AGENDA
ACADEMIC SENATE MEETING
March 21, 2012

1. CALL TO ORDER, ANNOUNCEMENTS & QUESTIONS   DR. DANIEL
2. APPROVAL OF THE AGENDA   DR. LEAF
3. APPROVAL OF MINUTES
   February 15, 2012 Meeting   DR. LEAF
4. SPEAKER’S REPORT   DR. LEAF
5. FAC REPORT   DR. LEAF
6. STUDENT GOVERNMENT LIAISON REPORT   DR. CORDELL
7. TOBACCO-FREE BUILDING RESOLUTION   DR. LEAF
8. REVISION TO POLICY ON HOP COMMITTEE   DR. LEAF
9. (IF APPROVED FOR AGENDA BY SENATE) DISCUSSION OF C/C- GRADE FOR PREREQUISITES   DR. LEAF
10. CEP PROPOSAL – GRADUATE CATALOG   DR. CANTRELL
12. ADJOURNMENT   DR. DANIEL
ITEM #3

APPROVAL OF MINUTES
UNAPPROVED AND UNCORRECTED MINUTES

These minutes are disseminated to provide timely information to the Academic Senate. They have not been approved by the body in question, and, therefore, they are not official minutes.

ACADEMIC SENATE MEETING
FEBRUARY 15, 2012

PRESENT: David Daniel, Hobson Wildenthal, Shawn Alborz, Peter Assmann, Poras Balsara, Kurt Beron, Dan Bochsler, Gail Breen, John Burr, Cy Cantrell, David Cordell, Greg Dieckmann, John Geissman, Joe Izen, Marilyn Kaplan, Murray Leaf, Sumit Majumdar, Dennis Miller, Jessica Murphy, Monica Rankin, Tim Redman, Richard Scotch, Zhenyu Xuan

ABSENT:

VISITORS: Andrew Blanchard, Calvin Jamison, Sheila Piñeres, Serenity King, Sharkey Andrews, Matthew Melton, Mike Mials, Sanaz Okhovat, Conor Wakeman, Rochelle Pena

1. CALL TO ORDER, ANNOUNCEMENTS AND QUESTIONS

President Daniel called the meeting to order. He announced that the Board of Regents approved an $85 million biosciences and engineering building for our campus. It will be an academic building with research labs, classrooms, and faculty office space. $72.25 million of the cost will be paid by the UT System from the Permanent University Fund. Dr. Daniel expressed his appreciation to Dr. Wildenthal, Dr. Blanchard, Dr. Jamison and Rick Dempsey for their help. The building will be immediately south of the NSERL building and construction will consume an existing parking lot. Dr. Jamison is committed to having a new parking lot completed before construction on the building begins. This new lot will likely be on the west side of Rutford or across Synergy from the NSERL building. At the next Regents’ meeting we will be asking for approval to build another parking garage.

The UT System changed its rules on review of tenured faculty. One of the big changes in the new policy is that annual reviews and comprehensive periodic performance evaluations (post tenure reviews) will use the same categories of evaluation. Faculty who are reviewed will be placed in one of four categories: exceeds expectations; meet expectations; does not meet expectations; unsatisfactory. Receiving an unsatisfactory designation in two consecutive annual review periods could trigger a more rigorous comprehensive post-tenure review.

The Regents have made available $10 million of matching gifts money. Our development officers are working to ensure that we receive a share of that money.

Enrollment figures for next fall are projected to be 20,000-21,000. We are continuing to take a careful look at classroom space and parking. Dr. Daniel was asked what type of parking lots are planned. He replied that for surface parking we typically build fairly inexpensive asphalt lots because of the possibility that the parking lot may get consumed by a building in not too many years. The two parking garages soon to be under design will be 4-story structures with 750 spaces each. One will be near the Jindal School of Management and one between the residence halls.
2. APPROVAL OF THE AGENDA
Speaker Leaf asked to add an additional item to the agenda – Faculty support for physical space for a UTD Veterans’ Center. Gregg Dieckmann moved add this item to the agenda. Tim Redman seconded. The motion carried. Cy Cantrell moved to approve the agenda as amended. Dan Bochsler seconded. The agenda was approved as amended.

3. APPROVAL OF MINUTES
Cy Cantrell moved to approve the minutes as circulated. Tim Redman seconded. The motion carried and the minutes were approved as circulated.

4. SPEAKER’S REPORT – MURRAY LEAF
The Budget Committee has begun work.

The ELS Committee continues to work—they have decided on a general approach, which is to have our portal website present two main paths to enrollment. One will be for ELS students who have not completed the language program and seek conditional admission. The other will be for those who have completed the program and seek regular admission. Mr. Elvey expects most students to be in the second category.

The Teaching Effectiveness Committee is working on the recommendations from President Daniel’s September retreat that concern improving teaching.

The MyEdu owners visited the campus about three weeks ago. Sheila Piñeres assembled the group to meet with the and has the matter well in hand. Speaker Leaf will ask the Distance Learning Committee to take the lead in representing the Senate if Senate consideration seems necessary.

5. FAC REPORT - MURRAY LEAF
Speaker Leaf reported that much happened at the last Faculty Advisory Council meeting.

System organization: David Prior has resigned effective the end of January, rather than wait for a replacement to be hired. Pedro Reyes has been appointed Acting Vice Chancellor for Academic Affairs in his absence. Dr. Reyes met with the FAC to discuss priorities for the near term.

Dashboard: Sandra Woodley presented the current state of the Chancellor’s dashboard. The prospects look good to use data from a service like SciVal or, better, Academic Analytics, for data on faculty productivity. If so, this will leave service as the last area to focus on for some kind of reasonably meaningful data on faculty activities.

MyEdu: We had another presentation from MyEdu. They are responding constructively to the input they have been getting in their campus visits. The FAC reaction appears to have gone from dubious to impressed and mildly optimistic.

Post Tenure Review—Regent’s Rule: After a good deal of tense discussion and a meeting between the FAC Executive Committee and the Chancellor, an amended version of the text recommended by the Chancellor’s Task Force was approved by the full FAC. A secret ballot was called for. The vote was 26 yes, 3 no, and 1 abstain. The revised rule, with the FAC’s further suggested changes, was approved by the Regents with no changes at their meeting on February 8. The new version includes the requirement that the system will provide templates for the annual review policy and for the comprehensive review policies. We are working in the
FAC to draft them. The annual review policy is more urgent because campuses should already have periodic comprehensive review (post-tenure review) policies.

Salary scales: The FAC has consistently been concerned with issues of salary equity, compression, and inversion on the various campuses. About four years ago, Dr. Shine, the Executive Vice Chancellor for Health affairs, coordinated an effort to rationalize salary terminology and practices among the medical/health faculty. This has historically been much more chaotic than for the academic campuses. The FAC worked with him in developing a model, and one of the things we asked for at the time was whether Dr. Shine could use the process to introduce consideration of a salary scale like that in the University of California. He said he would, and now has reported back. His conclusion is that the campuses differ far too much, for far too many reasons, to agree on such a system.

6. **Veterans’ Center Presentation**

Speaker Leaf asked for a motion to support the establishment of a veterans’ center on campus with a physical meeting space. Tim Redman made the motion as follows:

The Academic Senate urges the UTD administration to make available a physical space that the UTD student veterans association can use to centralise services and activities for veterans on campus.

Richard Scotch seconded. Students Matthew Melton and Mike Rials addressed the Senate. Both Mr. Melton and Mr. Rials are recently returned veterans and feel very strongly that students who are veterans often have needs that are unique to their situation and often are not fully integrated into the life of the University. It would be very beneficial if there were some type of center established with space where veterans could meet. Students, who are currently active military serving in the reserves, are facing a different set of challenges, and it is hoped that the center may help to address some of their concerns as well. Dr. Daniel indicated that he supported the proposal and noted that Dr. Darrelene Rachavong is considering possible space solutions for a center. The motion carried unanimously.

7. **Student Government Liaison Report**

Sharkey Andrews reported that the UT System Student Advisory Council met in February and representatives from our campus supported several initiatives. We were the driving force behind a recommendation that every UT-System campus establish some sort of veterans’ center. Students across the System are pushing to see more hybrid courses (combining online and in-person instruction) offered, especially at the graduate level. Marilyn Kaplan pointed out that due to budget constraints Student Government has had to cut back on offering free Scantrons and blue books. They are now only distributing Scantrons during mid-terms and final exams. Blue books continue to be offered for free.

Student Government elections will be held the last week in March. In addition to the election of student government representatives, three referenda will be presented:

The first is a “green fee.” This will be a $5.00 fee per student per semester to be used for the establishment of a green fund to be used by a student committee to pursue sustainability issues.

The second is the Student Union expansion fee. This is an increase of $74.00 per student per semester to be used for construction of a new Student Union Building that would connect to the current building.
The third item is a fee of $71.00 per student per semester for construction of a new activity center on the north end of campus near the residence halls. Because of our guaranteed tuition plan, if approved, these fees would not affect any current students, only new students.

8. **RESEARCH CONFLICT OF INTEREST POLICY**
Rafael Martin, Associate Vice President for Research, introduced Sanaz Okhovat and Conor Wakeman from the Office of Research. His presentation highlighted changes in federal government regulations. There will be future changes coming regarding financial conflict of interest and we will need to determine how we address those changes both at UT-Dallas and across the UT System. Dr. Martin’s presentation is attached to these minutes.

Dr. Martin said that both the Advisory Committee on Research and the Research Integrity Committee will be reviewing the changes. He will also try to find out what other System campuses plan to do. Dr. Chandrasakaren asked if the Senate could get a report from both these committees and the other campuses before we determine our next step.

9. **APPOINTMENT OF DENIS DEAN TO COMMITTEE ON QUALIFICATIONS OF ACADEMIC PERSONNEL**
Speaker Leaf explained that Bruce Jacobs had resigned from the Committee because of a teaching conflict that would not allow him to attend all of the meetings. The Committee on Committees recommended Denis Dean as his replacement and he agreed to serve. Tim Redman moved to approve this replacement. Cy Cantrell seconded. The motion carried.

10. **CEP PROPOSAL – UNDERGRADUATE CATALOG**
Cy Cantrell stated that the changes in the undergraduate catalog were relatively minor and asked Dean Piñeres to address those changes.

Dean Piñeres said that there were non-substantive changes with course and prefix renumbering. These were all reviewed within the respective schools by the associate deans, departments, and the CEP members from those schools.

It was noticed that there was a maximum course load policy for the long semesters of eighteen hours but there was no corresponding maximum course load policy for the summer. The catalog now states that anyone wishing to take more than 15 hour during the summer must get approval from the Associate Dean.

The next change is specifying that a student can fast-track into only one graduate program.

There is a new graduation requirement stating that no course work be taken off campus in the final semester and that all transfer work be submitted prior to the last semester. This is a result of students

Change to WP and WF designations: The intent of having the WP (withdraw passing) and WF (withdraw failing) was to inform whether a student was passing or failing a class in the last three weeks of the withdrawal period. Some law schools are translating the WF into an “F” and we had a policy that if the instructor did not sign the form to withdraw in that period the student automatically received a “WF.” The withdraw period is being changed from four weeks to six weeks and the “WP” and “WF” designations will no longer be used. Students will now receive a “WL” (withdraw late) for the seventh through the ninth weeks. These still require instructor signatures.
Addition of two new grades: Probation advising and at-risk advising is done based on mid-term grades, yet many times professors do not have enough information at mid-term to give a grade. The first new grade is to “MN” which says there is not sufficient information at mid-term to assign a grade.

The second new grade is “NF”– failure for non-attendance. It will count as an “F.” It will appear on the transcript.

Increase in minimum number of residency hours to graduate: The proposed change is from the current thirty hours to forty-five hours.

Student-initiated grade changes: The following wording will be placed in the undergraduate catalog and will correspond with wording in the graduate catalog:

The only grounds for considering a grade to be incorrect are either clerical error or that it is arbitrary or capricious. Examples of clerical error would include, but are not limited to, a mistake in adding component grades, a mistake in recording grades, or attributing a paper or examination to the wrong student. Arbitrary or capricious means that the grade cannot be considered reasonable given the material of the course, the overall performance of the class, and the individual performance of the student. The university assumes that course-work is best evaluated by the instructor in the immediate context of the course activity. Requests for reconsideration must show with clear and convincing evidence why this assumption should be set aside.

If a student believes they have been assigned a grade on the basis of a clerical error or that the grade is arbitrary or capricious, they should first seek to discuss the grade with the instructor. If this does not lead to satisfactory understanding, the student may file a formal appeal following the procedures described for academic grievances in the Rules, Regulations, and Statutory Requirements Section C.

Cy Cantrell moved to approve the undergraduate catalog copy submitted. Richard Scotch seconded. The motion assumes that all grammatical errors will be corrected in the final copy. The motion carried.

GRADUATE CATALOG
Cy Cantrell said that the graduate catalog information will not be presented today. It will be on the agenda for the March Senate meeting.

11. ANNUAL REVIEW POLICY
This policy is pursuant to changes in Regents’ Rules that were adopted at their February meeting. The Regents’ Rules require that there be a local campus review policy in the Handbook of Operating procedures for both annual reviews and the comprehensive periodic performance evaluation. Speaker Leaf has distributed our draft as a potential model policy for all the UT System academic campuses. This item does not require action by the Senate but Speaker Leaf asked for feedback regarding the policy. Discussion focused on the relationship between the evaluations in each of the kinds of activity—scholarship, teaching, and service—and the overall evaluation. This should be clarified in order provide a clearer definition of the crucial “unsatisfactory” designation. Speaker Leaf will make changes reflecting these concerns and send the revision to the Committee on Faculty Standing and Conduct for their further input.

12. DISCUSSION ITEM – PREREQUISITE GRADERS
Dean Piñeres reported that the undergraduate associate deans would like to bring this issue to the Senate to take back to the faculty. Currently the minimum passing grade is a D-, so if a
course has a prerequisite a student can move to the subsequent course with a grade of D- unless the catalog specifies a higher grade. The undergraduate associate deans would like the Senate to consider a policy of a minimum grade for moving along in a prerequisite. Their preference is a grade of C or C-. Under the current system at the beginning of each semester the associate deans have to manually pull the students who have a failing grade in a prerequisite course. If the new policy is adopted the process will be automated through the PeopleSoft system.

Richard Scotch moved that the Senate accept this recommendation and that the policy be given to Council for a future Senate meeting. John Geissman seconded. The motion carried.

13. ADJOURNMENT
Richard Scotch moved to adjourn. The motion was seconded and Speaker Leaf adjourned the meeting.

APPROVED: ___________________________ DATE: _________________

Murray J. Leaf
Speaker of the Academic Senate
Proposed Changes to the Policy on Research Investigator Financial Disclosure

Presentation to the Academic Senate
February 15, 2012
ITEM #7

TOBACCO-FREE BUILDING RESOLUTION
RESOLUTION ON TOBACCO-FREE BUILDINGS

The Academic Senate of the University of Texas at Dallas recommends that the use of tobacco be banned in all academic and service buildings on the University campus and all adjacent sidewalks, walkways, and attached parking structures within a distance of ten meters around the perimeters of such buildings. The Senate further recommends that the use of tobacco be banned in additional permanent outdoor places where faculty, staff, employees, and students gather that are not within the spaces covered by the first provision, such as the steps by the Student Union.

Definitions:

All academic and service buildings means all buildings with classrooms, laboratories, food-service and indoor recreational facilities, academic and business offices, or service facilities that support those classrooms, laboratories, facilities, or offices.

“Tobacco” means all forms of tobacco products, including but not limited to cigarettes, cigars, pipes, water pipes (hookah), bidis, kretexs, electronic cigarettes, smokeless tobacco, snuff and chewing tobacco.

Other terms in this recommendation that may be ambiguous should be interpreted in accordance with Texas Administrative Code Title 25, Chapter 703.
§703.20. Certification of Tobacco-Free Policy for Entities Receiving CPRIT Funds

(a) The following words and terms, when used in this section, shall have the following meanings, unless the context clearly indicates otherwise.

(1) “CPRIT-funded entity” means an institution, organization or company that receives grant funding from CPRIT equal to or more than $25,000 during the applicable fiscal year. All references to the CPRIT funded-entity include the entity’s faculty, staff, employees, and students.

(2) “Tobacco” means all forms of tobacco products, including but not limited to cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff and chewing tobacco.

(b) To be eligible to receive CPRIT funding, a CPRIT-funded entity shall certify that the entity has adopted and enforces Tobacco-free workplace policy.

(c) A Tobacco-free workplace policy will comply with the certification required by this section if the policy is adopted by the CPRIT-funded entity’s board of directors, governing body, or similar, and at a minimum, includes provisions:

(1) Prohibiting the use of all Tobacco products by all employees and visitors to the property owned, operated, leased, occupied, or controlled by the CPRIT-funded entity. For purposes of the Tobacco-free workplace policy, the CPRIT-funded entity may designate the property to which the policy applies, so long as the workplace policy encompasses all buildings and structures where the CPRIT project is taking place as well as the sidewalks, parking lots, walkways, and attached parking structures immediately adjacent, but only to the extent the CPRIT-funded entity owns, leases or controls the building, sidewalks, parking lots and parking structures.

(2) Providing for and/or referring to Tobacco use cessation services for employees.
(d) Exceptions – Upon request by a CPRIT-funded entity, the CPRIT executive director may grant a waiver of compliance with this section. If granted, the waiver is effective only for the fiscal year during which it was granted.

(e) Provisions in this section apply to all grant proposals submitted to the Institute in response to a request for proposals issued by the Institute on or after March 1, 2012. All other CPRIT-funded entities must certify compliance with this rule by August 31, 2012 or the first anniversary of the CPRIT-funded entity’s grant award, whichever is later.
Live Tobacco Free UT!
Texas Public Health Organization – October 14, 2011
http://www.tobaccofreetx.org

Following best practices recommended by the U.S. Centers for Disease Control and Prevention\(^1\) we call for a complete ban of tobacco products on the UT Austin campus.

This ban would apply to all students, staff, faculty, contract workers, and visitors to the campus: including buildings, parking lots and UT Austin owned and leased vehicles. It will also prohibit tobacco use at special events on campus such as sporting events, as well as any ancillary activities surrounding these events.

The purpose of a tobacco ban is not only to protect nonsmokers from secondhand smoke, but also to support employees and students who want to quit. This would result in cost savings for the university from better health and less litter, and promote a safe and healthy learning environment for students.

**Costs of Tobacco Use:**
- Smokers cost employers approximately $1300/year more than non-smokers.\(^2\)
- On average, businesses pay $2,189 in workers’ compensation for smokers, compared with $176 for nonsmokers.\(^3\)

**Health Effects of Smoking:**
- Approximately 70% of smokers know smoking is harmful and want to quit, but most are unable.\(^4\)
- Tobacco is the number one cause of preventable death nationwide, killing 443,000 annually — about 49,000 through secondhand smoke exposure.\(^5\)
- Even outdoors, secondhand smoke exposes nonsmokers to toxic substances that can cause cancer and lung disease.\(^6\)

**Trends in Campus Tobacco Policy:**
- As of July 2011, 530 colleges and universities around the US are 100% smoke-free, and many are completely tobacco-free.\(^7,8\)
- Oklahoma State University was one of the first “Big 12” universities to start the process and became a tobacco free campus in 2008. Other campuses with bans include: Texas State University, UT Arlington, UT Brownsville, University of Florida, University of Kentucky, Iowa State University, and University of Oklahoma (effective Jan. 2012).

**Public Opinion:**
- Tobacco bans on campuses have support among smokers and nonsmokers alike. A survey of over 14,000 college students, 17.3% of whom were smokers, showed that 97.5% of those who have never smoked and 81.5% of those who smoke agree that the right to breathe clean air takes precedence over the right to smoke.\(^9\)
After Dell Computer in Austin went entirely tobacco free, smoking rates dropped from 12% to 3%. A ban at Austin Travis County Integral Care saw tobacco use drop from 27.6% to 11.6% within 6 months.

Commonly proposed compromises and why we oppose them:

**Designated smoking areas**
- Do not eliminate non-smokers’ exposure to smoke.
- Do not encourage quitting or lower levels of tobacco use.

**Exceptions for special events**
- Require designated smoking areas, ash trays, and janitorial labor specifically for these events.
- Does not eliminate secondhand smoke exposure or encourage smokers to quit.

**Banning only smoking tobacco products**
- Smokeless tobacco encourages continued use of smoking tobacco.
- Will create litter on campus and damage campus environment.
- Tobacco users who previously only used cigarettes may turn to smokeless tobacco during work hours, thereby increasing their overall dependence.

**Supporting Groups/Individuals:**
- Texas Public Health, independent student organization (Thomas Haviland, Pres.)
- Austin/Travis County Health & Human Services Department (Philip Huang, M.D.)
- Student Government (Natalie Butler, Pres.)
- UT Department of Kinesiology (Keryn Pasch, Ph.D., M.P.H and Alexandra Loukas, Ph.D.)
- William M. Sage, M.D., J.D., Vice Provost for Health Affairs
- Sarah Simmons, Ph.D., Assistant Dean for Honors, Research & International Study
- Richard Taylor, Ph.D, Public Health Faculty
- Mary Steinhardt, Ed.D., L.P.C, Faculty Ombudsperson, Kinesiology Faculty

**References:**
10. Philip Huang, M.D., M.P.H. Austin/Travis County Health & Human Services Medical Director
11. Austin/Travis County Integral Care, 2011.
ITEM #8

REVISION TO POLICY ON
HOP COMMITTEE
Dear Abby:

At the last FAC meeting, the FAC (unanimously) approved recommending the following changes to the System's model policy on HOP committees:

UT System FAC Governance Committee Resolution 9/22/2011

Update to OGC Model Policy - HOP amendment approval process from November 9, 2007.

The effect of the current wording in the OGC model policy on the HOP Committee amendment approval process has been to establish the HOP committee as a body that can overrule the Senate on rules of academic policy on some campuses. This is not appropriate.

Therefore, we suggest the following amendments to the OGC model policy.

A. We replace the following in section 4.3:

“HOP Committee: The committee appointed by the President to review and make recommendations regarding the HOP to the President”

with:

“HOP Committee: The committee appointed by the President to review the process through which policies were developed and to certify that all stakeholders have been properly identified and consulted”

B. The following sentence should be added immediately after the previous sentence defining the HOP Committee:

“No policy concerning faculty should be certified for inclusion in the HOP without the approval of the faculty representative(s) to the University HOP Committee.”

C. We also add:

It should be the policy of the UT System that faculty must have a major role in distinguishing which policies affecting faculty are addressed in the HOP and which are addressed outside of the HOP. Policies affecting faculty that are not to be included in the HOP still require review by the faculty governance body. This should be reflected in the HOP model policy and anywhere else that would be appropriate.

Moreover, the model policy should make clear that its wording should be subject to amendment to reflect local campus circumstances as long as the following basic principles are observed. First, all stakeholders as defined in section 4.7 should be represented. Second, the HOP committee cannot override Senate authority in matters of policies affecting the faculty.
I think we are already operating in the spirit of this, but will recommend that we add one statement to our current HOP policy:

2. b. 3. Policies affecting educational policy, as defined by the areas in which the faculty shall have a "major role" in Regents Rule 40101 2.Section 3, will not be approved for inclusion in the HOP if the faculty Senate has not reviewed and approved them.

I am putting consideration of this amendment on the Academic Council agenda for this month.

We may also want to add a line somewhere that explicitly says policies intended for inclusion in the HOP should be explicitly so designating and approved by the stakeholders. Policies not intended to be included in the HOP should be distinguished from those to be included.

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The University of Texas System
Rules and Regulations of the Board of Regents Series: 20201

Sec. 4 Duties and Responsibilities. Within the policies and regulations of the Board of Regents and under the supervision and direction of the appropriate Executive Vice Chancellor, the president has general authority and responsibility for the administration of that institution. Specifically, the president is expected, with the appropriate participation of the staff, to:

4.8 Appoint, or establish procedures for the appointment of, all faculty, staff, and student committees.

4.9 Cause to be prepared and submitted to the appropriate Executive Vice Chancellor and the Vice Chancellor and General Counsel for approval, the rules and regulations for the governance of the institution and any related amendments. Such rules and regulations shall constitute the Handbook of Operating Procedures for that institution. Any rule or regulation in the institutional Handbook of Operating Procedures that is in conflict with any rule or regulation in the Regents' Rules and Regulations, is null and void and has no effect. Input from the faculty, staff, and student governance bodies for the institution will be sought for all significant changes to an

The University of Texas System
Rules and Regulations of the Board of Regents Series: 10100

Sec. 4 To ensure that the Regents' Rules and Regulations provide the proper degree of autonomy to the U. T. System or any of its institutions, the following guidelines should be considered when drafting or amending the rules:

4.1 The rule should help ensure compliance with applicable laws and regulations, promote operational efficiencies, enhance the mission, or reduce institutional risks of the U. T. System or any of its institutions.

4.2 The rule should establish a governing principle that has System-wide application.

4.3 The rule should communicate an important governing principle rather than specifying operational detail.

4.4 The rule should avoid dictating policy or procedure that could be better determined by an institution.

4.5 The rule should avoid restating a law or regulation.

Sec. 5 Every employee has the right to propose changes in policies
and procedures and to present arguments in support thereof. 
5.1 Proposals should originate and follow routines as 
 prescribed in the Regents’ Rules and Regulations or in 
an institutional Handbook of Operating Procedures. 
5.2 When a proposal has been approved or amended by the 
appropriate institutional officials, faculties, and the 
institution’s president, it shall then go to the appropriate 
Executive Vice Chancellor and the Chancellor for 
recommendation to the Board if such action is required. 
5.3 When a proposal has been approved, amended, or 
rejected by the appropriate institutional officials, faculties, 
or the institution’s president, any employee or group of 
employees may present an appeal in opposition to the 
action of the majority or in opposition to the 
recommendation of the institutional official or the 
institution president, and this appeal, accompanied by 
reasons for and against the proposal, shall go through 
the prescribed administrative channels and shall be 
presented through the appropriate Executive Vice 
Chancellor to the Chancellor and thence to the Board for 
final action. The deans and other institutional officials, 
the institution president, the appropriate Executive Vice 
Chancellor, the Chancellor, and the Board may invite 
both sides for personal conferences and discussions 

The University of Texas System 
Rules and Regulations of the Board of Regents Rule: 40101 
Page 1 of 3

1. Title 
Faculty Role in Educational Policy Formulation 

2. Rule and Regulation 

Sec. 1 Board Commitment. The Board of Regents will devote its best 
efforts to making all of the institutions of The University of Texas 
System of the "first class," as the Texas Constitution directs in 
Article VII, Section 10. The Board will be guided in general by 
the best practices of the top universities in the United States 
and abroad, especially by the best practices of state universities 
in the United States. 

Sec. 2 Advice on Board Policies. The Board of Regents will ordinarily 
seek the advice of the faculty on important matters of academic 
policy.
Sec. 3 General Authority. Subject to the authority of the Board of Regents and subject further to the authority that the Board has vested in the various administrative officers and subdivisions of the System, the faculties of the institutions regularly offering instruction shall have a major role in the governance of their respective institutions in the following areas:
3.1 General academic policies and welfare.
3.2 Student life and activities.
3.3 Requirements of admission and graduation.
3.4 Honors and scholastic performance.
3.5 Approval of candidates for degrees.
3.6 Faculty rules of procedure.

Sec. 4 Necessity of Approval by Regents. Legislation recommended by an institutional faculty, or legislative body thereof, requiring approval of the Board of Regents, shall not be effective unless and until approved by the Board. Such legislation by a college or school faculty shall not be presented to the Board until it has been approved by the institutional faculty, either directly or through its legislative body, and has received the consideration and recommendation of the institutional president, the appropriate Executive Vice Chancellor, and the Chancellor. The faculty affected will be notified by the Board, through administrative channels, of its action on recommended faculty legislation.

Sec. 5 Approval of Degree Candidates. It shall be the duty of the several institutional faculties to recommend approval or disapproval of all candidates for degrees. This duty may be delegated by affirmative vote of the institutional faculty, or its legislative body, to the respective deans or other appropriate official. Should this duty not be delegated, the institutional registrar, or his or her equivalent, shall furnish to the members of the institutional faculty a complete list of the degree candidates for recommendation.

Sec. 6 List of Degree Candidates. The institutional registrar, as soon as possible after each commencement, shall provide the secretary of his or her institutional faculty, or its legislative body, with a complete list of all successful degree candidate
Model Policy

Issued by: Office of General Counsel, UT System
November 9, 2007

HANDBOOK OF OPERATING PROCEDURES (HOP)
AMENDMENT APPROVAL PROCESS

1. Policy.

The University of Texas at [insert institution name] Handbook of Operating Procedures (HOP) contains official policies and procedures for the governance of UT [institution]. The rules and regulations constituting the HOP must not conflict with any rule or regulation in the Regents’ Rules and Regulations. Any HOP rule or regulation that is in conflict with any rule or regulation in the Regents’ Rules and Regulations is null and void and has no effect.

The President of The University of Texas at [insert institution name] has the authority and responsibility to prepare and submit to the appropriate Executive Vice Chancellor and the Vice Chancellor and General Counsel for approval, the rules and regulations constituting the HOP. The President has designated [insert name of institutional office or title of institutional official] as the university office/official responsible for coordination of policy development and review. The development and review process will include an opportunity for faculty, staff and student governance bodies to provide advisory input regarding proposed changes to policies that may impact the respective groups.

2. Scope

This policy applies to any significant change to the institution’s HOP, including the addition or deletion of policies and procedures.

3. Purpose

The purpose of this policy is to set forth the procedure for amending the institution’s HOP including obtaining input from faculty, staff and student governance bodies that may be affected by changes in policies and procedures.

4. Definitions

4.1 Educational Policy: Sections of the HOP that pertain to the areas of faculty responsibility as set forth in Regents’ Rules and Regulations, Rule 40101.
4.2 Governance of the institution: Consists of the policies and procedures except medical procedures or protocols, affecting the way the institution directs, administers or controls the institution. This includes policies and procedures:

(a) directing compliance with applicable state and federal laws and regulations, Regents’ Rules and Regulations, and UT System policies and policies with System-wide application;

(b) addressing or affecting the responsibility and/or authority of the various offices and bodies that make up the institution; and

(c) addressing the relationships between administration, faculty, students, and staff and institutional values and/or goals.

4.3 HOP Committee: The Committee appointed by the President to review and make recommendations regarding the HOP to the President. The HOP committee membership includes the President or his or her designee, the Vice Presidents or their respective designees, the Faculty Senate Chair, Staff Senate Chair, Student Government Association President the Policy Coordinator and other individuals as appointed by the President.

4.4 Policy Coordinator: Person or office appointed by the institution’s President to ensure institutional compliance with this policy.

4.5 Responsible Executive: The President, or his or her designee, or Vice President, or his or her designee, who is responsible for the programmatic, functional or administrative areas addressed by the policy and procedure.

4.6 Significant change: A change that results in a substantive change in the rule including changes to essential principle(s), scope or application of the HOP policy or procedure. Editorial changes, changes to reflect institutional organizational changes, paragraph and outline numbering, and reference citations are not significant changes.

4.7 Stakeholder Review Plan: A plan for obtaining advisory input from faculty, staff and student governance bodies that may be affected by changes in HOP policies and procedures.

5. Procedure

5.1 Designations and Responsibilities.

[The institutional policy must describe the institution’s process for:
- designating Responsible Executives;
- developing a periodic review schedule;]
- designating a policy as pertaining to the areas of faculty responsibility in Educational Policy formulation; and
- developing a Stakeholder Review Plan.]

EXAMPLE: The Policy Coordinator will chair the HOP Committee. The HOP Committee will review all HOP sections and for each section is responsible for designating a Responsible Executive; determining a periodic review schedule; designating whether it pertains to the areas of faculty responsibility in educational policy formulation; and developing a Stakeholder Review Plan.

5.2 HOP Review Process.

[The institutional policy must describe the institution’s HOP review process which at a minimum must include:
- the opportunity for stakeholders to provide advisory input;
- a timeframe for stakeholders to provide input that takes into consideration the best interests of the institution regarding timely policy implementation including, but not limited to, legal or otherwise mandated deadlines for policy implementation;
- regarding educational policy, a stakeholder review by the faculty governance body conducted in a reasonable time (60 days or less).]

EXAMPLE:

(a) Policies Not Related to Educational Matters

(1) A university office proposing a new HOP section will draft the policy, in correct HOP format and prepare a statement of background and rationale for the new policy. (The Policy Coordinator will provide assistance upon request). A university office proposing a HOP amendment will prepare a draft in congressional style along with a statement of background and rationale for the amendment. The proposing office will route the documents through the appropriate dean, director, or administrative equivalent to the Responsible Executive.

(2) The Responsible Executive will submit the proposal to the Policy Coordinator who will distribute it to the HOP Committee for review and approval. The HOP committee will confirm the Stakeholder Review Plan and develop a stakeholder review timeline that takes into consideration the best interests of the institution regarding timely implementation of the proposed HOP policy including, but not limited to, legal or otherwise mandated deadlines for policy implementation.
(3) The Policy Coordinator will distribute the proposed HOP policy in accordance with the Stakeholder Review Plan and timelines.

(4) Advisory input from Stakeholders returned timely to the Policy Coordinator will be provided to the Responsible Executive for consideration.

(5) The Responsible Executive will resubmit the proposed HOP policy with any incorporated changes to the HOP Committee.

(6) Once a majority of the HOP committee has approved the proposed HOP policy, it will be submitted to the President for review and approval.

(b) Educational Policy

(1) New or amended Educational Policy will be reviewed in accordance with Section 5.2(a)(1)-(6).

(2) The Stakeholder Review Plan must include review by the faculty governance body.

(3) The faculty governance review timeline will be reasonable (60 calendar days or less).

(c) HOP Policies with No Significant Changes

Proposed changes to HOP sections that are not significant do not need to be approved in accordance with this policy or reviewed by the Executive Vice Chancellor or Vice Chancellor and General Counsel. The Policy Coordinator shall determine whether the change is significant.

5.3 Each policy in the HOP will be reviewed in accordance with the review schedule and timelines using the applicable process in Section 5.2.

5.4 After approval by the President, the Policy Coordinator will submit the proposed HOP policy to the appropriate UT System Executive Vice Chancellor and the Vice Chancellor and General Counsel for review and approval. The submission should include any changes shown in congressional style and a brief background and rational for the proposed policy.

5.5 The Policy Coordinator will notify the HOP Committee and Responsible Executive regarding the resolution of any comments received from UT System and make conforming changes as needed. Recommendations and comments from university attorneys are legal advice provided to university administration and are to be treated as privileged and confidential attorney-client communications.
5.6 The Policy Coordinator will notify the university community regarding approved HOP amendments by placing them in the HOP.

6. Authority/Related Policies

Regents’ Rules and Regulations, Rule 20201
Regents’ Rules and Regulations, Rule 10100
Regents’ Rules and Regulations, Rule 40101
ITEM #9

DISCUSSION OF C/C- GRADE FOR PREREQUISITES
Prerequisites/Corequisites Policy

All prerequisites, co-requisites and limitations on enrollment as stated in the course descriptions of the college catalog will be strictly enforced at the time of a student’s registration.

Students who believe they have met a prerequisite at another institution are strongly advised to have all official transcripts of prior college work and other documentation on file well in advance of registration. This will minimize registration delays.

Consistent with UT Dallas policy on transfer credit a student must make a grade of C or better in a UT Dallas prerequisite course before moving into the subsequent course in a sequence.
ITEM #10

CEP PROPOSAL –

GRADUATE CATALOG
Graduate Program in Arts and Technology

Master of Arts

The program leading to the M.A. in Arts and Technology is designed both for individuals engaged in professional practice wishing to enhance their knowledge and skills and for students intending to pursue a doctorate in a related field. It offers advanced studies in interactive media and computer-based arts that emphasize the fusion of creative with critical thinking and theory with practice. Students must complete thirty-six semester hours of course work and an advanced project.

Core Courses (6 hours)

ATEC 6300 Interdisciplinary Approaches to Arts and Technology
ATEC 6331 Aesthetics of Interactive Arts
Students are expected to complete these courses as early as possible in their degree plan.

Prescribed Electives (27 hours)

Twenty-seven hours chosen from the following courses:
ATEC 6332 Design Principles
ATEC 6333 Computational Design
ATEC 6334 Information Design for New Media
ATEC 6335 Research in Sound Design
ATEC 6341 Game Design
ATEC 6342 Game Studies
ATEC 6343 Interactive Environments
ATEC 6345 Game Production Lab
ATEC 6351 Digital Arts
ATEC 6352 Motion Capture
ATEC 6353 Visualization Research
ATEC 6354 Immersive Environments
ATEC 6355 Animation Production Lab
ATEC 6361 Writing for Interactive Media
ATEC 6372 Approaches to Emerging Media and Communication
ATEC 6373 Emerging Media Studio I
ATEC 6374 Digital Textuality
ATEC 6375 Cyberpsychology
ATEC 6376 E-Business Environment Design
ATEC 6381 Special Topics in Emerging and Cognitive Design
ATEC 6382 Special Topics in Interactive Media
ATEC 6383 Special Topics in Sound Design
ATEC 6384 Special Topics in Game Studies
ATEC 6385 Special Topics in Animation
ATEC 6389 Topics in Arts and Technology

HUAS 6313 The Business of the Arts
HUAS 6312 Art and Society
HUAS 6330 Studies in Visual Arts
HUAS 6339 Painting/Digital Imaging/Video
HUAS 6375 Imagery and Iconography
HUAS 6391 Creativity: Visual Arts Workshop
HUAS 6392 Image/Text Workshop
Final Project (3 hours)

ATEC 6V95 Advanced Project Workshop

Having completed at least 30 hours of course work, students will complete and present an advanced project in digital arts for evaluation by a master’s committee.

Master of Fine Arts

The program leading to the M.F.A. in Arts and Technology is designed both for students wishing to teach arts-and-technology-related courses in colleges and universities and for those intending to engage in professional studio or design practice. While maintaining a commitment to interdisciplinary education fusing critical with creative thinking, this program places greater emphasis on the creation and application of computer-based arts and narrative. Students must complete fifty-four semester hours of course work and a substantial advanced project.

Core Courses (6 hours)

ATEC 6349 Interdisciplinary Approaches to Arts and Technology
ATEC 6331 Aesthetics of Interactive Arts

Students are expected to complete these courses as early as possible in their degree plan.

Prescribed Electives (24 hours)

Twenty-four hours chosen from the following courses:
ATEC 6332 Design Principles
ATEC 6333 Computational Design
ATEC 6334 Information Design for New Media
ATEC 6335 Research in Sound Design
ATEC 6341 Game Design
ATEC 6342 Game Studies
ATEC 6343 Interactive Environments
ATEC 6345 Game Production Lab
ATEC 6351 Digital Arts
ATEC 6352 Motion Capture
ATEC 6353 Visualization Research
ATEC 6354 Immersive Environments
ATEC 6355 Animation Production Lab
ATEC 6361 Writing for Interactive Media
ATEC 6371 Community Media
ATEC 6372 Approaches to Emerging Media and Communication
ATEC 6373 Emerging Media Studio I
ATEC 6374 Digital Textuality
ATEC 6375 Cyberpsychology
ATEC 6376 E-Business Environment Design
ATEC 6381 Special Topics in Emerging and Cognitive Design
ATEC 6382 Special Topics in Interactive Media
ATEC 6383 Special Topics in Sound Design
ATEC 6384 Special Topics in Game Studies
ATEC 6385 Special Topics in Animation
ATEC 6389 Topics in Arts and Technology

HUAS 6312 Art and Society
HUAS 6313 The Business of the Arts
HUAS 6317 Art and Authorship
HUAS 6330 Studies in Visual Arts
HUAS 6391 Creativity: Visual Arts Workshop

HUAS 6317 Art and Authorship
HUAS 6313 The Business of the Arts
HUAS 6330 Studies in Visual Arts
HUAS 6339 Painting/Digital Imaging/Video
HUAS 6352 Creating TV and Movie Scripts
HUAS 6373 Studies in Film
HUAS 6375 Imagery and Iconography
HUAS 6391 Creativity: Visual Arts Workshop
HUAS 6392 Image/Text Workshop
HUAS 6393 Time-Based Arts Workshop
HUAS 6354 Creating Short Fictions

HUAS 6308 Studies in Literary Forms
HUAS 6370 Literature and Ideas

Free Electives (9 hours)
Nine hours of electives in any organized courses.

Independent Study (9 hours)

Final Project (6 hours)

ATEC 6V95 Advanced Project Workshop

Having completed at least 45 hours of course work, students complete and present a substantial advanced project in digital arts for evaluation by a master’s committee.

Doctor of Philosophy

The program leading to the Ph.D. in Arts and Technology is designed both for students wishing to teach arts-and-technology-related courses in colleges and universities and those who wish to develop new artistic, cultural or commercial applications of digital technology/emerging media. This program emphasizes the fusion of creative with critical thinking and theory with practice. Students seeking a Ph.D. in Arts and Technology will normally complete a minimum of 60 semester hours (42 hours in course work and 18 hours in dissertation) beyond a master’s degree or its equivalent, pass doctoral field examinations, and complete and defend a dissertation.

Core Courses (42 hours)

ATEC 6300 Interdisciplinary Approaches to Arts and Technology
ATEC 6331 Aesthetics of Interactive Arts
ATEC 7331 Research Methodology in Arts and Technology
HUHI 7387 Science and Technology in Western Culture

Students are expected to complete these courses as early as possible in their degree plan.
Prescribed Electives (21 hours)

Twenty-one hours chosen from the following courses:
ATEC 6341 Game Design
ATEC 6351 Digital Arts
ATEC 6361 Writing for Interactive Media
ATEC 7340 Advanced Studies in Arts and Technology
ATEC 7V81 Advanced Project Workshop
ATEC 7V82 Advanced Projects in Interactive Media
ATEC 7620 Advanced Projects in Simulation and Game Design
ATEC 8305 Independent Research in Arts and Technology
HUAS 6375 Imagery and Iconography
HUHI 7387 Science and Technology in Western Culture
HUSL 6384 Digital and Visual Rhetorics

Free Electives (12 hours)

Eleven hours of electives in any organized 7000-8000 level courses offered by the Schools of Arts and Humanities, or the Erik Jonsson School of Engineering and Computer Science, Behavioral and Brain Sciences, Management, Economic, Political and Policy Sciences, Natural Science and Mathematics, or Interdisciplinary Studies.

Doctoral Field Examinations

After completing all these requirements, students proceed to the doctoral field examinations, a sequence consisting of three written sections and one oral section. The examining committee, composed of three regular members of the faculty, oversees definition and preparation of the three examination fields within guidelines established by the program. At least seven days before the exams themselves, the faculty members submit examination questions to the Arts and Humanities office, which schedules and administers the examination. The maximum time allowed for a student’s completion of the examination sequence is 20 business days.

Dissertation (18 hours minimum)

Students are formally advanced to Ph.D. candidacy when they have successfully completed the qualifying examinations and received final approval for dissertation topics. A four-person supervising committee is formed, normally from the examining committee plus another regular faculty member proposed by the student, to oversee dissertation work.

Each candidate then writes a doctoral dissertation, which is supervised and defended according to general university regulations. Every student must register for a minimum of nine hours of dissertation credit in two successive semesters and must maintain continuous enrollment thereafter for at least three semester hours during consecutive long semesters until the degree is completed. Any exception to this requirement is granted only by petition to the school's Associate Dean for Graduate Studies.
# Graduate Catalog Course Changes

**Catalog Years: 2012-2014**

<table>
<thead>
<tr>
<th>School</th>
<th>Arts &amp; Humanities</th>
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<tbody>
<tr>
<td><strong>Department</strong></td>
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<tr>
<td><strong>If there are no changes please indicate here:</strong></td>
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<tr>
<td><strong>Basis For Catalog Course Changes</strong></td>
<td>ATEC 6344, ATEC 6346, ATEC 6347, ATEC 6348, ATEC 6356, ATEC 6365, ATEC 6381, ATEC 6389, ATEC 6391, ATEC 6V90, ATEC 7330, ATEC 7335, EMAC 6342, EMAC 6365, EMAC 6375, EMAC 6375, EMAC 6381, HUHI 6351, HUHI 6355</td>
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<tr>
<td><strong>New Courses Added</strong></td>
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<td><strong>Courses Deleted</strong></td>
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<td>Changes to main excel sheet: ATEC 6300, ATEC 6335, ATEC 6341, ATEC 6342, ATEC 6343, ATEC 6351, ATEC 6352, ATEC 6353, ATEC 6354, ATEC 6361, ATEC 6374, ATEC 6375, ATEC 6375, ATEC 6376, ATEC 6382, ATEC 6383, ATEC 6384, ATEC 6385, ATEC 6390, ATEC 6V95, ATEC 7390, EMAC 6300, EMAC 6361, EMAC 6374, EMAC 6375, HUAS 6317, HUAS 6375, HUAS 6377, HUHI 6305, HUHI 6314, HUHI 6327, HUHI 6329, HUMA 6323, HUMA 8V99. Changes to cross-list excel sheet: ATEC 6372, ATEC 6373, EMAC 6372, EMAC 6373.</td>
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HUED 5300 (ED 5300) The Interdisciplinary Teaching of the Arts and Humanities in the Secondary School (3 semester hours) Approaches to the interdisciplinary teaching of the arts and humanities at the secondary level. Each student will design a curriculum unit to be taught from an interdisciplinary perspective. Required of students seeking the Master of Arts in Teaching. (3-0) Y

ATEC 6373 (EMAC 6373) Emerging Media Studio I (3 semester hours) This course explores media production across multiple media. Students work in teams to develop meta-media projects in a variety of content delivery environments. Class will require students to develop a range of rhetorical (text, audio) and visual (image, video) strategies appropriate for emerging media. (May be repeated for credit as topics vary to a maximum of 9 credit hours maximum). (3-0) T

EMAC 6373 (ATEC 6373) Emerging Media Studio I (3 semester hours) This course explores media production across multiple media. Students work in teams to develop meta-media projects in a variety of content delivery environments. Class will require students to develop a range of rhetorical (text, audio) and visual (image, video) strategies appropriate for emerging media. (May be repeated for credit as topics vary to a maximum of 9 credit hours maximum). (0-3-0) T

ATEC 6372 (EMAC 6372) Approaches to Emerging Media and Communications (3 semester hours) This course focuses on the conceptual study of emerging media. Course may explore the theoretical, exploring the political, technological, cultural, cognitive, and historical forces which inform the way media and communication develop. (3-0) T

EMAC 6372 (ATEC 6372) Approaches to Emerging Media and Communication (3 semester hours) This course focuses on the conceptual study of emerging media. Course may explore the theoretical, exploring the political, technological, cultural, cognitive, and historical forces which inform the way media and communication develop. (3-0) T

ATEC 6371 (EMAC 6371) Community Media (3 semester hours) Students develop local media that gives voice to people and issues in a particular community. Emphasis on personal, expressive media production that displays an authentic, personal voice. Students write and produce projects for Internet distribution using text, audio, video, interactive, and participatory elements. (0-3) T

EMAC 6371 (ATEC 6371) Community Media (3 semester hours) Students develop local media that gives voice to people and issues in a particular community. Emphasis on personal, expressive media production that displays an authentic, personal voice. Students write and produce projects for Internet distribution using text, audio, video, interactive, and participatory elements. (0-3) T
ATEC 6300 Interdisciplinary Approaches to the Arts and Technology (3 semester hours) Introduction to the interdisciplinary study of mutual interactions between technology and the creative arts. Establishes basic theoretical concepts and principles underlying the graduate program in Arts and Technology. Required of all degree candidates in Arts and Technology. (3-0) Y

ATEC 6331 Aesthetics of Interactive Arts (3 semester hours) Exploration of aesthetic principles underlying the interactive electronic arts, their relation to and divergence from aesthetic principles underlying traditional forms of artistic expression. Topics will include interactive games, animation, and new modes of narrative. Required of all degree candidates in Arts and Technology. (0-3) Y

ATEC 6332 Design Principles (3 semester hours) Exploration of advanced design principles and practices common to most design professions. Topics include the language of design, core design concepts, analysis of design, and specialized design practices. (0-3) Y

ATEC 6333 Computational Design (3 semester hours) Exploration of the computational theory of design and the design of products and processes through digital means, such as computer graphics, animation, visualization, simulation, computer-aided design, and image processing. (0-3) Y

ATEC 6334 Information Design for New Media (3 semester hours) This course explores holistic discovery research and practice in the field of new media studies. Students will learn to uncover insights about user desirability, technological potential and possibility, data evaluation, value measures, and how to select ideas that have the greatest potential to ultimately invest, develop, and build new products and services. (0-3) T

ATEC 6335 Research in Sound Design (3 semester hours) Exploration of the relationship between sound, music, and the visual arts. This course covers the history of art and technology as applied to the domain of sound, with a special focus on interactive applications. (May be repeated for credit as topics vary to a maximum of 96 credit hours.) (0-3) T

ATEC 6341 Game Design (3 semester hours) Advanced study of the structure and design of digital, analog, narrative, and social game systems. Course focuses on theory, critical analysis, innovation, and prototype creation. (May be repeated to a maximum of 9 credit hours.) (0-3) Y

ATEC 6342 Game Studies (3 semester hours) Advanced study of the computer game as cultural artifact, procedural system, social space, and artistic medium. (May be repeated for credit as topics vary to a maximum of 96 credit hours.) (0-3) T

ATEC 6343 Interactive Environments (3 semester hours) Exploration of design principles and practices for the creation of interactive experiential spaces. Course focuses on atmosphere, flow, interactivity, spatial narrative, and user experience. (May be repeated for credit as topics vary to a maximum of 96 credit hours.) (0-3) T
ATEC 6345 Game Production Lab (3 semester hours) Exploration and application of advanced methods and techniques (literary, artistic, conceptual, and technical) involved in the development of interactive games. Includes participation in development team for creation of a prototype, vertical slice demo, or complete original game. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-3) T

ATEC 6351 Digital Arts (3 semester hours) Exploration and application of advanced methods and techniques for the creation of visual images through the use of digital media. (May be repeated as topics vary to a maximum of 9 credit hours.) (0-3) Y

ATEC 6352 Motion Capture (3 semester hours) Exploration of advanced methods and techniques in motion capture animation. Course culminates in a professional-quality animation project. (May be repeated to a maximum of 9 credit hours.) (0-3) T

ATEC 6353 Visualization Research (3 semester hours) Exploration and application of advanced techniques in animation, visualization, simulation, and interactivity. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-3) T

ATEC 6354 Virtual Immersive Environments (3 semester hours) Advanced research in the conceptualization, creation, and application of interactive immersive environments, including research in synthetic spaces, interactive game engines, and hybrid physical/virtual worlds. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-3) T

ATEC 6355 Animation Production Lab (3 semester hours) Exploration and application of advanced concepts and techniques involved in the development of animated shorts and features. Includes participation in development team for creation of an animated short or feature-length animated film. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-3) T

ATEC 6361 Creating Writing for Interactive Media (3 semester hours) This course covers theory, principles, and practice of media objects created for an interactive environment. Sections may be devoted exclusively to a single aspect of distribution via digital media. Will include creation of emerging media both linear and communications or to a multiplicity of subjects related to the field nonlinear digital content for electronic distribution. (May be repeated to a maximum of 9 credit hours.) (0-3) T

ATEC 6374 Digital Textuality (3 semester hours) This course will combine theory and practice to focus on shifts in text, image, and sound. Students will become acquainted with the influence of the digital on forms of textuality and put theory into practice by communicating ideas through multiple media forms understanding how representation and specifically writing has changed as mediums of writing have changed, paying special attention to the transformation from the analog to the digital. (3-0) T

ATEC 6375 Topics in Emerging & Cognitive Design Cyberpsychology (3 semester hours) Exploration of the underlying psychological issues of users that can be taken into account in the design and assessment of interactive technologies, such as online personas, virtual humans and cultures, brain-computer or
human-robotic interfaces, virtual workplaces, and e-behavior. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

ATEC 6376 E-Business Environment Design (3 semester hours) Students in this course will analyze underlying changes in societal structures fueled by a web-based economic environment, apply the effect of these societal paradigms to marketing, examine the effect of technology-driven societal structures on the workplace, and explore how the optimization of e-marketing and e-business environment designs can be used to create sustainability strategies. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) reduce energy consumption. (3-0) T

ATEC 6382 Special Topics in Interactive Media (3 semester hours) Students in this course will explore how interactivity defines the degree to which digital artifacts (such as games, multimedia applications, and interactive applications) are generated and transformed into products of all kind by their users. Topics may include interaction design, interface design, and research in anticipatory systems. (May be repeated for credit to a maximum of 96 credit hours.) (0-3) R

ATEC 6383 Special Topics in Sound Design (3 semester hours) Advanced research in digital music and sound design. Topics may include advanced visualization of music and sound, sonification of images and data, and advanced research in interactive sound applications. (May be repeated for credit to a maximum of 96 credit hours.) (0-3) R

ATEC 6384 Special Topics in Game Studies (3 semester hours) An examination of the links between technology, play, and culture. Topics may include the ethics of game development, serious and persuasive games, simulation and training, interactive education, identity and culture in virtual worlds, multilinear narrative, and philosophical origins of games as a medium. (May be repeated for credit to a maximum of 96 credit hours.) (0-3) R

ATEC 6385 Special Topics in Animation (3 semester hours) Advanced research in animation, including concept development, character development, advanced techniques and methods in 2D animation, and animation production techniques. (May be repeated for credit to a maximum of 96 credit hours.) (0-3) R

ATEC 6390 Special Topics in Arts and Technology (3 semester hours) Independent studies course that may count toward minimum course requirements for the M.A. or M.F.A. degree. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) R

ATEC 6397 Independent Readings in Arts and Technology (3 semester hours) (May be repeated for credit) (3-0) R

ATEC 6398 Independent Research in Arts and Technology (3 semester hours) (May be repeated for credit.) (3-0) R

ATEC 7331 Research Methodology in Arts and Technology (3 semester hours) This course presents students with a variety of research methods that are appropriate for advanced research in Arts and Technology. Methods will include ethnographic, experimental, descriptive, historical, and philosophical. (3-0) R
ATEC 7340 Advanced Studies in Arts and Technology (3 semester hours) Advanced studies in the theoretical and/or practical interactions of arts and technology (May be repeated for credit to a maximum of 9 credit hours.) (3-0) R

ATEC 7390 Advanced Special Topics in Arts and Technology (3 semester hours) Independent studies course that may count toward minimum course requirements for the Ph.D., M.A., or M.F.A. degree. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) R

ATEC 7620 Advanced Projects in Simulation and Game Design (6 semester hours) Students will engage in the creation of advanced creative and/or research projects exploring simulation and game design. (0-6) R

ATEC 8303 Independent Readings in Arts and Technology (3 semester hours) (May be repeated for credit) (3-0) R

ATEC 8305 Independent Research in Arts and Technology (3 semester hours) (May be repeated for credit.) (3-0) R

ATEC 6V81 Special Topics in Emergent Communication (1-9 semester hours) Explores current theories informing research on and practices in digital media and communication, such as distributed, mobile, time-shifted, interactive and personal media. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-[1-9]) T

ATEC 6V95 Advanced Project Workshop (3-6 semester hours) Students will engage in the creation of an advanced creative and/or research project exploring the interaction of the arts with digital technology. Required of all M.A. and M.F.A. degree candidates in Arts and Technology. ([3-6]-0) Y

ATEC 7V81 Advanced Project Workshop (3-6 semester hours) Students will engage in the creation of an advanced creative and/or research project exploring the interaction of the arts with digital technology. Required of all degree candidates in Arts and Technology. ([3-6]-0) R

ATEC 7V82 Advanced Projects in Interactive Media (1-9 semester hours) Students will complete an advanced creative and/or research project exploring the interaction of communication and digital technology. (May be repeated for credit to a maximum of 9 credit hours as topics vary.) ([1-9]-0) R

ATEC 8V99 Ph.D. Dissertation (1-9 semester hours) (May be repeated for credit.) ([1-9]-0) R

EMAC 6300 Interdisciplinary Studies in Introduction to the Study of Emerging Media and Communication (3 semester hours) This course is an introduction to interdisciplinary study of the implications of interactive technology for the creation, dissemination and impact of communication. Establishes basic theoretical concepts and principles underlying the graduate program in Emerging Media and Communication. (3-0) Y

EMAC 6361 (ATEC 6361) Creating Writing for Interactive Media (3 semester hours) This course covers theory, principles, and practice of media objects created for an interactive
Sections may be devoted exclusively to a single aspect of distribution via digital media. Will include creation of emerging media, both linear and communications or to a multiplicity of subjects related to the field of nonlinear digital content for electronic distribution. (May be repeated to a maximum of 9 credit hours.) (0-3) T

EMAC 6374 (ATEC 6374) Digital Textuality (3 semester hours) This course will combine theory and practice to focus on shifts in text, image, and sound. Students will become acquainted with the influence of the digital on forms of textuality and put theory into practice by communicating ideas through multiple media forms, understanding how representation and specifically writing has historically changed, paying special attention to the transformation from the analog to the digital. (3-0) T

EMAC 6383 Emerging Media Studio II (3 semester hours) Advanced collaborative workshop devoted to the creation of sophisticated communications employing multiple media platforms. (May be repeated for credit to a maximum of 9 credit hours.) (0-3) T

EMAC 6V81 Special Topics in Emergent Communication (1-9 semester hours) A course dedicated to current issues, research problems, and special projects in emerging media and communication. Topics will vary and may include distributed, mobile, time-shifted, interactive, and personal media. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-1-9) T

EMAC 6V91 Advanced Project Workshop (3-6 semester hours) Students propose, develop, and execute an advanced creative and/or research project exploring the Emerging Media and Communication. This course is required of all degree candidates in Emerging Media and Communication. (3-6)-0) Y

HIST 6301 Historiography (3 semester hours) Graduate-level introduction to the practice and forms of written history. Required of all students in the M.A. program in History, this course examines the ways in which historians have conceived of their craft, the centrality of interpretation to the historical process, and the use of a variety of methods and theories in the study of the past. (3-0) Y

HIST 6310 Early American History (3 semester hours) The study of specific themes and/or periods in American history through the American Revolution. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HIST 6320 America in the Nineteenth Century (3 semester hours) The study of specific themes and/or periods in American history in the nineteenth century. Topics may include the Civil War and Reconstruction. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HIST 6324 Gilded Age & Progressive Era (3 semester hours) The study of social, political, and economic life in the period between 1877 and 1919. Special attention to the relationship between government and society. (3-0) T

HIST 6325 America in the Twentieth Century (3 semester hours) The study of specific themes and/or periods of American history in the twentieth century. Topics may include World War I, World War II, and the Civil Rights Era. May be repeated for credit as topics vary (9 hours maximum). (3-0) T
HIST 6326 U.S. Foreign Relations (3 semester hours) The study of U.S. diplomatic relations with Asia, Africa, Europe, Latin America, the Middle East, and Soviet Russia in the twentieth and twenty-first centuries. (3-0) T

HIST 6327 U.S. Since 1945 (3 semester hours) The study of the political, economic, social, and cultural development of the United States since the end of World War II. (3-0) T

HIST 6330 Regional and Area History in the United States (3 semester hours) The study of themes related to the history of specific regions of the United States, for example the South, the Southwest, and Texas. May be repeated for credit as topics vary (6 hours maximum). (3-0) T

HIST 6332 Slavery in America (3 semester hours) The study of the origins, evolution, growth and destruction of racial slavery in America from 1619-1865. (3-0) T

HIST 6333 Rise of the Jim Crow South (3 semester hours) The study of the origins of segregation and disfranchisement in the New South. Explores historiographical debates about the nature and meaning of Jim Crow. (3-0) T

HIST 6335 U.S. Women (3 semester hours) The study of recent historiography, current methods, and major themes in U.S. women’s and gender history. (3-0) T

HIST 6340 European and World History (3 semester hours) The study of specific themes and/or periods in the history of Europe and the world. Topics may vary. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HIST 6350 Asian History (3 semester hours) The study of specific themes and/or periods in the history of Asia. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HIST 6360 Latin American History (3 semester hours) The study of specific themes and/or periods in the history of Latin America. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HIST 6365 Mexican History (3 semester hours) The study of specific themes and/or periods in the history of Mexico. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HIST 6370 Middle Eastern History (3 semester hours) The study of specific themes and/or periods in the history of the Middle East. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HIST 6390 Topics in History (3 semester hours) The study of specific themes and/or periods in history. (May be repeated for credit as topics vary to a maximum of 9 hours.) (3-0) R

HIST 6395 Special Topics in History (3 semester hours) If taken as an independent studies course may count toward minimum course requirements for the M.A. degree. (May be repeated for credit to a maximum of 9 hours.) (3-0) R
HIST 6397 Independent Readings in History (3 semester hours) (May be repeated for credit.) (3-0) R

HIST 6398 Independent Research in History (3 semester hours) (May be repeated for credit.) (3-0) R

HIST 6399 Master's Thesis (3 semester hours) (May be repeated for credit but only 6 hours will be counted toward M.A.) (3-0) R

HUAS 6303 Performance Literature, Theory, and Criticism (3 semester hours) Examination of a wide range of performance and theatrical traditions and texts. Using various critical and theoretical perspectives, the focus will be on the interplay between textual analysis, theoretical and critical frames, and performance. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 6305 Criticism, Interpretation, and Performance (3 semester hours) An investigation of interrelationship among the activities of criticizing, interpreting, and performing artistic texts. Examples may be drawn from literature, theater, performance art, web and inter-media applications, film/video, music, and visual arts. The course will include an exploration of the effects of various cultural and theoretical perspectives on our response to specific works. (3-0) T

HUAS 6310 Introduction to Film Studies (3 semester hours) Study of the history and formal and stylistic elements of cinema as a medium of expression, as an industry, and as an art form; and an introduction to the tenets and theoretical basis of the academic discipline known as film studies. (3-0) T

HUAS 6312 Art and Society (3 semester hours) Study of the many forms of interaction between the arts and the society in which they exist. Topics may include the role of the artist in society, the representation of social and religious values in art, or the influence of art and the artist upon society. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 6313 The Business of the Arts (3 semester hours) Exploration of effective means to find, create, and manage markets and audiences for works of art. Topics may include digital media, visual or performing arts, museum studies, and arts management. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUAS 6315 The Arts in Historical Contexts (3 semester hours) Studies in one or more arts of various places and historical periods. Topics will vary, but may focus on a particular movement (e.g., Surrealism), a specific era (e.g., the Renaissance), or a place (e.g., Paris in the early twentieth century). (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) Y

HUAS 6317 Art and Authorship (3 semester hours) In-depth study of the role of the work, cultural milieu, and impact maker in the creation of an individual artist, writer, filmmaker, composer, performer, critic, scholar, or cultural historian. Topics vary but may include visual artists, filmmakers, composers, writers, or other artists. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 6318 Arts and Their Institutions (3 semester hours) Studies of the institutions that shape and present the visual and performing arts by providing their physical, administrative, and financial frames;
art museums, theaters, symphony associations, performance consortiums, or private foundations. The course will focus selectively on these institutions, grouping them for study in various ways depending on the interests and expertise of the instructor. May be repeated for credit as topics vary (6 hours maximum). (3-0) T

HUAS 6320 Studies in Experimental Traditions (3 semester hours) Studies in the works of artists whose experimentation with forms of expression breaks new ground in the arts and demands changes in the aesthetic perception of the public. The course will focus on such experimental movements as modernism, postmodernism and various avant-gardes that form the new tradition of the contemporary arts. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 6324 Spaces of Display and Performance (3 semester hours) Usually art works and performances are encountered in specific ritualized spaces designed for them and exerting strong influence on their character. The course will address such spaces critically from the point of view of architecture, theories of display, and concepts of ritual spectatorship. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HUAS 6330 Studies in the Visual Arts (3 semester hours) Explorations in various forms of the visual arts. The course may focus on a specific form (e.g., painting, sculpture, film, photography) or interrelations among visual forms. Emphasis will be on the understanding of the creative process underlying the finished work. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 6331 Studies in Music (3 semester hours) Studies in forms of musical expression. Topics will vary, but the course will emphasize the nature, development, and artistic possibilities of various forms of music. Courses may relate music to developments in other arts. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 6333 Advanced Orchestra/Chamber Music Ensemble (3 semester hours) Workshop in which instrumentalists, singers, dancers, actors, composers, lyricists, visual artists and/or video/performance artists create and perform music for small and larger ensembles, plus multi-media and theater works. (May be repeated for credit to a maximum of 9 credit hours.) Permission of instructor required. (3-0) T

HUAS 6334 Iberian Culture and Music (3 semester hours) Study of the transfer of music and culture between Spain, Portugal, and the countries of the Americas which had close connections to the Iberian countries via language, culture, and commerce. (3-0) T

HUAS 6336 Photography Studio/Seminar (3 semester hours) Workshop-based course designed to foster reflection on the relationship between human perception and the photographic mediation of reality. The course may emphasis photographic processes or conceptual frameworks. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 6337 Digital Photography (3 semester hours) Workshop in which students explore digital photography within the context of contemporary art, emphasizing the relationship between digital
imaging processes and color photographic techniques. (May be repeated for credit to a maximum of 6 credit hours.) (3-0) T

HUAS 6339 Painting/Digital Imaging/Video (3 semester hours) Workshop in which students will pursue creative work in a medium of their preference or expertise (can include painting, drawing, digital imaging, video or hybrid forms). (May be repeated for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 6340 Studies in Theater and Dance (3 semester hours) An investigation of theater, performance art, inter-media, and/or dance as forms of art. The course will relate to and incorporate trends in other arts and contemporary intellectual and cultural movements, theories and critical issues. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 6345 Shakespeare in Performance (3 semester hours) Studies of Shakespeare's plays, examining varied artistic and scholarly interpretations in film and performance. The course will blend lectures, discussions, and practical skill-based exercises and may include scholarly and/or creative projects. Meant for aspiring writers, actors, directors, and teachers, with or without experience in performing. May be repeated for credit to a maximum of 6 semester hours. Topics may vary. (3-0) T

HUAS 6347 Solo Performance (3 semester hours) Workshop in which students explore aspects of devising, writing and performing solos, with an emphasis on developing work in multiple genres, media, and formats. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 6348 Performance Installation (3 semester hours) An exploration of the theory, history, and practice of employing installation and performance art with technology as a means of extending personal artistic practice. Emphasis will be on practical experience in the conceptualization and production of collaborative, experimental, trans-disciplinary artistic expression. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 6350 Creating Poetry (3 semester hours) An investigation in a workshop environment of the aesthetics of the art and creation of poetry, focusing on the creative techniques and processes involved in producing poems and song lyrics in a variety of formalist, free verse, and experimental forms that combine verbal, written art with the visual and performing arts. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HUAS 6351 Creating Novels (3 semester hours) An investigation in a workshop environment of the aesthetics of the art and creation of the novel, focusing on the creative techniques and processes involved in producing novels in a variety of lyrical, experimental, and traditional forms that combine verbal, written art with the visual and performing arts. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HUAS 6352 Creating Television and Movie Scripts (3 semester hours) An investigation in a workshop environment of the aesthetics of art and creation of movie, multimedia, video, and television scripts, focusing on the creative techniques and processes involved in producing scripts in a variety of
experimental and traditional forms that combine verbal, written art with acting, filmmaking, and production. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HUAS 6353 Creating Plays and Musicals (3 semester hours) An investigation in a workshop environment of the aesthetics of art and creation of drama, focusing on the creative techniques and processes involved in producing plays and musicals in a variety of experimental and traditional forms that combine verbal, written art with the musical and dramatic arts. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HUAS 6354 Creating Short Fictions (3 semester hours) An investigation in a workshop environment of the aesthetics of the art and creation of the short story and the novella, focusing on the creative techniques and processes involved in producing short stories in a variety of experimental and traditional forms that combine verbal, written art with the visual and performing arts. Topics may vary. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 6355 Creating Nonfictions (3 semester hours) This workshop will draw from one or several nonfiction genres such as portraiture, historical accounts, essays, biography, and autobiography and will show how they are realized using techniques by the creation of art. Topics may vary but may include visual artists, filmmakers, composers, or other artists. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 6373 Studies in Film, Television, and Digital Media (3 semester hours) Study of aspects of motion picture history, criticism, and aesthetics. Topics may include genre study; documentary practices; national cinemas or movements; theories of reception; or comparisons of these and other art forms. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 6375 Imagery and Iconography (3 semester hours) The study of the visual image, its uses, and constructions of meaning. Topics may include the nature of the visual image, the modes of our perception and interpretation of visual images, the relationship of relation of the visual to the verbal image and text, and the ways in which the visual images are used in art to shape our imagination. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 6377 Critical Theory and the Visual Arts (3 semester hours) A mapping of the relations between the visual arts and new critical theories from the mid-20th centurystructuralism to the presentpost-structuralism. Focus will vary but may include semiotics, deconstruction, feminism, or psychoanalysis. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUAS 6380 Creating Poetry: Intermediate (3 semester hours) An intensive investigation into the forms (both ancient and modern), theories, and creations of poetry in a workshop environment that will focus on the creative techniques and processes involved in producing formalist, lyrical, free verse, and experimental poetry. Permission of the instructor and previous completion of HUAS 6350(MJV 3) are required. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) T
HUAS 6381 Creating Fiction: Intermediate (3 semester hours) An intensive investigation into the theories, aesthetics, and creation of fiction in a workshop environment that will focus both on structure and on creative techniques and creative process involved in producing sophisticated, challenging, and linguistically developed fictions. The course may emphasize the short story, novel, or novella. Permission of the instructor and previous completion of HUAS 6351 or HUAS 6354 [MJV 4] are required. Topics may vary. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 6383 Creating Scripts: Intermediate (3 semester hours) An intense investigation of the theory, history, aesthetics, art, and creation of play, movie, and television scripts in a workshop environment that will focus on the creative techniques and processes involved not only in the creation of film, play, and television scripts, but also in the production of plays, films, and television episodes. Permission of the instructor and previous completion of either HUAS 6352 or HUAS 6353 [MJV 5] required. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 6385 Creating Nonfictions: Intermediate (3 semester hours) An intensive investigation into the theory, aesthetics, and creation of biographies, autobiographies, and historical accounts in a workshop environment that will explore the boundaries between fiction and non-fiction and between art and reality. Permission of the instructor and previous completion of HUAS 6355 [MJV 6] are required. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 6390 Special Topics in Aesthetic and Performance Studies (3 semester hours) Independent studies course that may count toward minimum course requirements for the M.A. degree. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) R

HUAS 6391 Creativity: Visual Arts Workshop (3 semester hours) A workshop emphasizing the creation of artistic works in a specific area of the visual arts (e.g., painting, drawing, photography, sculpture). Topics, such as narrative representation or the study of a genre, are explored to examine the theoretical basis guiding practice. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HUAS 6392 Creativity: Image/Text Workshop (3 semester hours) An exploration of the visual possibilities inherent in the art of the text. Topics may include an investigation of techniques derived from various media that foster the transformation and combination of words and images. The problem of creating text for a visual environment will be examined. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HUAS 6393 Creativity: Time-Based Arts Workshop (3 semester hours) Exploration of the conceptual demands inherent in time-based visual art. Topics may include interactive visual arts, installation, kinetic art, computer animation, and video processes. The potential of narrative models may be examined. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HUAS 6394 Creativity: Performance (3 semester hours) A skills-based course intended to enable the exploration, development, and realization of a performance expression. Project-focused, the course may include playwriting, adaption of non-dramatic or oral history sources, or be guided by
specific text(s), improvisation, inter-cultural or inter-media explorations. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

HUAS 6397 Independent Readings in Aesthetic and Performance Studies (3 semester hours) (May be repeated for credit.) (3-0) R

HUAS 6398 Independent Research in Aesthetic and Performance Studies (3 semester hours) (May be repeated for credit.) (3-0) R

HUAS 6399 Music in Historical Context (3 semester hours) Study of music in society: dates, periods, genres, style characteristics, major figures, representative masterworks, political/economical/social climate, corollaries in literature, theatre, visual art. (May be repeated for credit as topics vary to a maximum of 9 credit hours) (3-0) T

HUAS 6608 Performance Training (6 semester hours) Intensive workshop-based course focusing on training and performance techniques to develop skills and methods for creating new performance. Activities include physical and vocal training, performance games and exercises, and will focus on methods, strategies, and processes of creation. Special attention to the performer's relation to 'text' exploration and evolution. (May be repeated for credit to a maximum of 12 credit hours.) (6-0) T

HUAS 6609 Music Performance (6 semester hours) Applied study of instrumental/vocal techniques, interpretation, repertoire building and performance practice. May be repeated for credit (12 hours maximum). (6-0) T

HUAS 7305 Advanced Topics in Art History (3 semester hours) Advanced studies in one or more arts of various places and historical periods. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 7320 Advanced Topics in the Visual Arts (3 semester hours) Advanced explorations in various forms of the visual arts. The course may focus on a specific genre or form or on interrelations among visual forms. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 7330 Advanced Topics in Music (3 semester hours) Advanced studies in forms of musical expression. The course will emphasize the nature, development, and artistic possibilities of various forms of music. Courses may relate music to developments in other arts. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUAS 7340 Advanced Topics in Theater and Dance (3 semester hours) Advanced investigation of theater, performance art, inter-media, and/or dance as forms of art. The course will relate to and incorporate trends in other arts and contemporary intellectual and cultural movements, theories and critical issues. (May be repeated as topics vary for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 7349 Advanced Topics in Creative Writing (3 semester hours) Advanced investigation of the theory, history, aesthetics, art, and creation of creative writing in a workshop environment. The course
may focus on poetry, short stories, scripts or other genres. (May be repeated as topics vary for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 7355 Interdisciplinary Studies in Music (3 semester hours) Study of music in relation to one or more of the other arts/disciplines: literature, theatre, dance, visual art, cinema, history, psychology, technology, etc. (May be repeated for credit as topics vary to a maximum of 9 credit hours) (3-0) T

HUAS 7360 Advanced Topics in Film, Television, and Digital Media (3 semester hours) Advanced study of particular aspects of motion picture history, criticism, and aesthetics. Topics may include genre study; documentary practices; national cinemas or movements; theories of reception; or comparisons of these and other art forms. (May be repeated as topics vary for credit to a maximum of 9 credit hours.) (3-0) T

HUAS 7380 Advanced Topics in Aesthetic Studies (3 semester hours) Advanced study of particular themes, topics, and issues in the various disciplines that constitute aesthetic studies. (May be repeated as topics vary for credit to a maximum of 9 credit hours.) (3-0) R

HUAS 7390 Advanced Special Topics in Aesthetic and Performance Studies (3 semester hours) Independent studies course that may count toward minimum course requirements for the Ph.D. degree. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) R

HUAS 7601 Advanced Music Performance (6 semester hours) Applied study of advanced instrumental/vocal techniques, interpretive insights, repertoire building and historical performance practice. May be repeated for credit (12 hours maximum). (6-0) T

HUAS 8303 Independent Readings in Aesthetic and Performance Studies (3 semester hours) (May be repeated for credit.) (3-0) R

HUAS 8305 Independent Research in Aesthetic and Performance Studies (3 semester hours) (May be repeated for credit.) (3-0) R

HUED 5360 (ED 5360) Teaching Spanish (3 semester hours) Study of modern theories and practices of teaching Spanish, with a focus on pedagogical applications for students teaching foreign-language skills in secondary schools or community colleges. (3-0) T

HUED 6304 Master Of Arts in Teaching [MV7] Casebook (3 semester hours) (May be repeated for credit.) (3-0) R

HUHI 6300 History of Early Modern Thought (3 semester hours) Introduction to and examination of the authors and texts influential in shaping Western culture through the eighteenth century. The course will treat philosophy as well as social, political, and religious thought during particular periods. (May be repeated for credit as topics vary to a maximum of 6 hours.) (3-0) T

HUHI 6301 History of Modern Thought (3 semester hours) Introduction to and examination of the authors and texts influential in shaping modern Western culture since 1800. The course will treat
philosophy as well as social, political, and religious thought during particular periods. (May be repeated for credit as topics vary to a maximum of 6 hours.) (3-0) T

HUHI 6305 Ideas in Contexts (3 semester hours) The study of an idea or ideas as developed in specific cultural, historical, or disciplinary circumstances. Topics may include, for example, the idea of revolution considered in theory as well as in its actualization in the American, French, and Bolshevik Revolutions; the idea of creativity in science, art, philosophy, and psychology; the interaction of science and religion from various perspectives. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUHI 6313 Thought, Culture, and Society in Europe (3 semester hours) Themes in the intellectual and cultural life of European societies. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUHI 6314 Thought, Culture, and Society in the United States (3 semester hours) Themes in the intellectual, cultural, and philosophical history of the United States. The course will focus on the writings of key thinkers chosen from different periods and on placing these writings within their intellectual and social contexts. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUHI 6315 Thought, Culture, and Society in Latin America (3 semester hours) Themes in the intellectual and cultural life of Latin American societies. (May be repeated for credit as topics vary to a maximum of 9 credit hours) (3-0) T

HUHI 6320 Perceptions of the Past (3 semester hours) Approaches to perceiving, reconstructing, appreciating, and analyzing the past. Formal historiographical methods, the fictionalization of the past, or the understanding of memory and nostalgia may be emphasized. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUHI 6323 Space, Time, and Culture (3 semester hours) The study of the relationship between changing philosophic and scientific concepts of space and time and forms of cultural expression such as art, literature, and music. (3-0) T

HUHI 6325 Movements in Thought and Culture (3 semester hours) The study of movements in thought and culture through a variety of perspectives, but emphasizing their intellectual bases: e.g., the Enlightenment, Romanticism, etc. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUHI 6327 Artist and Writer in Society (3 semester hours) Inquiries into the role and activities of creative artists (e.g., painters, sculptors, musicians, writers, filmmakers, comics creators, game designers) in various places and times. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUHI 6329 Philosophical Issues and the Humanities (3 semester hours) An investigation of the ways the humanities contribute to an understanding of such philosophical problems and traditions in continental
philosophy, as hermeneutics, as well as philosophy of science, moral education, life and death, race, gender, and technology, sexual orientation, and the environment. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUHI 6332 European Enlightenment (3 semester hours) The study of the European intellectual movement of the Enlightenment, its precursors and consequences. (3-0) T

HUHI 6334 Exploring Urban Cultures (3 semester hours) The study of the European cities of Berlin, Paris, and London from the mid-nineteenth through the early twentieth century. (3-0) T

HUHI 6335 Modern Jewish Thought (3 semester hours) Study of modern and contemporary Jewish thought, with an emphasis on the relationship between Judaism and philosophy. (3-0) T

HUHI 6336 Modernity, Culture, and the Jews (3 semester hours) The study of the role of Jews in the creation of modern culture, with emphasis on Jewish participation as an area of interaction, exchange, and encounter. (3-0) T

HUHI 6337 Moving Pictures in Jewish Culture and Thought (3 semester hours) The study of the role of Jews in the movie industry from the silent era to contemporary Hollywood production. (3-0) T

HUHI 6338 The Holocaust (3 semester hours) An examination of the event, its background and consequences, with emphasis on the political, psychological, theological, and artistic responses it has engendered. (May be repeated for credit to maximum of 6 credit hours.) (3-0) Y

HUHI 6340 Readings in American Culture (3 semester hours) An examination of the ways in which Americans have defined themselves, and been defined by others, over time. Works read will be drawn from a variety of genres and may include studies of myth and symbol. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUHI 6341 American Intellectual History (3 semester hours) The study of American thought from the seventeenth century to the present, with a focus on philosophy, political thought, and social thought. (3-0) T

HUHI 6342 American Political Cultures (3 semester hours) An inquiry into the development of political cultures in the United States since the late eighteenth century. Emphasis on how the apparatus of the state (courts, legislatures, elections, schools, asylums, the military) has provided formal frameworks for ongoing cultural contests among diverse Americans over the meanings of citizenship, family, work, property, nature, health, and privacy. (3-0) T

HUHI 6343 The American Experience in Vietnam (3 semester hours) The study of the reaction and response of American society to the political, military, and cultural turmoil engendered by the Vietnam War. (3-0) T
HUHI 6344 The 1960s (3 semester hours) The study of the "Long Decade" of the 1960s, from Elvis to the fall of Richard Nixon. The course will analyze political, economic, social, and cultural developments. (3-0) T

HUHI 6345 The Woman Question (3 semester hours) The study of how particular cultures and/or thinkers have defined the "woman question". Subjects may include particular geographical regions, major literary or historical movements and events. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUHI 6346 New Directions in Southern Studies (3 semester hours) The study of how scholarship on the U.S. South has begun to push the conventional boundaries of the discipline through its focus on the categories of race, gender, sexuality, and transnationalism. (3-0) T

HUHI 6347 Topics in Feminist Philosophy (3 semester hours) Examination of various topics in metaphysics, ethics, philosophy of science, philosophy of language, philosophy of mind, or philosophy of religion from feminist perspectives. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUHI 6348 Thought, Culture, and Society in Asia (3 semester hours) Themes in the intellectual and cultural life of Asian societies. (May be repeated for credit as topics vary to a maximum of 9 credit hours) (3-0) T

HUHI 6349 Thought, Culture, and Society in the Middle East (3 semester hours) Themes in the intellectual and cultural life of Middle Eastern societies. (May be repeated for credit as topics vary to a maximum of 9 credit hours) (3-0) T

HUHI 6395 Topics in the History of Ideas (3 semester hours) Topics in philosophy, intellectual and/or cultural history. (May be repeated for credit as topics vary to a maximum of 9 hours.) (3-0) R

HUHI 6396 Historical Inquiry (3 semester hours) A leveling course for graduate students with little background in the field as an advanced introduction to historical study and the history of ideas. (3-0) R

HUHI 6397 Independent Readings in History of Ideas (3 semester hours) (May be repeated for credit.) (3-0) R

HUHI 6398 Independent Research in History of Ideas (3 semester hours) (May be repeated for credit.) (3-0) R

HUHI 6399 Special Topics in the History of Ideas (3 semester hours) Independent studies course that may count toward minimum course requirements for the M.A. degree. (May be repeated for credit as topics vary to a maximum of 9 hours.) (3-0) R

HUHI 7313 Advanced Topics in U.S. Thought, Culture, and Society (3 semester hours) Advanced topics in the intellectual and cultural history of the United States. The course will focus on key thinkers, ideas, schools of thought, or cultural beliefs chosen from different periods and understood within their
intellectual and social contexts. (May be repeated for credit as topics vary to a maximum of 9 credit hours) (3-0) T

HUHI 7314 Advanced Topics in European Thought, Culture, and Society (3 semester hours) Advanced topics in the intellectual and cultural life of European societies. (May be repeated for credit as topics vary to a maximum of 9 credit hours) (3-0) T

HUHI 7315 Advanced Topics in Thought, Culture, and Society (3 semester hours) Advanced topics in intellectual and cultural history. The course may focus on different themes, periods, and geographical areas. (May be repeated for credit as topics vary to a maximum of 9 credit hours) (3-0) T

HUHI 7330 The History of Hermeneutics (3 semester hours) Studies in the history of hermeneutics as a biblical-philological method and its transformation by the modern German tradition into a philosophical approach to language and experience. Focus on the work of Schleiermacher, Dilthey, Heidegger, and Gadamer. (3-0) T

HUHI 7332 Topics in Recent Continental Philosophy (3 semester hours) Close textual study of the works of leading continental philosophers such as Nietzsche, Derrida, Foucault, Heidegger, Husserl, and others. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) R

HUHI 7335 Philosophical Topics in the Analytic Tradition (3 semester hours) Examination of philosophical issues arising from or inspired by the works of Russell, Wittgenstein, Frege, Carnap, and their heirs, including Popper, Quine, and Sellars. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) R

HUHI 7340 New Currents in the History of Ideas (3 semester hours) Exploration of significant recent approaches that represent major disciplinary and interdisciplinary contributions to the field. With emphasis on theory and method, focus falls upon critical study of new interests that include ‘new’ social and cultural histories, mentalities, post-structuralism, feminism, critical theory, institutionalist history, and hermeneutics, among others. (May be repeated for credit as topics vary to maximum of 6 credit hours.) (3-0) R

HUHI 7368 Topics in Thought and Society (3 semester hours) Studies in ideas, institutions, and applied history. The approach may be comparative or limited to a single cultural or geographical area. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) R

HUHI 7387 Science and Technology in Western Culture (3 semester hours) Topics will vary but may include consideration of the philosophical or historical basis for the evolution of scientific thought; the problem of conceptual change in the study of the fundamental character of technology and its impact on culture. (May be repeated for credit to a maximum of 6 credit hours.) (3-0) R

HUHI 7391 Women in European Society (3 semester hours) A historical examination of the varied experiences of European women, focusing on work, family life, political action, sexuality, and cultural expression. May emphasize early modern or modern period. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) R
HUHI 7393 Feminist Methodologies (3 semester hours) An investigation of the various types of feminist methodologies and their application to philosophical and historical issues. Methodologies to be addressed may include Marxist and socialist feminism, phenomenological feminisms, liberal feminism, and radical feminism. (May be repeated for credit to a maximum of 6 credit hours.) (3-0) R

HUHI 7397 Women in American Society (3 semester hours) A historical examination of the varied experiences of American women, focusing on work, family life, political action, sexuality, and cultural expression. May emphasize early modern or modern period. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) R

HUHI 7399 Advanced Special Topics in the History of Ideas (3 semester hours) Independent studies course that may count toward minimum course requirements for the Ph.D. degree. (May be repeated for credit to a maximum of 9 hours.) (3-0) R

HUHI 8303 Independent Readings in History of Ideas (3 semester hours) (May be repeated for credit.) (3-0) R

HUHI 8305 Independent Research in History of Ideas (3 semester hours) (May be repeated for credit.) (3-0) R

HUMA 6300 Interdisciplinary Approaches to the Arts and Humanities (3 semester hours) Introduction to interdisciplinary approaches to the arts and humanities, including concepts of inquiry and interpretation that form the theoretical bases of the graduate programs, seminars, workshops, and studios. Required of all degree candidates for the Master of Arts, Master of Arts in Teaching [MV9], and Doctor of Philosophy in Humanities. (3-0) S

HUMA 6320 French Review (3 semester hours) Intensive grammar review to assist students in moving from intermediate to advanced work with French texts. Prerequisite: intermediate proficiency (usually equivalent to four semesters of undergraduate courses). (3-0) Y

HUMA 6321 Spanish Review (3 semester hours) Intensive grammar review to assist students in moving from intermediate to advanced work with Spanish texts. Prerequisite: intermediate proficiency (usually equivalent to four semesters of undergraduate courses). (3-0) Y

HUMA 6323 German Review (3 semester hours) Intensive grammar review to assist students in moving from intermediate to advanced work with German texts. Prerequisite: intermediate proficiency (usually equivalent to four semesters of undergraduate courses). (3-0) R

HUMA 6330 French Workshop (3 semester hours) Advanced reading, interpretation, and translation of texts in French. Workshop concludes with a translation examination, which comprises both the course final and the program's proficiency examination in French. (3-0) R

HUMA 6331 Spanish Workshop (3 semester hours) Advanced reading, interpretation, and translation of texts in Spanish. Workshop concludes with a translation examination, which comprises both the course final and the program's proficiency examination in Spanish. (3-0) R
HUMA 6333 German Workshop (3 semester hours) Advanced reading, interpretation, and translation of texts in German. Workshop concludes with a translation examination, which comprises both the course final and the program's proficiency examination in German. (3-0) R

HUMA 6390 Topics in Arts and Humanities (3 semester hours) Studies of topics that incorporate multiple disciplinary materials and perspectives. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) R

HUMA 6393 Independent Readings in Arts and Humanities (3 semester hours) (May be repeated for credit.) (3-0) R

HUMA 6395 Independent Research in Arts and Humanities (3 semester hours) (May be repeated for credit.) (3-0) R

HUMA 7390 Advanced Topics in Arts and Humanities (3 semester hours) Advanced studies of topics that incorporate multiple disciplinary materials and perspectives. (May be repeated for credit to a maximum of 9 hours.) (3-0) R

HUMA 8303 Independent Readings in Arts and Humanities (3 semester hours) (May be repeated for credit.) (3-0) R

HUMA 8305 Independent Research in Arts and Humanities (3 semester hours) (May be repeated for credit.) (3-0) R

HUMA 6V81 Special Topics in Arts and Humanities (1-9 semester hours) If taken as an independent studies course may count toward minimum course requirements for the M.A. and Ph.D. degree. (May be repeated for credit to a maximum of 9 hours.) ([1-9]-0) R

HUMA 7V81 Advanced Special Topics in Arts and Humanities (1-9 semester hours) If taken as an independent studies course may count toward minimum course requirements for the Ph.D. degree. (May be repeated for credit to a maximum of 9 hours.) ([1-9]-0) R

HUMA 8V99 Ph.D. Dissertation (3-9 semester hours) (May be repeated for credit.) ([3-9]-0) R

HUSL 6304 Studies in Literary Themes (3 semester hours) Examinations of specific themes as they appear in various literary works and traditions. Themes considered in courses may include love, heroism, feminism, the anti-hero, or revolution. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUSL 6308 Studies in Literary Forms and Genres (3 semester hours) Studies in various literary genres, either individually or in relation to each other. Among topics considered will be the difficulties of defining genres, the nature of specific genres, their historical and aesthetic development, and their artistic possibilities. Genres for discussion may include tragedy, comedy, the novel, and various forms of poetic expression. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) Y
HUSL 6309 Literary Movements (3 semester hours) Studies in the nature of intellectual and artistic movements, with emphasis on how they affect literary expression. Examples of such movements are romanticism, naturalism, modernism, and postmodernism. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) Y

HUSL 6310 Studies in Literary Interpretation (3 semester hours) Study of the issues involved in the attempt to interpret dramatic, poetic, and fictional texts. Emphasis will be placed on the writing of interpretive essays and on the exploration of how various cultural and intellectual perspectives as well as different theoretical stances affect the reading of a specific text. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUSL 6312 Major Authors (3 semester hours) Study of one or more major literary figures, such as Dante, Chaucer, Milton, Cervantes, Goethe, Austen, Blake, Balzac, Dostoevsky, Tolstoy, Mann, Eliot, Pound, Woolf, Faulkner, Paz or Borges. May be repeated for credit as subjects vary (9 hours maximum). (3-0) Y

HUSL 6313 Shakespeare (3 semester hours) Study of the dramatic and/or poetic writings of William Shakespeare. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUSL 6314 Jane Austen and Her Time (3 semester hours) Study of the writings of Jane Austen and the ways in which her work engages the political and social issues of her day. (3-0) T

HUSL 6315 Literary Theory (3 semester hours) Consideration of major literary theories, such as new criticism, deconstruction, gender studies, and chaos theory, with emphasis on how these theories influence and modify the interpretation of literary and other artistic texts. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUSL 6330 Studies in Literature and the Other Arts (3 semester hours) An examination of the links between literature and music, the visual arts, film, theater, and/or dance. Topics and approaches will vary but may include, for example, the fantastic in literature and visual arts, structures in literature and music, adaptations of novels into film, and the pastoral in literature and the visual arts. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUSL 6340 Literature Before 1800 (3 semester hours) Studies in the literature and culture of selected periods in the Western tradition. May focus on ancient, medieval, or early modern periods. (May be repeated for credit as topics vary to a maximum of 9 hours) (3-0) T

HUSL 6345 Early American Literature (3 semester hours) Study of literary works written in and about America from the early 1500s to 1800. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUSL 6350 Literature of the Nineteenth Century (3 semester hours) Studies in the literature and culture of the nineteenth century. May focus on British, European, American, Latin American, or Asian contexts. (May be repeated for credit as topics vary to a maximum of 9 hours) (3-0) T
HUSL 6355 Literature, Science, and Culture (3 semester hours) Seminar emphasizing the treatment in literature of scientific concepts (e.g., relativity, evolution) and technological developments (e.g., computers, virtual reality) of particular importance. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUSL 6360 Literature of the Twentieth Century (3 semester hours) Studies in the literature and culture of the twentieth century. May focus on British, European, American, Latin American or Asian contexts. (May be repeated for credit as topics vary to a maximum of 9 hours) (3-0) T

HUSL 6370 Studies in Literature and Ideas (3 semester hours) Studies of the relationship between selected literary texts and major ideas in philosophy, science, and politics. The course will examine systems of thoughts as they are incorporated, delineated, and explored in literature. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUSL 6372 Literature and Society (3 semester hours) Seminar studying the values and concerns of various social groups through a study of literary texts, including consideration of the role of literature and the writer in given societies. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUSL 6373 Topics in Latin American Literature (3 semester hours) Studies in the literatures and cultures of Latin America. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUSL 6374 Modern Jewish Literature a Across Cultures (3 semester hours) Study of modern Jewish literatures in multiple national contexts and languages, with emphasis on the interaction between modernity and vision of Jewish identities and traditions. (3-0) T

HUSL 6375 German Literature and Ideas 1870-1960 (3 semester hours) Study of the range and diversity of German-Austrian literature and thought from the end of the nineteenth century through the 1960s. (3-0) T

HUSL 6376 Literature of Weimar Germany (3 semester hours) Study of literature written during the Weimar Republic (1918-1933) with attention to formative influences on and cultural-political forces shaping the artistic imagination. (3-0) T

HUSL 6378 Literature and the Holocaust (3 semester hours) Seminar considering both major literary works (novels, short stories, and poems) written under the impact of the Holocaust as well as literary theories responding to these texts. Some emphasis placed on films and other works of visual art. (3-0) T

HUSL 6380 The Art and Craft of Translation (3 semester hours) Workshop designed to provide students with a model not only of literary interpretation but also of an interdisciplinary approach through the act of translating that can be applied to a wide range of texts and issues. Emphasis is on the actual translation of literary texts from another language into English. Issues involved in this process will form the basis of the workshop’s theoretical component. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) S
HUSL 6381 Critical Approaches to Translation (3 semester hours) The study of the various approaches to the history, theory, and criticism of literary and humanistic translation. Topics may include the translator’s working methods, interviews with translators, multiple translations, the changing nature of interpretive approaches, theoretical models of translation, and criteria for the evaluation of translations. (May be repeated for credit as topics vary to a maximum of 6 credit hours.) (3-0) T

HUSL 6383 Teaching First-Year Writing (3 semester hours) Covers both the methods of teaching first-year writing and pedagogical theories of modern composition. Enrollment required for teaching assistants assigned to sections of Rhetoric 1302, but not limited to such students. (May be repeated for credit to a maximum of 6 hours.) (3-0) Y

HUSL 6384 Digital and Visual Rhetorics (3 semester hours) Covers a wide range of topics addressing the study of visual rhetoric as well as rhetoric in digital environments. Course also emphasizes the relationship of digital and visual rhetorics to media ecology/media studies as well as the implications of these rhetorics for composition pedagogy. (3-0) T

HUSL 6385 Rhetorical Theory (3 semester hours) A historical survey of Western rhetorical theory focusing on major figures in rhetoric. (3-0) T

HUSL 6386 Special Topics in Rhetoric (3 semester hours) A seminar in the study of rhetoric. May include one or more topics such as ethos, histories of rhetoric, the rhetoric of technology and science, the Sophists, rhetoric as epistemic, key figures in rhetoric (e.g., Burke, Foucault, Baudrillard, Spivak, etc.). (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) R

HUSL 6388 The Nature of Language (3 semester hours) An inquiry into the nature, origins, and evolution of language, the relationship of language to thought and to creativity, language as a social tool, and nonverbal patterns of communication. Survey of linguistic theory and method applicable to the study of the phonological, morphological, lexical, semantic, and syntactic levels of language. (3-0) T

HUSL 6389 Applied Linguistics (3 semester hours) Techniques for comparing two or more languages. The study of traditional and modern theories and practices of language learning and teaching. (3-0) T

HUSL 6390 Theory and Practice in Literary Studies (3 semester hours) Group projects integrating the interpretation of literary texts or themes with experiments in creative writing and performance. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUSL 6392 Topics in Literary Studies (3 semester hours) The study of themes, genres, authors, and/or movements in literature. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) R

HUSL 6393 Independent Readings in Literary Studies (3 semester hours) (May be repeated for credit.) (3-0) R

HUSL 6394 Independent Research in Literary Studies (3 semester hours) (May be repeated for credit.) (3-0) R
HUSL 6395 Special Topics in Literary Studies (3 semester hours) Independent studies course that may count toward minimum course requirements for the M.A. degree. (May be repeated for credit to a maximum of 9 hours.) (3-0) R

HUSL 6396 Spanish Language, Literature, and Culture (3 semester hours) Studies in the language, various literary movements, or the general cultures of Spanish-speaking peoples in Europe or Latin America. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) R

HUSL 6398 World Literatures (3 semester hours) Studies in literatures from specific regions, ethnic groups, and nationalities within and outside the United States. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUSL 6399 Studies in Asian Literature (3 semester hours) Studies in the literature and cultures of Asia. Topics may include Zen/Chan History, Thought, and Poetry; Confucianism; and the I-Ching (Book of Changes). (May be repeated for credit as topics vary to a maximum of 9 credit hours) (3-0) T

HUSL 7308 Advanced Studies in Literary Forms and Genres (3 semester hours) Advanced studies in various literary genres, either individually or in relation to each other. Topics considered may include the difficulties of defining genres, the nature of specific genres, their historical and aesthetic development, and their artistic possibilities. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUSL 7309 Advanced Studies in Literary Movements (3 semester hours) Advanced studies in the nature of intellectual and artistic movements, with emphasis on how they affect literary expression. Examples of such movements are romanticism, naturalism, modernism, and postmodernism. (May be repeated for credit as topics vary to a maximum of 9 credit hours). (3-0) R

HUSL 7322 Advanced Translation Workshop (3 semester hours) An intensive investigation in a workshop environment of the aesthetics of the art and craft of literary translation focusing on the techniques and processes involved in producing English translations of poetic, dramatic, fictional, and essayistic works. Students are expected to produce publishable translations primarily of works by contemporary international writers. Discussions will include the history and theory of literary translation. Permission of the instructor [MV12] or previous completion of HUSL 6380 required. (3-0) R

HUSL 7350 Advanced Studies in Nineteenth Century Literature (3 semester hours) Advanced studies in the literature and culture of the nineteenth century. May focus on British, European, American, Asian, or Latin American contexts. (May be repeated for credit as topics vary to a maximum of 9 hours) (3-0) T

HUSL 7360 Advanced Studies in Twentieth Century Literature (3 semester hours) Advanced studies in the literature and culture of the twentieth century. May focus on British, European, American, Asian, or Latin American contexts. (May be repeated for credit as topics vary to a maximum of 9 hours) (3-0) T

HUSL 7370 Advanced Studies in Literature and History (3 semester hours) Studies of selected literary texts and art movements in times of high political tension (American Revolution, Civil War, Weimar Germany, etc.). (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) R
HUSL 7372 Advanced Studies in Literature and Society (3 semester hours) Advanced studies of the values and concerns of various social groups through the analysis of literary texts, including consideration of the role of literature and the writer in given societies. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) R

HUSL 7390 Advanced Special Topics in Literary Studies (3 semester hours) Independent studies course that may count toward minimum course requirements for the Ph.D. degree. (May be repeated for credit to a maximum of 9 hours.) (3-0) R

HUSL 7391 Special Topics in Translation Studies (3 semester hours) The investigation of the field of Translation Studies. Topics may include the anthropological foundation of translation; the study of crossing cultural barriers; translation methodologies as a model for interdisciplinary research; communication as translation; translation and reading; historical aspects of translation; models of cultural differences; critical approaches to the theories of translation from the Greeks to the present; and specific research and translation projects. (May be repeated for credit as topics vary to a maximum of 9 hours.) (3-0) R

HUSL 8303 Independent Readings in Literary Studies (3 semester hours) (May be repeated for credit.) (3-0) R

HUSL 8305 Independent Research in Literary Studies (3 semester hours) (May be repeated for credit.) (3-0) R

LATS 6300 Introduction to Latin American Studies (3 semester hours) An interdisciplinary introduction to the theories, methodologies, topics, and themes relevant to the study of Latin America. Required of all students in the M.A. program in Latin American Studies. (3-0) Y

LATS 6390 Internship in Latin American Studies (3 semester hours) Students will complete an internship established in partnership with UT Dallas and businesses and/or not-for-profit agencies in the Dallas-Fort Worth area. (May be repeated but only 6 credit hours will be counted toward the M.A.) (3-0) R

LATS 6399 Capstone Project in Latin American Studies (3 semester hours) Students produce a capstone project on a topic of their choice in Latin American Studies in the form of either a research thesis or final project. (May be repeated but only 6 credit hours will be counted toward the M.A.) (3-0) R

ATEC 6344 History and Culture of Games (3 semester hours) Interdisciplinary research in the historical, cultural, sociological, and technological impact of games on human society. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

ATEC 6346 Game Pipeline Methodologies (3 semester hours) Advanced development and production of digital, analog, narrative, and social games with emphasis on post-production techniques, including system balancing and tuning, rapid iteration, and commercial and independent business models. Includes participation in a development team for creation of a prototype, vertical slice demo, or complete original game. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-3) T
ATEC 6347 Serious Games (3 semester hours) Advanced research in the application of gaming technologies, systems, and principles toward games outside the entertainment sector, including health and medical, social and civil, business, and academic applications. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-3) T

ATEC 6348 Educational Games (3 semester hours) Advanced research in the design, creation, and implementation of game-like systems towards new research in pedagogy, simulation, training, and formal and informal education. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-3) T

ATEC 6356 Interactive Narrative (3 semester hours) Advanced research in the analysis and creation of interactive narrative systems, designs, and models through various philosophical and mechanical approaches. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-3) T

ATEC 6365 Interaction, Communication, and Exchanges in Virtual Societies (3 semester hours) This course will address emerging issues related to the ever increasing use of virtual representations of the self and the other in the fields of human interaction, communication and exchanges. Topics may include education and training, cultural exchanges, and e-government, with the underlying human computer interaction and project management implications. The course will address the design, technical, psychological, ethical, and sociological dimensions in these fields. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-3) T

ATEC 6381 Special Topics in Emergent Communication (3 semester hours) Explores current theories informing research on and practices in digital media and communication, such as distributed, mobile, time-shifted, interactive and personal media. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (0-3) T

ATEC 6389 Topics in Arts and Technology (3 semester hours) The study of specific issues, problems, methods, or practices relevant to arts and technology. (May be repeated for credit to a maximum of 9 credit hours.) (3-0) R

ATEC 6391 Computer Processing for Arts and Technology (3 semester hours) Advanced study of technology and programming methods appropriate for research design in Arts & Technology. (3-0) R

ATEC 6V90 Internship in Arts & Technology (1-3 semester hours) Students undertake a learning experience at a supervised work situation related to their graduate area of study. An internship provides exposure experience to a professional working environment, application of theory to working realities, and an opportunity to test skills and clarify goals. Course requirements include formal and reflective writing. (May be repeated for credit to a maximum of 6 credit hours.) (0- [1-3]) R

ATEC 7330 Advanced Topics in Complex Digital Interactive Systems (3 semester hours) This course focuses on the analysis, design and production of complex digital interactive systems applied to
domains such as learning and training, entertainment, and scientific experiment. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

ATEC 7335 Advanced Topics in Digital Multisensory Representations and Simulations (3 semester hours) This course explores the technical, conceptual, sociological and artistic dimensions of digital multisensory representations in various contexts, domains and applications: entertainment, communication, education and training. Focus of the course may vary to deeper address specific questions in visual, auditory, kinetic and olfactive representations and simulations. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

EMAC 6342 Digital Culture (3 semester hours) This course will examine the way that the digital network alters various cultural practices. Students will examine a range of institutions, practices, and values that are affected by the digital shift. Topics may include, privacy, legal practices, journalism, politics, and intellectual property. (3-0) T

EMAC 6365 Journalism and the Digital Network (3 semester hours) This course will examine the ways in which the digital network has (and by extension has not) transformed the work of reporting, filtering, and creating the news. (3-0) T

EMAC 6375 Research Methodologies in Emerging Media and Communication (3 semester hours) This course introduces the basic set of knowledge and skills required for conducting rigorous research in emerging media and communication from various approaches. The concepts, strategies, methods, and skills that you will acquire in this course should help you to understand the implications and limitations of research reported by others, and to conduct and publish research in your chosen area of inquiry. Methods covered might include qualitative, quantitative, and/or ethnographic approaches. (May be repeated for credit to a maximum of 9 hours.) (3-0) T

EMAC 6381 Special Topics in Emergent Communication (3 semester hours) A course dedicated to current issues, research problems, and special projects in emerging media and communication. Topics will vary and may include distributed, mobile, time-shifted, interactive and personal media. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUHI 6351 History and Philosophy of Science and Technology (3 semester hours) The study of one or more topics in history or philosophy of science, technology, or medicine. For example, science and values, science and democracy, philosophy of information technology, feminist philosophy of science, history of psychology, foundations of physics, biomedical ethics. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T

HUHI 6355 Twentieth Century Philosophy (3 semester hours) This course will focus on major thinkers and texts within 20th-Century European or American philosophy taking up a variety of issues, e.g., ethics, technology, hermeneutics, phenomenology, epistemology or philosophy of science. (May be repeated for credit as topics vary to a maximum of 9 credit hours.) (3-0) T
Graduate Program in Emerging Media and Communication

Master of Arts

The program leading to the M.A. in Emerging Media and Communication focuses on ways in which network technologies are transforming the creation and dissemination of information and content. Providing an interdisciplinary education that connects theory with practice, the program combines the creation of digital content for multiple communication platforms with examination of cultural issues created by emerging technology. The program is intended for (a) professionals in fields such as journalism, design, public relations, and advertising that are powerfully affected by emerging communicative technologies, (b) graduates with degrees in computer science or related fields who wish to expand their occupational potential by gaining expertise in communication, (c) graduates of programs in the humanities, communication, and journalism who wish to expand their occupational potential by gaining expertise in emerging media, and (d) teachers in the humanities and other fields that will be profoundly affected by new modes of communication and information transfer. Students must complete 33 semester credit hours of course work and a capstone project.

Core Course (3 hours)
EMAC 6300 Introduction to the Interdisciplinary Studies of in Emerging Media and Communication

Required Courses (15 hours)
EMAC 6361 Writing for Interactive Media
EMAC 6342 Digital Culture
EMAC 6372 Approaches to Emerging Media and Communication
EMAC 6373 Emerging Media Studio I
EMAC 6374 Digital Textuality
HUHI 6323 Space, Time, and Culture
or
HUHI 6351 History & Philosophy of Science & Technology
or
HUSL 6355 Literature, Science, and Culture

Prescribed Electives (9-12 hours)
Twelve Nine hours chosen from the following courses:
ATEC 6331 Aesthetics of Interactive Media
EMAC 6361 Writing for Interactive Media
EMAC 6365 Journalism and the Digital Network
EMAC 6371 Community Media
EMAC 6375 Research Methodologies in Emerging Media and Communication
EMAC 6383 Emerging Media Studio II
EMAC 6381 Special Topics in Emerging Media and Communication
HUAS 6312 Art and Society
HUAS 6330 Studies in the Visual Arts
HUAS 6339 Painting/Digital Imaging/Video
HUAS 6354 Creating Short Fictions
HUAS 6355 Creating Nonfictions
HUAS 6373 Studies in Film, television, and Digital Media
HUAS 6391 Creativity: Visual Arts Workshop
HUAS 6392 Image/Text Workshop
HUHI 6323 Space, Time, and Culture
HUHI 6327 Artist and Writer in Society  
HUSL 6355 Literature, Science, and Culture  
HUSL 6380 Art & Craft of Translation

**Free Elective (3 hours)**

**Final Project (3 hours)**  
EMAC 6V91 Advanced Project Workshop
Having completed at least 30 hours of coursework; students will complete and present an advanced multi-media project for evaluation by a master’s committee.
HUED 5300 (ED 5300) The Interdisciplinary Teaching of the Arts and Humanities in the Secondary School (3 semester hours) Approaches to the interdisciplinary teaching of the arts and humanities at the secondary level. Each student will design a curriculum unit to be taught from an interdisciplinary perspective. Required of students seeking the Master of Arts in Teaching. (3-0) Y

ATEC 6373 (EMAC 6373) Emerging Media Studio I (3 semester hours) This course explores media production across multiple media. Students work in teams to develop meta-media projects in a variety of content delivery environments. Class will require students to develop a range of rhetorical (text, audio) and visual (image, video) strategies appropriate for emerging media. (May be repeated for credit as topics vary to a maximum of 9 credit hours maximum). (3-0) T

EMAC 6373 (ATEC 6373) Emerging Media Studio I (3 semester hours) This course explores media production across multiple media. Students work in teams to develop meta-media projects in a variety of content delivery environments. Class will require students to develop a range of rhetorical (text, audio) and visual (image, video) strategies appropriate for emerging media. (May be repeated for credit as topics vary to a maximum of 9 credit hours maximum). (3-0-3) T

ATEC 6372 (EMAC 6372) Approaches to Emerging Media and Communications (3 semester hours) Focuses on the conceptual study of emerging media from a theoretical frame, exploring the political, technological, cultural, cognitive, and historical forces which inform the way media and communication develop. (3-0) T

EMAC 6372 (ATEC 6372) Approaches to Emerging Media and Communication (3 semester hours) Focuses on the conceptual study of emerging media from a theoretical frame, exploring the political, technological, cultural, cognitive, and historical forces which inform the way media and communication develop. (3-0) T

ATEC 6371 (EMAC 6371) Community Media (3 semester hours) Students develop local media that gives voice to people and issues in a particular community. Emphasis on personal, expressive media production that displays an authentic, personal voice. Students write and produce projects for Internet distribution using text, audio, video, interactive, and participatory elements. (0-3) T

EMAC 6371 (ATEC 6371) Community Media (3 semester hours) Students develop local media that gives voice to people and issues in a particular community. Emphasis on personal, expressive media production that displays an authentic, personal voice. Students write and produce projects for Internet distribution using text, audio, video, interactive, and participatory elements. (0-3) T
Graduate Programs in Arts & Humanities

http://www.utdallas.edu/ah/

Faculty


Associate Professors: J. Michael Farmer, Pamela Gossin, Midori Kitagawa, Shelley Lane, Patricia Michaelson, Venus O. Reese, Nils Roemer, Erin A. Smith, Dean Terry, Daniel Wickberg, Michael Wilson

Assistant Professors: Matt Bondurant, Susan Briante, Matthew Brown, Sean Cotter, Frank DuFour, Monica Evans, Eric Farrar, Todd Fechter, Jonathan Frome, Shari Goldberg, John Gooch, Charles Hatfield, Jessica Murphy, Cihan Muslu, Michelle Nickerson, Peter Park, David Parry, Monica Rankin, Natalie Ring, Mark Rosen, Eric Schlereth, Charissa Terranova, Marjorie Zielke

Senior Lecturers: Bruce Barnes, Lisa Bell, Kelly P. Durbin, Maria Engen, Kathryn C. Evans, Dianne Goode, Michele Hanlon, Peter Ingrao, Janet Johnson, Thomas Lambert, Kathy Lingo, Mary Medrick, Greg L. Metz, Chris Ryan, Monica M. Saba, Jeffrey Schulze, Betty Wiesepape, MaryAnn Young

Emeritus Professors: Joan Chandler, Esteban R. Egea, S. Michael Simpson, Gerald L. Soliday, Deborah Stott

Objectives

The School of Arts and Humanities is committed to interdisciplinary programs that investigate the linkages between the arts and the humanities by fusing critical with creative thinking, theoretical with practical endeavors. Rather than identifying fixed disciplinary areas, the program emphasizes the interrelationship of broad areas of interest.

Within the Graduate Program in Arts and Technology, most courses are offered under the rubric of Arts and Technology (ATEC), but the degree plan also includes courses in Aesthetic Studies (HUAS), History of Ideas (HUHI), and Studies in Literature (HUSL).

Within the Graduate Program in Emerging Media and Communication, most courses are offered under the rubric of Emerging Media and Communication (EMAC), but the degree plan also includes courses in Arts and Technology (ATEC), Aesthetic Studies (HUAS), History of Ideas (HUHI), and Studies in Literature (HUSL).

Within the Graduate Program in the Humanities, most courses are offered within the three main areas of concentration: Aesthetic Studies (HUAS), History of Ideas (HUHI), and Studies in Literature (HUSL), and students seeking the M.A. or Ph.D. degrees in humanities must take courses in all three areas. The fourth area and other courses, including core courses required of all students, are offered under the rubric Humanities (HUMA).

Within the Graduate Program in History, most courses are offered within History (HIST) and History of Ideas (HUHI) but students may also take courses in Aesthetic Studies (HUAS) and Studies in Literature (HUSL).
Within the Graduate Program in Latin American Studies, required courses are offered within Latin American Studies (LATS) and elective courses are drawn from Aesthetic Studies (HUAS), History (HIST), History of Ideas (HUHI), and Studies in Literature (HUSL).

All our graduate programs are designed to provide students a flexible, interdisciplinary context within which to pursue a program of study built on connections among specific courses and the areas of concentration. Offerings include not only seminars stressing the interpretation and criticism of specific works and issues but also ensembles, studios, and workshops in which the activity of creation and/or performance becomes the primary means of learning.

Facilities

The School of Arts & Humanities provides specialized facilities for academic research and creative expression. The Jonsson Building contains technologically rich environments for studies in Rhetoric, Computer Graphics, Professional Communication, Musical Instrument Digital Interface, and Art & Technology. The Visual Arts Building houses a Media Room as well as studios for painting, photography, sculpture, and other arts. Performance venues for drama and music include the University Theatre and the Jonsson Performance Hall.

Admission Requirements

The University's general admission requirements are discussed here.

Each application is considered on its individual merits. Normally students applying for admission to the Graduate Program in Arts and Technology should have a previous academic degree (B.A. or B.S., M.A. or M.F.A.) in an appropriate field (i.e., Art, Computer Science), a grade point average of 3.3 (especially in upper-division undergraduate and graduate work), and evidence of previous course work and/or expertise in the creative arts and digital technology.

Normally students applying for admission to the Graduate Program in Emerging Media and Communication should have a previous academic degree (B.A. or B.S.) in an appropriate field (i.e., Art, Computer Science, Communication), a grade point average of 3.3 (especially in upper-division undergraduate work), and evidence of previous course work and/or expertise in the creative arts, communications, and/or digital technology.

Normally students applying for admission to the Graduate Program in Humanities should have previous academic degrees (B.A. or M.A.) in arts and humanities fields and a grade point average of 3.3 (especially in upper-division undergraduate or graduate work).

Normally students applying for admission to the Graduate Program in History should have a previous degree (B.A. or B.S.) in history or related disciplines and a grade point average of 3.3 (especially in upper-division undergraduate work).

Normally students applying for admission to the Graduate Program in Latin American Studies should have a previous degree (B.A. or B.S.) in arts and humanities fields, demonstrated interest and experience in Latin American studies and a grade point average of 3.3 (especially in upper-division undergraduate work).

The School of Arts and Humanities does not require the Graduate Record Examination for admission to graduate programs.
Full-time and Part-time Students

Students can pursue the graduate degrees in humanities on a full- or part-time basis. Full-time students normally register for nine or more semester hours per term. The school takes care to accommodate part-time study by scheduling both day and night classes, thus allowing students flexibility in organizing individual schedules.

Degree Requirements

The University’s general degree requirements are discussed here.

The approach to graduate education in the School of Arts and Humanities is flexible. Within the specific degree requirements listed below, each student plans a program of studies in consultation with an assigned faculty adviser.

Courses meeting degree requirements are normally chosen from the core courses and the areas of concentration within the School of Arts and Humanities. To have courses taken outside the school applied to one of its degrees, students must seek prior approval from the School’s Associate Dean for Graduate Studies. They may also petition to have appropriate transfer courses applied to reduce the required number of hours for a degree at U.T. Dallas. The School’s Associate Dean for Graduate Studies may require students with background deficiencies in interdisciplinary work to take additional courses at the undergraduate or graduate level to remedy those deficiencies.

Active involvement in the process of artistic creation and performance is basic to the design of the Aesthetic Studies area of concentration. Therefore, students working in the Graduate Program in the Humanities at the M.A. level with an emphasis on Aesthetic Studies are required to take at least one ensemble/workshop, and those working toward a Ph.D. with an emphasis on this area are required to take at least one additional ensemble/workshop. Students undertaking creative projects for master’s portfolios or doctoral dissertations must demonstrate their competency as artists by including in their degree plans a minimum number of studios, ensembles, or workshops related to a proposed medium: two for the M.A. and four for the Ph.D.

Research

The research interests of the faculty reflect the interdisciplinary mission of the School. In addition to the research activities of individual faculty, six centers and institutes that promote interdisciplinary research are located within the School: The Center for Translation Studies; the Ackerman Center for Holocaust Studies; the Confucius Institute; the Institute for Interactive Arts and Engineering; the Center for the Interdisciplinary Study of Museums, and the Center for Values in Medicine, Science and Technology. Since the School combines the Humanities and the Arts, many faculty are engaged in the creation and performance of artistic works in music, drama, literature and the visual arts.
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE:
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes __ __

SCHOOL____A&H

DEPARTMENT__ATEC

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED
ATEC 6344
ATEC 6346
ATEC 6347
ATEC 6348
ATEC 6356
ATEC 6365
ATEC 6381
ATEC 6389
ATEC 6391
ATEC 6V90
ATEC 7330
ATEC 7335

OTHER CHANGES__
Changes to degree hours.
Changes to courses:
ATEC 6300
ATEC 6335
ATEC 6341
ATEC 6342
ATEC 6343
ATEC 6351
ATEC 6352
ATEC 6353
ATEC 6354
ATEC 6361
ATEC 6372
ATEC 6373
ATEC 6374
ATEC 6375
ATEC 6376
ATEC 6382
ATEC 6383
ATEC 6384
ATEC 6385
ATEC 6390
ATEC 6V95
ATEC 7390

DELETED:
ATEC 6371
ATEC 6V81

Approved: ____________________________

School/Department
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE:
TO: GRADUATE DEAN
FROM:

Please indicate with an X if your department catalog copy has no changes ___ ___

SCHOOL ___ A&H

DEPARTMENT ___ EMAC

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

EMAC 6342
EMAC 6365
EMAC 6375
EMAC 6381

OTHER CHANGES___

Changes to degree hours.
Changes to courses:
EMAC 6300
EMAC 6361
EMAC 6372
EMAC 6373
EMAC 6374
DELETED:
EMAC 6371
EMAC 6V81

___________________________________________________________

Approved: ___________________________________________

School/Department
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE:
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes ___X___

SCHOOL A&H

DEPARTMENT History

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

OTHER

Approved: ____________________________________________

School/Department
DATE:
TO: GRADUATE DEAN
FROM:

Please indicate with an X if your department catalog copy has no changes ___ ___

SCHOOL A&H

DEPARTMENT Humanities

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

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<thead>
<tr>
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<tr>
<td>HUHI 6351</td>
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<td>HUHI 6355</td>
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<tr>
<td>HUED 5300</td>
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<td>HUHI 6347</td>
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<td>HUHI 7393</td>
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OTHER Eliminates the MAT.
Editorial changes to the Holocaust certificate.
Faculty changes
Add minimum ours to preface for each degree

Courses Changed:

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<th>Course Code</th>
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<tr>
<td>HUAS 6317</td>
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<td>HUHI 6329</td>
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<td>HUMA 6323</td>
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_____________________________________________________________

Approved: ___________________________________________

School/Department
DATE: 
TO:     GRADUATE DEAN 
FROM: 
Please indicate with an X if your department catalog copy has no changes ___X___ 

SCHOOL____A&H

DEPARTMENT___Latin American Studies

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

OTHER

Approved: ____________________________________________

School/Department
Graduate Program in History

Master of Arts

The program leading to the M.A. in History is designed both for individuals wishing to enhance their knowledge of and skills at the study of the past and for those intending to pursue a doctorate in a related field. Thus, students seeking the M.A. in History have two options, a "research" or a "professional" option. Students with plans for doctoral study should choose the research option.

Students in the research option must complete thirty-six semester hours of course work, demonstrate reading proficiency in an approved foreign language, and successfully complete a master's thesis.

Core Course (3 hours)

HIST 6301 Historiography
Students are expected to complete this course as early as possible in their programs.

Electives in History (HIST) or History of Ideas (HUHI) (24 hours)

Twenty-four hours chosen from graduate courses in HIST or HUHI, at least fifteen of which must be in HIST courses. Normally no more than six hours of independent study are applicable to the degree plan.

Elective Course (3 hours)

Three hours in any organized course outside of History (HIST) and History of Ideas (HUHI), but normally in the Humanities Graduate Program.

Thesis (6 hours)

HIST 6398 Master’s Thesis

Having completed thirty hours of course work, students must write and present a thesis in history for evaluation by a master's committee.

Students in the professional option in History must complete thirty-six semester hours of course work, including HIST 6301 and normally all in organized HIST and HUHI courses. They are not required to complete a thesis or meet a foreign-language requirement, and they receive a terminal degree.
Graduate Program in the Humanities

Master of Arts

The program leading to the M.A. in Humanities is designed both for individuals wishing to enhance their knowledge and skills and for students intending to pursue a doctorate in a humanistic field. Thus, students seeking an M.A. in Humanities have two options, a "research" or a "professional" option. Students with plans for doctoral study should choose the research option.

Students in the research option must complete thirty-three semester hours of course work, demonstrate reading proficiency in an approved foreign language, and successfully complete a portfolio.

Core Course (3 hours)

HUMA 6300 Interdisciplinary Approaches to the Arts and Humanities.
Students are expected to complete this course as early as possible in their programs.

Elective Courses (30 hours)

Thirty semester hours, of which at least twenty-seven hours are normally in organized courses. Eighteen of these hours are divided among organized courses in Aesthetic Studies (6 hours), History of Ideas (6 hours), and Studies in Literature (6 hours). The remaining hours must be taken in the student’s major area of concentration (Aesthetic Studies, History of Ideas, or Studies in Literature), the exception being students pursuing a general Humanities degree. Normally no more than three hours of independent study are applicable to the degree plan. Independent studies do not count toward the 18 hour minimum in the major required for certification to teach at either a two or four year college/university. M.A. students are restricted to courses numbered at the 5000- and 6000-level.

Foreign Language

The research M.A. degree requires demonstrated reading proficiency in an approved foreign language. Students can demonstrate proficiency by passing a translation examination in an approved language (e.g., French, German, classical Greek, Italian, Latin, or Spanish). Intensive review courses (HUMA 6320-6323) and the advanced language workshops (HUMA 6330-6333), which students may take to prepare for the examination, do not count toward minimum course requirements for the degree. Any students wishing to satisfy the requirement with languages other than those listed above must secure the approval of the School’s Associate Dean for Graduate Studies. Students must satisfy the M.A. language requirement before or as they submit their master’s portfolio proposals to the Graduate Studies Committee.

Portfolio

Two substantial pieces of work (two research papers or a creative project plus a scholarly essay) originating in or completed for graduate courses are revised and presented in a portfolio for evaluation by a master’s committee.

Students in the professional option in Humanities must complete thirty-three hours of coursework, all normally in organized courses and distributed as in the research option above. They are not required to complete a portfolio or meet a foreign language requirement, however, and they receive a terminal degree.
Master of Arts in Teaching

To earn the M.A.T. in Humanities, a degree specifically designed for practicing teachers, students must complete a total of thirty-six semester hours of course work. While most courses are the same as those for other students in the school, some courses are concerned specifically with the school classroom. It is possible for students who are particularly interested in English and History to design their degree programs so that their work in these areas can be focused and set in an interdisciplinary context. The M.A.T. degree does not require demonstration of reading proficiency in a foreign language.

Normally students applying for admission to the M.A.T. program should have a teaching certificate. Students may be teaching full time while they are pursuing the degree.

Core Courses (6 hours)

HUED 6300 Teaching of the Humanities in the Secondary School
HUMA 6300 Interdisciplinary Approaches to the Arts and Humanities

Specialization (15 hours)

Fifteen hours in organized courses at the 5000- or 6000-level in one of these areas of concentration: Aesthetic Studies or History of Ideas or Studies in Literature.

Professional Development (6 hours)

Six hours in education courses in addition to HUED 6300. Three hours may be taken as independent study to prepare for the casebook.

Elective Courses (6 hours)

Six hours of electives at the 5000- or 6000-level in any organized courses outside the area of specialization.

Casebook: HUED 6304 (3 hours)

The casebook consists of two parts—a critical essay on an interdisciplinary topic as well as a curriculum plan that adopts that topic to the candidate’s teaching level in twenty to thirty lesson plans.

Doctor of Philosophy

Students seeking a Ph.D. in the Humanities will normally complete a minimum of sixty semester hours beyond a master’s degree or its equivalent, demonstrate advanced proficiency in a foreign language, pass qualifying examinations, and complete and defend a dissertation. In addition to meeting the general university criteria for admission to graduate study, students earning an M.A. degree in the Humanities from UT Dallas must obtain the formal endorsement of their portfolio committees to proceed into the doctoral program. Students who have completed pertinent graduate work at other institutions (thirty hours of humanities courses, language training, and written work roughly equivalent to the portfolio here) may qualify for a Master of Arts equivalency upon admission to the graduate program. Students admitted with an M.A. equivalent must take HUMA 6300.

Courses (42 hours)
Forty-two semester hours of which at least thirty-three are normally in organized courses. Eighteen of these hours are divided among organized courses in Aesthetic Studies (6 hours), History of Ideas (6 hours), and Studies in Literature (6 hours). The remaining hours may be in one or more of the three areas, and normally no more than nine hours of independent study are applicable to the degree. At least fifteen hours of doctoral coursework must be taken in courses numbered at the 7000-level.

Foreign Language

Students admitted to the Ph.D. program from universities other than UT Dallas must pass a translation examination in an approved foreign language (e.g., French, German, classical Greek, Italian, Latin, or Spanish) during their first year in the Ph.D. program. Part-time students admitted from other universities, however, may have two calendar years to meet this initial requirement. All Ph.D. students must then demonstrate active use of the foreign language at an advanced level in two courses. For this purpose, they may undertake readings and research in regular organized courses, they may meet one half the requirement by taking the Art and Craft of Translation (HUSL 6380) once, or they may arrange to demonstrate active use of the language as part of an independent study. Students wishing to satisfy the requirement with languages other than those listed above must secure the approval of the school’s Associate Dean for Graduate Studies.

Students must satisfy the Ph.D. foreign-language requirement prior to taking qualifying examinations.

Doctoral Field Examinations

After completing all the above requirements, students proceed to the doctoral field examinations, a sequence consisting of three written sections and one oral section. The examining committee, composed of three regular members of the faculty, oversees definition and preparation of the three examination fields within guidelines established by the program. At least seven days before the exams themselves, the faculty members submit examination questions to the Arts and Humanities office, which schedules and administers the examination. The maximum time allowed for a student’s completion of the examination sequence is twenty business days.

Dissertation (18 hours minimum)

Students are formally advanced to Ph.D. candidacy when they have successfully completed the qualifying examinations and received final approval for dissertation topics. A student may submit a preliminary dissertation proposal for consideration during the oral section of the qualifying examination. In any case, after that examination, a four-person supervising committee is formed, normally from the examining committee plus another regular faculty member proposed by the student, to oversee dissertation work. The supervising committee must then approve a formal dissertation proposal before the student submits it to the Graduate Studies Committee for final approval.

Each candidate then writes a doctoral dissertation, which is supervised and defended according to general university regulation. Every student must register for a minimum of nine hours of dissertation credit in two successive semesters and must maintain continuous enrollment thereafter for at least three semester hours during consecutive long semesters until the degree is completed. Any exception to this requirement is granted only by petition to the school’s Associate Dean for Graduate Studies.

Certificate in Holocaust Studies

The Ackerman Center for Holocausts Studies
The Certificate in Holocaust Studies (Certificate) is offered to MA, MAT, and PhD students in the School of Arts and Humanities (A & H) from The Ackerman Center for Holocaust Studies (Center) at UT Dallas. Students who wish to pursue the Certificate must do so in coordination with A & H’s requirements for graduation from their specified program. Graduates of this 15 credit hours certificate will have a critical understanding of the Holocaust as well as modern Jewish culture, the history of anti-Semitism, and the major contemporary philosophical, aesthetic, and analytical responses to this major event.

In order to begin work toward the Certificate, each student must complete a registration form, and is required to be advised each semester by Professor Zsuzsanna Ozsvath or Professor Nils Roemer. In addition, each semester, Certification students must also meet with their academic counselor provided to them by A & H. Certificates can only be awarded to those students who have their advising forms completed from both the School of Arts and Humanities and the UT Dallas Ackerman Center for Holocaust Studies. The Certificate will be awarded in addition to the diploma earned in the student’s chosen field after graduation.

The Requirements:

Each student seeking a Certificate in Holocaust Studies must complete 15 graduate credit hours in organized classes (hours) chosen from the “Holocaust Certification Courses” courses below. Students must take 12 of the 15 required hours in organized classes. The remaining 3 hours of coursework may be completed either in an organized class, or by independent study with the permission of the student’s Center Advisor. Independent study courses must focus on topics relating to: German history, philosophy, and literature; Interwar Germany; Jewish Studies; or other Holocaust-related topics. Students may not take “Foundation Courses” by independent study.

NOTE: Students enrolled in the professional option of the MA degree may not take an independent study course.

Special Requirements for MAT Students Enrolled in HUAS Degree Plans

MAT students with a concentration in HUAS must take an additional 6 to 9 hours beyond their required 36 hours for the Holocaust Certification unless they receive prior special permission from the Associate Dean for Graduate Studies.

Holocaust Certification Courses

I. Foundation Courses (6 hours):

HUHI 6338: The Holocaust

AND

(HUSL 6378: Literature and the Holocaust

(6 hours)

(As new courses are developed, students may substitute a required course with the permission of the Center’s Director.)

II. German history, philosophy, and literature (3 hours):

HUSL 6375: German Literature and ideas 1870-1960 (3 hours)
OR

HUSL 6376: Literature of Weimar Germany (3 hours)

(As new courses are developed, students may substitute a required course with the permission of the Center’s Director.)

III. Jewish Studies (6 hours):

HUSL 6374: Modern Jewish Literature Across Cultures

AND

HUHI 6336: Modernity, Culture, and the Jews

(6 hours)

(As new courses are developed, students may substitute a required course with the permission of the Center’s Director.)

Students with Existing Course Credit:

Students who have completed a minimum of 9 credit hours, as of the date of application for the Holocaust Certificate, may apply their hours toward the above requirements as long as those classes have been taken within the last 24 credit hours or 12 months of prior coursework. The students, however, must be current in their requirements for graduation, and should be prepared to furnish the Center a completed, up-to-date advising form from their A & H Academic Advisor.

Certificate Registration:

Certificate registration forms are available on the table in front of the Arts and Humanities Office as well as online at www.utdallas.edu/holocaust. Please contact the Center office at 972-883-2100, or by email: holocauststudies@utdallas.edu if you have any questions. Please submit Certification enrollment forms to the Arts and Humanities Office located at JO 4.510.
Graduate Program in Latin American Studies

Master of Arts
The program leading to the M.A. in Latin American Studies allows students to acquire expertise in multiple aspects of Latin America. Building on the unique interdisciplinary structure of the School of Arts and Humanities, the program has an integrated curriculum that connects literary, historical, cultural, and visual studies. Students seeking the M.A. in Latin American Studies have two options, a "research" or a "professional" option. Students with plans for doctoral study should choose the research option.

Students pursuing the research option must complete thirty-six semester hours of course work, demonstrate reading proficiency in an approved foreign language, complete an approved internship or study abroad, and successfully complete a capstone project. Normally no more than six hours of independent study are applicable to the degree plan.

Core Course (3 hours)
LATS 6300: Introduction to Latin American Studies
Students are expected to complete this course as early as possible in their program.

Prescribed Electives (15 hours)
Prescribed electives are selected from the following courses:
HIST 6360: Latin American History
HIST 6365: Mexican History
HUAS 6334: Iberian Culture and Music
HUHI 6315: Thought, Culture, and Society in Latin America
HUSL 6373: Topics in Latin American Literature
HUSL 6380: The Art & Craft of Translation
HUSL 6396: Spanish Language, Literature, and Culture

Free Elective Courses (9 hours)
These three courses may be selected from other courses related to Latin America and/or the students' area of concentration. Students may take approved courses on Latin America topics in the School of Economic, Political, and Policy Sciences and the School of Interdisciplinary Studies.

Free electives must be approved by the Associate Dean for Graduate Studies.

Internship or Study Abroad (3 hours)
Students will also complete a minimum of 3 semester credit hours in an approved study abroad immersion program or a comparable internship program established in partnership with UT Dallas and businesses and/or non-for-profit agencies in the Dallas-Fort Worth area.

LATS 6390: Internship in Latin American Studies

Capstone Project (6 hours)
LATS 6399: Capstone Project in Latin American Studies
Having completed thirty hours of course work, students must write and present a capstone project on a topic of their choice in Latin American Studies, either a research thesis or final project.
Students pursuing the professional option in Latin American Studies must complete thirty-six semester hours of course work, including LATS 6300 and 15 hours of prescribed electives, demonstrate reading proficiency in an approved foreign language, and complete an approved internship or study abroad. They are not required to complete a capstone project and they receive a terminal degree. Normally no more than six hours of independent study are applicable to the degree plan.
SCHOOL OF ARTS AND HUMANITIES

The School of Arts and Humanities offers five graduate degree programs: Arts and Technology, Emerging Media and Communication, History, Humanities, and Latin American Studies.

Graduate Program in Arts and Technology (M.A., M.F.A., Ph.D.)

The interdisciplinary Graduate Program in Arts and Technology focuses on the creation, application, and implications of technologically sophisticated interactive communication. Students may focus on either Games and Interactive Narrative or Digital Arts and Design.

Graduate Program in Emerging Media and Communications (M.A.)

The interdisciplinary Graduate Program in Emerging Media and Communication focuses on ways in which digital technology is transforming the dissemination of information and art. The program enables students to analyze, employ and produce technologically mediated communication.

Graduate Program in History (M.A.)

The Graduate Program in History fosters advanced understanding of the processes by which interpretations of the past are made, disseminated and evaluated.

Graduate Program in the Humanities (M.A., M.A.T., Ph.D.)

The interdisciplinary Graduate Program in Humanities fosters integrated study and practice of the arts, literature, history, and philosophy. Combining the activities of established disciplines in the arts and humanities into one enterprise, the program enables students to take a broad view of human achievement in these areas.

Graduate Program in Latin American Studies (M.A.)

The interdisciplinary program in Latin American Studies allows students to acquire expertise in multiple aspects of Latin America. The curriculum connects literary, historical, cultural, and visual studies.

DEGREES OFFERED

Master of Arts in Arts and Technology (36 hours)
Master of Fine Arts in Arts and Technology (54 hours)
Doctor of Philosophy in Arts and Technology (60 hours)

Master of Arts in Emerging Media and Communication (33 hours)

Master of Arts in History (36 hours)

Master of Arts in Humanities (33 hours)
Master of Arts in Humanities Major in Aesthetic Studies (33 hours)
Master of Arts in Humanities Major in History of Ideas (33 hours)
Master of Arts in Humanities Major in Studies in Literature (33 hours)

Master of Arts in Latin American Studies (36 hours)
Master of Arts in Teaching in Humanities Major in Aesthetic Studies
Master of Arts in Teaching in Humanities Major in History of Ideas
Master of Arts in Teaching in Humanities Major in Studies in Literature

Doctor of Philosophy in Humanities (60 hours)
Doctor of Philosophy in Humanities Major in Aesthetic Studies (60 hours)
Doctor of Philosophy in Humanities Major in History of Ideas (60 hours)
Doctor of Philosophy in Humanities Major in Studies in Literature (60 hours)

Certificate in Holocaust Studies (15 hours)
Doctor of Audiology Program

http://bbs.utdallas.edu/

Faculty

Professors: Peter F. Assmann, Michael Kilgard, Aage R. Møller, Ross J. Roeser, Robert D. Stillman, Linda Thibodeau, Emily Tobey
Associate Professors: Michael Kilgard
Assistant Professor: Jeffrey Martin
Clinical Assistant Professors: Jackie Clark, Carol Cokely, Lee Wilson
Distinguished Scholar in Residence: James F. Jerger
Faculty Associates: Beth Dorsey, Amanda Lavue, Elizabeth Gill, Anne Howell, Shari Kwon, Jaime Hampton, Holly Whalen, Cynthia MacArthur, Laura Veazey, Michelle Levin, Beth Bernthal, Jennifer Carlock, Ben Rodriguez

Beth Bernthal, Jenifer Carlock, Sara Davis, Elizabeth Gill, Anne Howell, Shari Kwon, Amanda Labue, Elizabeth Mani, Kenneth Pugh, Ben Rodriguez, Coral Vazquez, Laura Veazey, Holly Whalen

Objectives

Doctor of Audiology (Au.D.): The AuD degree offers broad-based professional preparation in audiology within an environment supporting an active program of clinical services and research. Students receive comprehensive exposure to clinical methods and procedures across the scope of practice in audiology and to the scientific foundations from which clinical approaches are derived. Clinic rotations are provided at the Callier Center and medical and educational settings throughout the Dallas/Ft. Worth Metroplex.

Au.D./Ph.D. degree track: Students who are interested in combining clinical and research training may combine the Au.D. with the Ph.D. in Communication Sciences and Disorders. Students must apply separately to the Ph.D. program to be considered.

Facilities

The principal site for the academic, clinical, and research activities of the Doctor of Audiology program is the U.T. Dallas Callier Center for Communication Disorders, which is adjacent to The University of Texas Southwestern Medical Center. Courses and practicum are also offered at U.T. Dallas Callier Richardson on the Main Campus of the University. The U.T. Dallas Callier Advanced Hearing Research Center provides specialized clinical and research facilities for the program. In addition to the Callier outpatient clinics, the Callier Center houses the Dallas Cochlear Implant Program, the Dallas Regional Day School for the Deaf, Tinnitus and Hyperacusis Clinic, Auditory Processing Clinic, Assistive Devices Center, and Pediatric Hearing Aid Clinic.

Admission Requirements

The University's general admission requirements are discussed here.

Admission to the Doctor of Audiology Program is based on a review of the applicant’s GPA, GRE scores, letters of recommendation, and narrative description of research interests and career goals. The GRE score is included in the evaluation of the applicant's record. In general, students admitted to the program have a combined Verbal and Quantitative score on the GRE of at least 1000. However, there is no minimum cut-off score for admission; nor does a score of at least 1000 assure admission to the program.
Degree Requirements

The University’s general degree requirements are discussed here.

The Doctor of Audiology (Au.D.) degree requires 100 semester hours. Students completing the Au.D. degree meet the academic and clinical practicum requirements for the Certificate of Clinical Competence offered by the American Speech-Language-Hearing Association and Texas State licensure requirements for audiology. Specific degree requirements follow.

Required Courses (100 hours)

Foundation (25 Semester Hours)

AUD 6V20 Laboratory Procedures in Audiology and Hearing Science (taken 4 times)
AUD 6303 Hearing Science
AUD 6305 Anatomy and Physiology of Audition
AUD 6306 Speech Science
AUD 6310 Advanced Clinical Audiology
AUD 6311 Diagnostic Audiology
AUD 6316 Audiologic Rehabilitation for Adults
AUD 6318 Pediatric Audiology

Doctoral Core (27 Semester Hours)

AUD 6352 Medical Audiology
AUD 7182 Topics in Patient Counseling and Student Mentoring
AUD 7183 Grand Rounds
AUD 7321 Theories of Amplification
AUD 7324 Seminar in Cochlear Implants and Technology for Persons with Hearing Impairments
AUD 7326 Aural Habilitation of Children with Hearing Impairments
AUD 7327 Evaluation and Fitting/Amplification Systems
AUD 7338 Research in Audiology
AUD 7339 Evidence Based Practice in Communication Disorders
AUD 7353 Clinical Electrophysiology

Advanced (22 hours)

AUD 7310 Professional Issues in Audiology
AUD 7328 Hearing Loss Prevention
AUD 7351 Physiologic Assessment of Vestibular System
AUD 7371 Doctoral Seminar in Audiology/Elective (taken 2 times)
AUD 7340 Auditory Processing Disorders
HCS 6314 Instrumentation

Experiential (26 Semester Hours)

HCS 7380 Practicum in Human Development and Communication Sciences (14 semester hours)
AUD 8V80 Individual Research in Audiology
AUD 8V97 Doctoral Internship in Audiology (9 semester hours)

Out-of-Field Students
Students entering the program who lack undergraduate preparation in communication disorders are required to take a specified 6-12 semester hour sequence of corequisite courses. These courses may be taken at The University of Texas at Dallas and may be enrolled in concurrently with some graduate courses.

Students are advised that participation in clinical rotations mandates some personal expenses. All students must obtain lab coats and professional liability insurance. Off-campus clinical rotations may have additional expenses such as a criminal background check, drug screening, TB screening, and hepatitis shots vaccination and CPR certification. Students excluded from off-campus sites for any reason may be unable to complete all degree requirements. Students are responsible for the cost of criminal background checks.
SCHOOL OF BEHAVIORAL AND BRAIN SCIENCES

The School of Behavioral and Brain Sciences offers graduate preparation at the Masters and Doctoral levels designed to meet the needs of students with both research and professional objectives. With instruction and mentoring from internationally recognized faculty, the School's programs emphasize multidisciplinary training coupled with opportunities for intensive research and clinical supervision experiences. The School's degree programs draw upon three clusters of expertise in the School: Communication Sciences and Disorders, Cognition and Neuroscience, and Psychological Sciences. The Callier Center for Communication Disorders-Dallas and Callier-Richardson, large comprehensive clinical and research centers, as well as the Advanced Hearing Research Center, the Center for BrainHealth, the Center for Vital Longevity, and the Center for Children and Families further enrich the training of students.

The programs in the School include masters training in Applied Cognition and Neuroscience, Communication Disorders, Human Development and Early Childhood Disorders and Psychological Sciences. Doctoral training is provided in the professional doctorate in Audiology (Au.D.) and the Ph.D.s in Cognition and Neuroscience, Communication Sciences and Disorders, and Psychological Sciences. The School also offers a certificate program for graduate students with interests in Evaluation Research.

DEGREES OFFERED

Master of Science in Applied Cognition and Neurosciences (36 Hours)
Master of Science in Communication Disorders (48 Hours)
Master of Science in Human Development and Early Childhood Disorders (45 Hours)
Master of Science in Psychological Sciences (36 Hours)

Doctor of Audiology
Doctor of Philosophy in Cognition and Neuroscience
Doctor of Philosophy in Communication Sciences and Disorders
Doctor of Philosophy in Psychological Sciences

Certificate in Evaluation Research
DATE:  
TO:    GRADUATE DEAN  
FROM:  

Please indicate with an X if your department catalog copy has no changes ___ ___

SCHOOL___BBS

DEPARTMENT___ACN

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES


Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

ACN 6363, 7330, 6316.

OTHER CHANGES___
Changes to: Faculty, Career Opportunities, Core courses


Approved: ____________________________

School/Department
DATE: __________________________

TO: GRADUATE DEAN

FROM: __________________________

Please indicate with an X if your department catalog copy has no changes ___ ___

SCHOOL ___ BBS

DEPARTMENT ___ AUD

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

NEW COURSES ADDED

AUD 6314 Instrumentation
AUD 6113 Grand Rounds
AUD 7182 Issues in Mentoring and Counseling
AUD 7210 Professional Issues in Audiology
AUD 7228 Hearing Loss Prevention
AUD 7240 Auditory Processing Disorders
AUD 6120 Laboratory Procedures in Audiology and Hearing Science
AUD 7280 Doctoral Practicum in Audiology
AUD 7339 (COMD 7339) Evidence-Based Practice in Communication Disorders

OTHER CHANGES ___

Changes Faculty and required hours

Deleted: Deleted AUD 7310, AUD 7328, AUD 7340, AUD 6V20, AUD 7V80,

Approved: __________________________

School/Department
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE:
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes ___ ___

SCHOOL__BBS

DEPARTMENT__COMD

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED
COMD 6101 Childhood Apraxia of
COMD 6102 Dysphagia in Public Schools
COMD 6103 Research in Pediatric TBI
COMD 6104 Dysphagia in Infancy
COMD 6105 Professional Writing
COMD 6106 Medical SLP
COMD 6107 Dementia
COMD 6108 Pulmonary Issues
COMD 6109 Trachs and Vent
COMD 6110 Pediatric Feeding
All 1 semester hour.

OTHER CHANGES___
Changes to Degree Requirements.

Deleted:
COMD 7209, COMD 7219, COMD 7362,

Approved: ____________________________
School/Department
Graduate Catalog Changes
Catalog Years: 2012-2014

Date:
To: Graduate Dean
From:

Please indicate with an X if your department catalog copy has no changes ___ ___

School ___ BBS

Department ___ HDCD

Basis for Catalog Changes:

New Programs/Degrees/Certificates

__________________________________________________________

__________________________________________________________

__________________________________________________________

Course numbering and changes in credit hour changes should be reflected in the two categories below.

New Courses Added
HDCD 6360 Behavior Management
HDCD 7382 Health Psychology

Other Changes ___
Changes Faculty

Deleted:

__________________________________________________________

Approved: _____________________________________________

School/Department
GRADUATE CATALOG CHANGES  
CATALOG YEARS: 2012-2014  

DATE:  
TO: GRADUATE DEAN  
FROM:  
Please indicate with an X if your department catalog copy has no changes ___ ___  

SCHOOL____BBS  
DEPARTMENT____HCS  

BASIS FOR CATALOG CHANGES:  

NEW PROGRAMS/DEGREES/CERTIFICATES  

Course numbering and changes in credit hour changes should be reflected in the two categories below.  
NEW COURSES ADDED  
HCS 6360 Neural Basis of Speech-Sound  
HCS 6364 Cortical Plasticity  
HCS 7316 Statistical Analysis of Brain Imaging Data  
HCS 6366 Seminar in Auditory Cortical Processing  
HCS 8V80 Research in Behavioral and Brain Sciences  
HCS 6322 (ACN 6322) Computational Modeling Methods for Language Understanding  
HCS 6310 (ACN 6310) Fundamentals of Functional Brain Imaging  
HCS 6363 (ACN 6363) Text Comprehension Seminar  
HCS 7330 (ACN 7330) Advanced Functional Brain Imaging  
HCS 6351 (ACN 6351) Quantitative Methods in Neuroscience  
HCS 6316 (ACN 6316) MATLAB for Brain  
HCS 7382 (PSYC 7382, HDCD 7382) Health Psychology  

OTHER CHANGES___  
Changes Faculty and text, deadlines.  

Deleted: HCS 6314, HCS 7312, HCS 7313, HCS 7315, HCS 7355  

Approved: __________________________  

School/Department
DATE:  
TO:   GRADUATE DEAN  
FROM:  
Please indicate with an X if your department catalog copy has no changes ___ ___  

SCHOOL____BBS

DEPARTMENT____Psy Sci

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

PSYC 7V50 Internship in Psychological Sciences
PSYC 8V80 Research in Behavioral and Brain Sciences
PSYC 7382 (HCS 7382, HDCD 7382) Health Psychology

OTHER CHANGES___

Changes Faculty and text.

Deleted:

Approved: ____________________________________

School/Department
Master of Science Program in Applied Cognition and Neuroscience

http://bbs.utdallas.edu/

Faculty


Associate Professors: Marco Atzori, Lawrence J. Cauller (emeritus), Michael Kilgard, Lucien T. Thompson

Assistant Professors: Cindy de Frias, Francesca Filbey, Daniel Krawczyk, Sven Kroener, Christa McIntyre, Jon Plosksi

Distinguished Scholar in Residence: James Jerger

Objectives

The Master of Science in Applied Cognition and Neuroscience (ACN) program is an applied multidisciplinary program which incorporates and integrates methodologies from such diverse fields as psychology, neuroscience, and computer science. The Cognition and Neuroscience specialization area provides a flexible multidisciplinary curriculum for studying the mind and brain which is designed to be adaptable to the individual student's interests. Students enrolling in the Cognition and Neuroscience specialization area with backgrounds in psychology and neuroscience will have the opportunity to gain the diverse skills needed to collect and interpret behavioral and neurophysiological data. The Computational Modeling/Intelligent Systems specialization area provides advanced training applicable to developing mathematical and computer simulation models of the brain and behavior as well as the development of artificially intelligent systems. The Human Computer Interaction specialization area provides excellent preparation for work in areas involving human computer interactions, such as usability engineering issues associated with the design and evaluation of user-friendly web-based systems. The Neurological Diagnosis and Monitoring specialization area provides advanced training and preparation for using functional brain imaging methodologies such as: EEG, SPECT, PET, and fMRI for both clinical and experimental investigations. All four specialization areas provide excellent preparation for doctoral work in the Cognition and Neuroscience area as well as medical school.

Career Opportunities

The Masters of Science in Applied Cognition and Neuroscience (ACN) provides advanced training opportunities in the areas of Neuroscience, Experimental Psychology, Artificial Intelligence, and Human-Computer-Interactions. In addition, the ACN program is a multidisciplinary program which should be of interest to business professionals interested in retraining or continuing education and who are currently working full-time in a professional-level job. Business professionals in different fields should pursue the appropriate 'specialization area' within the ACN degree program. Many courses in the ACN program are offered periodically as evening courses which meet either once or twice a week. A few representative career opportunities in the Applied Cognition and Neuroscience Area are listed as follows.

- Software development professionals, whose focus is the development of web sites, can acquire advanced training in the design and evaluation of web-site effectiveness using advanced behavioral science methodologies through the Human-Computer Interaction specialization area.
• Psychological counselors and Education professionals (e.g., high school science teachers, adult literacy educators) will greatly benefit from the basic neuroscience and psychological science courses offered in the Cognition and Neuroscience specialization area.

• Medical Health professionals (e.g., Electroneurodiagnostic Technologists, MRI Technicians. Radiologists) who are working in the area of brain imaging technology will find the Neurological Diagnosis and Monitoring specialization area relevant for improving their knowledge and understanding of functional brain imaging technologies such as: EEG, SPECT, PET, and fMRI.

• Software development professionals interested in the area of the implementation of complex mathematical algorithms in software. Such mathematical algorithms are now widely embedded in a variety of software programs for the purposes of providing “intelligent assistance” to the end-user. Software development professionals interested in continuing education in the area of artificial intelligence and artificial neural network modeling should consider the Intelligent Systems specialization area in the ACN program.

Facilities

In addition to numerous individual faculty research labs, the Applied Cognition and Neuroscience Program utilizes several facilities which are shared among faculty and graduate students in the School of Behavioral and Brain Sciences. The Computational Systems Laboratory consists of a network of workstations which are used for computationally intensive models of perceptual, cognitive, and neural processes as well as high-volume data analyses. The Computational Systems Laboratory can be accessed remotely by graduate students and faculty members. The Neuroscience Laboratory facilities are located in Green Hall and the Multipurpose Building at the Richardson campus as well. The Callier Center for Communication Disorders, located adjacent to the University of Texas Southwestern Medical School, provides access to brain imaging laboratories and speech, hearing, and language laboratories.

Admission Requirements

The University’s general admission requirements are discussed here.

Admission to the Applied Cognition and Neuroscience Program is based on a review of the applicant’s GPA, letters of recommendation, and narrative description of interests and career goals. Both GRE math and verbal scores are required to be considered for admission.

Students with strong academic records, who are in the process of completing their undergraduate degree at UTD, may be admitted as Fast-track Students. Fast-track students may accelerate completion of the degree requirements of the Master of Science Program in Applied Cognition and Neuroscience at UTD by completing up to 12 credits of specified fast-track graduate coursework at UTD as an undergraduate. Fast-track credit hours may be used to fulfill requirements for the student’s undergraduate UTD degree as well as satisfy course requirements for the masters’ degree in Applied Cognition and Neuroscience. Applications to the Graduate Program in Applied Cognition and Neuroscience can be submitted as soon as the student is an undergraduate at UTD with no more than 45 credit hours remaining.

Degree Requirements

The University’s general degree requirements are discussed here.

All students in the program are required to regularly review their degree plans with their program advisor. In all areas of specialization, students complete 6 hours of approved core courses, 6 hours of approved
methods courses, 6 hours of approved advanced elective courses, 12 hours of coursework in an approved specialization area, and 6 hours of internship courses. A grade of "B" is the required passing grade for coursework used to fulfill the core course and methods course requirements of the degree. *Coursework used to fulfill the advanced elective requirement may be taken pass/fail.* Internship coursework must be taken pass/fail.

**Required Core Courses (18 hours)**

*Select two of the following approved core courses (6 hours).*

- ACN 6330 Cognitive Science I
- ACN 6395 Cognitive Psychology
- ACN 6340 Cellular Neuroscience
- ACN 6344 Functional Human Neuroanatomy
- ACN 6346 Systems Neuroscience

*Select at least one approved quantitative methods course approved by the Program Head or from the following approved list of quantitative methods courses (3 hours).*

- ACN 6312 Research Methods in Behavioral and Brain Sciences ~ Part I
- ACN 6313 Research Methods in Behavioral and Brain Sciences ~ Part II
- ACN 6314 Research Methods in Behavioral and Brain Sciences ~ Part III
- **ACN 5314 Computational Modeling Methods in Behavioral and Brain Sciences**
- **ACN XXX MATLAB for Brain Sciences**
- **CAN 6322 Computational Modeling Methods for Language Understanding**
- ACN 6351 Quantitative Methods in Neuroscience
- ACN 6348 Neural Net Mathematics
- ACN 6347 Intelligent Systems Analysis
- ACN 6349 Intelligent Systems Design

*Select at least one methods course (3 hours).*

*Select two advanced elective courses: These courses may be chosen from either the Graduate Program in Human Development and Communication Sciences or the Applied Cognition and Neuroscience Program or the courses may be chosen from outside the School of Behavioral and Brain Sciences with approval from the ACN program head. *Advanced elective courses may be taken pass/fail or for a grade.***

**Area of Specialization (12 hours)**

The following four specialization areas have been approved for the Applied Cognition and Neuroscience program but alternative specialization area proposals may be submitted for consideration to the Applied Cognition and Neuroscience program head.

**Cognition and Neuroscience Specialization Area**

Students selecting this specialization area are approved to select any four courses from the ACN program (i.e., courses with the prefix ACN) or the Cognition and Neuroscience Area of the Graduate Program in Human Development and Communication Sciences (i.e., courses with the prefix HCS).

**Human-Computer Interactions Specialization Area**

Students selecting this specialization area should take two of the following three courses: ACN 6341 Human Computer Interactions I, ACN 6342 Human Computer Interactions II, and ACN 6343 Human
Computer Interactions Lab. Students pursuing the behavioral sciences track should additionally take two courses from the Cognition and Neuroscience Specialization Area course selections. Students pursuing the user-interface development track should take: CS 5343 Algorithm Analysis and Data Structures and CS 6354 Software Engineering. Note that the prerequisites for CS5343 are: CS5303 Computer Science I (or equivalent) and CS 5333 Discrete Structures. Students specializing in the Human Computer Interactions area should regularly review the Arts and Technology courses offered in the School of Arts and Humanities, which have the course prefix ATEC, and discuss relevant course offerings with the ACN Program Head.

Computational Modeling/Intelligent Systems Specialization Area

Students pursuing the computer simulation modeling track should take four courses from the Cognition and Neuroscience Specialization Area which include at least one of the following courses: ACN 7335 Computational Neuroscience, ACN XXX Matlab for Brain Science, ACN 7367 Speech Perception Lab, ACN 6322 Computational Modeling Methods for Models of Language Understanding, and ACN 5314 Computational Modeling Methods in Behavioral and Brain Sciences. Students pursuing the mathematical modeling track will satisfy the advanced elective requirement in this specialization area by taking the sequence: ACN 6346 Neural Net Mathematics, ACN 6347 Intelligent Systems Analysis and ACN 6349 Intelligent Systems Design and one additional course from the Cognition and Neuroscience Specialization Area course selection. Note that STAT 5351, linear algebra, multivariable calculus, and ACN 5314 Cognitive and Neural Modeling Lab are recommended prerequisites for: ACN 6346. The following Computer Science and Electrical Engineering courses are pre-approved electives for students specializing in the Intelligent Systems area who have the appropriate prerequisite background in computer science and/or electrical engineering: CS6320 (Natural Language Processing), CS 6321 (Discourse Processing), CS6364 (Artificial Intelligence), CS6373 (Intelligent Systems), CS6375 (Machine Learning), CS6384 (Computer Vision), EE6362 (Speech Processing), EE6363 (Digital Image Processing), EE6364 (Pattern Recognition), and EE 6365 (Adaptive Signal Processing).

Neurological Diagnosis and Monitoring Specialization Area

Students should take ACN 6344 Functional Human Neuroanatomy and ACN 6346 Systems Neuroscience. Students should also choose at least 2 of the following courses as specialization area electives: ACN 6310 Fundamentals of Functional Brain Imaging, ACN 6373 Intraoperative Monitoring I, ACN 6374 Intraoperative Monitoring II, ACN 7315 Statistical Analysis of Brain Imaging Data, ACN 7329 Functional Brain Imaging Practica, ACN 6372 Pathophysiology of Disorders of the Nervous System, and ACN 7330 Advanced Functional Brain Imaging.

Internships (6 hours)

The internship requirement is satisfied by enrolling in 6 credit hours of ACN 7V71 Industry Internship, ACN 7V72 Research Internship, and/or HCS 8V80 Research in HCS. Students whose immediate post-graduate goals are graduate school and medical school should fulfill the Internship Requirement by taking six credit hours of HCS 8V80 in order to obtain research experience. Students not intending to pursue graduate or medical school training immediately after receiving their ACN masters degree should discuss internship opportunities with the Program Head during their second semester of enrollment in the ACN program.
Master of Science Program in Communication Disorders

http://bbs.utdallas.edu/comd/

Faculty

Professors: Thomas Campbell, Sandra Chapman, Christine Dollaghan, William F. Katz, Robert D. Stillman, Linda Thibodeau, Emily Tobey, Hanna Ulatowska, Anne van Kleeck

Associate Professor: Pamela Rollins

Assistant Professor: Mandy Maguire

Clinical Faculty: Michelle Aldridge, Suzanne Bonifert, Lucinda Dean, Diane Garst, Karen Kaplan, Helen Kenedi, Janice Lougeay, Felicity Sale

Objectives

The Master of Science program in Communication Disorders offers broad-based professional preparation in speech-language pathology within an environment which supports an active program of clinical services and research. Students are provided comprehensive exposure to clinical approaches in communication disorders and to the scientific foundations from which clinical approaches are derived. Practical experience is available in a variety of clinical, educational, and medical settings.

The graduate program in Communication Disorders is accredited in speech-language pathology by the Council on Academic Accreditation of the American Speech-Language-Hearing Association.

Facilities

The principal sites for the academic, clinical, and research activities of the Communication Disorders program are the U.T. Dallas Callier Center for Communication Disorders, adjacent to The University of Texas Southwestern Medical Center, and Callier-Richardson on the University’s main campus. These facilities, and others throughout the Metroplex, provide the educational, clinical, research, and medical environments essential for an interdisciplinary program in Communication Disorders.

Admission Requirements

The University's general admission requirements are discussed here.

Admission to the Communication Disorders Program is based on a review of the applicant’s GPA transcripts, GRE scores, letters of recommendation, and statement of purpose.

Degree Requirements

The University’s general degree requirements are discussed here.
The Master of Science program requires a minimum of 48 semester hours. Students completing the master’s degree meet the academic and clinical practicum requirements for the Certificate of Clinical Competence offered by the American Speech-Language-Hearing Association.

Students entering the master’s program with a bachelor’s degree in speech-language pathology are required to take the following courses: COMD 6221 Voice Disorders, COMD 6222 Stuttering, COMD 6320 Motor Speech Disorders, COMD 6377 Assessment and Treatment of Adult Neurogenic Disorders, COMD 7303 Dysphagia, and COMD 7378 Assessment and Treatment of Language Disorders in Preschool and School-Age Children. Students must also complete 23 hours of approved elective courses and practicum/internship totaling 48 credit hours. In addition to the required courses listed above, students must complete including a minimum of two three additional courses in the areas of language disorders in children and one additional course in the area of language disorders in adults., Two courses must be completed in one area and one course in the other. Students enroll in Practicum (HCS 7380) or Internship (COMD 6630) each semester in order to earn the necessary clock hours for certification and licensure. However, In general, a maximum of 9 semester hours of Practicum/Internship may be counted toward the minimum 48 semester hours required for the degree. Exceptions to the above requirements must be approved by the program head.

Combined Master/Doctoral Study

Students who wish to earn a clinical master’s degree while pursuing doctoral study may apply for combined master’s/doctoral study. Students approved to enroll in both master’s and doctoral courses pursue an individualized plan of study leading to both degrees.

Comprehensive Examination

All students seeking the master’s degree in Communication Disorders must pass a written comprehensive examination. A thesis is optional.

Out-Of-Field Students

Students entering the program who lack undergraduate preparation in speech-language pathology or audiology are required to take a specified 15 semester hours of preparatory courses. These courses may be taken at U.T. Dallas in conjunction with graduate coursework or may be taken at another university.
Graduate Program in Human Development and Early Childhood Disorders

http://bbs.utdallas.edu/

Faculty

Professors: Thomas G.R. Bower, Bert S. Moore, Margaret Tresch Owen, John W. Santrock, Melanie J. Spence, Robert D. Stillman, Marion K. Underwood, Deborah Wiebe

Associate Professors: Pamela Rollins, Candice Mills

Assistant Professors: Shayla Holub, Mandy Maguire, Jackie Nelson-Taylor, Noah Sasson, Candice Mills

Clinical Faculty: Cheryl Bryant, Lisa Rosen

Senior Lecturers: Toosje Van Beveren

Objectives

The Master of Science program in Human Development and Early Childhood Disorders is designed for students with professional interests in early child development and disorders. The curriculum offers a strong foundation in the normative path of physical, cognitive and social development with specialized training in diagnostic and intervention techniques needed to work with developmental disorders of early childhood. The program is designed for students interested in a career in the delivery of services to young children who show developmental delays and disorders and teaches students to work as part of a multi- or transdisciplinary team. This program provides training to those who desire to work with infants and young children and their families in early childhood intervention programs and other professional settings, including schools, hospitals, and medical/therapy clinics. Classroom training is combined with practical experience in a variety of clinical and educational settings, both on campus and in the community. Students graduating from the program qualify to work as Early Intervention Specialists and Developmental Specialists. Coursework also satisfies many competencies toward Child Life certification. They also Graduates with one additional year of work experience typically qualify for Level 2 Infant Mental Health Endorsement by the Texas Association for Infant Mental Health.

Facilities

The principal sites for the academic and research activities of the Human Development and Early Childhood Disorders program are located at UTD and the Callier Center for Communication Disorders on the main campus in Richardson, and on the campus of the UT Southwestern Medical Center in Dallas. Facilities include research and observational laboratories, including laboratories dedicated to infant and child assessment. On-campus fieldwork opportunities with preschool-age children with special needs are available in the Preschool Language Development Program held at Callier-Richardson. The Callier Center on the UT Southwestern Medical Center campus operates a laboratory preschool, and the Callier Center on both the main campus in Richardson and the medical center campus offer a number of other educational and clinical programs serving young children. These facilities and various community programs and settings throughout the Metroplex provide essential educational and clinical research environments for training in Human Development and Early Childhood Disorders. Practicum and Internship placements both on campus and in the community provide supervised on-site and community based fieldwork experiences with young children with special needs and their families.

Admission Requirements

The University’s general admission requirements are discussed here.
The Human Development and Early Childhood Disorders program is designed for students with backgrounds in psychology, special education, early childhood education, social work, and communication disorders. Students from other disciplines are also encouraged to apply. Those from other fields are generally not required to take leveling courses.

Admission to the Human Development and Early Childhood Disorders program is based on a review of the applicant's GPA, GRE scores, letters of recommendation, and narrative description of interests, relevant experiences, and career goals. In general, a combined Verbal and Quantitative score on the GRE of at least 1000 is advisable based on our experience with student success in the program. However, there is no minimum cut-off score for admission nor does a score of at least 1000 assure admission to the program.

**Degree Requirements**

The University's general degree requirements are discussed [here](#).

The plan of study includes a set of required foundational courses, elective course options, and supervised practical experience in applied settings designed to prepare students to work with children and their families.

Students are advised that participation in off-campus practicum and internship requires a criminal background check. Students excluded from off-campus sites for any reason may be unable to complete all degree requirements.

The Master of Science program requires a minimum of 45 semester hours. Specific degree requirements follow.

**Required Core Courses (24 hours)**

- HDCD 6319 The Developing Child: Infants and Toddlers
- HDCD 6312 Atypical Development
- HDCD 6315 Assessment Theory
- HDCD 6316 Developmental Assessment
- HDCD 6335 Intervention Paradigms
- HDCD 6310 Parent Education
- HDCD 6320 The Developing Child: Preschool Years
- HDCD 6370 Intervention with Young Children

**Practicum (3 hours)**

- HDCD 7V20 Practicum in Disorders of Young Children

**Internship (6 hours)**

- HDCD 7V20 Internship in Disorders of Young Children

**Electives (12 hours)**

- HDCD 6325 Service Coordination of Community Resources
- HDCD 6395 Medical and Biobehavioral Factors in Early Childhood Disorders
- HDCD 6325 Families and Culture
- HDCD 6335 Child Psychopathology
- HDCD 6355 Family Outreach and Assessment
- HDCD 6390 Infant Mental Health
- HDCD 6V81 Special Topics in Early Childhood Disorders
- HDCD 6360 Behavior Management
HDCD 6365 (COMD 7336) Social Communication in Early Childhood Disorders
HCS 7382 Health Psychology
COMD 6307 Language Acquisition
COMD 7362 Seminar in Autism
HDCD 7V98 Independent Study
HDCD 7V80 Independent Research
Master of Science Program in Psychological Sciences

Faculty


Associate Professors: Candice M. Mills, Pamela R. Rollins, Bart Rypma, L. Tres Thompson

Assistant Professors: Robert Ackerman, Cindy de Frias, Shayla C. Holub, Mandy J. Maguire, Christa McIntyre, Candice M. Mills, Noah Sasson, Jackie Nelson Taylor

Objectives

The Master of Science (M.S.) in Psychological Sciences program provides advanced training in psychological sciences. The program is designed for full-time student scholars who wish to expand their knowledge of psychology by engaging in advanced coursework, additional research training, and/or applied experience in psychological sciences. The program also offers students the opportunity to gain additional psychology training in preparation for applying to nationally prominent doctoral programs in Clinical and Experimental Psychology. This research-focused program requires students to work with a research mentor from the beginning and to be actively involved in at least one research laboratory throughout training. Students also have the opportunity to gain additional applied experiences through the Internship Program in the School of Behavioral and Brain Sciences. The Master of Psychological Sciences degree does not provide clinical training or lead to licensure as a counselor or psychologist.

Facilities

The principal sites for the academic, applied, and research activities of the Masters Program in Psychological Sciences include faculty labs located on the Richardson Campus and the Callier Center for Communication Disorders. Students also will be exposed to research and applied experiences at vibrant centers within the School of Behavioral and Brain Sciences: the Center for Children and Families, the Callier Center for Communication Disorders, the Center for BrainHealth, the joint Center for Brain Imaging with UT Southwestern, and the Center for Vital Longevity. These centers provide access to brain imaging laboratories and speech, hearing, and language laboratories.

Admission Requirements

The University’s general admission requirements are discussed here.

The application deadline is February 15th each year. Applicants are selected once a year to begin the program in the fall semester.

Admission to the Master of Science Program in Psychological Sciences is based on a review of the applicant’s GPA, three letters of recommendation, and narrative description of interests and career goals. Both GRE math and verbal scores are required to be considered for admission.

Degree Requirements
The University’s general degree requirements are discussed here.

The M.S. in Psychological Sciences curriculum is designed to offer opportunities for specialization in a chosen core field, breadth of training, selection of electives that serve students’ individual goals, and research experience. Each student will be assigned to a research mentor at the start of the program and will maintain involvement in a research laboratory throughout the two-year program. Students will also have the opportunity to gain applied experience by participating in the internship program offered by the School of Behavioral and Brain Sciences.

All students in the program are required to regularly review their degree plans with their research mentor. The program requires a minimum of 36 credit hours distributed as follows. Students are required to complete 6 credit hours of major field core courses (two selected from one of the following fields: Developmental, Cognitive, Social and Personality, Neuroscience), 6 credit hours of additional core courses (two courses from a different area than the major core), 6 credit hours of Research Methods (a two course sequence in statistics and research methods), 12 credit hours of approved advanced elective courses, and 6 credit hours of Independent Study/Research or Practical Internship courses. Independent Study/Research or Practical Internship coursework must be taken pass/fail.

Students are encouraged to use the summer between the first and the second year to get applied internship experience. Students interested in summer applied internships can find placements through the currently existing School of Behavioral and Brain Sciences internship program for undergraduates.

**Required Core Courses (18 hours)**

**Major Field Core Courses (12 SCH minimum).** Students will declare a major in one of these areas and take two courses from the major area and two courses from a different area than the major core.

1. Developmental Psychology
   - PSYC 6350 Social Development
   - PSYC 6331 Cognitive Development
   - PSYC 6368 Language Development

2. Cognition
   - PSYC 6330 Cognitive Science
   - PSYC 6395 Cognitive Psychology
   - PSYC 6333 Memory

3. Social/Personality Psychology
   - PSYC 6376 Social Psychology
   - PSYC 6327 Personality

4. Neuroscience
   - PSYC 6346 Systems Neuroscience
   - PSYC 6344 Functional Human Neuroanatomy
Research Methods (6 SCH minimum)

- Students will complete two 3-hour courses in research methods and design that are approved by the program head and faculty coordinator.

1. Research Methods I
   - PSYC 6312 Research Methods in HCS – Part I

2. Research Methods II
   - PSYC 6313 Research Methods in HCS – Part II

Advanced Electives (12 SCH minimum)

Students will elect 4 courses from master’s, masters and doctoral offerings. Any core course (listed above) may count as an advanced elective, though it cannot count both as a core course and as an elective.

**As an elective course, interested students may participate in a Teaching Internship. Teaching internships will be arranged by the Program Head in consultation with the teaching faculty. Teaching internships will be for course credit and not for pay.**

Independent Study/Research or Practical Internship (6 SCH)

Students will complete either a Research Project or a Practical Internship to fulfill this requirement. The research requirement will be fulfilled by completion of a focused research project to be submitted and presented in poster format. The Internship requirement will be fulfilled by participating in applied placements through the currently existing School of Behavioral and Brain Sciences internship program for undergraduates.
Doctoral Programs in Cognition and Neuroscience, Communication Sciences and Disorders, Psychological Sciences

http://bbs.utdallas.edu/

Faculty

Associate Professors: Marco Atzori, Lawrence J. Cauller (emeritus), Michael Kilgard, Candace Mills

Robert Rennaker, Pamela Rollins, Bart Rypma, Lucien T. Thompson

Assistant Professors: Robert Ackerman, Chandramallika Basak, Cindy de Frias, Francesca M. Filbey, Shayla Holub, Daniel Krawczyk, Sven Kroener, Christa McIntyre, Mandy Maguire, Jackie Nelson Taylor, Candace Mills, Jonathan E. Plosksi, Noah Sasson

Distinguished Scholar in Residence: James Jerger

Objectives

The School of Behavioral and Brain Sciences offers doctoral programs in Cognition and Neuroscience, Communication Sciences and Disorders, and Psychological Sciences. Each provides preparation in basic and applied aspects of behavioral and brain sciences. The faculty consists of specialists in developmental psychology, cognitive science, neuroscience, cognitive neuroscience, and communication sciences and disorders. Students may specialize in these areas or pursue study across areas as in the study of child language, aging, perception, and behavioral and neural plasticity. Core and specialized courses provide the foundation for advanced seminars and a wide spectrum of doctoral research in laboratories, schools, and clinics. Frequent colloquia and informal brown-bag seminars contribute to a stimulating environment for scholarly development.

Cognition and Neuroscience

The flexible, non-traditional doctoral program in Cognition and Neuroscience provides novel opportunities for multidisciplinary and cross-disciplinary studies in the areas of perception, memory, attention, and executive processing, cognitive neuroscience, cellular and systems neuroscience, cortical plasticity, and computational modeling of cognitive and neural processes. Close liaison with the U.T. Southwestern Medical School provides access to first-class neuroimaging technologies and research populations. Students pursuing research in this program have the option of developing, in consultation with their doctoral advisor, a unique training program tailored to their specific research interests.

Psychological Sciences

The doctoral program in Psychological Sciences provides opportunities for study within the context of a traditional experimental psychology curriculum. The program also offers strong interdisciplinary linkages to other areas within the School of Behavioral and Brain Sciences, including cognitive neuroscience, behavioral neuroscience, and communication sciences and disorders. The primary goal of the program is to prepare research investigators for academic and applied settings either directly or indirectly related to the field of Experimental Psychology. Students work closely with one or more faculty members in a
collegial mentoring relationship. Although all students complete a core curriculum comprised of coursework in areas such as Developmental Psychology, Cognition, and Social/Personality Psychology, the program allows students to individually tailor their studies in creative ways.

Communication Sciences and Disorders

The doctoral program in Communication Sciences and Disorders provides opportunities for graduate study and research in the areas of speech, language, and hearing science and in the disorders that affect speech, language, and hearing. Students have available a wealth of research opportunities in laboratories, clinics, and schools, both on-campus and in the community. Close liaison with the U.T. Southwestern Medical School provides patient access and numerous opportunities for research in medical settings. Coursework and research options within the doctoral programs in Psychological Sciences and Cognition and Neuroscience allow students to pursue interdisciplinary study in areas such as neuroimaging of language processes, child language, autism, neural plasticity and recovery, speech perception, auditory neuroscience and cognitive aging.

Facilities

The offices and research facilities of the School of Behavioral and Brain Sciences are located on the Richardson campus, and off-campus at the Callier Center for Communication Disorders-Dallas, the Center for BrainHealth, and the Center for Vital Longevity, all of which are located adjacent to the campus of the UT Southwestern Medical Center at Dallas. Facilities on the Richardson campus include teaching and research laboratories for neuroscience, a cognitive science, and facilities for the study of child development. the Center for Children and Families and Callier-Richardson, also located on the Richardson campus, provides a variety of clinical services to the community and serves as a research site for graduate students. in Communication Sciences and Disorders and Psychological Sciences.

The Center for BrainHealth and the Center for Vital Longevity are the primary facilities for the study of cognitive neuroscience. The Center for BrainHealth includes research activities in the areas of aging, neurogenic disorders in children and adults, developmental disorders, and clinical neuroscience. The Callier Center-Dallas has its primary focus on speech, language, and hearing and includes research laboratories, clinical services, and classroom programs for preschool children. The Center for Vital Longevity includes research on how the body and mind can successfully age together and uses cutting-edge brain imaging technologies and advances in cognitive science to identify the “neural signature” of those at risk of not aging well and preventing problems before symptoms occur. Collaborative arrangements with the U.T. Southwestern Medical School expand student research opportunities including access to its clinical populations and brain imaging facilities. The Center for Children and Families, housed in the School for Behavioral and Brain Sciences, offers an array of clinical and community outreach activities organized around three initiatives: parenting healthy families, strengthening interpersonal relationships and enhancing thinking and learning.

Admission Requirements

The University’s general admission requirements are discussed here.

Review of applications and early decisions for fall admission will begin December 1, but all application materials MUST be received by February 1. Fall application is advised due to the coursework schedule and availability of assistantship support. The Psychological Sciences Ph.D. program accepts students for fall semester admission only. Current application deadlines may be found at http://bbs.utdallas.edu/graduate/deadlines.html

Admission to a doctoral program is based on a review of the applicant’s transcripts, GRE scores, three letters of recommendation, and narrative description of research interests and career goals. In addition to
academic requirements, the admissions committee weighs heavily the match between the applicant's research interests and the research areas available to students in the school. For information about faculty research interests, see our web pages at www.bbs.utdallas.edu.

Applications for admission are due December 15. Students are accepted for the Fall semester only.

Some courses in the graduate programs in Audiology, Applied Cognition and Neuroscience, Communication Disorders, Human Development and Early Childhood Disorders, and Psychological Sciences complement doctoral coursework and, upon a student's admission to the Ph.D. program, can be applied toward the degree. Students should consult with the doctoral program head to determine which graduate courses can be applied to the Ph.D.

Combining a Clinical Master's (M.S.) or Doctorate (Au.D.) with the Ph.D.

Students seeking clinical certification from the American Speech-Language-Hearing Association in Speech-Language Pathology or Audiology, in addition to the Ph.D., may combine the masters program in Communication Disorders (speech-language pathology) or doctoral program in Audiology with the Ph.D. programs in Communication Sciences and Disorders, Cognition and Neuroscience, or Psychological Sciences. An individualized plan of study leads to both degrees. Students are separately admitted to each program and admission to one program does not assure admission to the other.

Degree Requirements

The University’s general degree requirements are discussed here.

Students seeking the Doctor of Philosophy degree must complete 75 graduate hours.

COGNITION AND NEUROSCIENCE (Ph.D.)

Doctoral Proseminar (6 semester hours)

- HCS 6302 Issues in Behavioral and Brain Sciences I
- HCS 6303 Issues in Behavioral and Brain Sciences II

Research Methods (6 semester hour minimum)

- HCS 6312 Research Methods in Behavioral and Brain Sciences - Part I
- HCS 6313 Research Methods in Behavioral and Brain Sciences - Part II

Cognition and Neuroscience Core Courses (6 semester hour minimum). Students must take a minimum of one Cognition Core and one Neuroscience Core, choosing from those listed below.

1. Cognition

   HCS 6330 Cognitive Science
   HCS 6395 Cognitive Psychology

2. Neuroscience
Advanced Electives (9 semester hours minimum) In addition to completing the 6 semester credit hour (SCH) core requirement, students take a minimum of 9 SCH of advanced electives. Any HCS course may count as an advanced elective. This includes core courses (see above), though no course can be counted both as a core and an advanced elective for any single student. Advanced electives are selected by students with the concurrence of their research advisors based on the students' research foci. Depending on a student’s background and dissertation research, additional advanced electives beyond the 9 SCH minimum may be necessary.

COMMUNICATION SCIENCES AND DISORDERS (Ph.D.)

Doctoral Proseminar (6 semester hours)
- HCS 6302 Issues in Behavioral and Brain Sciences I
- HCS 6303 Issues in Behavioral and Brain Sciences II

Research Methods (9 semester hour minimum)
- HCS 6312 Research Methods in Behavioral and Brain Sciences - Part I
- HCS 6313 Research Methods in Behavioral and Brain Sciences - Part II
- Approved Advanced Research Methods/Statistics course

Core (6 semester hour minimum) Students must complete a minimum of 6 semester credit hours of approved COMD or AUD prefixed courses. Courses meeting this requirement will vary depending on the student's research interests. The requirement may be waived for students holding a graduate degree in the field of speech-language pathology or audiology. Students lacking an adequate foundation in communication sciences may be required to complete more than the 6 SCH minimum of core coursework.

Communication Sciences and Disorders (3 semester hour minimum) All students must complete a minimum of 3 SCH of doctoral coursework offered through the Ph.D. program in Communication Sciences and Disorders.

Supplemental Coursework (12 semester hour minimum) All students must complete an additional minimum of 12 SCH's of doctoral level courses and seminars. Courses may be selected from doctoral level coursework offered through the Ph.D. programs in Communication Sciences and Disorders or, with advisor approval, from the doctoral coursework offered through the Ph.D. programs in Cognition and Neuroscience and Psychological Sciences.

PSYCHOLOGICAL SCIENCES (Ph.D.)

Doctoral Proseminar (6 semester hours)
- HCS 6302 Issues in Behavioral and Brain Sciences I
- HCS 6303 Issues in Behavioral and Brain Sciences II

Research Methods (6 semester hour minimum)
Psychological Science Core Courses (12 semester hour minimum). Students will declare a major in Developmental Psychology, Cognition, or Social/Personality Psychology. Students must take four core courses from those listed below. Two of these courses must be selected from the major area, and the four courses must be selected from at least two of the four areas listed.

1. Developmental Psychology

   HCS 6350 Social Development
   HCS 6331 Cognitive Development
   HCS 6368 Language Development

2. Cognition

   HCS 6395 Cognitive Psychology
   HCS 6330 Cognitive Science
   HCS 6333 Memory

3. Social/Personality Psychology

   HCS 6376 Social Psychology
   HCS 6327 Personality

4. Neuroscience

   HCS 6346 Systems Neuroscience
   HCS 7344 Functional Neuroanatomy

Advanced Electives (9 semester hour minimum). After completing the 12 SCH core requirements, students will take an additional 9 SCH of advanced electives. Any core course (see above) may count as an advanced elective, though it cannot count both as a core course and as an elective. One of these 3-hour elective courses must be an advanced research methods course. Students will declare a major in Developmental Psychology, Cognition, or Social/Personality Development and will take a minimum of four courses (cores and electives) in the major area. Students may enroll in other advanced electives from the other doctoral course offerings available in the School, including courses in language and communication. Additional advanced electives are available each semester.

INDIVIDUALIZED DEGREE PLANS

The option of creating an individualized degree plan is available to students whose interests cut across degree areas. One such plan offers a focus in Child Language Development and Disorders. This focus allows students to take advantage of unique interdisciplinary research opportunities in the School’s demonstration programs for infants, toddlers, and preschool children. Individualized plans should be drafted in consultation with the student’s research advisor and require the approval of the Graduate Studies Committee.

ADDITIONAL REQUIREMENTS
All students must complete the Qualifying Project/Qualifying Paper requirements of the Ph.D. degree sought. The successful defense of a written dissertation completes the requirements for the degree.
Revised Description

ACN 6334 (HCS 6334) Attention (3 semester hours) Theory and evidence on the study of attention especially in human vision and audition. Includes perceptual learning, information processing, neuropsychological approaches. (3-0) R

HCS 6334 (ACN 6334) Attention (3 semester hours) Theory and evidence on the study of attention especially in human vision and audition. Includes perceptual learning, information processing, and neuropsychological approaches. (3-0) R

ACN 5314 (HCS 5314) Computational Modeling Methods in the Behavioral and Brain Sciences (3 semester hours) Computational Neuroscience, Cognitive and Neural Modeling Lab (3 semester hours)
Auto-associative, associative, competitive learning, recurrent, and Mathematical Psychology modeling methodologies are introduced through the use of back-propagation artificial neural network algorithms in a hands-on micro-computer-based laboratory environment using special simulation modeling experiments software. Applications to perceptual, cognitive, computational, and neuroscience problems. Emphasizes creative applications of these research methodologies. Prerequisites: Linear Algebra and Computer Programming Experience are recommended but not required. (2:3:0) T

HCS 5314 (ACN 5314) Computational Modeling Methods in the Behavioral and Brain Sciences (3 semester hours) Computational Neuroscience, Cognitive and Neural Modeling Lab (3 semester hours)
Auto-associative, associative, competitive learning, recurrent, and Mathematical Psychology modeling methodologies are introduced through the use of back-propagation artificial neural network architectures in a hands-on micro-computer-based laboratory environment using special simulation modeling experiments. Emphasizes creative applications of these research methodologies software. Applications to perceptual, cognitive, computational, and neuroscience modeling problems. Prerequisites: Linear Algebra and Computer Programming Experience are recommended but not required. (3-0) T

ACN 6330 (HCS 6330, PSYC 6330) Cognitive Science (3 semester hours) Cognitive, computational, and neural processing approaches to understanding perception, memory, thought, language and emotion. (3-0) Y

HCS 6330 (ACN 6330, PSY 6330) Cognitive Science (3 semester hours) Cognitive, computational, and neural processing approaches to understanding perception, memory, thought, language and emotion. (3-0) Y

PSYC 6330 (HCS 6330, ACN 6330) Cognitive Science (3 semester hours) Cognitive, computational, and neural processing approaches to understanding perception, memory, thought, language and emotion. (3-0) Y

ACN 7335 (HCS 7333) Computational Neuroscience (3 semester hours). Introduction to state-of-the-art computer methods for simulation of biologically realistic neuronal dynamics. Students must demonstrate some degree of computer skills. (3-0) R
HCS 7333 (ACN 7335) Computational Neuroscience (3 semester hours). Introduction to \textit{Construction of biologically realistic simulations of neurons and small neural circuits using state-of-the-art computer methods for simulation of biologically realistic neuronal dynamics software. Students must demonstrate computer skills.} \textit{will construct simulations that shed light on the neural basis of higher functions such as visual contrast enhancement, perceptual oscillation, sensory localization, and motor pattern generation.} (3-0) R

ACN 6347 (HCS 6347) Intelligent Systems Analysis (3 semester hours). Mathematical tools for investigating the asymptotic behavior of both \textit{deterministic and stochastic nonlinear dynamical systems. Topics include: artificial neural network architectures, Lyapunov stability theory, nonlinear optimization theory, stochastic approximation theory, and Monte Carlo Markov Chain methods such as the Metropolis-Hastings algorithm and the Gibbs Sampler. Emphasizes development of advanced analytic skills and mathematical reasoning abilities. Prerequisites: ACN/HCS 6348 (or equivalent) or consent of instructor.} (3-0) T

HCS 6347 (ACN 6347) Intelligent Systems Analysis (3 semester hours). Mathematical tools for investigating the asymptotic behavior of both \textit{deterministic and stochastic nonlinear dynamical systems for the purposes of building computational models in the fields of neuroscience, psychology, and artificial intelligence. Topics include: artificial neural network architectures, Lyapunov stability theory, nonlinear optimization theory, stochastic approximation theory, and Monte Carlo Markov Chain methods such as the Metropolis-Hastings algorithm. Emphasizes development of advanced analytic skills and mathematical reasoning abilities. Gibbs Sampler. Prerequisites: ACN/HCS 6348 (or equivalent) or consent of instructor.} (3-0) T

ACN 6349 (HCS 6349) Intelligent Systems Design (3 semester hours) \textit{Probabilistic and statistical modeling Mathematical tools for the design and evaluation of artificially intelligent deterministic and stochastic nonlinear dynamical systems for the purpose of building computational models in the fields of neuroscience, psychology, and artificial intelligence. Topics include probabilistic interpretations of nonlinear dynamical system models: Markov Random Fields, probability representations, and asymptotic mathematical statistical theory for parameter estimation, model selection, specification analysis, and hypothesis testing. Prerequisites: ACN/HCS 6347 or consent of instructor.} (3-0) T

HCS 6349 (ACN 6349) Intelligent Systems Design (3 semester hours) \textit{Probabilistic and statistical modeling Mathematical tools for the design and evaluation of artificially intelligent deterministic and stochastic nonlinear dynamical systems for the purpose of building computational models in the fields of neuroscience, psychology, and artificial intelligence. Topics include probabilistic interpretations of nonlinear dynamical system models: Markov Random Field probability representations, and asymptotic mathematical statistical theory for parameter estimation, model selection, specification analysis, and hypothesis testing. Prerequisites: ACN/HCS 6347 or consent of instructor.} (3-0) T
ACN 6333 (HCS 6333, PSYC 6333) Memory (3 semester hours) Research and theory on the acquisition, representation, and retrieval of information by the mind/brain. Includes information processing and neuropsychological perspectives. (3-0) T

HCS 6333 (ACN 6333, PSYC 6333) Memory (3 semester hours) Research and theory on the acquisition, representation, and retrieval of information by the mind/brain. Includes information processing and neuropsychological perspectives. (3-0) T

PSYC 6333 (HCS 6333, ACN 6333) Memory (3 semester hours) Research and theory on the acquisition, representation, and retrieval of information by the mind/brain. Includes information processing and neuropsychological perspectives. (3-0) T

ACN 6348 (HCS 6348) Neural Net Mathematics (3 semester hours) Vector calculus and vector calculus-based probability theory with artificial neural network modeling applications. Emphasizes development of advanced analytic skills and mathematical reasoning abilities. Intended to provide mathematics preparation for ACN/HCS 6347 and ACN/HCS 6349. Prerequisites: Either: (1) Linear algebra, multivariable calculus, STAT 5351 or equivalent, ACN/HCS 5314, or (2) consent of instructor. (3-0) T

HCS 6348 (ACN 6348) Neural Net Mathematics (3 semester hours) Vector calculus and vector calculus-based probability theory with artificial neural network modeling applications. Emphasizes development of advanced analytic skills and mathematical reasoning abilities. Intended to provide mathematics preparation for ACN/HCS 6347 and ACN/HCS 6349. Prerequisites: Either: (1) Linear algebra, multivariable calculus, STAT 5351 or equivalent, and ACN/HCS 5314, or (2) consent of instructor. (3-0) T

ACN 7343 (HCS 7343) Neuropharmacology (3 semester hours) Biology of neurotransmission in the central nervous system. Includes ionotropic and metabotropic coupling of all known classes of receptors to both their cellular and systemic effects. Clinical efficacy, side effects, and other issues related to drug use and abuse are covered. Prerequisite: Consent of Instructor or either: ACN/HCS 6340 or ACN/HCS 6346. (3-0) T

HCS 7343 (ACN 7343) Neuropharmacology (3 semester hours) Biology of neurotransmission in the central nervous system. Includes ionotropic and metabotropic coupling of all known classes of receptors to both their cellular and systemic effects. Clinical efficacy, side effects, and other issues related to drug use and abuse are covered. Prerequisite: ACN/HCS 6340 or ACN/HCS 6346. (3-0) T

ACN 6332 (HCS 6332, PSYC 6332) Perception (3 semester hours) Psychophysical, neurophysiological, and computational foundations of sensation and perception. Basic senses of vision, audition, chemoreception, and tactile processing, with emphasis on understanding the processes that take us from neurons to perception and action. (3-0) R

HCS 6332 (ACN 6332, PSYC 6332) Perception (3 semester hours) Psychophysical, neurophysiological, and computational foundations of sensation and perception. Basic senses of vision, audition, chemoreception, and tactile processing, with emphasis on understanding the processes that take us from neurons to perception and action. (3-0) R
PSYC 6332 (HCS 6332, ACN 6332) Perception (3 semester hours) Psychophysical, neurophysiological, and computational foundations of sensation and perception. Basic senses of vision, audition, chemoreception, and tactile processing, with emphasis on understanding the processes that take us from neurons to perception and action. (3-0) R

ACN 6312 (HCS 6312, PSYC 6312) Research Methods in Behavioral and Brain Sciences - Part I (3 semester hours) This course focuses on applying, understanding, and interpreting various statistical techniques in a behavioral science context. Students: Participants have the opportunity to learn the framework appropriate statistical details for hypothesis testing, basic descriptive (e.g., measures of central tendency, variability and shape) and inferential (e.g., z, t, correlation, ordinary least squares regression, and ANOVA) statistics. The course provides students with an understanding of, the interrelationships among statistical techniques, and computer skills required for data analyses. Students without the necessary background knowledge of basic statistics and experimental design will be required to take PSY 3392 before registering for ACN 6312. (3-0) Y

HCS 6312 (ACN 6312, PSYC 6312) Research Methods in Behavioral and Brain Science - Part I (3 semester hours) This course focuses on applying, understanding, and interpreting various statistical techniques in a behavioral science context. Students: Participants have the opportunity to learn the framework appropriate statistical details for hypothesis testing, basic descriptive (e.g., measures of central tendency, variability and shape) and inferential (e.g., z, t, correlation, ordinary least squares regression, and ANOVA) statistics. The course provides students with an understanding of, the interrelationships among statistical techniques, and computer skills required for data analyses. Students without the necessary background knowledge of basic statistics and experimental design will be required to take PSY 3392 before registering for ACN 6312. (3-0) Y

PSYC 6312 (HCS 6312, ACN 6312) Research Methods in Behavioral and Brain Sciences - Part I (3 semester hours) This course focuses on applying, understanding, and interpreting various statistical techniques in a behavioral science context. Students: Participants have the opportunity to learn the framework appropriate statistical details for hypothesis testing, basic descriptive (e.g., measures of central tendency, variability and shape) and inferential (e.g., z, t, correlation, ordinary least squares regression, and ANOVA) statistics. The course provides students with an understanding of, the interrelationships among statistical techniques, and computer skills required for data analyses. Students without the necessary background knowledge of basic statistics and experimental design will be required to take PSY 3392 before registering for ACN 6312. (3-0) Y

ACN 6313 (HCS 6313, PSYC 6313) Research Methods in Behavioral and Brain Sciences - Part II (3 semester hours) Topics in general linear modeling including regression analysis correlation, simple analysis of variance, factorial analysis of variance, analysis of covariance, between and within subject designs, and multiple regression. Prerequisite: ACN/HCS/PSYC 6312. (3-0) Y

HCS 6313 (ACN 6313, PSYC 6313) Research Methods in Behavioral and Brain Sciences - Part II (3 semester hours) Topics in general linear modeling including regression analysis correlation, simple analysis of
variance, factorial analysis of variance, analysis of covariance, between and within subject designs, and multiple regression. Prerequisite: ACN/HCS/PSYC 6312. (3-0) Y

PSYC 6313 (HCS 6313, ACN 6313) Research Methods in Behavioral and Brain Sciences - Part II (3 semester hours) Topics in general linear modeling including regression analysis correlation, simple analysis of variance, factorial analysis of variance, analysis of covariance, between and within subject designs, and multiple regression. Prerequisite: ACN/HCS/PSYC 6312. (3-0) Y

ACN 7367 (HCN 7367) Speech Perception Laboratory (3 semester hours). Introduction to the field of speech processing by computer, with primary application to research techniques in the study of speech perception. (0-9) T

HCS 7367 (ACN 7367) Speech Perception Laboratory (3 semester hours) Introduction to the field of speech processing by computer, with primary application to research techniques in the study of speech perception. (0-9) T

ACN 6346 (HCS 6346, PSYC 6346) Systems Neuroscience (3 semester hours) Integrative systems level study of the nervous system. Aspects of neural mechanisms and circuitry underlying regulation of motor behaviors, sensory and perceptual processing, biological homeostasis, and higher cognitive functions. (3-0) Y

HCS 6346 (ACN 6346, PSYC 6346) Systems Neuroscience (3 semester hours) Integrative systems level study of the nervous system. Aspects of neural mechanisms and circuitry underlying regulation of motor behaviors, sensory and perceptual processing, biological homeostasis, and higher cognitive functions. (3-0) Y

PSYC 6346 (HCS 6346, ACN 6346) Systems Neuroscience (3 semester hours) Integrative systems level study of the nervous system. Aspects of neural mechanisms and circuitry underlying regulation of motor behaviors, sensory and perceptual processing, biological homeostasis, and higher cognitive functions. (3-0) Y

ACN 6340 (HCS 6340) Cellular Neuroscience (3 semester hours) Basic neural biology and physiology and principles of synaptic transmission. (3-0) Y

HCS 6340 (ACN 6340) Cellular Neuroscience (3 semester hours) Basic neural biology and physiology and principles of synaptic transmission. (3-0) Y

ACN 6351 (HCS 6351) Quantitative Methods in Neuroscience (3 semester hours) Data analysis techniques relevant to neuroscience. Topics may include: Fourier/wavelet analysis, differential equations, and statistical data analysis methods. May be repeated for credit with permission of the instructor. Prerequisite: ACN/HCS 6312 or consent of instructor. (3-0) R

ACN 6373 (HCS 6373) Intraoperative Neurophysiological Monitoring I (3 semester hours) The anatomical and physiological basis for the use of electrophysiological techniques in intraoperative neurophysiologic monitoring and in diagnosis of disorders affecting the nervous system. (3-0) Y
HCS 6373 (ACN 6373) Intraoperative Neurophysiological Monitoring I (3 semester hours) The anatomical and physiological basis for the use of electrophysiological techniques in intraoperative neurophysiologic monitoring and in diagnosis of disorders affecting the nervous system. (3-0) Y

ACN 6374 (HCS 6374) Intraoperative Neurophysiological Monitoring II (3 semester hours). The use of recordings of neuro-electric brain potentials and their interpretation for diagnostic purposes and for intraoperative monitoring. Prerequisite: ACN/HCS 6373. (3-0) Y

HCS 6374 (ACN 6374) Intraoperative Neurophysiological Monitoring Part II (3 semester hours) The use of recordings of neuro-electric brain potentials and their interpretation for diagnostic purposes and for intraoperative monitoring. Prerequisite: ACN/HCS 6373. (3-0) Y

ACN 6395 (HCS 6395, PSYC 6395) Cognitive Psychology (3 semester hours) Theory and research on perception, learning, thinking, psycholinguistics, and memory. Prerequisites: PSY 3361 (or CGS 3361) or equivalent. (3-0) Y

HCS 6395 (ACN 6395, PSYC 6395) Cognitive Psychology (3 semester hours) Theory and research on perception, learning, thinking, psycholinguistics, and memory. Prerequisites: PSY 3361 (or CGS 3361) or equivalent. (3-0) Y

PSYC 6395 (HCS 6395, ACN 6395) Cognitive Psychology (3 semester hours) Theory and research on perception, learning, thinking, psycholinguistics, and memory. (3-0) Y Prerequisites: CGS 3361 (or PSY 3361) Cognitive Psychology or consent of instructor. (3-0) Y

ACN 7344 (HCS 7344, PSYC 7344) Functional Human Neuroanatomy (3 semester hours) Function of each major brain system as related to the organization and synaptic connections of their principal nuclei. Function of each system related to the neurological disorders associated with disease or lesions at specific locations. (3-0) T

ACN 7344 (HCS 7344, PSYC 7344) Functional Human Neuroanatomy (3 semester hours) Function of each major brain system as related to the organization and synaptic connections of their principal nuclei. Function of each system related to the neurological disorders associated with disease or lesions at specific locations. (3-0) T

HCS 7344 (ACN 7344, PSYC 7344) Functional Human Neuroanatomy (3 semester hours) Function of each major brain system as related to the organization and synaptic connections of their principal nuclei. Function of each system related to the neurological disorders associated with disease or lesions at specific locations. (3-0) T

PSYC 7344 (HCS 7344, ACN 7344) Functional Human Neuroanatomy (3 semester hours) Function of each major brain system as related to the organization and synaptic connections of their principal nuclei. Function of each system related to the neurological disorders associated with disease or lesions at specific locations. (3-0) T
ACN 7324 (COMD 7324, AUD 7324) Seminar in Cochlear Implants and Technology for Persons with Hearing Impairments (3 semester hours) Overview of prosthetic alternatives to conventional amplification for individuals with severe-to-profound hearing loss. Topics include candidacy determination, technology, programming/fitting of devices, aural (re)habilitation, and awareness of controversial areas related to cochlear implantation. (3-0) Y

AUD 7324 (COMD 7324, ACN 7324) Seminar in Cochlear Implants and Technology for Persons with Hearing Impairments (3 semester hours) Overview of prosthetic alternatives to conventional amplification for individuals with severe-to-profound hearing loss. Topics include candidacy determination, technology, programming/fitting of devices, aural (re)habilitation, and awareness of controversial areas related to cochlear implantation. (3-0) Y

COMD 7324 (AUD 7324, ACN 7324) Seminar in Cochlear Implants and Technology for Persons with Hearing Impairments (3 semester hours) Overview of prosthetic alternatives to conventional amplification for individuals with severe-to-profound hearing loss. Topics include candidacy determination, technology, programming/fitting of devices, aural (re)habilitation, and awareness of controversial areas related to cochlear implantation. (3-0) Y

HCS 6357 (PSYC 6357, HDCD 6319) The Developing Child: Infants and Toddlers (3 semester hours) Relevant developmental theories and processes as well as skills acquired in motor, sensory-perception, cognitive, and social domains from the prenatal period through two years of age. (3-0) Y

HDCD 6319 (HCS 6357, PSYC 6357) The Developing Child: Infants and Toddlers (3 semester hours) Relevant developmental theories and processes as well as skills acquired in motor, sensory-perceptual, cognitive, and social domains from the prenatal period through two years of age. (3-0) Y

PSYC 6357 (HCS 6357, HDCD 6319) The Developing Child: Infants and Toddlers (3 semester hours) Relevant developmental theories and processes as well as skills acquired in motor, sensory-perception, cognitive, and social domains from the prenatal period through two years of age. (3-0) Y

HCS 6327 (PSYC 6327) Personality (3 semester hours) Survey of cognitive, analytic, and learning theory approaches to study of personality. Emphasis on intensive exploration of selected concepts and related research. (3-0) R

PSYC 6327 (HCS 6327) Personality (3 semester hours) Survey of cognitive, analytic, and learning theory approaches to study of personality. Emphasis on intensive exploration of selected concepts and related research (3-0) R

ACN 6331 (HCS 6331, PSYC 6331) Cognitive Development (3 semester hours) Survey of cognitive development theories and research in a variety of domains including perception, memory, language, and problem solving. (3-0) Y

HCS 6331 (ACN 6331, PSYC 6331) Cognitive Development (3 semester hours) Survey of cognitive development theories and research in a variety of domains including perception, memory, language, and problem solving, intelligence (3-0) Y
PSYC 6331 (HCS 6331, ACN 6331) Cognitive Development (3 semester hours) Survey of cognitive development theories and research in a variety of domains including perception, memory, language, and problem solving. (3-0) Y

HCS 6350 (PSYC 6350) Social Development (3 semester hours) Foundations of social and personality development. Includes survey of psychodynamic, social learning, behavior genetic, family systems, and social-cognitive approaches to the study of attachment, parenting, aggression, peer relationships, sex typing, and other contemporary issues. (3-0) Y

PSYC 6350 (HCS 6350) Social Development (3 semester hours) Foundations of social and personality development. Includes survey of psychodynamic, social learning, behavior genetic, family systems, and social-cognitive approaches to the study of attachment, parenting, aggression, peer relationships, sex typing, and other contemporary issues. (3-0) Y

ACN 6368 (HCS 6368, PSYC 6368) Language Development (3 semester hours) Advanced study of normal oral language development. The goals of this course are to consider the developmental trajectories of the different components of language; to consider the varied and critical roles of language in human development; to understand the impact of culture, different languages, child factors and the environment on development; and to be introduced to the theoretical perspectives driving research and thinking in this area of inquiry. Focus on research in child language and recent theories of language acquisition. Prerequisite: Consent of instructor. (3-0) Y

HCS 6368 (ACN 6368, PSYC 6368) Language Development (3 semester hours) Advanced study of normal oral language development. The goals of this course are to consider the developmental trajectories of the different components of language; to consider the varied and critical roles of language in human development; to understand the impact of culture, different languages, child factors and the environment on development; and to be introduced to the theoretical perspectives driving research and thinking in this area of inquiry. Focus on research in child language and recent theories of language acquisition. Prerequisite: Consent of instructor. (3-0) Y

PSYC 6368 (HCS 6368, ACN 6368) Language Development (3 semester hours) Advanced study of normal oral language development. The goals of this course are to consider the developmental trajectories of the different components of language; to consider the varied and critical roles of language in human development; to understand the impact of culture, different languages, child factors and the environment on development; and to be introduced to the theoretical perspectives driving research and thinking in this area of inquiry. Focus on research in child language and recent theories of language acquisition. Prerequisite: Consent of instructor. (3-0) Y

HCS 6376 (PSYC 6378) Social Psychology (3 semester hours) Overview of the social bases of behavior. Topics may include social cognition and self-justification, biases in judgment, attitudes and persuasion, conformity, compliance, group dynamics, prejudice and stereotyping, interpersonal attraction and relationships, aggression and altruism, cultural diversity, and applications relevant to these aspects of the human experience. Special attention to research paradigms of interest to students developing their own empirical work. (3-0) Y
PSYC 6376 (HCS 6376) Social Psychology (3 semester hours) Overview of the social bases of behavior. Topics may include social cognition and self-justification, biases in judgment, attitudes and persuasion, conformity, group dynamics, prejudice and stereotyping, interpersonal attraction and relationships, aggression and altruism, cultural diversity, and applications relevant to these aspects of the human experience. Special attention to research paradigms of interest to students developing their own empirical work. (3-0) Y

HCS 8V80 (PSYC 8V80) Research in Behavioral and Brain Sciences (1-9 semester hours) Supervised research experience. (May be repeated for credit.) ([1-9]-0) S

PSYC 8V80 Research in Behavioral and Brain Sciences (1-9 semester hours) Supervised research experience. (May be repeated for credit.) ([1-9]-0) S

COMD 7379 (HCS 7379) Current Research in Autism (3 semester hours) Exploration of research theories related to Autism Spectrum Disorders (ASD) and the implications the disability has on an individual’s learning, behavior and ability to process information. Topics may include: diagnostic classification, the evaluation process, current theoretical models, intervention models, research on potential causes and treatments, provisions for service delivery and areas of impairment. (3-0) Y

HCS 7379 (COMD 7379) Current Research in Autism (3 semester hours) Exploration of research theories related to Autism Spectrum Disorders (ASD) and the implications the disability has on an individual’s learning, behavior and ability to process information. Topics may include: diagnostic classification, the evaluation process, current theoretical models, intervention models, research on potential causes and treatments, provisions for service delivery and areas of impairment. (3-0) Y

ACN 6319 (HCS 6319, PSYC 6319) Scientific Writing (3 semester hours) Scientific writing of articles for publication. (3-0) Y

HCS 6319 (ACN 6319, PSYC 6319) Scientific Writing (3 semester hours) Scientific writing of articles for publication. (3-0) Y

PSYC 6319 (HCS 6319, ACN 6319) Scientific Writing (3 semester hours) Scientific writing of articles for publication. (3-0) Y

ACN 6316 (HCS 6316, PSYC 6316) Research Methods in Behavioral and Brain Sciences - Part III (3 semester hours) Applying, understanding, and interpreting various advanced multivariate statistical techniques in brain and behavioral science contexts. Includes principle component analyses, simple and multiple correspondence analyses, partial least square regression, discriminant analyses, and structural equation modeling. (3-0) R
HCS 6316 (ACN 6316, PSYC 6316) Research Methods in Behavioral and Brain Sciences Part III (3 semester hours) Applying, understanding, and interpreting various advanced multivariate statistical techniques in brain and behavioral science contexts. Includes principle component analyses, simple and multiple correspondence analyses, partial least square regression, discriminant analyses, and structural equation modeling. (3-0) R

PSYC 6316 (HCS 6316, ACN 6316) Research Methods in Behavioral and Brain Sciences Part III (3 semester hours) Applying, understanding, and interpreting various advanced multivariate statistical techniques in brain and behavioral science contexts. Includes principle component analyses, simple and multiple correspondence analyses, partial least square regression, discriminant analyses, and structural equation modeling. (3-0) R

ACN 6339 (HCS 6339, PSYC 6339) Psycholinguistics (3 semester hours) Classic and current research in psycholinguistics. Includes concepts from linguistics, the biological bases of speech and language processing, and child language acquisition. Hands-on exercises include labs on speech perception, language acquisition, and language comprehension. (3-0) R

HCS 6339 (ACN 6339, PSYC 6339) Psycholinguistics (3 semester hours) Classic and current research in psycholinguistics. Includes concepts from linguistics, the biological bases of speech and language processing, and child language acquisition. Hands-on exercises include labs on speech perception, language acquisition, and language comprehension. (3-0) R

PSYC 6339 (HCS 6339, ACN 6339) Psycholinguistics (3 semester hours) Classic and current research in psycholinguistics. Includes concepts from linguistics, the biological bases of speech and language processing, and child language acquisition. Hands-on exercises include labs on speech perception, language acquisition, and language comprehension. (3-0) R

ACN 6355 (HCS 6355, PSYC 6355) Judgment and Decision Making (3 semester hours) This course examines human inferences, judgments, decisions, and the processes by which we arrive at them. It will focus on the fact that our social judgments are not based on the laws of probability and chance, but on other cognitive processes that may have serious shortcomings in important inferential and decision making tasks. We will also see that these processes, while ecologically efficient, systematic and often predictable, are imperfect in today's data-rich environment. (3-0) T

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other cognitive processes that may have serious shortcomings in important inferential and decision making tasks. We will also see that these processes, while ecologically efficient, systematic and often predictable, are imperfect in today's data-rich environment. (3-0) T

HCS 6359 (PSYC 6320, HDCD 6320) The Developing Child: Toddler and Preschool Years (Two to Five Years) (3 semester hours) Relevant developmental theories and processes as well as skills acquired in motor, sensory-perceptual, cognitive, and social domains. Prerequisite: HCDC 5311 or HCS 6357 (3-0) Y

HDCD 6320 (HCS 6359, PSYC 6320) The Developing Child: Toddler and Preschool Years (Two to Five Years) (3 semester hours) Relevant developmental theories and processes as well as skills acquired in motor, sensory-perceptual, cognitive, and social domains. from 2 to 5 years. (3-0) Y

PSYC 6320 (HCS 6359, HDCD 6320) The Developing Child: Toddler and Preschool Years (Two to Five Years) (3 semester hours) Relevant developmental theories and processes as well as skills acquired in motor, sensory-perceptual, cognitive, and social domains. from 2 to 5 years. (3-0) Y

ACN 6367 (HCS 6367, PSYC 6367) Speech Perception (3 semester hours) Current topics and theories in speech perception. Topics include the acoustic correlates of speech sounds and the problem of invariance, the perception of speech under adverse conditions, the effects of hearing impairment, and models of speech perception. (3-0) T

HCS 6367 (ACN 6367, PSYC 6367) Speech Perception (3 semester hours) Current topics and theories in speech perception. Topics include the acoustic correlates of speech sounds and the problem of invariance, the perception of speech under adverse conditions, the effects of hearing impairment, and models of speech perception. (3-0) T

PSYC 6367 (HCS 6367, ACN 6367) Speech Perception (3 semester hours) Current topics and theories in speech perception. Topics include the acoustic correlates of speech sounds and the problem of invariance, the perception of speech under adverse conditions, the effects of hearing impairment, and models of speech perception. (3-0) T

ACN 6372 (HCS 6372) The Neuroscience of Pain (3 semester hours) A systems-oriented course covering the anatomical and physiologic basis of pain. The course emphasizes the similarities and differences between the different forms of pain and describes the basic features of neural processing of pain signals in the spinal cord and brain, the anatomy and the function of the descending systems that can control transmission of pain signals, and peripheral and central sensitization. The physiological and molecular basis for treatment of pain is discussed. (3-0) Y

HCS 6372 (ACN 6372) The Neuroscience of Pain (3 semester hours) A systems-oriented course covering the anatomical and physiologic basis of pain. The course emphasizes the similarities and differences between the different forms of pain and describes the basic features of neural processing of pain signals in the spinal cord and brain, the anatomy and the function of the descending systems that can control
transmission of pain signals, and peripheral and central sensitization. The physiological and molecular basis for treatment of pain is discussed. (3-0) Y

ACN 6399 (HCS 6399, PSYC 6399) Research Ethics and Scientific Integrity (3 semester hours) An interactive, intensive course designed to cover critical issues related to human subjects, animal welfare, research design, accountability of scientific actions and fraud. Course designed for individuals intending research careers in academia or industry. (3-0) Y

HCS 6399 (ACN 6399, PSYC 6399) Research Ethics and Scientific Integrity (3 semester hours) An interactive, intensive course designed to cover critical issues related to human subjects, animal welfare, research design, accountability of scientific actions and fraud. Course designed for individuals intending research careers in academia or industry. (3-0) Y

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COMD 7309 (HCS 7309) Neural Correlates of Human Cognition: Lesion-Deficit Models (3 semester hours) A framework of how the correlation of brain lesions with behavioral deficits provides a key map associating cognitive functions with specific brain regions in humans. These findings provide a key model to combine with the findings of functional neuroimaging (fMRI, PET) in understanding how humans think. The areas of cognition to be covered include language, episodic memory, semantic memory, working memory, aspects of visuospatial functions, and higher-order motor planning. Cognitive deficits in patients (e.g., amnesia, aphasia, etc.) will be explained within this framework. (3-0)

HCS 7309 (COMD 7309) Neural Correlates of Human Cognition: Lesion-Deficit Models (3 semester hours) A framework of how the correlation of brain lesions with behavioral deficits provides a key map associating cognitive functions with specific brain regions in humans. These findings provide a key model to combine with the findings of functional neuroimaging (fMRI, PET) in understanding how humans think. The areas of cognition to be covered include language, episodic memory, semantic memory, working memory, aspects of visuospatial functions, and higher-order motor planning. Cognitive deficits in patients (e.g., amnesia, aphasia, etc.) will be explained within this framework. (3-0)

HCS 7376 (HDCD 6385, PSYC 6335) Child Psychopathology (3 semester hours) Major classes of childhood psychopathology manifested during infancy through adolescence. Normal personality development as a basis for identifying psychopathology. Issues of etiology, diagnosis, prognosis and social policy. (3-0) R

HDCD 6385 (HCS 7376, PSYC 6335) Child Psychopathology (3 semester hours) Major classes of childhood psychopathology manifested during infancy through adolescence. Normal personality development as a basis for identifying psychopathology. Issues of etiology, diagnosis, prognosis and social policy. (3-0) R
PSYC 6335 (HCS 7376, HDCD 6385) Child Psychopathology (3 semester hours) Major classes of childhood psychopathology manifested during infancy through adolescence. Normal personality development as a basis for identifying psychopathology. Issues of etiology, diagnosis, prognosis and social policy. (3-0) R

COMD 7336 (HDCD 6365) Social Communication in Early Childhood Disorders (3 semester hours) Development of infant and toddler cognitive, social, communication and language skills are explored through including major theories, current research, milestones of typical development in the areas of cognitive, social and application to disorders. Emphasis is placed on functional assessments language development, assessment, and intervention for children with treatment of social communication disorders functioning at in the prelinguistic and emerging language stages. (3-0) Y

HDCD 6365 (COMD 7336) Social Communication in Early Childhood Disorders (3 semester hours) Development of infant and toddler cognitive, social, communication and language skills are explored through including major theories, current research, milestones of typical development in the areas of cognitive, social and application to disorders. Emphasis is placed on functional assessments language development, assessment, and intervention for children with treatment of social communication disorders functioning at in the prelinguistic and emerging language stages. (3-0) Y

ACN 6322 (HCS 6322) Computational Modeling Methods for Language Understanding (3 semester hours). Probabilistic methods for natural language understanding. Use of the MATLAB computer language for instantiating specific knowledge-based computational theories of natural language understanding. Emphasizes creative applications of these research methodologies. Prerequisites: Computer Programming Experience is recommended but not required. (3-0) T

HCS 6322 (ACN 6322) Computational Modeling Methods for Language Understanding (3 semester hours). Probabilistic methods for natural language understanding. Use of the MATLAB computer language for instantiating specific knowledge-based computational theories of natural language understanding. Emphasizes creative applications of these research methodologies. Prerequisites: Computer Programming Experience is recommended but not required. (3-0) T

ACN 6310 (HCS 6310) Fundamentals of Functional Brain Imaging (3 semester hours) This course covers topics such as principles of tracer techniques, neuroimaging instrumentation, safety issues, brain physiology (perfusion, metabolism, and receptor function), image processing and analysis, fundamentals of SPECT, PET and fMRI, and critical evaluation of the functional neuroimaging literature. (3-0) Y

HCS 6310 (ACN 6310) Fundamentals of Functional Brain Imaging (3 semester hours) This course covers topics such as principles of tracer techniques, neuroimaging instrumentation, safety issues, brain physiology (perfusion, metabolism, and receptor function), image processing and analysis, fundamentals of SPECT, PET and fMRI, and critical evaluation of the functional neuroimaging literature. (3-0) Y

HCS 6363 (ACN 6363) Text Comprehension Seminar (3 semester hours) Current readings in the field of text comprehension and memory. May be repeated for credit with instructor's permission. (3-0) T
ACN 6363 (HCS 6363) Text Comprehension Seminar (3 semester hours) Current readings in the field of text comprehension and memory. May be repeated for credit with instructor’s permission. (3-0) T

ACN 7330 (HCS 7330) Advanced Functional Brain Imaging (3 semester hours) This course explores more in-depth topics such as neuroimaging detection systems, clinical applications of functional neuroimaging, experimental design, statistical techniques in image analysis and reviews of pertinent literature using functional brain imaging to illuminate various cognitive and perceptual processes, such as language, memory, hearing and vision. (3-0) R

HCS 7330 (ACN 7330) Advanced Functional Brain Imaging (3 semester hours) This course explores more in-depth topics such as neuroimaging detection systems, clinical applications of functional neuroimaging, experimental design, statistical techniques in image analysis and reviews of pertinent literature using functional brain imaging to illuminate various cognitive and perceptual processes, such as language, memory, hearing and vision. (3-0) R

AUD 7339 (COMD 7339) Evidence-Based Practice in Communication Disorders (3 semester hours) Evidence-based practice as a paradigm for identifying, appraising, and using high-quality evidence to plan research studies and to make decisions about clinical practice. (3-0) Y

COMD 7339 (AUD 7339) Evidence-Based Practice in Communication Disorders (3 semester hours) Evidence-based practice as a paradigm for identifying, appraising, and using high-quality evidence to plan research studies and to make decisions about clinical practice. (3-0) Y

HCS 6351 (ACN 6351) Quantitative Methods in Neuroscience (3 semester hours) Data analysis techniques relevant to neuroscience. Topics may include: Fourier/wavelet analysis, differential equations, and statistical data analysis methods. May be repeated for credit with permission of the instructor. Prerequisite: ACN/HCS 6312 or consent of instructor. (3-0) R

ACN 6316 (HCS 6316) MATLAB for Brain Sciences (3 semester hours). Introduction to MATLAB computer programming. Covers the use of the MATLAB programming language for the purpose of stimulus generation, behavioral data analysis, statistical analyses, and generation of publication quality figures.

HCS 6316 (ACN 6316) MATLAB for Brain Sciences (3 semester hours). Introduction to MATLAB computer programming. Covers the use of the MATLAB programming language for the purpose of stimulus generation, behavioral data analysis, statistical analyses, and generation of publication quality figures.

HCS 7382 (PSYC 7382, HDCD 7382) Health Psychology (3 semester hours) Current theory and research concerning the social, cognitive, behavioral, and biological processes that shape experiences of physical health. The importance of these concepts for health behaviors, psychosomatics, and psychological adjustment to illness. (3-0) T

PSYC 7382 (HCS 7382, HDCD 7382) Health Psychology (3 semester hours) Current theory and research concerning the social, cognitive, behavioral, and biological processes that shape experiences of...
physical health. The importance of these concepts for health behaviors, psychosomatics, and psychological adjustment to illness. (3-0) T

HDCD 7382 (HCS 7382, PSYC 7382) Health Psychology (3 semester hours) Current theory and research concerning the social, cognitive, behavioral, and biological processes that shape experiences of physical health. The importance of these concepts for health behaviors, psychosomatics, and psychological adjustment to illness. (3-0) T
Revised Current Description

ACN 6160 Neurobiology (1 semester hour) A self-paced course providing the neurobiological foundation for the study of speech-language pathology. This course may only be taken pass/fail. (Open to COMD students only.) (1-0) R

ACN 6310 (HCS 6310) Fundamentals of Functional Brain Imaging (3 semester hours) This course covers topics such as principles of tracer techniques, neuroimaging instrumentation, safety issues, brain physiology (perfusion, metabolism, and receptor function), image processing and analysis, fundamentals of SPECT, PET and fMRI, and critical evaluation of the functional neuroimaging literature. (3-0) Y

ACN 6322 (HCS 6322) Computational Modeling Methods for Models of Language Understanding (3 semester hours). Probabilistic methods for natural language understanding. Use of the MATLAB computer language for instantiating specific knowledge-based computational theories of natural language understanding. Emphasizes creative applications of these research methodologies. Prerequisites: Computer Programming Experience is recommended but not required. (3-0) T

ACN 6341 Human Computer Interactions I (3 semester hours) Methods and principles of human-computer interaction (HCI), user-centered design (UCD), and user ability evaluation. Provides broad overview of HCI and how HCI informs UCD processes throughout product development life cycle. (3-0) T

ACN 6342 Human Computer Interactions II (3 semester hours) Detailed exploration of human-computer interaction (HCI) through readings in journal articles and research reports. Practical experience in methodology typically used in the design of usable systems. (3-0) T

ACN 6343 Human Computer Interactions Lab (3 semester hours). Provides students with resources to learn and perform hands-on lab-based techniques such as usability testing and cognitive walkthroughs. Emphasizes creative applications of these research methodologies as well as the development of critical thinking skills in a usability engineering context. (0-3) T

ACN 6363 (HCS 6363) Text Comprehension Seminar (3 semester hours) Current readings in the field of text comprehension and memory. May be repeated for credit with instructor's permission. (3-0) T

ACN 7330 (HCS 7330) Advanced Functional Brain Imaging (3 semester hours) This course explores more in-depth topics such as neuroimaging detection systems, clinical applications of functional neuroimaging, experimental design, statistical techniques in image analysis and reviews of pertinent literature using functional brain imaging to illuminate various cognitive and perceptual processes, such as language, memory, hearing and vision. (3-0) R

ACN 6V81 Special Topics in Applied Cognition and Neuroscience (1-9 semester hours) Topics vary from semester to semester. May be repeated for credit as topics vary. ([1-9]-0) S

ACN 7V71 Industry Internship (1-6 semester hours) May be repeated for credit. This course may only be taken pass/fail. ([1-6]-0) S
ACN 7V72 Research Internship (1-6 semester hours) May be repeated for credit. This course may only be taken pass/fail. ([1-6]-0) S

AUD 6303 Hearing Science (3 semester hours) Basic acoustics and psychoacoustics. (3-0) Y

AUD 6305 Anatomy and Physiology of Audition (3 semester hours) Structure and function of the auditory system including external, middle, and inner ear, and central auditory mechanisms. (3-0) Y

AUD 6306 Speech Science (3 semester hours) The physical properties of speech and the perceptual, cognitive and neural processes that intervene between the production and perception of speech in everyday speech communication. (3-0) Y

AUD 6310 Advanced Clinical Audiology (3 semester hours) Instrumentation and calibration standards for audiology practice. The development, and application of standard diagnostic audiology procedures. Administration and interpretation of standard diagnostic audiological procedures. audiometric tests. (3-0) Y

AUD 6311 Diagnostic Audiology (3 semester hours) Diagnostic The development and application of advanced diagnostic procedures for audiological diagnosis including behavioral and electrophysiological measures (ABR and OAE). Administration and interpretation of diagnostic audiological tests. (3-0) Y

AUD 6316 Audiologic Rehabilitation for Adults (3 semester hours) Evaluation and remediation of impairment, limitations and restrictions associated with hearing loss. Emphasis on hearing aid orientation and benefit, counseling, assistive technology, coping skills, communication strategies, speech reading, advocacy for adults with hearing loss, and partnering with community mentors. (3-0) Y

AUD 6318 Pediatric Audiology (3 semester hours) Etiological, medical and genetic considerations relevant to the pediatric population. Emphasis on current diagnostic options with infants and young children, including those having mental retardation or multiple disabilities. (3-0) Y

AUD 6352 Medical Audiology (3 semester hours) Etiology and pathology of auditory/vestibular disorders and diagnostic and treatment procedures. (3-0) Y

AUD 7182 Issues Topics in Mentoring and Patient Counseling (1 semester) and Professional Mentoring (1 semester hour) This course focuses on topics in patient Application of counseling and professional mentoring theories. Counselors and mentors across various disciplines will discuss the importance of effective communication as it relates to address key issues regarding collaboration and conflict as they pertain to interactions between clinician and patient interaction, within the family dynamics, and structure as well as in the workplace dynamics. (1-0) Y

AUD 7310 Professional Issues in Audiology (3 semester hours) Ethics and professional issues in various practice settings, including multicultural considerations, licensure, certification, outcome measures, liability, malpractice, and practice management. (3-0) Y
AUD 7321 Theories of Amplification (3 semester hours) The affect of sensory hearing loss on speech perception. Compression and hearing aid signal processing. Verification of hearing aid performance including electroacoustic and probe microphone measurement. Assessing candidacy, prescribing hearing aid performance and assessing hearing aid outcomes. Principles underlying sound field acoustics and calibration, ear mold acoustics, speech perception in hearing impaired persons, and fitting methods. (3-0) Y

(3-0) Y

AUD 7325 Intensive Auditory Rehabilitation for Adult Hearing Loss (3 semester hours) Intensive experience with comprehensive rehabilitation of adults and/or teens with a focus on research and clinical techniques to facilitate communication in employment, social, and home situations through the use of communication strategies and advanced assistive technology. (3-0) Y

AUD 7326 Aural Habilitation of Children with Hearing Impairments (3 semester hours) Issues in selection and fitting of amplification and FM systems for children, rationale and methods of auditory training, optimizing the auditory environment, communication options, and family-centered intervention. (3-0) Y

AUD 7327 Evaluation and Fitting of Amplification Systems (3 semester hours) Advanced study of analog and digital technology in amplification systems including programmable hearing aids, compression characteristics, noise reduction, signal-to-noise ratio enhancement, feedback suppression, frequency lowering technology and speech enhancement strategies. Verification of advanced features in hearing aid delivery. Examination of new developments in hearing aid technologies. (3-0) Y

AUD 7328 Hearing Loss Prevention (2 semester hours) Identification and prevention of hearing loss in children and adults through screening programs. Includes school, community, and industrial-based hearing conservation programs, noise measurement techniques, and hearing protection. (3-0) Y

AUD 7338 Research in Audiology (3 semester hours) Review of statistical principles including the relationship between working hypotheses and methodology and outcomes to prepare individuals to become a critical consumer of research. Scientific writing process is taught including components of journal publication, scientific posters, and writing style. (3-0) Y

AUD 7339 (COMD 7339) Evidence-Based Practice in Communication Disorders (3 semester hours) Evidence Origins, strengths and limitations of the evidence-based practice paradigm. Methods for identifying, finding, appraising, and using incorporating high-quality evidence to plan research studies and to make into clinical decisions about clinical practice, screening, diagnosing and treating speech, language, and hearing disorders. (3-0) Y

AUD 7340 Auditory Processing Disorders (3 semester hours) Auditory processing disorders with respect to underlying etiologies and behavioral and electrophysiologic procedures for diagnosis and therapeutic management. (3-0) Y
AUD 7351 Physiologic Assessment of Vestibular System (3 semester hours) Anatomy, physiology and pathophysiology of the vestibular, oculomotor, and related systems used for maintaining equilibrium and balance. Disorders affecting balance. Procedures used for diagnostic assessment of the vestibular system including ENG/VNG, rotational chair and platform posturography and vestibular evoked myogenic potentials. Medical and medical and non-medical treatments for balance vestibular disorders. (3-0) Y

AUD 7353 Clinical Electrophysiology (3 semester hours) Evoked and event-related potentials including recording techniques, neurophysiological mechanisms, and applications to clinical populations. (3-0) Y

AUD 7371 Doctoral Seminar in Audiology (3 semester hours) Selected topics and current research in audiology and hearing science. (May be repeated for credit.) (3-0) Y

AUD 6V20 Laboratory Procedures in Audiology and Hearing Science (1-9 semester hours) Application in structured laboratories of principles taught in diagnostic audiology, rehabilitation audiology, hearing science, amplification, cochlear implant and electrophysiology courses. To be taken with AUD 6303, AUD 6310, AUD 6311, AUD 6316, AUD 7321, AUD 7326, AUD 7327 and AUD 7353. (May be repeated for credit.) (0-1-9)-Y

AUD 7V80 Doctoral Practicum in Audiology (1-9 semester hours) Supervised doctoral level experience in assessment and habilitation/rehabilitation of hearing impairment. (May be repeated for credit) ((1-9)-0) S

AUD 7V82 Special Topics in Hearing Science and Audiology (1-9 semester hours) Selected topics and current research in Hearing science and Audiology. Topics will vary from semester to semester. (May be repeated for credit.) ((1-9)-0) R

AUD 8V80 Individual Research in Audiology (1-9 semester hours) Independent research project to fulfill the Doctor of Audiology research requirement. (May be repeated for credit.) ((1-9)-0) S

AUD 8V97 Doctoral Internship in Audiology (1-9 semester hours) Intensive, full-time, clinical audiology practicum in a work setting that provides exposure to a diverse clinical population and a wide breadth of audiologic services. Completed during the fourth year of the Au.D. Program. (May be repeated for credit.) ((1-9)-0) S

COMD 5340 Articulation Disorders (3 semester hours) Etiology, symptomatology, evaluation, and treatment of articulation disorders. (3-0) Y

COMD 5341 Audiology (3 semester hours) Clinical application and interpretation in audiology. Emphasis on instrumentation and calibration considerations for air and bone conduction test, speech audiometry, cerumen management, infection control and basic masking principles. (3-0) Y

COMD 5344 Anatomy and Physiology of Speech and Hearing (3 semester hours) Study of anatomic and physiologic mechanisms underlying speech: respiration, phonation, and articulation. Overview of the peripheral auditory system. (3-0) Y
COMD 6221 Voice Disorders (2 semester hours) Etiology of voice disorders and methods for assessing and modifying vocal behavior. (2-0) Y

COMD 6222 Stuttering (2 semester hours) Principles, methods, and procedures for assessment, and intervention of stuttering and associated disorders. (2-0) Y

COMD 6240 Professional Issues in Speech/Language Pathology (2 semester hours) Insights into the real-world and a means to master objectives as a professional in the field of speech-language pathology. (2-0) R

COMD 6305 Speech Science (3 semester hours) Anatomy, physiology and functional organization of speech. Mechanisms of normal speech production and perception with applications to the clinical setting. (3-0) Y

COMD 6307 Language Acquisition (3 semester hours) Development of the phonological, morphosyntactic, semantic, and pragmatic aspects of language, and consideration of the social, psychological, and cultural influences. (3-0) Y

COMD 6317 Language in Communication Disorders (3 semester hours) Basic processes underlying language disruptions in phonology, morphology, syntax, semantics and pragmatics. Biological and social aspects of language. (3-0) Y

COMD 6320 Motor Speech Disorders (3 semester hours) Anatomic and physiologic bases of the motor speech mechanism. Etiology, symptomatology, evaluation and treatment techniques for a variety of motor speech disorders in children and adults. (3-0) Y

COMD 6348 Counseling for Communication Disorders Professionals (3 semester hours) Psychological aspects of communication disorders in the context of the family system. Basic counseling and problem-solving skills to use as an adjunct to roles as communication disorders professionals. Emphasis on helping students to gain comfort and skill in coping with their clients' emotions and giving their clients constructive feedback. (3-0) R

COMD 6377 Neurogenic Communication Disorders I (3 semester hours) Introduction to adult neurogenic communication disorders including neuropathology, assessment and diagnosis of aphasia, traumatic brain injury, right hemispheric impairment, and dementia. (3-0) Y

COMD 6378 Neurogenic Communication Disorders II (3 semester hours) Language and cognitive intervention for individuals with adult neurogenic communication disorders with management of special populations including stroke, traumatic brain injury and dementia. (3-0) Y

COMD 6630 Advanced Seminar Internship in Communication Disorders (6 semester hours) Intensive internship program in a clinical setting. Pass/Fail only. (May be repeated for credit.) Prerequisite: Consent of instructor (6-0) S
COMD 7172 Laryngectomy (1 semester hour) Laryngectomy course will describe the laryngectomy process from surgery to rehabilitation, discuss emotional issues related to the rehabilitative process, describe laryngeal devices and demonstrate how to use them. and discuss TEP, stoma, and trach care, and strategies to help patients master esophageal speech. (1-0) Y

COMD 7173 Methods in Pediatric Aural Habilitation - Part I (1 semester hour) R[MV1]

COMD 7174 Methods in Pediatric Aural Habilitation - Part II (1 semester hour) SpeechPAH II focuses on speech, language, and learning assessments for students with hearing loss and developing auditory management skills. Troubleshooting with hearing aids, cochlear implants, and assistive technology is reviewed. weekly. Development of sign language skills is included through group practice and community service projects. (1-0) R

COMD 7204 Craniofacial Disorders (2 semester hours) Etiology, symptomatology, evaluation, and treatment of craniofacial disorders emphasizing cleft lip and palate. (2-0) Y

COMD 7207 Advanced Topics in Dysphagia (2 semester hours) Integration and application of dysphagia evaluation and treatment at an advanced level. Management of special populations including stroke, traumatic brain injury and oral/laryngeal cancers. Family and patient counseling/education. Ethical issues and decision-making. Prerequisite: COMD 7303. (2-0) Y

COMD 7209 Pediatric Medical Speech Pathology (2 semester hours) Terminology and medical diagnoses affecting the practice of speech pathology in the pediatric medical setting. Guest lectures by practicing clinicians will vary from year to year. (2-0) Y

COMD 7219 Birth To Three (2 Semester Hours) Assessment and treatment of infants and toddlers with a variety of speech, language, feeding, and oral motor disorders. (3-0) Y

COMD 7301 Public School Methods (3 semester hours) Practices and procedures of implementing clinical skills in the public schools including applying federal and state laws to best practices in assessment and intervention. (3-0) Y

COMD 7302 Seminar in Aphasiology (3 semester hours) Current issues in neurolinguistics. Models of brain and language; classification, symptoms, and etiology of aphasia. Analysis of aphasic language with respect to phonology, morphology, syntax, and semantics. (3-0) Y

COMD 7303 Dysphagia (3 semester hours) Anatomic and physiologic bases of normal swallowing. Etiology, symptomatology, evaluation and treatment techniques for swallowing disorders in children and adults. (3-0) Y

COMD 7305 Communication and the Aging Brain (3 semester hour) Social and biological factors affecting language and communication in normal aging. Pathological changes in aphasia and dementia. Assessment and intervention strategies. (3-0) Y
COMD 7306 Cultural Issues in Communication (3 semester hours) The multicultural nature of society, the role of language and communication in cultural identity, and how practice in the field of communicative disorders is tailored to cultural and linguistic diversity. (3-0) Y

COMD 7308 Preliteracy Development (3 semester hours) Historical, cultural, theoretical, developmental, and pedagogical perspectives on the foundation for literacy in early childhood. (3-0) T

COMD 7323 Auditory-Verbal Methods (3 semester hours) Comprehensive survey of the auditory-verbal approach to the habilitation of children with hearing losses from infancy through the early elementary years; includes philosophy, research, special problems, and specific methodology. (3-0) Y

COMD 7325 Hearing and Deafness (3 semester hours) Introduction to issues, assessment, and management of hearing-impairment. Includes principles and prerequisites for intervention, amplification, aural habilitation programs, sign language, and deaf culture. (3-0) Y

COMD 7339 (AUD 7339) Evidence-Based Practice in Communication Disorders (3 semester hours) Evidence: Origins, strengths and limitations of the evidence-based practice as a paradigm. Methods for identifying, appraising, and using incorporating high-quality evidence to plan research studies and to make into clinical decisions about clinical practice, screening, diagnosing and treating speech, language, and hearing disorders. (3-0) Y

COMD 7345 Pediatric Traumatic Brain Injury (3 semester hours) Assessment and management of acquired brain injury in children including linguistic, cognitive, psychosocial, educational, and neurological factors within a brain plasticity framework. (3-0) T

COMD 7362 Seminar in Autism (3 semester hours) Issues concerning the diagnosis and theories of Autism. The development of social, communication/language, and cognitive skills in Autism, as well as various therapeutic approaches. (2-0). Y

COMD 7378 Assessment and Intervention of Language Impairments in Preschool and School-Age Children (3 semester hours) Assessment and intervention for children with diverse language impairments. Theoretical models, characteristics and correlates of pediatric language disorders; and evidence-based approaches to screening, diagnosis, assessment, treatment, and prevention. (3-0) Y

COMD 7384 Augmentative Communication (3 semester hours) Components and dimensions of augmentative and alternative communication (AAC) systems. AAC assessment and intervention for individuals with congenital and acquired complex communication needs. Includes hands on AAC equipment labs. (3-0) Y

COMD 7389 Alzheimer's Disease and Related Disorders (3 semester hours) Clinical characteristics, diagnosis, cognitive-linguistic evaluation discourse based assessment, and direct and indirect intervention of adults with different dementias such as Alzheimer's disease, frontotemporal dementias, and vascular dementia. (3-0) R
COMD 7392 Language Disorders, Learning Disabilities, and Dyslexia (3 semester hours) Theoretical models and current best evidence concerning the relationships among language disorders, learning disabilities, and dyslexia. Typical Models of typical and atypical language and literacy development, definitional and diagnostic issues, and evidence-based treatment approaches for deficits in phonological processing, reading fluency, reading comprehension, and compensatory meta-cognitive strategies. (3-0) Y

COMD 8V98 Thesis (3-6 semester hours) (May be repeated for credit.) ([3-6]-0) S

COMD 7V19 Birth-To-Three (1-3 Semester Hours) Assessment and treatment of infants and toddlers with a variety of speech, language, feeding, and oral-motor disorders. (3-0) Y

COMD 7V56 Bilingual Language (1-3 semester hours) Evaluation procedures and intervention strategies of culturally and linguistically diverse populations. Second language acquisition, acculturation, bilingual education models and differentiating between language difference vs. language disorders will be discussed. ([1-3]-0) T

COMD 7V62 Seminar in Autism (1-3 semester hours) Issues concerning the diagnosis and theories of Autism. The development of social, communication/language, and cognitive skills in Autism, as well as various therapeutic approaches. ([1-3]-0) Y

COMD 7V68 Cognitive Rehabilitation (1-3 semester hours) Study of normal and impaired aspects of cognition as it relates to communication, including attention, memory, and executive function with an emphasis on current evidence supporting evaluation and treatment theories in the adult rehabilitation setting. ([1-3]-0) R

COMD 7V73 Seminar in Hearing and Speech Science (1-6 semester hours) Current topics in hearing and speech science. (May be repeated for credit.) ([1-6]-0) T

COMD 7V82 Special Topics in Communication Disorders (1-6 semester hours) Selected topics and current research in communication disorders. Topics will vary from semester to semester. (May be repeated for credit.) ([1-6]-0) R

COMD 7V86 Special Topics in Child Language (1-6 semester hours) Current issues in child language emphasizing research on intervention practices. Specific topics vary from semester to semester. (May be repeated for credit.) ([1-6]-0) R

COMD 7V90 Special Topics in Hearing and Speech Science (1-6 semester hours) Special topics and current research in hearing and speech science. (May be repeated for credit.) ([1-6]-0) R

COMD 7V91 Methods in Communication Disorders (1-6 semester hours) Issues related to methods of assessment and intervention in communication disorders. (May be repeated for credit.) ([1-6]-0) R
COMD 7V98 Directed Study in Communication Disorders (1-9 semester hours) Individualized program of study which may include reading, research implementation of clinical strategies and/or other designated activities. Pass/Fail only. (May be repeated for credit.) ([1-9]-0) S

COMD 8V80 Research in Communication Disorders (1-9 semester hours) Supervised research experience in Communication Disorders. Topics may vary. (May be repeated for credit.) ([1-9]-0) S

HCS 6302 Issues in Behavioral and Brain Sciences - Part I (3 semester hours) Doctoral proseminar on current theory and research in Cognition and Neuroscience, Communication Sciences and Disorders, and Psychological Sciences. Pass/Fail only. (Open only to HCS doctoral students) (3-0) Y

HCS 6303 Issues in Behavioral and Brain Sciences - Part II (3 semester hours) Continuation of the doctoral proseminar on current theory and research in Cognition and Neuroscience, Communication Sciences and Disorders, and Psychological Sciences. Pass/Fail only. (Open only to HCS doctoral students) (3-0) Y

HCS 6310 (ACN 6310) Fundamentals of Functional Brain Imaging (3 semester hours) This course covers topics such as principles of tracer techniques, neuroimaging instrumentation, safety issues, brain physiology (perfusion, metabolism, and receptor function), image processing and analysis, fundamentals of SPECT, PET and fMRI, and critical evaluation of the functional neuroimaging literature. (3-0) Y

HCS 6314 Instrumentation (3-semester hours) Basic principles of electricity, signal processing, instrumentation, and laboratory safety. (3-0) R

HCS 6315 Grant Writing for Researchers (3 semester hours) Identifying funding sources appropriate to research needs, formulating a research plan, generating specific aims and a methodological design to address those aims, presentation of preliminary results to show the feasibility of the proposed work, and use of appropriate reference citations. Prerequisite: Permission of instructor. (3-0) Y

HCS 6322 (ACN 6322) Computational Modeling Methods for Models of Language Understanding (3 semester hours) Probabilistic methods for natural language understanding. Use of the MATLAB computer language for instantiating specific knowledge-based computational theories of natural language understanding. Prerequisites: Computer programming experience is recommended but not required. (3-0) T

HCS 6336 Principles of Developmental Neuroscience (3 semester hours) Molecular and cellular events underlying neuronal differentiation, axon guidance, synapse formation, neurotrophic factors, and neural death, with special emphasis on activity-dependent plasticity and its role in generating and maintaining the extraordinary precision of connections found in the nervous system. (3-0) T

HCS 6343 Neurobiology of Learning and Memory (3 semester hours) Current research and theory on modifications in the central nervous system that contribute to the processes of learning and memory. Includes an overview of different forms of learning as assessed in model systems, with extensive review of anatomical, cellular, and molecular changes underlying neuronal and behavioral plasticity. Prerequisite: HCS 6346. (3-0) T
HCS 6363 (ACN 6363) Text Comprehension Seminar (3 semester hours) Current readings in the field of text comprehension and memory. May be repeated for credit with instructor's permission. (3-0) T

HCS 6379 Neurological Basis of Language Development (3 semester hours) Study of the developing brain and how it relates to the acquisition and development of language throughout the lifespan. (3-0) R

HCS 6391 Seminar on Preliteracy Development (3 semester hours) Selected topics and current research in preliteracy development. (May be repeated for credit). (3-0) R

HCS 6392 Seminar in Theories of Language Acquisition (3 semester hours) A survey and critical exploration of current theories of language acquisition and more general theories of cognitive development that have been applied to language development. (3-0) R

HCS 7310 Advanced Research Methods (3 semester hours) Advanced methods of inquiry and analysis unique to cognition and neuroscience, communication sciences and disorders, or psychological sciences. Prerequisite: HCS 6313. (May be repeated for credit.) (3-0) Y

HCS 7312 Applied Research Design: Growth Modeling (3 semester hours) Practical application and interpretation of individual growth modeling, and analytic strategy for analyzing longitudinal data. Introduction of basic concepts underlying the models, describing computer programs for conducting analyses, and interpreting results. Students will be required to complete weekly assignments. Permission of the instructor is required. (3-0) R

HCS 7313 Family Psychology (3 semester hours) Theory and research on family systems, including topics related to family interactions and relationships within the family. (3-0) R

HCS 7315 Statistical Analysis of Brain Imaging Data (3 semester hours) Covers analysis of brain imaging data obtained from diverse techniques such as PET, SPECT, fMRI, or EEG. Includes standard analysis with packages such as SPM02 or AFNI as well as pattern analysis approaches (e.g., partial least squares regression, correspondence, discriminant, and principal component analysis). (3-0) R

HCS 7329 Functional Brain Imaging Practica (3 semester hours) Application of learned skills to short research projects in small group format. Projects include: 1) acquisition of new data in SPECT, PET or fMRI in association with ongoing funded research; 2) mentored analysis of existing data sets; and 3) experimental design projects with a full experimental protocol, including informed consent procedures, acquisition parameters and data analysis plans. (3-0) RAll projects are reviewed in a biweekly group meeting to facilitate learning across groups. (3-0) R

HCS 7330 (ACN 7330) Advanced Functional Brain Imaging (3 semester hours) Exploration of topics such as neuroimaging detection systems, experimental design, statistical techniques in image analysis, reviews of pertinent literature using functional brain imaging to illuminate various cognitive/perceptual processes, such as language, memory, hearing and vision and clinical applications of functional neuroimaging. (3-0) R
HCS 7334 Affective Neuroscience (3 semester hours) Current studies and theories of the biological basis of emotion and affective behaviors. The interactions of emotional processes with other brain functions will be discussed. Topics covered may include anxiety, depression, stress, and fear as well as hedonically positive emotional states. Prerequisite: ACN/HCS 6346. (3-0) R

HCS 7335 Seminar in Auditory Cortical Processing (3 semester hours) Basic principles of neural information processing with special emphasis on the central nervous system processes underlying hearing and speech perception. May be repeated for credit. (3-0) T

HCS 7337 Advanced Neuroscience Lab Methods (3 semester hours) Intensive hands-on training and exposure to focus upon widely used neuroscience laboratory methods such as neurophysiology, neuropharmacology, and behavioral observation, with particular emphases on neurophysiological, neurochemical, and biobehavioral approaches to understanding the biology of behavior. Experimental design, analysis and science writing are emphasized. Prerequisites: HCS 6346 and HCS 7343 or instructor's permission. (3-0) R

HCS 7351 Aging and the Nervous System (3 semester hours) Critical evaluation of research and theory concerning the impact of aging on neuronal function. Cognitive dysfunctions, dementias, and underlying neuropathologies, as well as neurophysiological and neurochemical changes that accompany normal aging. (3-0) R

HCS 7352 Seminar in Language Impairments in Children (3 semester hours) Advanced study of language impairments in children emphasizing research issues related to these diverse clinical populations. Topics may include SLI, SCI, SELD, deafness, and autistic spectrum disorders among others. May be repeated for credit. Prerequisites: COMD 6307 or HCS 6368 and COMD 7378 or consent of instructor. (3-0) T

HCS 7355 Seminar in Psychological Sciences (3 semester hours) Selected topics of current research in social or cognitive development. (May be repeated for credit.) (3-0) R

HCS 7372 Seminar in Cognition and Neuroscience (3 semester hours) Selected topics and current research in cognition and neuroscience. (May be repeated for credit.) (3-0) R

HCS 7380 Practicum in Communication Sciences (3 semester hours) Supervised, research or practice-based activities in applied contexts or evaluation and therapeutic management of communication disorders. Weekly conference may be required. Pass/Fail only. (May be repeated for credit) (3-0) S

HCS 7382 Health Psychology (3 semester hours) This course examines current theory and research concerning the social, cognitive, behavioral, and biological processes that shape our experiences of physical health. The importance of these concepts for health behaviors, psychosomatics, and psychological adjustment to illness will be discussed. (3-0) T

HCS 7V71 Topics in Communication Sciences and Disorders (1-6 semester hours) Selected topics and current research in communication sciences and disorders. (May be repeated for credit.) [(1-6)-0] R
HCS 7V98 Directed Individual Study in Behavioral and Brain Sciences (1-9 semester hours) Individualized program of study which may include reading, research, implementation of clinical strategies, and/or other designated activities. (May be repeated for credit) ([1-9]-0) S

HCS 8V50 Doctoral Readings and Research Seminar (1-6 semester hours) Seminar for advanced doctoral students on current issues and research in Behavioral and Brain Sciences. (May be repeated for credit) ([1-6]-0) S

HCS 8V99 Dissertation (1-9 semester hours) (May be repeated for credit.) ([1-9]-0) S

HDCD 6310 Parent Education (3 semester hours) Skills needed by professionals to assess parents' strengths, resources and needs as well as to assist parents in understanding and promoting their children's development and adjustment. Includes effective communication techniques, basic counseling skills, and strategies to enhance parental effectiveness within the family and community. (3-0) Y

HDCD 6312 Atypical Development (3 semester hours) Disorders of development from conception to age five, emphasizing etiology, diagnosis and treatment. Impact of delays in the acquisition and integration of various developmental skills as they relate to specific disorders of personality and socialization, sensory and motor skills, and language and cognition. (3-0) Y

HDCD 6315 Assessment Theory (3 semester hours) Latest developments in the field of assessment with young children, including behavioral observation, contextual multi-faceted assessment, and inclusion of the family. Training in traditional psychometrics and assessment tools/techniques. Pre- or co-requisite[MV2]: HDCD 6319. (3-0) Y

HDCD 6316 Developmental Assessment (3 semester hours) Play-based, curriculum-based, authentic assessment, and family assessment protocols and the Functional Emotional Assessment Scale (FEAS). Consider Zero-to-Three diagnostic classification system (DC: 0-3) through differential diagnosis decision-making based on the results from the FEAS. Emphasis on clinical judgment/observation, interpretation and integration with assessment results of diagnostic information. Prerequisites: HDCD 6319, 5315, [MV3](3-0) Y

HDCD 6325 Service Coordination of Community Resources (3 semester hours) Policies and procedures pertinent to service coordination of community resources in early intervention and family centered practices that help families become more independent. (3-0) Y

HDCD 6330 Families and Culture (3 semester hours) Child growth and development in the context of diverse families and cultures. Respect for cultural variations in family values and practices. Emphasizes the impact of the students' own culture, attitudes, and beliefs in working with families from diverse backgrounds.

HDCD 6335 Intervention Paradigms (3 semester hours) Historical, theoretical, political, and research bases for principles of approaches to early intervention with at-risk and handicapped infants, toddlers, and preschoolers and their families. Includes research methodology for evaluating the effectiveness of
early intervention and an emphasis on evidence-based practice and methods of program evaluation. (3-0) Y

HDCD 6355 Advanced Seminar: Family Outreach and Assessment (3 semester hours) This practicum is designed to provide students, as part of a 2-3 person team, supervised experiences with young children from diverse backgrounds, at selected off-campus sites. Emphasis is on assessment, professional report writing, communicating assessment results orally to the families and other professionals, the referral process, and working together in 2-3 student teams. Pass/Fail only. (3-0) Y

HDCD 6370 Intervention with Young Children (3 semester hours) Emphasis on methods and procedures for facilitating development of high risk, delayed or handicapped young children through relationship-based intervention. Reviews the contributions and perspectives of various early intervention disciplines. Students design and implement individualized intervention programs. (3-0) Y

HCD 6390 Infant Mental Health (3 semester hours) Theoretical foundations of infant mental health. The attachment-separation process in healthy development. The impact of illness, disability, maltreatment, deprivation, trauma, foster-care, and adoption on infant mental health. Overview of intervention programs that address relationship disruptions or disorders. (3-0) Y

HDCD 6395 Medical and Biobehavioral Factors in Early Childhood Disorders (3 semester hours) The normal functioning of organ systems and the most common malformations, dysfunction, and diseases. Effects of these disorders on the child and family are studied. (3-0) Y

HDCD 6V81 Special Topics in Human Development and Early Childhood Disorders (1-9 semester hours) Topics vary from semester to semester. (May be repeated for credit) as topics vary. ([1-9]-0) R

HDCD 7V20 Practicum/Internship in Early Childhood Disorders (3 or 6 semester hours) (P/F grading) Supervised participation in on-site, early intervention, preschool and private therapy settings for young children with special needs. Includes, including professional activities such as conducting assessments, intervention, service coordination, and interdisciplinary teaming. Bi-Weekly seminars address reflective practice as a tool for professional growth, ethical decision making in real situations, and professional use of self. Taken for 3 hours credit coincident with practicum placement and for 6 hours credit coincident with internship placement. Prerequisite: Consent of instructor. May be repeated for credit with the supervisor’s prior approval. Pass/Fail only. (3-0 or 6-0) S

HDCD 7V80 Independent Research (1-6 semester hours) Individualized program of study which includes research and/or other designated activities. ([1-6]-0) S

HDCD 7V98 Independent Study (1-6 semester hours) Individualized program of study which may include reading, research, and/or other designated activities. (May be repeated for credit) (1-6)-0) S

PSYC 7318 Special Topics in Psychological Sciences (3 semester hours) Selected topics of current research in psychological sciences. (May be repeated for credit.) (3-0) R
HCS 6360 Neural Basis of Speech-Sound Processing (3 semester hours) Basic neural mechanisms of speech-sound processing. Discussion of research articles. (3-0) R

HCS 6364 Cortical Plasticity (3 semester hours) Basic principles of neural plasticity with special emphasis on cortical plasticity related to development, recovery from injury, and learning. Classic and recent research articles will be discussed (3-0) R

AUD 6314 Instrumentation (3 semester hours) This course focuses on the use, care, and maintenance of instrumentation used in clinical audiology, including the basic principles of electrical systems, signal processing and analysis, calibration, and laboratory safety. (3-0) Y

AUD 6113 Grand Rounds (1 semester hour) Case staffing, presentations and discussion of patient audiological diagnostic and rehabilitation and selected topics in a group session attended by students and faculty. (3-0) Y

AUD 7182 Issues in Mentoring and Counseling (1 semester hour) This course focuses on topics in patient counseling and professional mentoring. Counselors and mentors across various disciplines will discuss the importance of effective communication as it relates to key issues in clinician-patient interaction, family dynamics, and workplace dynamics.

AUD 7210 Professional Issues in Audiology (2 semester hours) Ethics and professional issues in various practice settings, including multicultural considerations, licensure, certification, outcome measures, liability, malpractice, and practice management. (3-0) Y

AUD 7228 Hearing Loss Prevention (2 semester hours) Identification and prevention of hearing loss in children and adults through screening programs. Includes school, community, and industrial-based hearing conservation programs, noise measurement techniques, and hearing protection. (3-0) Y

AUD 7240 Auditory Processing Disorders (2 semester hours) Auditory processing disorders with respect to underlying etiologies and behavioral and electrophysiologic procedures for diagnosis and therapeutic management. (3-0) Y

AUD 6120 Laboratory Procedures in Audiology and Hearing Science (1-9 semester hours) Application in structured laboratories of principles taught in diagnostic audiology, rehabilitation audiology, hearing science, amplification, cochlear implant and electrophysiology courses. To be taken with AUD 6303, AUD 6310, AUD 6311, AUD 6316, AUD 7321, AUD 7326, AUD 7327 and AUD 7353. (May be repeated for credit.) (0-[1-9]) Y
AUD 7280 Doctoral Practicum in Audiology (2 semester hours) Supervised doctoral level experience in assessment and habilitation/rehabilitation of hearing impairment. (May be repeated for credit) ([1-9]-0) S

HCS 7316 Statistical Analysis of Brain Imaging Data (3 semester hours) Covers analysis of brain imaging data obtained from diverse techniques such as PET, SPECT, fMRI, or EEG. Includes standard analysis with packages such as SPM02 or AFNI as well as pattern analysis approaches (e.g., partial least squares regression, correspondence, discriminant, and principal component analysis). (3-0) R

HCS 6366 Seminar in Auditory Cortical Processing (3 semester hours) Basic principles of neural information processing with special emphasis on the central nervous system processes underlying hearing and speech perception. May be repeated for credit. (3-0) T

HCS 8V80 Research in Behavioral and Brain Sciences (1-9 semester hours) Supervised research experience. (May be repeated for credit.) ([1-9]-0) S

PSYC 8V80 Research in Behavioral and Brain Sciences (1-9 semester hours) Supervised research experience. (May be repeated for credit.) ([1-9]-0) S

HCS 7311 Family Psychology (3 semester hours) Theory and research on family systems, including topics related to family interactions and relationships within the family. (3-0) R

PSYC 7V50 Internship in Psychological Sciences (1-6 semester hours). Applied placement in community agency or other approved site. (May be repeated for credit) ([1-6]-0) S

HDCD 6360 Behavior Management (3 semester hours) Observational methodology in behavioral assessment and a review of principles and procedures of behavior change from social learning and applied behavior analysis perspectives. Particular attention will be given to the design, implementation, and evaluation of behavioral interventions with children and families. (3-0) Y

COMD 6101 Childhood Apraxia of Speech (1 semester credit hour) Current research topics in the assessment and management of children of all ages with Childhood Apraxia of Speech. Includes recent developments in prosody, oral motor therapy, profiling characteristics, articulatory error consistency, augmentative communication, integral stimulation intervention, and diagnostic criteria. Pre-requisite: COMD 6320. (1-0) S

COMD 6102 Dysphagia in Public Schools (1 semester credit hour) Current research topics in dysphagia assessment and management of children of all ages in the public school setting. Includes program development, legislative information, treatment plans in the IEP, and ethical considerations. Pre-requisite: COMD 7303. (1-0) S

COMD 6103 Research in Pediatric TBI (1 semester credit hour) Current research topics in the assessment and management of children of all ages with traumatic brain injury. Includes clinical characteristics of acute dysphagia in children with TBI, recovery of memory function, articulatory
function, executive function, and inference comprehension skills in children with TBI. Pre-requisites:
COMD 6377, COMD 7378. (1-0) S

COMD 6104 Dysphagia in Infancy (1 semester credit hour) Assessment and management of infants
and with feeding and swallowing impairments. Include review of anatomy and physiology of
suck/swallow/breathe triad, diagnostic and test procedures in the NICU and hospital setting, clinical
feeding evaluation of infants in the NICU and hospital, therapeutic treatment strategies for infants
with dysphagia, special medical populations, and breast feeding. Prerequisite: COMD 7303. (1-0) S

COMD 6105 Professional Writing (1 semester credit hour) Professional reports, and professional
writing covering behavioral objectives, discharge planning, and report formats. (1-0) S

COMD 6106 Medical SLP (1 semester credit hour) Medical terminology and scope of practice of the
medical SLP. Topics include assessment of aphasia, cognitive rehabilitation after TBI, diagnostic
approaches to dementia, communication impairment and management of dementia, assessment and
management of dysphagia, voice disorders, head and neck cancer, psychogenic communication
disorders, issues in geriatric medicine and drug induced communication and swallowing disorders. (1-
0) S

COMD 6107 Dementia (1 semester credit hour) Diagnosis, treatment, and current best practice in the
management of the dementias. Pre-requisites: COMD 6377. (1-0) S

COMD 6108 Pulmonary Issues (1 semester credit hour) Issues related to respiration and swallowing
coordination in normal aging and patients with specific respiratory conditions (i.e., aspiration
pneumonia, COPD, Parkinsonism, patients on mechanical ventilation). Normal and disordered
respiratory systems, and assessment/management considerations for patients with specific
respiratory issues are discussed. Pre-requisite: COMD 7303. (1-0) S

COMD 6109 Trachs and Vent (1 semester credit hour) Communication, respiration and swallowing
issues/considerations as they relate to patients who require tracheostomy tubes and/or ventilators.
Normal and disordered respiratory systems, oral and nonoral communication and
assessment/management of dysphagia. Pre-requisite: COMD 7303. (1-0) S

COMD 6110 Pediatric Feeding (1 semester credit hour) Assessment and management of infants and
children of all ages with feeding and swallowing impairments. Includes recent developments in the
field of swallowing disorders including advances in technology, surgery and pharmacology, and
management of pediatric patients with dysphagia. Pre-requisite: COMD 7303. (1-0) S
Summary of Edits for Graduate Catalog, Part 2

Reviewed:
ECS, NSM

- Copied and pasted data from two columns, called “current descriptions” and “revised descriptions,” from Excel spreadsheets into Word documents for ease of editing.
- All Word documents show the tracked changes as made by each school’s faculty, along with edits made by Venetis.
- Made typo, punctuation and spelling corrections as needed on Word documents, and made the same corrections within the spreadsheets.
- Some spreadsheets became “unreadable,” after extracting data into Word. This resulted in spreadsheets showing only one set of highlighted tracking changes for one staff member, Venetis. When that happens, the file is noted in this document.
  - Original documents sent by Lila Foroutan still show original tracked changes made by faculty members.
- Need a new copy of ENCS-SYSM spreadsheet (completely uneditable); emailed Registrar’s Office for another copy on 1-30-12.

Duplicate Entries on Various Spreadsheets / Word Documents

It seems that ECS faculty has the most trouble with cross-listed courses. They keep adding the same courses in many files when these courses could be added one time within the cross-listed spreadsheets.

When I noticed it, I alerted Lila Foroutan, asking her about these duplicate entries and asked how she wanted to handle these. She wanted to leave the duplicate entries within the various files as long I marked them as “duplicated.” I marked them that they (1) were already listed on the appropriate cross-listed spreadsheet; or (2) have been added to the appropriate cross-listed spreadsheets.

The following information shows some examples of duplicate entries.

BIOL 5376 is now cross-listed with BMEN 6387. BIOL 5376 still appears on the NSMT-BIOL spreadsheet so I made a notation that this needs to be “transferred” to the ENCS-NSMT spreadsheet. (I left the entries on the Word documents since they will be part of the web catalog). BIOL 5376 is listed in three files: the ENCS-NSMT crosslist spreadsheet/document, ENCS-BMEN spreadsheet/document, and NSMT-BIOL spreadsheet/document.

The same can be said for BIOL 6373, which is now cross-listed with BMEN 6391.

BIOL 6385 (BMEN 6389) is listed on the ENCS-NSMT crosslist documents. BMEN 6389 (BIOL 6385) is listed on the ENCS-BMEN documents with a notation that this was
added to the ENCS-NSMT spreadsheet. However the BIOL 6385 entry on the ENCS-NSMT spreadsheet had a different prereq set. This shows how complicated it can be to determine which description / entry is the “correct/final version.”

With this in mind, if there were any changes made to a cross-listed course on any spreadsheet, that version became the “official” version. Changes were made accordingly on all spreadsheets. If no changes were made, the original information was transferred to the “crosslists” spreadsheets. Notations were made for all duplicated entries on “individual” spreadsheets that the courses should be transferred to the appropriate cross-listing spreadsheet. If there are discrepancies, that course is marked for further review by faculty.

BMEN 6374 (EEBM 6374) is used as a primary example; the title and description was changed on the ENCS-BMEN spreadsheet but not on the ENCS-ENCS spreadsheet. I updated the information on the ENCS-ENCS spreadsheet. The same can be said for BIOL 6385 (BMEN 6389) which showed the updated description on the ENCS-NSMT spreadsheet.

**RECOMMENDATION:** Faculty should not add any entries on the individual spreadsheets for cross-listed courses. If a new addition is needed, that entry should be made on the cross-listing spreadsheet. If a course already exists but it needs to be cross-listed, then a notation should be made, marking that course to be “transferred” to the appropriate cross-listed spreadsheet. Then copy all the data to the cross-listed spreadsheet. As noted, ECS faculty members seem to have the most trouble with this.

The generated Word documents from the cross-listed spreadsheets should not be used in the web catalog. Currently, most of the cross-listed courses are listed in the correct numbering sequence on each graduate school’s course offerings. Foroutan will need to review the web catalog to ensure that all cross-listed courses are listed in the catalog.

**ECS**

**ENCS-ENCS cross-listed documents (additional updates/revisions since 1-19-12)**

BMEN 6374 (EEBM 6374): BMEN 6374 showed an updated title and description on the ENCS-BMEN spreadsheet. Made the corrections accordingly on the ENCS-ENCS spreadsheet.

Added the following cross-listed courses to ENCS-ENCS spreadsheet:
BMEN 6355 / MSEN 6355
MECH 6323 / SYSE 6323
MECH 6300 / EESC 6331
BMEN 6372 / MECH 6314 / SYSM 6306
RECOMMENDATION: Ask the Registrar to create a new crosslists spreadsheet for ENCS-MGMT cross-listed courses to avoid duplication in listing entries on various schools’ spreadsheets. The list is the following:

OPRE 6301 / SYSM 6303
OPRE 6355 / SYSM 6304
OPRE 6362 / SYSM 6311
FIN 6301 / SYSM 6312
HMGT 6324 / OB 6332 / SYSM 6313
ENTP 6398 / SYSM 6315
ENTP 6388 / SYSM 6326 not showing as crosslisted on SOM side
MKT 6301 / SYSM 6318
MECO 6303 / SYSM 6319
BPS 6332 / SYSM 6320

ENCS-NSMT cross-listed documents

Corrections made for the following:

PHYS 6371: Added “MSEN 5371” to the continuation phrase in order to match the description as shown in MSEN 6371.

PHYS 6374: corrected capitalization in title.

PHYS 6377: corrected capitalization in title and some in description (0-D, 1-D).

MSEN 5331: missing prerequisite information which is listed in CHEM 5331 (Prerequisite: CHEM 2325 or equivalent.) Added the prereq info to match CHEM 5331.

PHYS 6383: corrected spelling for plasma sheaths.

BIOL 6385 and BMEN 6389 show two different prereqs in the course descriptions but on the spreadsheet, they have the same prereqs. As a result, I edited the prereq in BIOL 6385 to match BMEN 6389.

BIOL 6373: added the BMEN 6391 cross listing info to the description, and made a notation on the NSMT-BIOL spreadsheet that this is now transferred to the ENCS-NSMT cross-listing spreadsheet.

BIOL 5376: added the BMEN 6387 cross listing info to the description, and made a notation on the NSMT-BIOL spreadsheet that this is now moved to the ENCS-NSMT cross-listing spreadsheet.

Made notations within the “cross_list_nbr” column for the newly cross-listed courses by putting down NEW1, NEW2, etc., to indicate which courses are linked together.
Need to consult ECS faculty to resolve the following course issues:

- CHEM 5355 and MSEN 5355 have different course descriptions.
- MSEN 5377 and PHYS 5377 have different course descriptions. In addition, the prerequisite column on the Registrar’s spreadsheet shows two different sets of prereqs, triggering a “red flag” indicating a problem. MSEN 5377 indicates the course is limited to ENCS majors while PHYS 5377 does not list any prereqs. In addition, on the ENCS-MSEN spreadsheet, a new prereq of MSEN 6319 or equivalent is listed for MSEN 5377.

Need to consult NSM faculty (in conjunction with ECS faculty): BMEN 6390 (BIOL 63__) we need to obtain the missing course number for BIOL 63__.

ENCS-BMEN documents

BMEN 6374 (EEBM 6374): BMEN 6374 showed an updated title and description on the ENCS-BMEN spreadsheet. Made the corrections accordingly on the ENCS-ENCS spreadsheet.

BMEN 6384: deleted from Word doc as requested by the spreadsheet notation.

BMEN 6385: corrected capitalization for MATLAB.

BMEN 6387: Now crosslisted w/ BIOL 5376. Undergraduate courses cannot be listed as prereqs in the PREREQ column; I removed them. (NOTE: it is fine to list UG courses in description).

BMEN 6355 (MSEN 6355): new cross-listed courses. Added to the ENCS-ENCS spreadsheet. Made a notation to transfer course from ENCS-BMEN spreadsheet to ENCS-ENCS spreadsheet.

BMEN 6390 (BIOL 63__): need to get BIOL course number.

BMEN 6391: changed the prereq to match the cross-listed courses as shown on the ENCS-NSMT documents.

See ENCS-ENCS and ENCS-NSMT sections for additional comments.

ENCS-CS documents

CS 6348, 6371, 6375, 6391, 8V99: made capitalization/lower case, grammar, punctuation, spacing, and/or spelling corrections.
CS 6379: has a prereq of BIOL 5373, which used to be called Proteomics. There is a
BIOL 6373/BMEN 6371 Proteomics. Update prereq to BIOL 6373? Need to consult
ECS/NSM faculty.

CS 6395: prereq column shows CS 5343 as a prereq; description shows CS 4353.
Updated prereq from CS 4353 to CS 5343 in description.

CS 6387: was added to the spreadsheet as a cross-listed item but no course description
was given. CS 6387 /SE 6381 Advanced Software Engineering Project is already on the
ENCS-ENCS crosslists spreadsheet. However, please confirm with ECS faculty. I’ve
marked this a delete.

CS 6301: this course may be a new cross-listed course with SE 6301, under the title of
SPEC TOPICS in COMPUTER SCIENC. I believe that this line was entered in error
since there is a cross-listed course for CS 8V02 / SE 8V02 with the title of Topics in
Computer Science. Please confirm with ECS faculty. I’ve marked this line as a delete.

ENCS-MECH documents

MECH 6300/SYSM 6307: has a third course listed as part of the cross-listed courses
(EESC 6331) as shown on the ENCS-ENCS crosslists spreadsheet (and not shown on the
ENCS-MECH documents). SYSM 6307 shows a different course description (see 2nd
3rd sentences, and EE 4310 is included in the prereq. Did not change the course
descriptions/prereqs, but ECS faculty needs to be consulted to select a matching
description.

MECH 6368 / MSEN 6350: newly cross-listed. MSEN 6350 has different prereqs than
MECH 6368. They also have different course frequencies. Need to consult ECS faculty
to correct this information.

These courses have been marked with notations on the spreadsheet that they are to be
transferred to the ENCS-ENCS spreadsheet. We are missing the EE spreadsheet so the
EE courses also have missing data.
MECH 6300/ SYSM 6307 / EESC 6331
MECH 6312 / EESC 6349
MECH 6313 / EEGR 6336
MECH 6323 / SYSE 6323
MECH 6312 / EESC 6349
MECH 6313 / EEGR 6336
MECH 6348 / EEMF 6322 / MSEN 6322
MECH 6368 / MSEN 6350
MECH 6391 / EEGR 6381

NOTE: these courses were added to the MECH spreadsheet but they are already listed on
the ENCS-ENCS spreadsheet.
MECH 6347 / EEMF 6382
MECH 6348 / EEMF 6322 / MSEN 6322

NOTE: these courses were added to the MECH spreadsheet but they are already listed on the ENCS-NSMT spreadsheet.

MECH 5388 / EEMF 5383 / PHYS 5383

MECH 6383 / EEMF 6383 / PHYS 6383: need to ask ECS faculty about different prereqs. On the MECH spreadsheet, prereqs are PHYS 5320 or EEMF 6316 or MECH 6310 or equivalents. Crosslists show Prerequisite: PHYS 5320 or EEGR 6316.

MECH 6331: deleted as instructed by spreadsheet

MS 6303, 6306, 6307, 6311, 6354, 6370, 6380: these courses list undergraduate (UG) courses in the prereq column; they have been removed from the prereq column/spreadsheet. It is ok to list UG courses within the description.

ENCS-MSEN documents

- Spreadsheet does not show any tracked changes. However, ECS was able to highlight the various columns/rows.

MSEN 5300, 5331, 5333, 5340, 5355, 5356, 5371, 5377, 5383, 5410 5440, 6358, 6371, 6374, 6377: all these courses are cross-listed with NSMT (i.e. BIOL, CHEM, PHYS) courses. Made notations on the ENCS-MSEN spreadsheet that these courses are already listed on the ENCS-NSMT spreadsheet.

MSEN 5331/CHEM 5331: added the prereq as shown on the ENCS-NSMT crosslists spreadsheet.

MSEN 5341/CHEM 5341: added entry to the ENCS-NSMT crosslists spreadsheet. Made a notation on the ENCS-MSEN spreadsheet that this is to be transferred to the ENCS-NSMT spreadsheet. Prereq problem/red flag is triggered on the ENCS-NSMT spreadsheet so ECS/NSM faculty needs to decide: CHEM 5341 has no prereqs but MSEN 5341 is limited to ENCS majors.

MSEN 5375: this is supposed to be cross-listed with PHYS 5375 but there is no entry for PHYS 5375. Check with ENCS/NSM faculty about whether this is cross-listed or not.

MSEN 5377 / PHYS 5377: new prereq added on the ENCS-MSEN spreadsheet. Added it to the ENCS-NSMT documents.

MSEN 6320, 6321, 6322, 6324, 6348, 6355, 6382, 7320: all these are cross-listed with ENCS courses. Made notations on the ENCS-MSEN spreadsheet that these courses are already listed on the ENCS-ENCS spreadsheet.

MSEN 6355 (BMEN 6355) – new cross-listed courses. Added to the ENCS-ENCS spreadsheet. Made a notation to “move” course off ENCS-MSEN spreadsheet.
ENCS-SE documents

SE 6357: prereq column showed CS 5330/5343 as prereqs but the current/revised descriptions show CE/CS/SE 5354 as a prereq. Edited the prereq column to show CE/CS/SE 5354 as a prereq.

SE 6387: was added to the spreadsheet as a cross-listed item but no course description was given. CS 6387/SE 6381 Advanced Software Engineering Project is already on the ENCS-ENCS crosslists spreadsheet. However, please confirm with ECS faculty. I’ve marked this a delete.

SE 6301: this course may be a new cross-listed course with SE 6301, under the title of SPEC TOPICS in COMPUTER SCIENC. I believe that this line was entered in error since there is a cross-listed course for CS 8V02/SE 8V02 with the title of Topics in Computer Science. Please confirm with ECS faculty. I’ve marked this line as a delete.

ENCS-SYSM documents

- Spreadsheet is uneditable; emailed the Registrar’s office to obtain a new copy in order to make corrections matching Word documents.

Most of the issues were already reported in the Summary Edits, Part 1, under ENCS-ENCS section and SOM (pp. 4-6).

Changed “credit hours” to “semester hours” for all courses on Word documents.

ENCS-EE documents:

EECT 6326: changed preq of EE 4340 to EE 5340 to match the prereq column info

EECT 6332 and EEGR 6336: both courses show the prereqs for MECH 6331; MECH 6331 may be a typo since it could be MECH 6300 which is part of a cross-listed course set, EESC 6331/MECH 6300/SYSM 6307. Need to find out before updating prereq column and description.

EESC 6331: should be cross-listed w/ MECH 6300 and SYSM 6307. Already listed on ENCS-ENCS crosslists spreadsheet.

EESC 6366: deleted EESC 6349 listed in the prereq column to match the revised description.

EECT 6379: EECT 6326 listed in the prereq column, but the prereq is not listed in the course description itself. Need to find out if we should add it.

EEBM 6380 (BMEN 6380) and EEBM 6381 (BMEN 6381)
It looks like that there will be new cross-listings for these two courses. The BMEN documents does not show the cross-listing. I did not transfer/copy the data to the ENCS-ENCS crosslist spreadsheet until we verify it. I just made a notation on the EE spreadsheet that this needs to be transferred to the cross-lists spreadsheet.

**NSMT-CHEM documents**

CHEM 5341: cross-listed with MSEN 5341. Made a notation on the NSMT-CHEM spreadsheet that this is now transferred to the ENCS-NSMT crosslists spreadsheet. **Need to consult NSM and/or ECS faculty** since the cross-listed courses do not have the same prereqs. MSEN 5341 is limited to ENCS majors while CHEM 5341 lists no prereqs.
CE 6390 (CS 6390) Advanced Computer Networks (3 semester hours) Survey of recent advancements in high-speed network technologies. Application of quantitative approach to the study of broadband integrated networks including admission control, access control, and quality of service guarantee. Prerequisite: CS 5390. (3-0) S

CS 6390 (CE 6390) Advanced Computer Networks (3 semester hours) Survey of recent advancements in high-speed network technologies. Application of quantitative approach to the study of broadband integrated networks including admission control, access control, and quality of service guarantee. Prerequisite: CS 5390. (3-0) S

CE 6378 (CS 6378 and TE 6378) Advanced Operating Systems (3 semester hours) Concurrent processing, inter-process communication, process synchronization, deadlocks, introduction to queuing theory and operational analysis, topics in distributed systems and algorithms, checkpointing, recovery, multiprocessor operating systems. Prerequisites: CS 5348 or equivalent, and knowledge of C and UNIX. (3-0) S

CS 6378 (CE 6378 and TE 6378) Advanced Operating Systems (3 semester hours) Concurrent processing, inter-process communication, process synchronization, deadlocks, introduction to queuing theory and operational analysis, topics in distributed systems and algorithms, checkpointing, recovery, multiprocessor operating systems. Prerequisites: CS 5348 or equivalent; knowledge of C and UNIX. (3-0) S

TE 6378 (CE 6378 and CS 6378) Advanced Operating Systems (3 semester hours) Concurrent processing, inter-process communication, process synchronization, deadlocks, introduction to queuing theory and operational analysis, topics in distributed systems and algorithms, checkpointing, recovery, multiprocessor operating systems. Prerequisites: CS 5348 or equivalent; knowledge of C and UNIX. (3-0) S

CE 6354 (CS 6354, SE 6354) Advanced Software Engineering (3 semester hours) This course covers advanced theoretical concepts in software engineering and provides an extensive hands-on experience in dealing with various issues of software development. It involves a semester-long group software development project spanning software project planning and management, analysis of requirements, construction of software architecture and design, implementation, and quality assessment. The course will introduce formal specification, component-based software engineering, and software maintenance and evolution. Prerequisites: CE/CS/SE 5354 (or equivalent) and knowledge of Java. (3-0) S

CS 6354 (CE 6354, SE 6354) Advanced Software Engineering (3 semester hours) This course covers advanced theoretical concepts in software engineering and provides an extensive hands-on experience in dealing with various issues of software development. It involves a semester-long group software development project spanning software project planning and management, analysis of requirements, construction of software architecture and design, implementation, and quality assessment. The course
will introduce formal specification, component-based software engineering, and software maintenance and evolution. Prerequisites: CE/CS/SE 5354 (or equivalent) and knowledge of Java. (3-0) S

SE 6354 (CE 6354, CS 6354) Advanced Software Engineering (3 semester hours) This course covers advanced theoretical concepts in software engineering and provides an extensive hands-on experience in dealing with various issues of software development. It involves a semester-long group software development project spanning software project planning and management, analysis of requirements, construction of software architecture and design, implementation, and quality assessment. The course will introduce formal specification, component-based software engineering, and software maintenance and evolution. Prerequisites: CE/CS/SE 5354 (or equivalent) and knowledge of Java. (3-0) S

CE 7325 (EECT 7325) Advanced VLSI Design (3 semester hours) Advanced topics in VLSI design covering topics beyond the first course (EECT 6325). Topics include: use of high-level design, synthesis, and simulation tools, clock distribution and routing problems, (a) synchronous circuits, low-power design techniques, study of various VLSI-based computations, systolic arrays, etc. Discussions on current research topics in VLSI design. Prerequisite: EECT 6325 or equivalent. (3-0) R

EECT 7325 (CE 7325) Advanced VLSI Design (3 semester hours) Advanced topics in VLSI design covering topics beyond the first course (EECT 6325). Topics include: use of high-level design, synthesis, and simulation tools, clock distribution and routing problems, (a) synchronous circuits, low-power design techniques, study of various VLSI-based computations, systolic arrays, etc. Discussions on current research topics in VLSI design. Prerequisite: EECT 6325 or equivalent. (3-0) R

CS 6385 (TE 6385) Algorithmic Aspects of Telecommunication Networks (3 semester hours) This is an advanced course on topics related to the design, analysis, and development of telecommunications systems and networks. The focus is on the efficient algorithmic solutions for key problems in modern telecommunications networks, in centralized and distributed models. Topics include: main concepts in the design of distributed algorithms in synchronous and asynchronous models, analysis techniques for distributed algorithms, centralized distributed solutions for handling design and optimization problems concerning network topology, architecture, routing, survivability, reliability, congestion, dimensioning and traffic management in modern telecommunication networks. Prerequisites: CS 5343, CS 5348, and CE/EE/TE 3341 or equivalents. (3-0) Y

TE 6385 (CS 6385) Algorithmic Aspects of Telecommunication Networks (3 semester hours) This is an advanced course on topics related to the design, analysis, and development of telecommunications systems and networks. The focus is on the efficient algorithmic solutions for key problems in modern telecommunications networks, in centralized and distributed models. Topics include: main concepts in the design of distributed algorithms in synchronous and asynchronous models, analysis techniques for distributed algorithms, centralized and distributed solutions for handling design and optimization problems concerning network topology, architecture, routing, survivability, reliability, congestion, dimensioning and traffic management in modern telecommunication networks. Prerequisites: CS 5343, CS 5348, and CE/EE/TE 3341 or equivalents. (3-0) Y
CE 6306 (EEDG 6306) Application Specific Integrated Circuits Design (3 semester hours) This course discusses the design of application specific integrated circuits (ASIC). Specific topics include: VLSI system design specification, ASIC circuit structures, synthesis, and implementation of an ASIC digital signal processing (DSP) chip. Prerequisites: EE 3320. (3-0) Y

EEDG 6306 (CE 6306) Application Specific Integrated Circuit Design (3 semester hours) This course discusses the design of application specific integrated circuits (ASIC). Specific topics include: VLSI system design specification, ASIC circuit structures, synthesis, and implementation of an ASIC digital signal processing (DSP) chip. Prerequisites: EE 3320 (3-0) Y

CE 6353 (CS 6353) Compiler Construction (3 semester hours) Lexical analyzers, context-free grammars. Top-down and bottom-up parsing; shift reduce and LR parsing. Operator-precedence, recursive-descent, predictive, and LL parsing. LR(k), LL(k) and precedence grammars will be covered. Prerequisites: CS 5343 and CS 5349. (3-0) Y

CS 6353 (CE 6353) Compiler Construction (3 semester hours) Lexical analyzers, context-free grammars. Top-down and bottom-up parsing; shift reduce and LR parsing. Operator-precedence, recursive-descent, predictive, and LL parsing. LR(k), LL(k) and precedence grammars will be covered. Prerequisites: CS 5343 and CS 5349. (3-0) Y


CS 6360 (SE 6360) Database Design (3 semester hours) Methods, principles, and concepts that are relevant to the practice of database software design. Database system architecture; conceptual database models; relational and object-oriented databases; database system implementation; query processing and optimization; transaction processing concepts, concurrency, and recovery; security. Prerequisite: CS 5343. (3-0) S

SE 6360 (CS 6360) Database Design (3 semester hours) Methods, principles, and concepts that are relevant to the practice of database software design. Database system architecture; conceptual database models; relational and object-oriented databases; database system implementation; query processing and optimization; transaction processing concepts, concurrency, and recovery; security. Prerequisite: CE/SE/CS 5343. (3-0) S
CE 6370 (EEDG 6370) Design and Analysis of Reconfigurable Systems (3 semester hours) Introduction to reconfigurable computing, programmable logic: FPGAS, CPLDs, CAD issues with FPGA based design, reconfigurable systems: emulation, custom computing, and embedded application based computing, static and dynamic hardware, evolutionary design, software environments for reconfigurable systems. Prerequisite: EE 3320 or equivalent. (3-0) R

EEDG 6370 (CE 6370) Design and Analysis of Reconfigurable Systems (3 semester hours) Introduction to reconfigurable computing, programmable logic: FPGAS, CPLDs, CAD issues with FPGA based design, reconfigurable systems: emulation, custom computing, and embedded application based computing, static and dynamic hardware, evolutionary design, software environments for reconfigurable systems. Prerequisite: EE 3320 or equivalent. (3-0) R

CE 6375 (EEDG 6375) Design Automation of VLSI Systems (3 semester hours) This course deals with various topics related to the development of CAD tools for VLSI systems design. Algorithms, data structures, heuristics and design methodologies behind CAD tools. Design and analysis algorithms for layout, circuit partitioning, placement, routing, chip floor planning, design rule checking (DRC). Introduction to CAD algorithms for RTL and behavior level synthesis, module generators, and silicon compilation. Prerequisite: CS 5343. Co-requisite: EECT 6325. (3-0) Y

EEDG 6375 (CE 6375) Design Automation of VLSI Systems (3 semester hours) This course deals with various topics related to the development of CAD tools for VLSI systems design. Algorithms, data structures, heuristics and design methodologies behind CAD tools. Design and analysis algorithms for layout, circuit partitioning, placement, routing, chip floor planning, design rule checking (DRC). Introduction to CAD algorithms for RTL and behavior level synthesis, module generators, and silicon compilation. Prerequisite: CS 5343. Co-requisite: EECT 6325. (3-0) Y

CE 6380 (CS 6380) Distributed Computing (3 semester hours) Topics include distributed algorithms, election algorithms, synchronizers, mutual exclusion, resource allocation, deadlocks, Byzantine agreement and clock synchronization, knowledge and common knowledge, reliability in distributed networks, proving distributed programs correct. Prerequisite: CS 5348. (3-0) S

CS 6380 (CE 6380) Distributed Computing (3 semester hours) Topics include distributed algorithms, election algorithms, synchronizers, mutual exclusion, resource allocation, deadlocks, Byzantine agreement and clock synchronization, knowledge and common knowledge, reliability in distributed networks, proving distributed programs correct. Prerequisite: CS 5348. (3-0) S

CE 6398 (CS 6398, EEDG 6398) DSP Architectures (3 semester hours) Typical DSP algorithms, representation of DSP algorithms, Data-graph, FIR filters, convolutions, Fast Fourier Transform, Discrete Cosine Transform, low power design, VLSI implementation of DSP algorithms, implementation of DSP algorithms on DSP processors, DSP applications including wireless communication and multimedia. Prerequisite: CS 5343. (3-0) Y

CS 6398 (CE 6398, EEDG 6398) DSP Architectures (3 semester hours) Typical DSP algorithms, representation of DSP algorithms, Data-graph, FIR filters, Convolutions, Fast Fourier Transform,
Discrete Cosine Transform, low power design, VLSI implementation of DSP algorithms, implementation of DSP algorithms on DSP processors, DSP applications including wireless communication and multimedia. Prerequisite: CS 5343. (3-0) Y

EEDG 6398 (CE 6398, CS 6398) DSP Architectures (3 semester hours) Typical DSP algorithms, representation of DSP algorithms, data-graph, FIR filters, convolutions, Fast Fourier Transform, Discrete Cosine Transform, low power design, VLSI implementation of DSP algorithms, implementation of DSP algorithms on DSP processors, DSP applications including wireless communication and multimedia. Prerequisite: CS 5343. (3-0) Y

CE 6307 (EEDG 6307) Fault-Tolerant Digital Systems (3 semester hours) Concepts in hardware and software fault tolerance. Topics include fault models, coding in computer systems, fault diagnosis and fault-tolerant routing, clock synchronization, system reconfiguration, etc. Survey of practical fault-tolerant systems. Prerequisites: EEDG 6301, ENGR 3341 or equivalent. (3-0) R

EEDG 6307 (CE 6307) Fault-Tolerant Digital Systems (3 semester hours) Concepts in hardware and software fault tolerance. Topics include fault models, coding in computer systems, fault diagnosis and fault-tolerant routing, clock synchronization, system reconfiguration, etc. Survey of practical fault-tolerant systems. Prerequisite: EEDG 6301, ENGR 3341 or equivalent. (3-0) R

CS 6389 (SE 6389) Formal Methods and Programming Methodology (3 semester hours) Formal techniques for building highly reliable systems. Use of abstractions for concisely and precisely defining system behavior. Formal logic and proof techniques for verifying the correctness of programs. Hierarchies of abstractions, state transition models, Petri Nets, communicating processes. Operational and definitional specification languages. Applications to reliability-critical, safety-critical, and mission-critical systems, ranging from commercial computer communication systems to strategic command control systems. Prerequisite: CE/CS/SE 5354. (3-0) Y

SE 6389 (CS 6389) Formal Methods and Programming Methodology (3 semester hours) Formal techniques for building highly reliable systems. Use of abstractions for concisely and precisely defining system behavior. Formal logic and proof techniques for verifying the correctness of programs. Hierarchies of abstractions, state transition models, Petri Nets, communicating processes. Operational and definitional specification languages. Applications to reliability-critical, safety-critical, and mission-critical systems, ranging from commercial computer communication systems to strategic command control systems. Prerequisite: CE/CS/SE 5354. (3-0) Y

CE 5325 (EEDG 5325) Hardware Modeling Using HDL (3 semester hours) This course introduces students to hardware description languages (HDL) beginning with simple examples and describing tools and methodologies. It covers the language, dwelling on fundamental simulation concepts. Students are also exposed to the subset of HDL that may be used for synthesis of custom logic. HDL simulation and synthesis labs and projects are performed using commercial and/or academic VLSI CAD tools. Prerequisite: EE 3320 or equivalent. (3-0) T
EEDG 5325 (CE 5325) Hardware Modeling Using HDL (3 semester hours) This course introduces students to hardware description languages (HDL) beginning with simple examples and describing tools and methodologies. It covers the language, dwelling on fundamental simulation concepts. Students are also exposed to the subset of HDL that may be used for synthesis of custom logic. HDL simulation and synthesis labs and projects are performed using commercial and/or academic VLSI CAD tools. Prerequisite: EE 3320 or equivalent. (3-0) T

CE 6324 (CS 6324) Information Security (3 semester hours) A comprehensive study of security vulnerabilities in information systems and the basic techniques for developing secure applications and practicing safe computing. Topics include common attacking techniques such as buffer overflow, Trojan, virus, etc. UNIX, Windows and Java security. Conventional encryption. Hashing functions and data integrity. Public-key encryption (RSA, Elliptic-Curve). Digital signature. Watermarking for multimedia. Security standards and applications. Building secure software and systems. Management and analysis of security. Legal and ethical issues in computer security. Prerequisite: CS 5348 and CS 5343. (3-0) Y

CS 6324 (CE 6324) Information Security (3 semester hours) A comprehensive study of security vulnerabilities in information systems and the basic techniques for developing secure applications and practicing safe computing. Topics include common attacking techniques such as buffer overflow, Trojan, virus, etc. UNIX, Windows and Java security. Conventional encryption. Hashing functions and data integrity. Public-key encryption (RSA, Elliptic-Curve). Digital signature. Watermarking for multimedia. Security standards and applications. Building secure software and systems. Management and analysis of security. Legal and ethical issues in computer security. Prerequisite: CS 5348 and CS 5343. (3-0) Y

CE 6302 (EEDG 6302) Microprocessor Systems (3 semester hours) Design of microprocessor based systems including I/O and interface devices. Microprocessor architectures. Use of emulators and other sophisticated test equipment. Extensive laboratory work. Prerequisite: EE 4304 or equivalent and background in VHDL/Verilog. (2-3) Y

EEDG 6302 (CE 6302) Microprocessor Systems (3 semester hours) Design of microprocessor based systems including I/O and interface devices. Microprocessor architectures. Use of emulators and other sophisticated test equipment. Extensive laboratory work. Prerequisite: EE 4304 or equivalent and background in VHDL/Verilog. (2-3) Y

CE 6392 (CS 6392) Mobile Computing Systems (3 semester hours) Topics include coping with mobility of computing systems, data management, reliability issues, packet transmission, mobile IP, end-to-end reliable communication, channel and other resource allocation, slot assignment, routing protocols, and issues in mobile wireless networks (without base stations). Prerequisite: CS 6378 or CS 6390. (3-0) Y

CS 6392 (CE 6392) Mobile Computing Systems (3 semester hours) Topics include coping with mobility of computing systems, data management, reliability issues, packet transmission, mobile IP, end-to-end reliable communication, channel and other resource allocation, slot assignment, routing protocols, and issues in mobile wireless networks (without base stations). Prerequisite: CS 6378 or CS 6390. (3-0) Y
CE 6399 (CS 6399) Parallel Architectures and Systems (3 semester hours) A comprehensive study of the fundamentals of parallel systems and architecture. Topics including parallel programming environment, fine-grain parallelism such as VLIW and superscalar, parallel computing paradigm of shared-memory, distributed-memory, data-parallel and data-flow models, cache coherence, compiling techniques to improve parallelism, scheduling theory, loop transformations, loop parallelizations and run-time systems. Prerequisite: CS 5348. (3-0) T

CS 6399 (CE 6399) Parallel Architectures and Systems (3 semester hours) A comprehensive study of the fundamentals of parallel systems and architecture. Topics including parallel programming environment, fine-grain parallelism such as VLIW and superscalar, parallel computing paradigm of shared-memory, distributed-memory, data-parallel and data-flow models, cache coherence, compiling techniques to improve parallelism, scheduling theory, loop transformations, loop parallelizations and run-time systems. Prerequisite: CS 5348. (3-0) T

CE 7328 (EEDG 7328) Physical Design of High-Speed VLSI Circuits (3 semester hours) Techniques for the physical design of high-speed VLSI circuits. Topics related to interconnection circuit modeling, performance-driven routing, buffer and wire sizing, placement and floor planning, technology mapping and performance evaluation issues encountered in high-speed VLSI circuit designs. Discussion of state-of-the-art practical industrial design examples. A project related to the development of a prototype CAD tool. Prerequisites: CE/EECT 6325 and knowledge of programming in C. (3-0) T

EEDG 7328 (CE 7328) Physical Design of High-Speed VLSI Circuits (3 semester hours) Techniques for the physical design of high-speed VLSI circuits. Topics related to interconnection circuit modeling, performance-driven routing, buffer and wire sizing, placement and floor planning, technology mapping and performance evaluation issues encountered in high-speed VLSI circuit designs. Discussion of state-of-the-art practical industrial design examples. A project related to the development of a prototype CAD tool. Prerequisites: CE/EECT 6325 and knowledge of programming in C. (3-0) T

CE 6308 (CS 6396 and EEDG 6308) Real-Time Systems (3 semester hours) Introduction to real-time applications and concepts. Real-time operating systems and resource management. Specification and design methods for real-time systems. System performance analysis and optimization techniques. Project to specify, analyze, design, implement and test small real-time system. Prerequisite: CS 5348. (3-0) R

CS 6396 (CE 6308 and EEDG 6308) Real-Time Systems (3 semester hours) Introduction to real-time applications and concepts. Real-time operating systems and resource management. Specification and design methods for real-time systems. System performance analysis and optimization techniques. Project to specify, analyze, design, implement and test small real-time system. Prerequisite: CS 5348. (3-0) R

Project to specify, analyze, design, implement and test small real-time system. Prerequisite: CS 5348. (3-0) R

CS 7301 (SE 7301) Recent Advances in Computing (3 semester hours) Advanced topics and publications will be selected from the theory, design, and implementation issues in computing. May be repeated for credit as topics vary. Prerequisite: Consent of the instructor. (3-0) Y

SE 7301 (CS 7301) Recent Advances in Computing (3 semester hours) Advanced topics and publications will be selected from the theory, design, and implementation issues in computing. May be repeated for credit as topics vary. Prerequisite: Consent of the instructor. (3-0) Y

CS 8V07 (SE 8V07) Research (1-9 semester hours) Open to students with advanced standing subject to approval of the graduate adviser. May be repeated for credit (9 hours maximum). (3-0) S

SE 8V07 (CS 8V07) Research (1-9 semester hours) Open to students with advanced standing subject to approval of the graduate adviser. May be repeated for credit (9 hours maximum). (3-9) S

CS 6362 (SE 6362) Advanced Software Architecture and Design (3 semester hours) Concepts and methodologies for the development, evolution, and reuse of software architecture and design, with an emphasis on object-orientation. Identification, analysis, and synthesis of system data, process, communication, and control components. Decomposition, assignment, and composition of functionality to design elements and connectors. Use of non-functional requirements for analyzing trade-offs and selecting among design alternatives. Transition from requirements to software architecture, design, and to implementation. State of the practice and art. Prerequisite: CE/CS/SE 5354. (3-0) S

SE 6362 (CS 6362) Advanced Software Architecture and Design (3 semester hours) Concepts and methodologies for the development, evolution, and reuse of software architecture and design, with an emphasis on object-orientation. Identification, analysis, and synthesis of system data, process, communication, and control components. Decomposition, assignment, and composition of functionality to design elements and connectors. Use of non-functional requirements for analyzing trade-offs and selecting among design alternatives. Transition from requirements to software architecture, design, and to implementation. State of the practice and art. Prerequisite: CE/CS/SE 5354. (3-0) S

CE 5354 (CS 5354, SE 5354) Software Engineering (3 semester hours) Formal specification and program verification. Software life-cycle models and their stages. System and software requirements engineering; user-interface design. Software architecture, design, and analysis. Software testing, validation and quality assurance. Corequisite: CS 5343 (CS 5343 can be taken before or at the same time as CS 5354) (3-0) S

CS 5354 (CE 5354, SE 5354) Software Engineering (3 semester hours) Formal specification and program verification. Software life-cycle models and their stages. System and software requirements engineering; user-interface design. Software architecture, design, and analysis. Software testing, validation, and quality assurance. Corequisite: CS 5343 (CS 5343 can be taken before or at the same time as CS 5354) (3-0) S
SE 5354 (CE 5354, CS 5354) Software Engineering (3 semester hours) Formal specification and program verification. Software life-cycle models and their stages. System and software requirements engineering; user-interface design. Software architecture, design, and analysis. Software testing, validation, and quality assurance. Co-requisite: CS 5343 (CS 5343 can be taken before or at the same time as CE/CS/SE 5354) (3-0) S

CS 6388 (SE 6388) Software Project Planning and Management (3 semester hours) Techniques and disciplines for successful management of software projects. Project planning and contracts. Advanced cost estimation models. Risk management process and activities. Advanced scheduling techniques. Definition, management, and optimization of software engineering processes. Statistical process control. Software configuration management. Capability Maturity Model Integration (CMMI). Prerequisite: CE/CS/SE 5354. (3-0) Y

SE 6388 (CS 6388) Software Project Planning and Management (3 semester hours) Techniques and disciplines for successful management of software projects. Project planning and contracts. Advanced cost estimation models. Risk management process and activities. Advanced scheduling techniques. Definition, management, and optimization of software engineering processes. Statistical process control. Software configuration management. Capability Maturity Model Integration (CMMI). Prerequisite: CE/CS/SE 5354. (3-0) Y

CE 6367 (CS 6367, SE 6367, SYSM 6367) Software Testing, Validation and Verification (3 semester hours) Fundamental concepts of software testing. Functional testing. GUI based testing tools. Control flow based test adequacy criteria. Data flow based test adequacy criteria. White box based testing tools. Mutation testing and testing tools. Relationship between test adequacy criteria. Finite state machine based testing. Static and dynamic program slicing for testing and debugging. Software reliability. Formal verification of program correctness. Prerequisite: CE/CS/SE 5354 or consent of instructor. (3-0) Y

CS 6367 (CE 6367, SE 6367, SYSM 6367) Software Testing, Validation and Verification (3 semester hours) Fundamental concepts of software testing. Functional testing. GUI based testing tools. Control flow based test adequacy criteria. Data flow based test adequacy criteria. White box based testing tools. Mutation testing and testing tools. Relationship between test adequacy criteria. Finite state machine based testing. Static and dynamic program slicing for testing and debugging. Software reliability. Formal verification of program correctness. Prerequisite: CE/CS/SE 5354 or consent of instructor. (3-0) Y

SE 6367 (CS 6367, SE 6367, SYSM 6367) Software Testing, Validation and Verification (3 semester hours) Fundamental concepts of software testing. Functional testing. GUI based testing tools. Control flow based test adequacy criteria. Data flow based test adequacy criteria. White box based testing tools. Mutation testing and testing tools. Relationship between test adequacy criteria. Finite state machine based testing. Static and dynamic program slicing for testing and debugging. Software reliability. Formal verification of program correctness. Prerequisite: CE/CS/SE 5354 or consent of instructor. (3-0) Y
CE 6397 (CS 6397) Synthesis and Optimization of High-Performance Systems (3 semester hours) A comprehensive study of high-level synthesis and optimization algorithms for designing high performance systems with multiple CPUs or functional units for critical applications such as Multimedia, Signal processing, Telecommunications, Networks, and Graphics applications, etc. Topics including algorithms for architecture-level synthesis, scheduling, resource binding, real-time systems, parallel processor array design and mapping, code generations for DSP processors, embedded systems and hardware/software codesigns. Prerequisite: CS 5343. (3-0) T

CS 6397 (CE 6397) Synthesis and Optimization of High-Performance Systems (3 semester hours) A comprehensive study of the high-level synthesis and optimization algorithms for designing high performance systems with multiple CPUs or functional units for critical applications such as Multimedia, Signal processing, Telecommunications, Networks, and Graphics applications, etc. Topics including algorithms for architecture-level synthesis, scheduling, resource binding, real-time systems, parallel processor array design and mapping, code generations for DSP processors, embedded systems and hardware/software codesigns. Prerequisite: CS 5343. (3-0) T

CE 6303 (EEDG 6303) Testing and Testable Design (3 semester hours) Techniques for detection of failures in digital circuits and systems. Fault modeling and detection. Functional testing and algorithms for automatic test pattern generation (ATPG). Design of easily testable digital systems. Techniques for introducing built-in self test (BIST) capability. Test of various digital modules, such as PLA's, memory circuits, datapath, etc. Prerequisite: EE 3320 or equivalent and background in VHDL/Verilog. (3-0) Y

EEDG 6303 (CE 6303) Testing and Testable Design (3 semester hours) Techniques for detection of failures in digital circuits and systems. Fault modeling and detection. Functional testing and algorithms for automatic test pattern generation (ATPG). Design of easily testable digital systems. Techniques for introducing built-in self test (BIST) capability. Test of various digital modules, such as PLA's, memory circuits, datapath, etc. Prerequisite: EE 3320 or equivalent and background in VHDL/Verilog. (3-0) Y

CE 6325 (EECT 6325) VLSI Design (3 semester hours) Introduction to MOS transistors. Analysis of the CMOS inverter. Combinational and sequential design techniques in VLSI; issues in static, transmission gate and dynamic logic design. Design and layout of complex gates, latches and flip-flops, arithmetic circuits, memory structures. Low power digital design. The method of logical effort. CMOS technology. Use of CAD tools to design, layout, check, extract and simulate a small project. Prerequisites: EE 3320, ENGR 3301 or equivalent. (3-0) Y
EECT 6325 (CE 6325) VLSI Design (3 semester hours) Introduction to MOS transistors. Analysis of the CMOS inverter. Combinational and sequential design techniques in VLSI; issues in static, transmission gate and dynamic logic design. Design and layout of complex gates, latches and flip-flops, arithmetic circuits, memory structures. Low power digital design. The method of logical effort. CMOS technology. Use of CAD tools to design, layout, check, extract and simulate a small project. Prerequisites: EE 3320, ENGR 3301 or equivalent. (3-0) Y

CS 5301 (EEGR 5301) Professional and Technical Communication (3 semester hours) CS 5301 utilizes an integrated approach to writing and speaking for the technical professions. The advanced writing components of the course focus on writing professional quality technical documents such as proposals, memos, abstracts, reports, letters, emails, etc. The advanced oral communication components of the course focus on planning, developing, and delivering dynamic, informative and persuasive presentations. Advanced skills in effective teamwork, leadership, listening, multimedia and computer generated visual aids are also emphasized. Graduate students will have a successful communication experience working in a functional team environment using a real time, online learning environment. (3-0) Y

EEGR 5301 (CS 5301) Professional and Technical Communication (3 semester hours) EEGR 5301 utilizes an integrated approach to writing and speaking for the technical professions. The advanced writing components of the course focus on writing professional quality technical documents such as proposals, memos, abstracts, reports, letters, emails, etc. The advanced oral communication components of the course focus on planning, developing, and delivering dynamic, informative and persuasive presentations. Advanced skills in effective teamwork, leadership, listening, multimedia and computer generated visual aids are also emphasized. Graduate students will have a successful communication experience working in a functional team environment using a real time, online learning environment. (3-0) Y

CS 6356 (SE 6356, SYSM 6356) Software Maintenance, Evolution, and Re-Engineering (3 semester hours) Principles and techniques of software maintenance. Impact of software development process on software justifiability, maintainability, evolvability, and planning of release cycles. Use of very high-level languages and dependencies for forward engineering and reverse engineering. Achievements, pitfalls, and trends in software reuse, reverse engineering, and re-engineering. Prerequisite: CE/CS/SE 5354. (3-0) Y

SE 6356 (CS 6356, SYSM 6356) Software Maintenance, Evolution, and Re-Engineering (3 semester hours) Principles and techniques of software maintenance. Impact of software development process on software justifiability, maintainability, evolvability, and planning of release cycles. Use of very high-level languages and dependencies for forward engineering and reverse engineering. Achievements, pitfalls, and trends in software reuse, reverse engineering, and re-engineering. Prerequisite: CE/CS/SE 5354. (3-0) Y
CS 6356 (SE 6356) Software Maintenance, Evolution, and Re-Engineering (3 semester hours) Principles and techniques of software maintenance. Impact of software development process on software justifiability, maintainability, evolvability, and planning of release cycles. Use of very high-level languages and dependencies for forward engineering and reverse engineering. Achievements, pitfalls, and trends in software reuse, reverse engineering, and re-engineering. Prerequisite: CE/CS/SE 5354. (3-0) Y

CS 6359 (SE 6359) Object-Oriented Analysis and Design (3 semester hours) Analysis and practice of modern tools and concepts that can help produce software that is tolerant of change. Consideration of the primary tools of encapsulation and inheritance. Construction of software-ICs which show the parallel with hardware construction. Prerequisites: CE/CS/SE 5354 and either CS 3335 or CS 5336. (3-0) S

SE 6359 (CS 6359) Object-Oriented Analysis and Design (3 semester hours) Analysis and practice of modern tools and concepts that can help produce software that is tolerant of change. Consideration of the primary tools of encapsulation and inheritance. Construction of software-ICs which show the parallel with hardware construction. Prerequisites: CE/CS/SE 5354 and either CS 3335 or CS 5336. (3-0) S

CS 6361 (SE 6361, SYSM 6361) Advanced Requirements Engineering (3 semester hours) System and software requirements engineering. Identification, elicitation, modeling, analysis, specification, management, and evolution of functional and non-functional requirements. Strengths and weaknesses of different techniques, tools, and object-oriented methodologies. Interactions and trade-offs among hardware, software, and organization. System and sub-system integration with software and organization as components of complex, composite systems. Transition from requirements to design. Critical issues in requirements engineering. Prerequisite: CE/CS/SE 5354. (3-0) S

SE 6361 (CS 6361, SYSM 6361) Advanced Requirements Engineering (3 semester hours) System and software requirements engineering. Identification, elicitation, modeling, analysis, specification, management, and evolution of functional and non-functional requirements. Strengths and weaknesses of different techniques, tools, and object-oriented methodologies. Interactions and trade-offs among hardware, software, and organization. System and sub-system integration with software and organization as components of complex, composite systems. Transition from requirements to design. Critical issues in requirements engineering. Prerequisite: CE/CS/SE 5354. (3-0) S

SYSM 6361-6309 (CS 6361, SE 6361) Advanced Requirements Engineering (3 semester hours) System and software requirements engineering. Identification, elicitation, modeling, analysis, specification, management, and evolution of functional and non-functional requirements. Strengths and weaknesses of different techniques, tools, and object-oriented methodologies. Interactions and trade-offs among hardware, software, and organization. System and sub-system integration with software and organization as components of complex, composite systems. Transition from requirements to design. Critical issues in requirements engineering. Prerequisite: CE/CS/SE 5354. (3-0) S
CS 6387 (SE 6387) - Advanced Software Engineering Project (3 semester hours) This course is intended to provide experience in a group project that requires advanced technical solutions, such as distributed multi-tier architectures, component-based technologies, automated software engineering, etc., for developing applications, such as web-based systems, knowledge-based systems, real-time systems, etc. The students will develop and maintain requirements, architecture and detailed design, implementation, and testing and their traceability relationships. Best practices in software engineering will be applied. Prerequisites: CS/SE 6361 or /SYSM 6309, and CS/SE 6362. Co-requisite: CE/CS/SE 6367 or /SYSM 6310. (3-0) S

CE 6345 (EEDG 6345) Engineering of Packet-Switched Networks (3 semester hours) Detailed coverage, from the point of view of engineering design, of the physical, data-link, network and transport layers of IP (Internet Protocol) networks. This course is a Masters-level introduction to packet networks. Prior knowledge of digital communication systems is strongly recommended. Prerequisite: EE 3350 or equivalent. (3-0) Y

EEDG 6345 (CE 6345) Engineering of Packet-Switched Networks (3 semester hours) Detailed coverage, from the point of view of engineering design, of the physical, data-link, network and transport layers of IP (Internet Protocol) networks. This course is a Masters-level introduction to packet networks. Prior knowledge of digital communication systems is strongly recommended. Prerequisite: EE 3350 or equivalent. (3-0) Y
CE 6352 (CS 6352) Performance of Computer Systems and Networks (3 semester hours) Overview of case studies. Quick review of principles of probability theory. Queuing models and physical origin of random variables used in queuing models. Various important cases of the M/M/m/N queuing system. Little's law. The M/G/1 queuing system. Simulation of queuing systems. Product form solutions of open and closed queuing networks. Convolution algorithms and Mean Value Analysis for closed queuing networks. Discrete time queuing systems. Prerequisite: a first course on probability theory. (3-0) S

CS 6352 (CE 6352) Performance of Computer Systems and Networks (3 semester hours) Overview of case studies. Quick review of principles of probability theory. Queuing models and physical origin of random variables used in queuing models. Various important cases of the M/M/m/N queuing system. Little's law. The M/G/1 queuing system. Simulation of queuing systems. Product form solutions of open and closed queuing networks. Convolution algorithms and Mean Value Analysis for closed queuing networks. Discrete time queuing systems. Prerequisite: a first course on probability theory. (3-0) S

CE 7304 (EEDG 7304) Advanced Computer Architecture (3 semester hours) Advanced research topics in, multi-processor, network and reconfigurable architectures. Focuses on current research in the area of computer system architecture to prepare students for a career in computer architecture research. Course will use articles from current technical literature to discuss relevant topics, such as digital signal processors and VLIW processors. Prerequisites: EEDG 6304, CS 5348, ENGR 3341 and knowledge of C/C++. (3-0) R

EEDG 7304 (CE 7304) Advanced Computer Architecture (3 semester hours) Advanced research topics in multi-processor, network and reconfigurable architectures. Focuses on current research in the area of computer system architecture to prepare students for a career in computer architecture research. Course will use articles from current technical literature to discuss relevant topics, such as digital signal processors and VLIW processors. Prerequisites: EEDG 6304, CS 5348, ENGR 3341 and knowledge of C/C++. (3-0) R

EEOP 6313 (MSEN 6313) Semiconductor Opto-Electronic Devices (3 semester hours) Physical principles of semiconductor optoelectronic devices: optical properties of semiconductors, optical gain and absorption, wave guiding, laser oscillation in semiconductors, LEDs, physics of detectors, applications. Prerequisite: EE 3310 or equivalent. (3-0) R

MSEN 6313 (EEOP 6313) Semiconductor Opto-Electronic Devices (3 semester hours) Physical principles of semiconductor optoelectronic devices: optical properties of semiconductors, optical gain and absorption, wave guiding, laser oscillation in semiconductors, LEDs, physics of detectors, applications. Prerequisite: EE 3310 or equivalent. (3-0) R

EEMF 6320 (MSEN 6320) Fundamentals of Semiconductor Devices (3 semester hours) Semiconductor material properties, band structure, equilibrium carrier distributions, non-equilibrium current-transport processes, and recombination-generation processes. Prerequisite: EEMF 6319 or equivalent. (3-0) R
MSEN 6320 (EEMF 6320) Fundamentals of Semiconductor Devices (3 semester hours)  Semiconductor material properties, band structure, equilibrium carrier distribution, non-equilibrium current-transport processes, and recombination-generation processes. Prerequisite: EEMF 6319 or equivalent. (3-0) R

MSEN 5375 (PHYS 5375) Electronic Devices Based On Organic Solids (3 semester hours) Solid state device physics based on organic condensed matter structures, including: OLEDs (organic light emitting diodes), organic FETs, organic lasers, plastic photocells, molecular electronic chips. (3-0) R

EEMF 6321 (MSEN 6321) Active Semiconductor Devices (3 semester hours) The physics of operation of active devices will be examined, including p-n junctions, bipolar junction transistors and field-effect transistors: MOSFETs, JFETs, and MESFETs. Active two-terminal devices and optoelectronic devices will be presented. Recommended co-requisite: EEMF 6320. (3-0) R

EEMF 6322 (MECH 6348, MSEN 6322) Semiconductor Processing Technology (3 semester hours) Modern techniques for the manufacture of semiconductor devices and circuits. Techniques for both silicon and compound semiconductor processing are studied as well as an introduction to the design of experiments. Topics include: wafer growth, oxidation, diffusion, ion implantation, lithography, etch and deposition. (3-0) R

MECH 6348 (EEMF 6322 and MSEN 6322) Semiconductor Processing Technology (3 semester hours) Modern techniques for the manufacture of semiconductor devices and circuits. Techniques for both silicon and compound semiconductor processing are studied as well as an introduction to the design of experiments. Topics include: wafer growth, oxidation, diffusion, ion implantation, lithography, etch and deposition. (3-0) R

MSEN 6322 (EEMF 6322 and MECH 6348) Semiconductor Processing Technology (3 semester hours) Modern techniques for the manufacture of semiconductor devices and circuits. Techniques for both silicon and compound semiconductor processing are studied as well as an introduction to the design of experiments. Topics include: wafer growth, oxidation, diffusion, ion implantation, lithography, etch and deposition. (3-0) R

EEMF 6324 (MSEN 6324) Electronic, Optical and Magnetic Materials (3 semester hours) Foundations of materials properties for electronic, optical and magnetic applications. Electrical and thermal conduction, elementary quantum physics, modern theory of solids, semiconductors and devices, dielectrics, properties of magnetic and optical materials. Prerequisite: MSEN 5300 or PHYS 5376 or equivalent. (3-0) S

MSEN 6324 (EEMF 6324) Electronic, Optical and Magnetic Materials (3 semester hours) Foundations of materials properties for electronic, optical and magnetic applications. Electrical and thermal
conduction, elementary quantum physics, modern theory of solids, semiconductors and devices, dielectrics, properties of magnetic and optical materials. Prerequisite: MSEN 5300 or PHYS 5376 or equivalent. (3-0) S

EEMF 7320 (MSEN 7320) Advanced Semiconductor Device Theory (3 semester hours) Quantum mechanical description of fundamental semiconductor devices; carrier transport on the submicron scale; heterostructure devices; quantum-effect devices. Prerequisites: EEMF 6320 and EEMF 6321. (3-0) R

MSEN 7320 (EEMF 7320) Advanced Semiconductor Device Theory (3 semester hours) Quantum mechanical description of fundamental semiconductor devices; carrier transport on the submicron scale; heterostructure devices; quantum-effect devices. Prerequisite: EEMF 6320 and EEMF 6321. (3-0) R

EEGR 6381 (MECH 6391) Computational Methods (3 semester hours) Numerical techniques and their applications in engineering. Topics will include: numerical methods of linear algebra, interpolation, solution of nonlinear equations, numerical integration, Monte Carlo methods, numerical solution of ordinary and partial differential equations, and numerical solution of integral equations. Prerequisites: ENGR 2300 and ENGR 3300 or equivalents, and knowledge of a scientific programming language. (3-0) R

MECH 6391 (EEGR 6381) Computational Methods (3 semester hours) Numerical techniques and their applications in engineering. Topics will include: numerical methods of linear algebra, interpolation, solution of nonlinear equations, numerical integration, Monte Carlo methods, numerical solution of ordinary and partial differential equations, and numerical solution of integral equations. Prerequisites: ENGR 2300 and ENGR 3300 or equivalents, and knowledge of a scientific programming language. (3-0) R

EEMF 6382 (MECH 6347, MSEN 6382) Introduction to MEMS (3 semester hours) Study of micro-electromechanical devices and systems and their applications. Microfabrication techniques and other emerging fabrication processes for MEMS are studied along with their process physics. Principles of operations of various MEMS devices such as mechanical, optical, thermal, magnetic, chemical/biological sensors/actuators are studied. Topics include: bulk/surface micromachining, LIGA, microsensors and microactuators in multiphysics domain. (3-0) R

MECH 6347 (EEMF 6382, MSEN 6382) Introduction to MEMS (3 semester hours) Study of micro-electromechanical devices and systems and their applications. Microfabrication techniques and other emerging fabrication processes for MEMS are studied along with their process physics. Principles of operations of various MEMS devices such as mechanical, optical, thermal, magnetic, chemical/biological sensors/actuators are studied. Topics include: bulk/surface micromachining, LIGA, microsensors and microactuators in multiphysics domain. (3-0) R

MSEN 6382 (EEMF 6382, MECH 6347) Introduction to MEMS (3 semester hours) Study of micro-electromechanical devices and systems and their applications. Microfabrication techniques and other emerging fabrication processes for MEMS are studied along with their process physics. Principles of operations of various MEMS devices such as mechanical, optical, thermal, magnetic, chemical/biological
sensors/actuators are studied. Topics include: bulk/surface micromachining, LIGA, microsensors and microactuators in multiphysics domain. (3-0) R

CE 6301 (EEDG 6301) Advanced Digital Logic (3 semester hours) Modern design techniques for digital logic. Logic synthesis and design methodology. Link between front-end and back-end design flows. Field programmable gate arrays and reconfigurable digital systems. Introduction to testing, simulation, fault diagnosis and design for testability. Prerequisite: EE 3320 or equivalent and background in VHDL/Verilog. (3-0) T

EEDG 6301 (CE 6301) Advanced Digital Logic (3 semester hours) Modern design techniques for digital logic. Logic synthesis and design methodology. Link between front-end and back-end design flows. Field programmable gate arrays and reconfigurable digital systems. Introduction to testing, simulation, fault diagnosis and design for testability. Prerequisites: EE 3320 or equivalent and background in VHDL/Verilog. (3-0) T

BMEN 6373 (EEBM 6373) Anatomy and Human Physiology for Engineers (3 semester hours) This course provides an introduction to anatomy and human physiology for engineers and other non-life scientists. Topics include nervous system, muscle and cardiac function, digestive system, and immune system. (3-0) Y

EEBM 6373 (BMEN 6373) Anatomy and Human Physiology for Engineers (3 semester hours) This course provides an introduction to anatomy and human physiology for engineers and other non-life-scientists. Topics include nervous system, muscle and cardiac function, digestive system, and immune system. (3-0) Y

BMEN 6374 (EEBM 6374) Genes, Proteins Molecular and Cell Biology for Engineers (3 semester hours) This course provides an introduction to principles of modern molecular and cellular biology for engineers and other non-life-scientists. Topics include genes, protein structure and function, organization of cells and cellular trafficking. (3-0) Y

EEBM 6374 (BMEN 6374) Genes, Proteins Molecular and Cell Biology for Engineers (3 semester hours) This course provides an introduction to principles of modern molecular and cellular biology for engineers and other non-life-scientists. Topics include genes, protein structure and function, organization of cells and cellular trafficking. (3-0) Y

BMEN 6376 (EEBM 6376) Lecture Course in Biomedical Applications of Electrical Engineering (3 semester hours) This course provides an introduction to different areas of biomedical applications of electrical engineering. A special emphasis will be placed on research topics that are actively pursued at UTD. (3-0) Y

EEBM 6376 (BMEN 6376) Lecture Course in Biomedical Applications of Electrical Engineering (3 semester hours) This course provides an introduction to different areas of biomedical applications of electrical engineering. A special emphasis will be placed on research topics that are actively pursued at UTD. (3-0) Y
EEMF 6348 (MSEN 6348) Lithography and Nanofabrication (3 semester hours) Study of the principles, practical considerations, and instrumentation of major lithography technologies for nanofabrication of devices and materials. Advanced photolithography, electron beam lithography, nanoimprint lithography, x-ray lithography, ion beam lithography, soft lithography, and scanning probe lithography, basic resist and polymer science, applications in nanoelectronics and biomaterials. (3-0) Y

MSEN 6348 (EEMF 6348) Lithography and Nanofabrication (3 semester hours) Study of the principles, practical considerations, and instrumentation of major lithography technologies for nanofabrication of devices and materials. Advanced photolithography, electron beam lithography, nanoimprint lithography, x-ray lithography, ion beam lithography, soft lithography, and scanning probe lithography, basic resist and polymer science, applications in nanoelectronic and biomaterials. (3-0) Y

CE 6363 (CS 6363) Design and Analysis of Computer Algorithms (3 semester hours) The study of efficient algorithms for various computational problems. Algorithm design techniques. Sorting, manipulation of data structures, graphs, matrix multiplication, and pattern matching. Complexity of algorithms, lower bounds, NP completeness. Prerequisite: CS 5343. (3-0) S

CS 6363 (CE 6363) Design and Analysis of Computer Algorithms (3 semester hours) The study of efficient algorithms for various computational problems. Algorithm design techniques. Sorting, manipulation of data structures, graphs, matrix multiplication, and pattern matching. Complexity of algorithms, lower bounds, NP completeness. Prerequisite: CS 5343. (3-0) S

SYSM 6303 (OPRE 6301) Quantitative Introduction to Risk and Uncertainty in Business (3 credit hours). Introduction to statistical and probabilistic methods and theory applicable to situations faced by managers. Topics include: data presentation and summarization, regression analysis, fundamental probability theory and random variables, introductory decision analysis, estimation, confidence intervals, hypothesis testing, and One Way ANOVA (Some sections of this class may require a laptop computer). Prerequisite: MATH 5304 or equivalent. (3-0) S

SYSM 6304 (OPRE 6335) Risk and Decision Analysis (3 credit hours) This course provides an overview of the main concepts and methods of risk assessment, risk management, and decision analysis. The methods used in industry, such as probabilistic risk assessment, six sigma, and reliability, are discussed. Advanced methods from economics and finance (decision optimization and portfolio analysis) are presented. Prerequisite: SYSM 6303 or OPRE 6301. (3-0) T
SYSM 6303 Quantitative Risk, Probability, Stochastic Processes (3 semester hours). In this course, basic approaches of risk analysis in project planning and management are presented. The methodology used will be based on probability theory and statistics. Students will be expected to present a project report as a part of the course. (3-0) Y

SYSM 6304 Risk Assessment and Management (3 semester hours) This course will familiarize participants with various kinds of risk that an organization may face; methodologies for identifying these risks and classifying them into various categories, their extent and their potential for causing harm; methods for quantifying the potential impact of various kinds of risk, as well as the cost of implementing risk management techniques; and risk management and implementation strategies at an organizational level. (3-0) Y

SYSM 6306 (BMEN 6372, MECH 6314) Engineering Systems: Modeling & Simulation (3 semester hours) This course will present principles of computational modeling and simulation of complex systems. General topics covered include: parametric and non-parametric modeling; system simulation; parameter estimation, linear regression and least squares; model structure and model validation through simulation; and, numerical issues in systems theory. Techniques covered include methods from numerical linear algebra, hierarchical decomposition, cellular decomposition, nonlinear programming and Monte Carlo simulation, with applications to general engineering systems. Modeling and simulation software is utilized (MATLAB/SIMULINK). Prerequisites: none. (3-0) Y

BMEN 6372 (SYSM 6306, BMEN 6372) Engineering Systems: Modeling & Simulation (3 semester hours) This course will present principles of computational modeling and simulation of systems. General topics covered include: parametric and non-parametric modeling; system simulation; parameter estimation, linear regression and least squares; model structure and model validation through simulation; and, numerical issues in systems theory. Techniques covered include methods from numerical linear algebra, nonlinear programming and Monte Carlo simulation, with applications to general engineering systems. Modeling and simulation software is utilized (MATLAB/SIMULINK). (3-0) Y

MECH 6314 (SYSM 6306, BMEN 6372) Engineering Systems: Modeling & Simulation (3 semester hours) This course will present principles of computational modeling and simulation of systems. General topics covered include: parametric and non-parametric modeling; system simulation; parameter estimation, linear regression and least squares; model structure and model validation through simulation; and, numerical issues in systems theory. Techniques covered include methods from numerical linear algebra, nonlinear programming and Monte Carlo simulation, with applications to
general engineering systems. Modeling and simulation software is utilized (MATLAB/SIMULINK). (3-0)

SYSM 6307 (EESC 6331, MECH 6300) Linear Systems (3 semester hours) State space methods of analysis and design of linear dynamical systems. Coordinate transformations and tools from advanced linear algebra. Controllability and observability. Lyapunov stability analysis. Pole assignment, stabilizability, detectability. State estimation for deterministic models, observers. Introduction to the optimal linear quadratic regulator problem. Prerequisites: EE 4310 or MECH 4310 or equivalent. (3-0)

MECH 6300 Linear Systems (SYSM 6307, EESC 6331) (3 semester hours) State space methods of analysis and design of linear dynamical systems. Coordinate transformations, controllability and observability. Lyapunov stability analysis. Pole assignment, stabilizability, detectability. State estimation for deterministic models, observers. Introduction to the optimal linear quadratic regulator problem. Prerequisites: MECH 4310 or equivalent. (3-0)

EESC 6331 Linear Systems (SYSM 6307, MECH 6300) (3 semester hours) State space methods of analysis and design of linear dynamical systems. Coordinate transformations, controllability and observability. Lyapunov stability analysis. Pole assignment, stabilizability, detectability. State estimation for deterministic models, observers. Introduction to the optimal linear quadratic regulator problem. Prerequisites: MECH 4310 or equivalents (3-0)

SYSM 6308 (CS 6356/SE 6356) Software Maintenance, Evolution & Re-engineering (3 credit hours) Principles and techniques of software maintenance. Impact of software development process on software justifiability, maintainability, evolvability, and planning of release cycles. Use of very high-level languages and dependencies for forward engineering and reverse engineering. Achievements, pitfalls, and trends in software reuse, reverse engineering, and re-engineering. Prerequisite: CE/CS/SE 5354 or consent of instructor. (3-0)

SYSM 6309 (SE 6361/CS 6361) Advanced Requirements Engineering (3 credit hours) System and software requirements engineering. Identification, elicitation, modeling, analysis, specification, management, and evolution of functional and non-functional requirements. Strengths and weaknesses of different techniques, tools, and object-oriented methodologies. Interactions and trade-offs among hardware, software, and organization. System and sub-system integration with software and organization as components of complex, composite systems. Transition from requirements to design. Critical issues in requirements engineering. Prerequisite: CS/SE 5354 or consent of instructor. (3-0)
**SYSM 6310 (SE 6367/CE 6367/CS 6367) Software Testing, Validation, and Verification (3 credit hours)**

Fundamental concepts of software testing. Functional testing. GUI-based testing tools. Control flow based test adequacy criteria. Data flow based test adequacy criteria. White box based testing tools. Mutation testing and testing tools. Relationship between test adequacy criteria. Finite state machine based testing. Static and dynamic program slicing for testing and debugging. Software reliability. Formal verification of program correctness. Prerequisites: CE/CS/SE 5354 or consent of instructor. (3-0) Y

**SYSM 6311 (OPRE 6362) Systems Project Management**

Systems project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives. The course will cover critical path methods for planning and controlling projects including time and cost tradeoffs, resource utilization, organizational design, conflict resolution and stochastic considerations. Prerequisites: none (3-0) Y

**SYSM 6312 (FIN 6301) Systems Financial Management**

Theoretical and procedural considerations in the administration of the finance function in the individual business firm; planning, fundraising, controlling of firm finances; working capital management, capital budgeting and cost of capital. Prerequisite: ACCT 6305 or prerequisites: OPRE 6301 and ACCT 6201, or consent of instructor. (3-0) Y

**SYSM 6313 (HGMT 6324 and OB 6332) Negotiating Deals & Resolving Conflict within the Organization**

This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal, group, and international settings. Emphasis is placed on understanding influence and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises. Prerequisite: OB 6301 or consent of instructor. (3-0) Y
The Entrepreneurial Experience (3 credit semester hours) This course is designed to provide student teams with practical experience in the investigation, evaluation and recommendation of technology and/or market entry strategies for a significant new business opportunity. Projects will be defined by the faculty and will generally focus on emerging market opportunities defined by new technologies of interest to a sponsoring corporate partner. Teams will be comprised of management and engineering graduate students, mentored by faculty and representatives of the partnering company. Evaluation will be based on papers, presentations and other deliverables defined on a case-by-case basis. Prerequisites: ENTP 6370 or consent of instructor (3-0) Y

Innovation within the Corporation (3 credit semester hours) Intrapreneurs are the entrepreneurs within established corporations who combine innovation, creativity and leadership to develop and launch new products, new product lines and new business units that grow revenues and profits from within. The course seeks to equip student with the skills and perspectives required to initiate new ventures and create viable businesses in dynamic and uncertain environments in the face of organizational inertia and other sources of resistance to innovation. Course topics include the elements of strategic analysis and positioning for competitive advantage in dynamic markets, and the structuring, utilization and mobilization of the internal resources of existing firms in the pursuit of growth and new market opportunities. Prerequisites: OB 6301 and ENTP 6370 (3-0) Y

Marketing Management and Marketing Systems Analysis (3 credit semester hours) Overview of marketing management methods, principles and concepts including product, pricing, promotion and distribution decisions as well as segmentation, targeting, and positioning. Prerequisites: none (3-0) Y

Business Economics (3 credit semester hours) Provides foundations of the economic analysis of business problems, with special emphasis on the function and determination of market prices in production and consumption. Supply and demand, price theory, production theory, trade theory with reference to the global economy, the effects of tax and other policies in the economy, and essential elements of the banking system and monetary policy are addressed. Prerequisites: MATH 5304 or equivalent. or consent of instructor (3-0) Y

Strategic Leadership (3 credit semester hours) Addresses the challenge of leading organizations in dynamic and challenging environments. Overall goal is to not only question one’s assumptions about leadership, but also enhance skills and acquire new content knowledge.
Topics include visionary and transformational leadership; post-heroic leadership; empowerment; leveraging & combining resources; designing organizations; and ethics. **Prerequisites: none** (3-0) Y

**SYSE 6323 (MECH 6323) Robust Control Systems** [MV20](3 semester hours) Theory, methodology, and software tools for the analysis and design of model-based control systems with multiple actuators and multiple sensors. Control oriented model parameterizations and modeling errors. Definitions and criteria for robust stability and performance. Optimal synthesis of linear controllers. The loop shaping design method. Methods to simplify the control law. Control law discretization. Mechatronic design examples. Prerequisites: SYSM 6307 or equivalent. (3-0) T

**MECH 6323** [MV21] Robust Control (3 semester hours) Theory, methodology, and software tools for the analysis and design of model-based control systems with multiple actuators and multiple sensors. Control oriented model parameterizations and modeling errors. Definitions and criteria for robust stability and performance. Optimal synthesis of linear controllers. The loop shaping design method. Methods to simplify the control law. Control law discretization. Mechatronic design examples. Prerequisite: MECH 6300 or equivalent. (3-0) T

**MECH 6312 (EESC 6349) Random Processes** (3 semester hours) Introductory course to discrete and continuous stochastic process. Spectral analysis, response of linear systems to stochastic inputs. Introduction to estimation theory, Kalman filtering. Prerequisite: MECH 6300 or equivalent. (3-0) T

**EESC 6349 (MECH 6312) Random Processes** (3 semester hours) Introductory course to discrete and continuous stochastic process. Spectral analysis, response of linear systems to stochastic inputs. Introduction to estimation theory, Kalman filtering. Prerequisite: MECH 6300 or equivalent. (3-0) T

**MECH 6313 (EEGR 6336) Nonlinear Systems** (3 semester hours) Fundamental concepts and tools for the analysis of nonlinear systems, design of controllers and estimators for nonlinear systems. Prerequisite: MECH 6300 or equivalent. (3-0) T

**EEGR 6336 (MECH 6313) Nonlinear Systems** (3 semester hours) Fundamental concepts and tools for the analysis of nonlinear systems, design of controllers and estimators for nonlinear systems. Prerequisite: MECH 6300 or equivalent. (3-0) T
MECH 6341 (EEMF 6348, MSEN 6348) Lithography and Nanofabrication (3 semester hours) Study of the principles, practical considerations, and instrumentation of major lithography technologies for nanofabrication of devices and materials. Advanced photolithography, electron beam lithography, nanoimprint lithography, x-ray lithography, ion beam lithography, soft lithography, and scanning probe lithography, basic resist and polymer science, applications in nanoelectronic and biomaterials. (3-0) Y

MSEN 6348 (EEMF 6348, MECH 6341) Lithography and Nanofabrication (3 semester hours) Study of the principles, practical considerations, and instrumentation of major lithography technologies for nanofabrication of devices and materials. Advanced photolithography, electron beam lithography, nanoimprint lithography, x-ray lithography, ion beam lithography, soft lithography, and scanning probe lithography, basic resist and polymer science, applications in nanoelectronic and biomaterials. (3-0) Y

EEMF 6348 (MECH 6341, MSEN 6348) Lithography and Nanofabrication (3 semester hours) Study of the principles, practical considerations, and instrumentation of major lithography technologies for nanofabrication of devices and materials. Advanced photolithography, electron beam lithography, nanoimprint lithography, x-ray lithography, ion beam lithography, soft lithography, and scanning probe lithography, basic resist and polymer science, applications in nanoelectronic and biomaterials. (3-0) Y

MECH 6368 (MSEN 6350) Imperfections in Solids (3 semester hours) Point defects in semiconductors, metals, ceramics, and nonideal defect structures; nonequilibrium conditions produced by irradiation or quenching; effects of defects on electrical and physical properties, effects of defects at interfaces between differing materials. MECH 6306 or equivalent. (3-0) T

MSEN 6350 (MECH 6368) Imperfections in Solids (3 semester hours) Point defects in semiconductors, metals, ceramics, and nonideal defect structures; nonequilibrium conditions produced by irradiation or quenching; effects of defects on electrical and physical properties, effects of defects at interfaces between differing materials. Prerequisites: MSEN 5310 and MSEN 6324 or equivalents. (3-0) R

MECH 6391 (EEGR 6381) Computational Methods (3 semester hours) Numerical techniques and their applications in engineering. Topics will include: numerical methods of linear algebra, interpolation, solution of nonlinear equations, numerical integration, Monte Carlo methods, numerical solution of ordinary and partial differential equations, and numerical solution of integral equations. Prerequisites: ENGR 2300 and ENGR 3300 or equivalents, and knowledge of a scientific programming language. (3-0) R

EEGR 6381 (MECH 6391) Computational Methods (3 semester hours) Numerical techniques and their applications in engineering. Topics will include: numerical methods of linear algebra, interpolation, solution of nonlinear equations, numerical integration, Monte Carlo methods, numerical solution of ordinary and partial differential equations,
and numerical solution of integral equations. Prerequisites: ENGR 2300 and ENGR 3300 or equivalents, and knowledge of a scientific programming language. (3-0) R

BMEN 6355 (MSEN 6355) Nanotechnology and Sensors (3 semester hours)  Introduction to the concept of nanotechnology, in context toward designing sensors/diagnostic devices. Identifying the impact of nanotechnology in designing "state-of-the art" sensors for healthcare applications. Topics include: nanotechnology and nanomaterials, principles of sensing and transduction and heterogeneous integration toward sensor design. (3-0) Y

MSEN 6355 (BMEN 6355) Nanotechnology and Sensors (3 semester hours)  Introduction to the concept of nanotechnology, in context toward designing sensors/diagnostic devices. Identifying the impact of nanotechnology in designing "state-of-the art" sensors for healthcare applications. Topics include: nanotechnology and nanomaterials, principles of sensing and transduction and heterogeneous integration toward sensor design. (3-0) Y
BIOL 5410 (MSEN 5410) Biochemistry of Proteins and Nucleic Acids (4 semester hours) Chemistry and metabolism of amino acids and nucleotides; biosynthesis of nucleic acids; analysis of the structure and function of proteins and nucleic acids and of their interactions including chromatin structure. Prerequisite: BIOL 3361 (biochemistry) or equivalent. (4-0) Y

MSEN 5410 (BIOL 5410) Biochemistry of Proteins and Nucleic Acids (4 semester hours) Chemistry and metabolism of amino acids and nucleotides; biosynthesis of nucleic acids; analysis of the structure and function of proteins and nucleic acids and of their interactions including chromatin structure. Prerequisite: BIOL 3361 (biochemistry) or equivalent. (4-0) Y

BIOL 5440 (MSEN 5440) Cell Biology (4 semester hours) Molecular architecture and function of cells and subcellular organelles; structure and function of membranes; hormone and neurotransmitter action; growth regulation and oncogenes; immune response; eukaryotic gene expression. Prerequisites: BIOL 5410 and BIOL 5420, or the equivalent, or permission of the instructor. (4-0) Y

MSEN 5440 (BIOL 5440) Cell Biology (4 semester hours) Molecular architecture and function of cells and subcellular organelles; structure and function of membranes; hormone and neurotransmitter action; growth regulation and oncogenes; immune response; eukaryotic gene expression. Prerequisites: BIOL 5410 and BIOL 5420, or the equivalent, or permission of the instructor. (4-0) Y

EEMF 5383 (MECH 5383, MSEN 5383, PHYS 5383) Plasma Processing (3 semester hours) Hardware oriented study of useful laboratory plasmas. Topics will include vacuum technology, gas kinetic theory, basic plasma theory and an introduction to the uses of plasmas in various industries. (3-0) T

MECH 5383 (EEMF 5383, MSEN 5383, PHYS 5383) Plasma Processing (3 semester hours) Hardware oriented study of useful laboratory plasmas. Topics will include vacuum technology, gas kinetic theory, basic plasma theory and an introduction to the uses of plasmas in various industries. (3-0) T

MSEN 5383 (EEMF 5383, MECH 5383, PHYS 5383) Plasma Processing (3 semester hours) Hardware oriented study of useful laboratory plasmas. Topics will include vacuum technology, gas kinetic theory, basic plasma theory and an introduction to the uses of plasmas in various industries. (3-0) T

PHYS 5383 (EEMF 5383, MECH 5383, MSEN 5383) Plasma Processing (3 semester hours) Hardware oriented study of useful laboratory plasmas. Topics will include vacuum technology, gas kinetic theory, basic plasma theory and an introduction to the uses of plasmas in various industries. (3-0) T

CHEM 5356 (MSEN 5356) Analytical Techniques II (3 semester hours) Study of chromatography (GC, LC, CZE), statistical methods (standard tests and ANOVA), chemical problem solving, and modern bio/analytical techniques such as biochips, microfluidics, and MALDI-MS. Prerequisite: CHEM 5355 or consent or instructor. (3-0) R

MSEN 5356 (CHEM 5356) Analytical Techniques II (3 semester hours) Study of chromatography (GC, LC, CZE), statistical methods (standard tests and ANOVA), chemical problem solving, and modern
bio/analytical techniques such as biochips, microfluidics, and MALDI-MS. Prerequisite: CHEM 5355 or consent or instructor. (3-0) R

MSEN 6371 (PHYS 6371) Advanced Solid State Physics (3 semester hours) Continuation of MSEN 5371/PHYS 5371, transport properties of semiconductors, ferroelectricity and structural phase transitions, magnetism, superconductivity, quantum devices, surfaces. Prerequisite: MSEN 5371/PHYS 5371 or equivalent. (3-0) R

PHYS 6371 (MSEN 6371) Advanced Solid State Physics (3 semester hours) Continuation of PHYS 5371/MSEN 5371, transport properties of semiconductors, ferroelectricity and structural phase transitions, magnetism, superconductivity, quantum devices, surfaces. Prerequisite: PHYS/MSEN 5371 or equivalent. (3-0) R

MSEN 6374 (PHYS 6374) Optical Properties of Solids (3 semester hours) Optical response in solids and its applications. Lorentz, Drude and quantum mechanical models for dielectric response function. Kramers-Kronig transformation and sum rules considered. Basic properties related to band structure effects, excitons and other excitations. Experimental techniques including reflectance, absorption, modulated reflectance, Raman scattering. Prerequisite: MSEN 5371/PHYS 5371 or equivalent. (3-0) R

PHYS 6374 (MSEN 6474) Optical Properties of Solids (3 semester hours) Optical response in solids and its applications. Lorentz, Drude and quantum mechanical models for dielectric response function. Kramers-Kronig transformation and sum rules considered. Basic properties related to band structure effects, excitons and other excitations. Experimental techniques including reflectance, absorption, modulated reflectance, Raman scattering. Prerequisite: PHYS/MSEN 5371 or equivalent. (3-0) R


MSEN 5300 (PHYS 5376) Introduction to Materials Science (3 semester hours) This course provides an intensive overview of materials science and engineering and includes the foundations required for further graduate study in the field. Topics include atomic structure, crystalline solids, defects, failure mechanisms, phase diagrams and transformations, metal alloys, ceramics, polymers as well as their thermal, electrical, magnetic and optical properties. (3-0) R

PHYS 5376 (MSEN 5300) Introduction to Materials Science (3 semester hours) This course provides an intensive overview of materials science and engineering and includes the foundations required for further graduate study in the field. Topics include atomic structure, crystalline solids, defects, failure mechanisms, phase diagrams and transformations, metal alloys, ceramics, polymers as well as their thermal, electrical, magnetic and optical properties. (3-0) R

MSEN 5371 (PHYS 5371) Solid State Physics (3 semester hours) Symmetry description of crystals, bonding, properties of metals, electronic band theory, thermal properties, lattice vibration, elementary properties of semiconductors. Prerequisites: PHYS 5301 and 5320 or equivalent. (3-0) Y

PHYS 5371 (MSEN 5371) Solid State Physics (3 semester hours) Symmetry description of crystals, bonding, properties of metals, electronic band theory, thermal properties, lattice vibration, elementary properties of semiconductors. Prerequisites: PHYS 5301 and 5320 or equivalent. (3-0) Y

CHEM 5331 (MSEN 5331) Advanced Organic Chemistry I (3 semester hours) Modern concepts of bonding and structure in covalent compounds. Static and dynamic stereochemistry and methods for study. Relationships between structure and reactivity. Prerequisite: CHEM 2325 or equivalent. (3-0) Y

MSEN 5331 (CHEM 5331) Advanced Organic Chemistry I (3 semester hours) Modern concepts of bonding and structure in covalent compounds. Static and dynamic stereochemistry and methods for study. Relationships between structure and reactivity. Prerequisite: CHEM 2325 or equivalent. (3-0) Y

CHEM 5333 (MSEN 5333) Advanced Organic Chemistry II (3 semester hours) Application of the principles introduced in CHEM 5331, emphasizing their use in correlating the large body of synthetic/preparative organic chemistry. Prerequisite: CHEM/MSEN 5331. (3-0) R

MSEN 5333 (CHEM 5333) Advanced Organic Chemistry II (3 semester hours) Application of the principles introduced in CHEM 5331, emphasizing their use in correlating the large body of synthetic/preparative organic chemistry. Prerequisite: MSEN 5331/CHEM 5331. (3-0) R

CHEM 5355 (MSEN 5355) Analytical Techniques I (3 semester hours) Study of fundamental analytical techniques, including optical spectroscopic techniques, mass spectrometry, and microscopic and surface analysis methods. (3-0) Y

MSEN 5355 (CHEM 5355) Analytical Techniques I (3 semester hours) Study of fundamental analytical techniques, including optical spectroscopic techniques and energetic particle and x-ray methods including SEM, EDS, STM, AFM, AES, XPS, XRF, and SIMS. (3-0) Y
EEMF 6383 (MECH 6383, PHYS 6383) Plasma Science (3 semester hours) Theoretically oriented study of plasmas. Topics to include: fundamental properties of plasmas, fundamental equations (kinetic and fluid theory, electromagnetic waves, plasma waves, plasma sheaths) plasma chemistry and plasma diagnostics. Prerequisite: PHYS 5320 or EEGR 6316. (3-0) T

MECH 6383 (EEMF 6383, PHYS 6383) Plasma Science (3 semester hours) Theoretically oriented study of plasmas. Topics to include: fundamental properties of plasmas, fundamental equations (kinetic and fluid theory, electromagnetic waves, plasma waves, plasma sheaths) plasma chemistry and plasma diagnostics. Prerequisite: PHYS 5320 or EEGR 6316. (3-0) T

PHYS 6383 (EEMF 6383, MECH 6383) Plasma Science (3 semester hours) Theoretically oriented study of plasmas. Topics to include: fundamental properties of plasmas, fundamental equations (kinetic and fluid theory, electromagnetic waves, plasma waves, plasma sheaths) plasma chemistry and plasma diagnostics. Prerequisite: PHYS 5320 or EEGR 6316. (3-0) T

CHEM 5340 (MSEN 5340) Advanced Polymer Science and Engineering (3 semester hours) Polymer structure-property relations, Linear and nonlinear viscoelasticity. Dynamic mechanical analysis, time-temperature superposition, creep and stress relaxation. Mechanical models for prediction of polymer deformation, rubber elasticity, environmental effects on polymer deformation, instrumentation for prediction of long term properties. (3-0) R

MSEN 5340 (CHEM 5340) Advanced Polymer Science and Engineering (3 semester hours) Polymer structure-property relations, Linear and nonlinear viscoelasticity. Dynamic mechanical analysis, time-temperature superposition, creep and stress relaxation. Mechanical models for prediction of polymer deformation, rubber elasticity, environmental effects on polymer deformation, instrumentation for prediction of long term properties. (3-0) R

MSEN 5377 (PHYS 5377) Computational Physics of Nanomaterials (3 semester hours) This course introduces atomistic and quantum simulation methods and their applications to modeling study nanomaterials (nanoparticles, nanowires, and thin films). The course has three main parts: basic theory of materials (thermodynamics, statistical mechanics, and solid state physics), computational methods to model materials systems, and applications to practical problems. There are three main themes of the course: structure-property relationship of nanomaterials; atomistic modeling for atomic structure optimization; and quantum simulations for electronic structure study and functional property analysis. Prerequisite: MSEN 6319 or equivalent. (3-0) R

PHYS 5377 (MSEN 5377) Computational Physics of Nanomaterials (3 semester hours) This course introduces atomistic and quantum simulation methods to study nanomaterials. Three main themes are covered: structure-property relationship of nanomaterials; atomistic modeling for atomic structure optimization; and quantum simulations for electronic structure study and functional property analysis. Prerequisite: MSEN 6319 or equivalent. (3-0) R
BIOL 6358 (MSEN 6358) Bionanotechnology (3 semester hours) Protein, nucleic acid and lipid structures. Macromolecules as structural and functional units of the intact cell. Parallels between biology and nanotechnology. Applications of nanotechnology to biological systems. (3-0) T

MSEN 6358 (BIOL 6358) Bionanotechnology (3 semester hours) Protein, nucleic acid and lipid structures. Macromolecules as structural and functional units of the intact cell. Parallels between biology and nanotechnology. Applications of nanotechnology to biological systems. (3-0) T

BIOL 6385 (BMEN 6389) Computational Biology (3 semester hours) Using computational and statistical methods to analyze biological data, and perform mathematical modeling and computational simulation techniques to understand the biological systems. The course introduces methods in DNA/protein motif discovery, gene prediction, high-throughput sequencing and microarray data analysis, computational modeling gene expression regulation, and biological pathway and network analysis. Prerequisite: (BMEN 6374 and BMEN 6387) or BIOL 5376 or instructor permission. (3-0) Y

BMEN 6389 (BIOL 6385) Computational Biology (3 semester hours) Using computational and statistical methods to analyze biological data, and perform mathematical modeling and computational simulation techniques to understand the biological systems. The course introduces methods in DNA/protein motif discovery, gene prediction, high-throughput sequencing and microarray data analysis, computational modeling gene expression regulation, and biological pathway and network analysis. Prerequisite: (BMEN 6374 and BMEN 6387) or BIOL 5376 or instructor permission. (3-0) Y

BMEN 6391 (BIOL 6373) Proteomics (3 semester hours) Protein identification, sequencing, and analysis of post-translational modifications by liquid chromatography/tandem mass spectrometry; determination of protein three dimensional structure by x-ray crystallography; its use in drug design; understanding protein interactions and function using protein chip microarrays. Prerequisite: Undergraduate or graduate biochemistry (3-0) T

BIOL 6373 (BMEN 6391) Proteomics (3 semester hours) Protein identification, sequencing, and analysis of post-translational modifications by liquid chromatography/tandem mass spectrometry; determination of protein three dimensional structure by x-ray crystallography; its use in drug design; understanding protein interactions and function using protein chip microarrays. Prerequisite: Undergraduate or graduate biochemistry (3-0) T

BIOL 5376 (BMEN 6387) Applied Bioinformatics (3 semester hours) Genomic information content; data searches and multiple sequence alignment; mutations and distance-based phylogenetic analysis; genomics and gene recognition; polymorphisms and forensic applications; nucleic-acid and protein array analysis; structure prediction of biological macromolecules. Prerequisites: STAT 1342 (introductory statistics) and MATH 1325 and MATH 1326 (2 semesters of calculus). (3-0) T

BMEN 6387 (BIOL 5376) Applied Bioinformatics (3 semester hours) Genomic information content; data searches and multiple sequence alignment; mutations and distance-based phylogenetic analysis; genomics and gene recognition; polymorphisms and forensic applications; nucleic-acid and protein
array analysis; structure prediction of biological macromolecules. Prerequisites: STAT 1342 (introductory statistics) and MATH 1325 and MATH 1326 (2 semesters of calculus). (3-0) T.

BMEN 6390 (BIOL 63__) [MV 3] Metabolic Pathways for Translational Medicine (3 semester hours) This course will provide extensive discussion of major metabolic pathways in human and other experimental models of human diseases with emphasis on biochemical understanding, roles and effects of the pathways in the entire cellular network, and potential application to medicine. Prerequisites: BMEN 6374 or instructor permission. (3-0) Y

BIOL 63__ [MV 4] (BMEN 6390) Metabolic Pathways for Translational Medicine (3 semester hours) This course will provide extensive discussion of major metabolic pathways in human and other experimental models of human diseases with emphasis on biochemical understanding, roles and effects of the pathways in the entire cellular network, and potential application to medicine. Prerequisites: BMEN 6374 or instructor permission. (3-0) Y

MSEN 5375 (PHYS 5375) [MV 3] Electronic Devices Based On Organic Solids (3 semester hours) Solid state device physics based on organic condensed matter structures, including: OLEDs (organic light emitting diodes), organic FETs, organic lasers, plastic photocells, molecular electronic chips. (3-0) R

CHEM 5341 (MSEN 5341) Advanced Inorganic Chemistry I (3 semester hours) Physical inorganic chemistry addressing topics in structure and bonding, symmetry, acids and bases, coordination chemistry and spectroscopy. Prerequisite: CHEM 3341, or consent of instructor. (3-0)

MSEN 5341 (CHEM 5341) Advanced Inorganic Chemistry I (3 semester hours) Physical inorganic chemistry addressing topics in structure and bonding, symmetry, acids and bases, coordination chemistry and spectroscopy. Prerequisite: CHEM 3341 or consent of instructor. (3-0) Y
BMEN 6375 Techniques in Cell and Molecular Biology (3 semester hours) Introduction to various cell and molecular laboratory techniques including DNA recombinant technology, protein biochemistry, structural biology, and molecular biology. Intended for engineers and other non-life-scientists. Prerequisite: BMEN 6374 or instructor permission. (3-0) Y

BMEN 6377 Introduction to Protein Engineering (3 semester hours) Development of proteins with practical utility will be discussed, using examples and case studies taken from the current literature. Prerequisites: BMEN 6374 or by instructor permission. (3-0) Y

BMEN 6380 Introduction to Cellular Microscopy (3 semester hours) Image formation, diffraction, labeling techniques, fluorescence and image processing techniques will be introduced. (3-0) Y

BMEN 6381 Advanced Concepts in Microscopy (3 semester hours) Continuation of BMEN 6380, with emphasis on advanced approaches such as vectorial diffraction, stochastic aspects of image formation and analysis. Prerequisites: BMEN 6380 or by instructor permission. (3-0) Y

BMEN 6382 Systems Biology (3 semester hours) An interdisciplinary approach to biology. It explores experimental, theoretical, and computational approaches from mathematics, physics, and engineering for the understanding and analysis of biological problems. Prerequisites: BMEN 6374 or instructor permission. (3-0) Y

BMEN 6384 Stochastic Methods in Biomedical Engineering (3 semester hours) This course will examine stochastic approaches to several problems in genomics and proteomics, such as sequence similarity detection, gene and protein classification, and structure prediction. Techniques such as Markov and hidden Markov models will be introduced in the course and applied to these problems. (3-0) Y

BMEN 6385 Biomedical Signals and Systems (3 semester hours) Time and Frequency domain analysis; continuous-time and discrete-time signals, linear-time invariant (LTI) systems and their properties. Frequency analysis of: LTI systems, continuous-time signals (=Fourier series and Fourier transform) and. Frequency analysis of discrete time signals [=discrete Fourier series and discrete-time Fourier transform (DTFT)]. Frequency analysis of LTI systems. Sampling and signal reconstruction. Discrete Fourier transform (DFT) and fast Fourier transform (FFT). Filter design. Matlab-based tutorials. Prerequisites: ENGR 2300 and EE 4310. (3-0) Y

BMEN 6386 Biological Processes: Modeling and Simulation (3 semester hours) Introduces This course provides introduction to the fundamental principles to develop and simulate mathematical and computer models of biological systems. Topics include modeling principles [such as continuous (model (ordinary differential equation models), discrete model (Boolean network and Markov model), probabilistic model (Bayesian network) and), stochastic models] model and model optimization. (parameter estimation). Methods to implement and simulate different mathematical biological models using computer programming (software: MATLAB) will be introduced. Prerequisites: MATH 2419 or equivalent. (3-1) Y
BMEN 6387 (BIOL 5376) [MV1] Applied Bioinformatics (3 semester hours) Genomic information content; data searches and multiple sequence alignment; mutations and distance-based phylogenetic analysis; genomics and gene recognition; polymorphisms and forensic applications; nucleic-acid and protein array analysis; structure prediction of biological macromolecules. Prerequisites: STAT 1342 (introductory statistics) and MATH 1325 and MATH 1326 (2 semesters of calculus). (3-0) T

BMEN 6388 Nonlinear Dynamics and Control in BME (3 semester hours) **Introduction** This course provides introduction to theory and analysis and control methods for nonlinear dynamical systems, with application to representative biological and engineering systems biology. Topics include concepts, theory and analysis of nonlinear systems represented by ordinary and partial differential equations, such as local linearization and stability analysis, phase space analysis, bifurcation analysis, chaos parameteric and feedback linearization, structural robustness, pattern formation and chaos. Representative biological systems will be discussed. Prerequisites: BMEN 6385 Biomedical Signals & Systems. (3-0) Y

BMEN 6390 (BIOL ____) [MV2] Metabolic Pathways for Translational Medicine (3 semester hours) This course will provide extensive discussion of major metabolic pathways in human and other experimental models of human diseases with emphasis on biochemical understanding, roles and effects of the pathways in the entire cellular network, and potential application to medicine. Prerequisites: BMEN 6374 or instructor permission. (3-0) Y

BMEN 6391 (BIOL 6373) [MV3] Proteomics (3 semester hours) Protein identification, sequencing, and analysis of post-translational modifications by liquid chromatography/tandem mass spectrometry; determination of protein three dimensional structure by x-ray crystallography; its use in drug design; understanding protein interactions and function using protein chip microarrays. **Prerequisite:** Undergraduate or graduate biochemistry or biochemistry or its equivalent or permission of the instructor. (3-0) T

BMEN 6392 Bioinstrumentation and Systems (3 semester hours) Introduction to biomedical engineering and bioinstrumentation, biomedical signal acquisition, isolation, amplification, and conditioning, biopotential electrodes and amplifiers for ECG, EEG, ENG and EMG. Vascular system dynamics. Transmission and propagation of EM and RF signals around tissue. Biomedical applications. Prerequisites: BMEN 6385 Biomedical Signals and Systems. (3-0) Y

BMEN 6V40 Individual Instruction in Biomedical Engineering (1-9 semester hours) (May be repeated for credit). ([1-9]-0) R

BMEN 6V70 Research Biomedical Engineering (3-9 semester hours) (May be repeated for credit). For pass/fail credit only. ([3-9]-0) R

BMEN 6V71 Seminars Biomedical Engineering (1-9 semester hours) (May be repeated for credit). For pass/fail credit only. ([1-9]-0) R

BMEN 6V87 Special Topics in Biomedical Engineering (1-9 semester hours) (May be repeated for credit). ([1-9]-0) S
BMEN 6V98 Thesis (3-9 semester hours) (May be repeated for credit). For pass/fail credit only. ([3-9]-0) S

BMEN 7V87 Special Topics in Biomedical Engineering (1-9 semester hours) (May be repeated for credit). ([1-9]-0) S

BMEN 7V88 Seminars in Biomedical Engineering (1-9 semester hours) (May be repeated for credit). ([1-9]-0) R

BMEN 8V40 Individual Instruction in Biomedical Engineering (1-9 semester hours) (May be repeated for credit). ([1-9]-0) R

BMEN 8V70 Research in Biomedical Engineering (3-9 semester hours) (May be repeated for credit). For pass/fail credit only. ([3-9]-0) R

BMEN 8V99 Dissertation Thesis (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) S

BMEN 6374 (EEBM 6374) Molecular and Cell Biology for Engineers (3 semester hours) An introduction to principles of modern molecular and cellular biology for engineers and other non-life-scientists. Topics include genes, protein structure and function, organization of cells and cellular trafficking. (3-0) Y

BMEN 6389 (BIOL 6385) Computational Biology (3 semester hours) Using computational and statistical methods to analyze biological data, and perform mathematical modeling and computational simulation techniques to understand the biological systems. The course introduces methods in DNA/protein motif discovery, gene prediction, high-throughput sequencing and microarray data analysis, computational modeling gene expression regulation, and biological pathway and network analysis. Prerequisite: (BMEN 6374 and BMEN 6387) or BIOL 5376 or instructor permission. (3-0) Y

BMEN 6355 (MSEN 6355) Nanotechnology and Sensors (3 semester hours) Introduction to the concept of nanotechnology, in context toward designing sensors/diagnostic devices. Identifying the impact of nanotechnology in designing "state-of-the art" sensors for healthcare applications. Topics include: nanotechnology and nanomaterials, principles of sensing and transduction and heterogeneous integration toward sensor design. (3-0) Y

BMEN 6351 Biomedical Microdevices (3 semester hours) Introduction to concepts of medical microdevices; design methodology and its applications for diagnostics and therapeutics. (3-0) Y

BMEN 6341 BIOSTATISTICS (3 semester hours) Introduction to probability; joint, marginal and conditional distributions; entropy and relative entropy (Kullback-Leibler divergence); Markov processes and hidden Markov models; applications to specific problems such as sequence alignment, analysis of gene expression data and protein classification. (3-0) T
BMEN 6372 (MECH 6314, SYSM 6306)  [MV7] Engineering Systems: Modeling & Simulation (3 semester credit hours) This course will present principles of computational modeling and simulation of systems. General topics covered include: parametric and non-parametric modeling; system simulation; parameter estimation, linear regression and least squares; model structure and model validation through simulation; and, numerical issues in systems theory. Techniques covered include methods from numerical linear algebra, nonlinear programming and Monte Carlo simulation, with applications to general engineering systems. Modeling and simulation software is utilized (MATLAB/SIMULINK). Prerequisites: none. (3-0) Y
Revised Current Description

CS 5303 Computer Science I (3 semester hours) Computer science problem solving. The structure and nature of algorithms and their corresponding computer program implementation. Programming in a high level block-structured language (e.g., PASCAL, Ada, C++, or JAVA). Elementary data structures: arrays, records, linked lists, trees, stacks and queues. (3-0) R

CS 5330 Computer Science II (3 semester hours) Basic concepts of computer organization: Numbering systems, two's complement notation, multi-level machine concepts, machine language, assembly programming and optimization, subroutine calls, addressing modes, code generation process, CPU datapath, pipelining, RISC, CISC, performance calculation. Co-requisite: CS 5303. (3-0) R

CS 5333 Discrete Structures (3 semester hours) Mathematical foundations of computer science. Logic, sets, relations, graphs and algebraic structures. Combinatorics and metrics for performance evaluation of algorithms. (3-0) S

CS 5336 Programming Projects in Java (3 semester hours) Overview of the object-oriented philosophy. Implementation of object-oriented designs using the Java programming environment. Emphasis on using the browser to access and extend the Java class library. Prerequisite: CS 5303 or equivalent experience. (3-0) R

CS 5343 Algorithm Analysis & Data Structures (3 semester hours) Formal specifications and representation of lists, arrays, trees, graphs, multilinked structures, strings and recursive pattern structures. Analysis of associated algorithms. Sorting and searching, file structures. Relational data models. Prerequisites: CS 5303, CS 5333. (3-0) S

CS 5348 Operating Systems Concepts (3 semester hours) Processes and threads. Concurrency issues including semaphores, monitors and deadlocks. Simple memory management. Virtual memory management. CPU scheduling algorithms. I/O management. File management. Introduction to distributed systems. Prerequisites: CS 5330 and CS 5343 (may be taken concurrently) and a working knowledge of C and Unix. (3-0) S

CS 5349 Automata Theory (3 semester hours) Deterministic and nondeterministic finite automata; regular expressions, regular sets, context-free grammars, pushdown automata, context free languages. Selected topics from Turing Machines and undecidability. Prerequisite: CS 5333. (3-0) S

CS 5375 Principles of UNIX (3 semester hours) Design and history of the UNIX operating system. Detailed study of process and file system data structures. Shell programming in UNIX. Use of process-forking functionality of UNIX to simplify complex problems. Interprocess communication and coordination. Device drivers and streams as interfaces to hardware features. TCP/IP and other UNIX inter-machine communication facilities. Prerequisite: CS 3335. (3-0) S

CS 5390 Computer Networks (3 semester hours) The design and analysis of protocols for computer networking. Topics include: network protocol design and composition via layering, contention.
resolution in multi-access networks, routing metrics and optimal path searching, traffic management, global network protocols; dealing with heterogeneity and scalability. Prerequisite: CS 5343. (3-0) S

CS 6304 Computer Architecture (3 semester hours) Trends in processor, memory, I/O and system design. Techniques for quantitative analysis and evaluation of computer systems to understand and compare alternative design choices in system design. Components in high performance processors in computers: pipelining, instruction level parallelism, memory hierarchies, and input/output. Students will undertake a major computing system analysis and design project. Prerequisite: CS 3340, CS 4341 and C/C ++. (3-0) Y

CS 6320 Natural Language Processing (3 semester hours) This course covers state-of-the-art methods for natural language processing. After an introduction to the basics of syntax, semantic, and discourse analysis, the focus shifts to the integration of these modules into natural-language processing systems. In addition to natural language understanding, the course presents advanced material on lexical knowledge acquisition, natural language generation, machine translation, and parallel processing of natural language. Prerequisite: CS 5343. (3-0) Y

CS 6321 Discourse Processing (3 semester hours) Introduction to discourse processing from natural language texts. Automatic clustering of utterances into coherent units (segments) with hierarchical structures. State-of-the-art research in textual cohesion, coherence, and discourse understanding. Included topics are anaphoric reference and ellipsis, notion of textual context, and relationship between tense, aspect, and discourse states. Prerequisite: CS 6320 or consent of the instructor. (3-0) T

CS 6322 Information Retrieval (3 semester hours) This course covers modern techniques for storing and retrieving unformatted textual data and providing answers to natural language queries. Current research topics and applications of information retrieval in data mining, data warehousing, text mining, digital libraries, hypertext, multimedia data, and query processing are also presented. Prerequisite: CS 5343. (3-0) Y

CS 6325 Introduction to Bioinformatics (3 semester hours) The course provides a broad overview of the bioinformatics field. Comprehensive introduction to molecular biology and molecular genetics for a program of study in bioinformatics. Discussion of elementary computer algorithms in biology (e.g., sequence alignment and gene finding). Biological databases, data analysis and management. Prerequisite: Knowledge equivalent to CS 2302. (3-0) T

CS 6333 Algorithms in Computational Biology (3 semester hours) The principles of algorithm design for biological datasets, and analysis of influential problems and techniques. Biological sequence analysis, gene finding, RNA folding, protein folding, sequence alignment, genome assembly, comparative genomics, phylogenetics, clustering algorithms. Prerequisite: CS 6325. (3-0) S

CS 6348 Data and Applications Security (3 semester hours) The course will teach principles, technologies, tools and trends for data and applications security. Topics to be covered include: Confidentiality, Privacy and Trust Management; Secure Databases; Secure Distributed Systems; Secure Multimedia and Object Systems; Secure Data Warehouses; Data Mining
for Security Applications; Assured Information Sharing; Secure Knowledge Management; Secure Collaboration; Secure Digital Libraries; Trustworthy Semantic Web; Biometrics; Digital Forensics; Secure E-Commerce; Secure Sensor Information Management and Secure Social Networks. Students will take one system or application and develop a secure version of that system or application for the programming project. Prerequisite: CS 5343 (3-0) Y

CS 6349 Network Security (3 semester hours) This course covers theoretical and practical aspects of network security. The topics include use of cryptography for building secure communication protocols and authentication systems; security handshake pitfalls, Kerberos and PKI, security of TCP/IP protocols including IPsec, BGP security, VPNs, IDSes, firewalls, and anonymous routing; security of TCP/IP applications; wireless LAN security; denial-of-service defense. Students are required to do a programming project building a distributed application with certain secure communication features and required to participate in several network security lab exercises and cyber war games. Prerequisite: CS 5390 (3-0) Y

CS 6364 Artificial Intelligence (3 semester hours) Design of machines that exhibit intelligence. Particular topics include: representation of knowledge, vision, natural language processing, search, logic and deduction, expert systems, planning, language comprehension, machine learning. Prerequisite: CS 5343. (3-0) Y

CS 6365 Data and Text Mining for Computational Biology (3 semester hours) The course introduces data and text mining as practiced currently in the bioinformatics field. Major topics include: sequence alignment for determining similarity between proteins and genes; properties of similarities and distances; genomic, proteomic, and text databases in the real world; finding patterns (motifs) in genes and proteins; differentiating between valid patterns and noise; classification; clustering and its application to phylogenetic trees; and selected topics from text mining. Prerequisite: CS 6325. (3-0) Y

CS 6366 Computer Graphics (3 semester hours) Device and logical coordinate systems. Geometric transformations in two and three dimensions. Algorithms for basic 2-D drawing primitives, such as Brensenham's algorithm for lines and circles, Bezier and B-Spline functions for curves, and line and polygon clipping algorithms. Perspectives in 3-D, and hidden-line and hidden-face elimination, such as Painter's and Z-Buffer algorithms. Fractals and the Mandelbrot set. Prerequisites: CS 5330, CS 5343, and MATH 2418 (linear algebra). (3-0) Y

CS 6368 Telecommunication Network Management (3 semester hours) In-depth study of network management issues and standards in telecommunication networks. OSI management protocols including CMIP, CMISE, SNMP, and MIB. ITU's TMN (Telecommunication Management Network) standards, TMN functional architecture and information architecture. NMF (Network Management Forum) and service management, service modeling and network management API. Issues of telecommunication network management in distributed processing environment. Prerequisite: One of CS 5390, CS 6390, CS 6385 or equivalent. (3-0) Y
CS 6369 Complexity of Combinatorial Algorithms (3 semester hours) Topics include bounded reducibility and completeness, approximation algorithms and heuristics for NP-hard problems, randomized algorithms, additional complexity classes. Prerequisite: CS 6363. (3-0) T

CS 6371 Advanced Programming Languages (3 semester hours) Functional Programming, Lambda Calculus, Logic Programming, Abstract Syntax, Denotational Semantics of imperative Languages, Fixpoints semantics, Verification of Programs, Partial Evaluation, Interpretation and Automatic Compilation, Axiomatic Semantics, Applications of semantics to software engineering. Prerequisites: CS 5343, CS 5349. (3-0) S

CS 6373 Intelligent Systems (3 semester hours) Logical formalizations of knowledge for the purpose of implementing intelligent systems that can reason in a way that mimics human reasoning. Topics include: syntax and semantics of common logic, description logic, modal epistemic logic; reasoning about uncertainties, beliefs, defaults and counterfactuals; reasoning within contexts; implementations of knowledge base and textual inference reasoning systems; and applications. Prerequisite: CS 5343. (3-0) Y

CS 6374 Computational Logic (3 semester hours) Methods and algorithms for the solution of logic problems. Topics include problem formulation in first order logic and extensions, theorem proving algorithms, polynomially solvable cases, logic programming, and applications. Prerequisites: CS 5343, and knowledge of C. (3-0) Y


CS 6376 Parallel Processing (3 semester hours) Topics include parallel machine models, parallel algorithms for sorting, searching and matrix operations. Parallel graph algorithms. Selected topics in parallel processing. Prerequisite: CS 6363. (3-0) T

CS 6377 Introduction to Cryptography (3 semester hours) This course covers the basic aspects of modern cryptography, including block ciphers, pseudorandom functions, symmetric encryption, Hash functions, message authentication, number-theoretic primitives, public-key encryption, digital signatures and zero knowledge proofs. Prerequisites: CS 5333 and CS 5343. (3-0) T

CS 6379 Biological Database Systems and Data Mining (3 semester hours) Relational data models and database management systems; theories and techniques of constructing relational databases to store biological data, including sequences, structures, genetic linkages and maps, and signal pathways. Introduction to a relational database query language (SQL) with emphasis on answering biologically important questions. Summary of current biological databases. Data integration from various sources and security. Novel data mining methods in bioinformatics with an emphasis on protein structure prediction, homology search, genomic sequence analysis, gene finding and gene mapping. Future
directions for biological database development. Prerequisites: BIOL 5373, BIOL 5381, and CS 5343 or consent of the instructor. (3-0) T

CS 6381 Combinatorics and Graph Algorithms (3 semester hours) Fundamentals of combinatorics and graph theory. Combinatorial optimization, optimization algorithms for graphs (max flow, shortest routes, Euler tour, Hamiltonian tour). Prerequisites: CS 5343, CS 6363. (3-0) T

CS 6382 Theory of Computation (3 semester hours) Formal models of computation. Recursive function theory. Undecidability and incompleteness. Selected topics in theory of computation. Prerequisite: Consent of Instructor. (3-0) Y

CS 6383 Computational Systems Biology (3 semester hours) The course will provide a system-level understanding of biological systems by analyzing biological data using computational techniques. The major topics include: computational inference of biological networks (regulatory, protein interactions, and metabolic) and the effects of biological networks in cellular processes, development, and disease. (3-0) T

CS 6384 Computer Vision (3 semester hours) Algorithms for extracting information from digital pictures. Particular topics include: analysis of motion in time varying image sequences, recovering depth from a pair of stereo images, image separation, recovering shape from textured images and shadows, object matching techniques, model based recognition, the Hough transform. Prerequisite: CS 5343. (3-0) Y

CS 6386 Telecommunication Software Design (3 semester hours) Programming with sockets and remote procedure calls, real time programming concepts and strategies. Operating system design for real time systems. Encryption, file compression, and implementation of fire walls. An in-depth study of TCP/IP implementation. Introduction to discrete event simulation of networks. Prerequisites: CS 5390. (3-0) Y


CS 6393 Advanced Algorithms in Biology (3 semester hours) Recent advanced topics in algorithms in biology will be discussed. Topics will be chosen from: sorting and transformational operations on strings and permutations, structural analysis of proteins, pooling design and nonadaptive group testing, approximation algorithms, and complexity issues. Prerequisites: CS 6363 and CS 6325. (3-0) Y

CS 6395 Speech Recognition, Synthesis, and Understanding (3 semester hours) Basic speech processing techniques: isolated word recognition using dynamic time warping, acoustic modeling using hidden Markov models, statistical language modeling, search algorithms in large vocabulary continuous speech recognition, components in text-to-speech systems, architecture and components in spoken dialog systems. Prerequisite: CS 4353. (3-0) T

CS 5V71 Cooperative Education (1-3 semester hours) Placement in a faculty-supervised work environment in industry or government. Sites may be local or out-of-state. The cooperative education program provides exposure to a professional working environment, application of theory to working realities, and an opportunity to test skills and clarify goals. Experience gained may also serve as a work credential after graduation. (May be repeated to a maximum of 9 credit hours.) Departmental approval is required. ([1-3]-0) S

CS 5V81 (SE 5V81) Special Topics in Computer Science (1-9 semester hours) Selected topics in Computer Science. (May be repeated to a maximum of 9 credit hours.) ([1-9]-0) S

CS 6V81 (SE 6V81) Special Topics in Computer Science (1-9 semester hours) Topics vary from semester to semester. May be repeated for credit as topics vary. ([1-9]-0) S

CS 8V02 (SE 8V02) Topics in Computer Science (1-6 semester hours) (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

CS 8V98 (SE 8V98) Thesis (3-9 semester hours) (May be repeated for credit.) ([3-9]-0) S

CS 8V99 (SE 8V99) Dissertation (1-9 semester hours) (May be repeated for credit.) ([1-9]-0) S
**Revised**

**Current Description**

EE 6V99 Special Topics in Electrical Engineering (1-9 semester hours) Topics vary from semester to semester. May be repeated for credit as topics vary. ([1-9]-0) S

EEBM 6371 Lecture Course in Biomedical Applications of Electrical Engineering (3 semester hours) This course provides an introduction to different areas of biomedical applications of electrical engineering. A special emphasis will be placed on research topics that are actively pursued at UTD. (3-0) Y

EEBM 7V87 Special Topics in Biomedical Applications of Electrical Engineering (1-6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

EECT 5321 Introduction to Circuits and Systems (3 semester hours) Continuation of EEMF 5320. Topics include analog circuits, digital circuits, digital systems and communication systems. Credit does not apply to the 33 hour M.S.E.E. requirement. (3-0) R

EECT 5340 Analog Integrated Circuit Analysis and Design (3 semester hours) Application of MOSFET and BJT large-signal and small-signal models to analyze and design amplifiers, analysis and design of current mirrors and differential amplifiers, analysis of frequency response of amplifiers, and feedback theories. Prerequisite: EE 3311 or equivalent. (3-0) Y

EECT 5385 Analog Filters (3 semester hours) This course aims at bridging the intermediate-level and the advanced-level knowledge in analog filter design. It moves from basic theory of analog passive filters to theoretical and practical aspects of active, switched-capacitor, and continuous time filters. For active solutions the focus is on integrated implementations on silicon. Prerequisites: ENGR 3301 and EE 3111. (3-0) Y

EECT 6326 Analog Integrated Circuit Design (3 semester hours) Introduction to MOS transistor, CMOS technology and analog circuit modeling. Basic analog circuits: MOS switches, active resistors, current sources, current mirrors, current amplifiers, inverting amplifier, differential amplifier, cascade amplifier and the output amplifier. Complex circuits: comparators and operational amplifiers. Use of CAD tools to layout and simulate analog circuits. Prerequisite: EE 4340. (3-0) Y

EECT 6378 Power Management Circuits (3 semester hours): This course introduces different circuits related to power management systems. Topics include analysis and design of voltage references, magnetic, Operating principles of rectifiers and different dc-dc converters including: switched-mode power converters, charge pumps and linear regulators. Design and switched-capacitor charge pump analysis of voltage references and frequency compensation techniques for two-stage and three-stage amplifiers. Use of CAD tools to design and simulate power management circuits. Prerequisite: EECT 6326 or equivalent. (3-0) Y

EECT 7326 Advanced Analog Integrated Circuit Systems Design (3 semester hours) Advanced topics introduction to the types of systems environment in which analog design including a rigorous treatment of noise, feedback and distortion in analog circuits. Selected topics from other advanced topics such as continuous-time filter, oscillator, phase-locked loop (PLL) integrated circuit design is
employed. The topics are A/D and delay-locked loop (DLL) are also covered. D/A converters, including over-sampled S-D A/D converters, switched capacitor amplifiers, multipliers, wave-shaping circuits, oscillators, PLLs, and the design of filters. Prerequisite: EECT 6326. (3-0) Y

EECT 7327 Analog to Digital and Digital to Analog Converters (3 semester hours) This course provides the basic and the specific knowledge for the design and the use of data converters. Topics include fundamentals on sampling and quantization, Nyquist-rate and oversampled techniques, circuit design issues, testing, digital calibration and correction. Prerequisite: EECT 6326 and EECT 6325. (3-0) Y

EECT 7329 Advanced Analog Integrated Circuit Design (3 semester hours) The course will cover, but not be limited to, advanced architectures for voltage references, current references, operational amplifiers (including voltage, current, transconductance, and transresistance), comparators, linear regulators, etc. Emphasis will be on why one topology might be better than another for a given set of specifications or applications. Prerequisites: EECT 6326. (3-0) T

EECT 7331 Physics of Noise (3 semester hours) The physics of fluctuation phenomena, generically called Noise. The class will cover the fundamental physical principles underlying generation-recombination, thermal, shot, l/f noise and other, related fluctuation phenomena. The statistical nature of these physical processes will be developed. The physics of noise in resistors, diodes, bipolar, JFETS, and MOSFETs will be discussed and how to model it in circuits. Approximately two thirds of the class will be devoted to the physics of noise and the rest will cover how to use this knowledge to design low-noise integrated circuits. Prerequisite: EECT 6326. (3-0) Y

EECT 7V88 Special Topics in Circuits and Systems (1-6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

EECT 7V89 Special Topics in RF and Microwave Systems (1-6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

EEDG 7V81 Special Topics in Digital Systems (1-6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

EEGR 5300 Advanced Engineering Mathematics (3 semester hours) Advanced mathematical topics needed in the study of engineering. Topics may include advanced differential equations, linear algebra, vector calculus, complex analysis, and numerical methods. Credit does not apply to the 33 hour M.S.E.E. requirement. (3-0) R

EEGR 5365 Engineering Leadership (3 semester hours) Interpersonal influence and organizational influence in leading engineering organizations. Leadership is addressed from the point of view of the technical manager as well as from that of the technical professional. Topics include staffing, motivation, performance evaluation, communication, project selection and planning, intellectual property and professional ethics. (3-0) R

EEGR 5381 Curriculum Practical Training in Electrical Engineering (3 semester hours) This course is required of students who need additional training in engineering practice. Credit does not apply to the
33 hour M.S.E.E. requirement. Consent of Graduate Adviser required. (May be repeated to a maximum of 9 hours) (3-0) R

EEGR 6316 Fields and Waves (3 semester hours) Study of electromagnetic wave propagation beginning with Maxwell's equations; reflection and refraction at plane boundaries; guided wave propagation; radiation from dipole antennas and arrays; reciprocity theory; basics of transmission line theory and waveguides. Prerequisite: EE 4301 or equivalent. (3-0) Y

EEGR 6332 Advanced Control (3 semester hours) Modern control techniques in state space and frequency domain: optimal control, robust control, and stability. Prerequisite: EESC 6331. (3-0) R

EEGR 6336 Nonlinear Control Systems (3 semester hours) Differential geometric tools, feedback linearization, input-output linearization, output injection, output tracking, stability. Prerequisite: EESC 6331. (3-0) R

EEGR 5V80 Special Topics in Electrical Engineering (1-6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

EEGR 6V98 Thesis (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) S

EEGR 8V40 Individual Instruction in Electrical Engineering (1-6 semester hours) (May be repeated for credit.) For pass/fail credit only. ([1-6]-0) R

EEGR 8V70 Research in Electrical Engineering (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) R

EEGR 8V99 Dissertation (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) S

EEMF 5283 Plasma Technology Laboratory (2 semester hours) Laboratory will provide a hands-on experience to accompany EEMF 5383. Topics to include: Vacuum technology [pumps, gauges, gas feed], plasma uses [etch, deposition, lighting and plasma thrusters] and introductory diagnostics. Corequisite: EEMF 5383. Recommended Co-requisite: EEMF 7171. (0-2) R

EEMF 5320 Introduction to Devices and Circuits (3 semester hours) This course provides a background in Electrical Engineering for students entering the M.S.E.E. program from other fields of science and engineering. Topics include circuit analysis and simulation, semiconductor device fundamentals and operation, and basic transistor circuits. Credit does not apply to the 33 hour M.S.E.E. requirement. Prerequisite: differential equations. (3-0) R

EEMF 6283 Plasma Science Laboratory (2 semester hours) Laboratory will provide a hands-on experience to accompany EEMF 6383. Experiments will include measurements of fundamental plasma properties and understanding of important plasma diagnostics. Co-requisite: EEMF 6383, recommended co-requisite: EEMF 7171. (0-2) T
EEMF 6319 Quantum Physical Electronics (3 semester hours) Quantum-mechanical foundation for study of nanometer-scale electronic devices. Principles of quantum physics, stationary-state eigenfunctions and eigenvalues for one-dimensional potentials, interaction with the electromagnetic field, electronic conduction in solids, applications of quantum structures. Prerequisite: ENGR 3300 or equivalent. (3-0) Y

EEMF 6323 Circuit Modeling of Solid-State Devices (3 semester hours) Provide physical insight into the operation of MOSFETs and BJTs, with particular emphasis on new physical effects in advanced devices. Compact (SPICE-level) transistor models will be derived from basic semiconductor physics; common simplifications made in the derivations of model equations will be detailed to provide an appreciation for the limits of model capabilities. Prerequisites: EEMF 6320 and EEMF 6321. (3-0) R

EEMF 6372 Semiconductor Process Integration (3 semester hours) The integration of semiconductor processing technology to yield integrated circuits. The course will emphasize MOSFET design based upon process integration, in particular as it applies to short channel devices of current interest. Process simulation will be used to study diffusion, oxidation, and ion implantation. (3-0) R

EEMF 7171 Current Topics in Plasma Processing (1 semester hour) discussion of current literature on plasma processing; applications, diagnostics, sources, chemistry and technology. May be repeated for credit. Prerequisite: Knowledge of plasma processing technology (EEMF 5383 or EEMF 6383 preferred) or consent of instructor (1-0) Y

EEMF 7V82 Special Topics in Microelectronics (1-6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ((1-6)-0) S

EEOP 6309 Fourier Optics (3 semester hours) Description of coherent optics using a linear systems approach. The concepts of impulse response and transfer functions for unbounded wave propagation, diffraction, and image formation. Introduction to holography and optical data processing. Prerequisites: ENGR 3302 and EE 4301 or equivalents. (3-0) R

EEOP 6310 Optical Communication Systems (3 semester hours) Operating principles of optical communications systems and fiber optic communication technology. Characteristics of optical fibers, laser diodes, and laser modulation, laser and fiber amplifiers, detection, demodulation, dispersion compensation, and network topologies. System topology, star network, bus networks, layered architectures, all-optical networks. Prerequisite: EE 3350 or equivalent. (3-0) T

EEOP 6312 Laser and Modern Optics (3 semester hours) Theory and applications of lasers, including ray and beam optics. Design issues include power maximization, noise properties, spectral purity and high-speed modulation. Particular emphasis on semiconductor lasers and their relevance to optical communications. Prerequisite: EE 4301 or equivalent. (3-0) Y

EEOP 6314 Principles of Fiber and Integrated Optics (3 semester hours) Theory of dielectric waveguides, modes of planar waveguides, strip waveguides, optical fibers, coupled-mode formalism, directional couplers, diffractive elements, switches, wavelength-tunable filters, polarization properties of devices
and fibers, step and graded-index fibers, devices for fiber measurements, fiber splices, polarization properties, and fiber systems. Prerequisites: ENGR 3300 and EE 4301 or equivalents. (3-0) T

EEOP 6315 Engineering Optics (3 semester hours) Fundamental concepts of geometrical optics, first-order optical system design and analysis, paraxial ray tracing, aperture and field stops. Optical materials and properties; third order aberration theory. Prerequisite: PHYS 2326 or equivalent. (3-0) T

EEOP 6317 Physical Optics (3 semester hours) Study of optical phenomena based primarily on the electromagnetic nature of light; mathematical description of polarized light; Jones and Mueller matrices; interference of polarized waves; interferometers, diffractive phenomena based on scalar formalisms; diffraction gratings; and diffraction in optical instruments. Prerequisite: EE 4301 or equivalent. (3-0) T

EEOP 6328 Nonlinear Optics (3 semester hours) Survey of nonlinear optical effects; origins of optical nonlinearities; laser-pulse propagation equations in bulk media and optical fibers; the nonlinear optical susceptibility tensor; second-order nonlinear optical effects (second harmonic generation, optical rectification, parametric mixing and amplification); third-order nonlinear optical effects in fiber optic communication systems (self-phase modulation, cross-phase modulation, stimulated Brillouin scattering, stimulated Raman scattering, four-wave mixing, nonlinear polarization mode dispersion); self-focusing and self-defocusing in bulk media; computational methods for nonlinear optics. Prerequisite: EE 4301 or equivalent; EEOP 6310 recommended. (3-0) R

EEOP 6329 Optical Signal Conditioning (3 semester hours) Engineering principles and applications of laser beam modulation and deflection (acousto-optics and electro-optics), harmonic generation and optical parametric processes, optical pulse compression and shaping. Prerequisites: EE 4301 or equivalent and EEOP 6317 recommended. (3-0) R

EEOP 6334 Advanced Geometrical and Physical Optics (3 semester hours) Geometrical optics as a limiting case of the propagation of electromagnetic waves; geometrical theory of optical aberrations; the diffraction theory of aberrations; image formation with partially coherent and partially polarized light; computational methods for physical optics. Other topics may be selected from the following: diffraction theory of vector electromagnetic fields, diffraction of light by ultrasonic waves, optics of metals, Lorenz-Mie theory of the scattering of light by small particles, and optics of crystals. Prerequisite: EEOP 6317. (3-0) R

EEOP 6335 Engineering of Infrared Imaging Systems (3 semester hours) Thermal optics, review of Fourier optics, review of information theory, embedded system design principles, and system modeling. Prerequisites: EEOP 6309 or EEOP 6315 or equivalents. (3-0) T

of tunable lasers and high-speed external modulators. Direct and externally modulated transmitters. Study of high-speed drivers for laser and modulators. Characteristics of optical transmitters. Prerequisite: EE 3311 or equivalent. (3-0) R


EEOP 7V83 Special Topics in Optics and Fields (1-6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

EERF 5305 Radio Frequency Engineering (3 semester hours) Introduction to generation, transmission, and radiation of electromagnetic waves. Microwave-frequency measurement techniques. Characteristics of guided-wave structures and impedance matching. Fundamentals of antennas and propagation. Prerequisite: EE 4301 or equivalent. (3-0) Y

EERF 6311 RF and Microwave Circuits (3 semester hours) Analysis and design of RF and microwave circuits. Topics include impedance matching, network theory, S-parameters, transmission line media (waveguide, coax, microstrip, stripline, coplanar waveguide, etc.) and passive component design (power dividers, couplers, switches, attenuators, phase shifters, etc.). Industry-standard microwave CAD tools will be used. Prerequisite: EE 4368 or equivalent. (3-0) R

EERF 6330 RF Integrated Circuit Design (3 semester hours) Introduction to RF and wireless systems; Basic concepts of RF Design: Linearity, Distortion, (P1dB, IIP3), Sensitivity, Figure; RF Passives: Q-factors, Impedance Transformation, Matching Network; Transceiver Architectures: Receivers-Heterodyne, Direct downconversion, Image Reject Receivers, Direct Conversion transmitter, two-step transmitter, Low Noise Amplifier Design; Mixer Design; Oscillator Design; Basic architectures of Power Amplifiers. Use of Agilent ADS for Design projects. Prerequisite EE 4340. (3-0). Y

EERF 6351 Computational Electromagnetics (3 semester hours) Review of Maxwell's equations; numerical propagation of scalar waves; finite-difference time-domain solutions of Maxwell's equations; numerical implementations of boundary conditions; numerical stability; numerical dispersion; absorbing boundary conditions for free space and waveguides; selected applications in telecommunications, antennas, microelectronics and digital systems. Prerequisite: EE 4301 or equivalent. (3-0) R

EERF 6355 RF and Microwave Amplifier Design (3 semester hours) Design of high-frequency active circuits. Review of transmission line theory. RF and microwave matching circuits using discrete and guided wave structures. Detailed study of S-parameters. Design of narrow band, broadband and low noise amplifiers. Detailed study of noise figure, noise parameters and stability of RF and microwave circuits using S-parameters. Prerequisite: EE 4368 or equivalent. (3-0) R
EERF 6394 Antenna Engineering and Wave Propagation (3 semester hours) Operating principles for microwave antennas used in modern wireless communications and radar systems. Prerequisite: EEGR 6316 or equivalent. (3-0) T

EERF 6395 Radiofrequency and Microwave Systems Engineering (3 semester hours) Review of RF and microwave systems, such as cellular, point-to-point radio, satellite, RFID and RADAR. Topics include: system architectures, noise & distortion, antennas & propagation, transmission lines & network analysis, active & passive components, modulation techniques and specification flowdown. Prerequisite: EE 4368 or equivalent. (3-0) R

EERF 6396 Microwave Design and Measurement (3 semester hours) This lecture and lab course covers the fundamentals of microwave component design and measurements, including vector impedance (scattering parameters), scalar measurements and spectrum analysis. Microwave components, such as filters, directional couplers, switches, amplifiers, and oscillators, will be designed and simulated with various CAD tools and then built and measured to compare performance with theory. Prerequisite: EE 4368 or equivalent. (2-1) R

EERF 7330 Advanced RF Integrated Circuit Design (3 semester hours) Power Amplifiers, different classes of linear (A, B, AB, C) and switching power amplifiers (E, G, H), CMOS Integrated power amplifiers, High Efficiency Power Amplifiers (Doherty Power Amplifier); Phase Locked Loops: Basic concepts of PLL, Charge pumps, Type-I and Type-II PLLs, Noise in PLLs, Phase Noise, Frequency multiplication, RF Synthesizer Architectures, Frequency Dividers, Fractional-N PLLs, Delta-Sigma based PLLs, ADPLL; Advanced RF transceivers; Wideband and multiband radio design; Complete link budget analysis for wireless systems. Design project will focus on design of the entire transmitter using Agilent ADS. Prerequisite: EERF 6330 (RF Integrated Circuit Design). (3-0) Y

EESC 5350 Signals, Systems, and Digital Communications (3 semester hours) Advanced methods of analysis of electrical networks and linear systems. Laplace transforms, Fourier series, and Fourier transforms. Response of linear systems to step, impulse, and sinusoidal inputs. Convolution, system functions, and frequency response. Z transforms and digital systems. Fundamentals of digital communication systems such as information, digital transmission, channel capacity, modulation and demodulation techniques are introduced. Signaling schemes and performance of binary as well as M-ary modulated digital communication systems are introduced. Overall design considerations and performance evaluation of various digital communication systems are discussed. Prerequisite: ENGR 3300 or equivalent. (3-0) R

EESC 5360 Introduction to Communications and Signal Processing (3 semester hours) This course is designed to provide the necessary background for someone with a technical degree to enter the M.S.E.E. program in the Communications and Signal Processing concentration. It will focus on linear systems theory, to include Fourier series, Fourier and Laplace transforms, transfer functions, frequency response, and convolution. It will also include introductions to the solution of ordinary differential equations and to communications systems. Credit does not apply to the 33 hour M.S.E.E. requirement. Prerequisites: One year of calculus and one semester of probability theory. (3-0) R
EESC 6331 Linear Systems and Signals (3 semester hours)  State space methods of analysis and design for linear dynamical systems. Coordinate transformations and tools from advanced linear algebra. Controllability and observability, convolution integrals, transfer functions, stability, controllability, observability. Lyapunov stability analysis. Pole assignment, stabilizability, detectability. State estimation for deterministic models, observers. Introduction to the optimal linear quadratic regulator problem. Prerequisites: EEENGR 2300 and EE 4310. (3-0) Y

EESC 6340 Introduction to Telecommunications Networks (3 semester hours) Circuit, message and packet switching. The hierarchy of the ISO-OSI Layers. The physical layer: channel characteristics, coding, and error detection. The data link control layer: retransmission strategies, framing, multiaccess protocols, e.g., Aloha, slotted Aloha, CSMA, and CSMA/CD. The network layer: routing, broadcasting, multicasting, flow control schemes. Co-requisite: EESC 6349. (3-0) Y

EESC 6341 Information Theory I (3 semester hours) Self information, mutual information, discrete memoryless sources, entropy, source coding for discrete memoryless channels, homogeneous Markov sources, discrete memoryless channels, channel capacity, converse to the coding theorem, noisy channel coding theorem, random coding exponent, Shannon limit. Prerequisite: EESC 6352. (3-0) R


EESC 6344 Coding Theory (3 semester hours) Groups, fields, construction and properties of Galois fields, error detection and correction, Hamming distance, linear block codes, syndrome decoding of linear block codes, cyclic codes, BCH codes, error trapping decoding and majority logic decoding of cyclic codes, non-binary codes, Reed Solomon codes, burst error correcting codes, convolutional codes, Viterbi decoding of convolutional codes. Prerequisite: EESC 6352. (3-0) R

EESC 6349 Random Processes (3 semester hours) Random processes concept. Stationarity and independence. Auto-correlation and cross-correlation functions, spectral characteristics. Linear systems with random inputs. Special topics and applications. Prerequisites: ENGR 3302 and ENGR 3341 or equivalent. (3-0) Y

EESC 6350 Signal Theory (3 semester hours) Signal processing applications and signal spaces, vector spaces, matrix inverses and orthogonal projections, four fundamental subspaces, least squares and minimum norm solutions, the SVD and principal component analysis, subspace approximation, infinite dimensional spaces, linear operators, norms, inner products and Hilbert spaces, projection theorems, spectral properties of Hermitian operators, Hilbert spaces of random variables, linear minimum variance estimation and the Levinson-Durbin algorithm, general optimization over Hilbert spaces, methods and applications of optimization. Prerequisite: ENGR 3302 or equivalent. (3-0) Y

EESC 6352 Digital Communication Systems (3 semester hours) Digital communication systems are discussed. Source coding and channel coding techniques are introduced. Signaling schemes and
performance of binary and M-ary modulated digital communication systems. The overall design
considerations performance evaluations of various digital communications systems are emphasized.
Prerequisite: EESC 6349 or equivalent. (3-0) Y

EESC 6353 Broadband Digital Communication (3 semester hours) Characterization of broadband wireline
and wireless channels. MAP and ML detection. Intersymbol Interference (ISI) effects. Equalization
methods to mitigate ISI including single-carrier and multi-carrier techniques. Equalization techniques
and structures including linear, decision-feedback, precoding, zero-forcing, mean square-error, FIR
versus IIR. Multi-Input Multi-Output (MIMO) Equalization. Implementation issues including complexity,
channel estimation, error propagation, etc. Real-world case studies from Digital Subscriber Lines (DSL)
and wireless systems. Students work individually or in small teams on project and present their findings
to class. Prerequisites: EE 4360 and knowledge of MATLAB. (3-0) T

EESC 6360 Digital Signal Processing I (3 semester hours) Analysis of discrete time signals and systems, Z-
transform, discrete Fourier transform, fast Fourier transform, analysis and design of digital filters.
Prerequisite: ENGR 3302 or EE 4361 or equivalent. (3-0) Y

EESC 6361 Digital Signal Processing II (3 semester hours) Continuation of EESC 6360. Includes advanced
topics in signal processing such as: Digital filter structures and finite-word-length effects, digital filter
design and implementation methods, multirate digital signal processing, linear prediction and optimum
filtering, spectral analysis and estimation methods. Prerequisite: EESC 6360. (3-0) T

EESC 6362 Introduction to Speech Processing (3 semester hours) Introduction to the fundamentals of
speech signal processing and speech applications. Speech analysis and speech synthesis techniques,
speech enhancement and speech coding techniques including ADPCM and linear-predictive based
methods such as CELP. Pre-requisite: EESC 6360. (3-0) T

EESC 6363 Digital Image Processing (3 semester hours) Image formation, image sampling, 2D Fourier
transform and properties, image wavelet transform, image enhancement in spatial and frequency
domains, image restoration, color image processing, image segmentation, edge detection,
morphological operations, object representation and description, introduction to image compression.
Prerequisites: EE 4361 and knowledge of C or MATLAB. (3-0) T

EESC 6364 Pattern Recognition (3 semester hours) Pattern recognition system, Bayes decision theory,
maximum likelihood and Bayesian parametric classifiers, linear discriminant functions and decision
boundaries, density estimation and nonparametric classifiers, unsupervised classification and clustering,
multilayer neural networks, decision trees, classifier comparison. Prerequisite: Knowledge of C or
MATLAB. Co-requisite: EESC 6349. (3-0) T

EESC 6365 Adaptive Signal Processing (3 semester hours) Adaptive signal processing algorithms learn the
properties of their environments. Transversal and lattice versions of the Least Mean Squares (LMS) and
Recursive Least Squares (RLS) adaptive filter algorithms and other modern algorithms will be studied.
These algorithms will be applied to network and acoustic echo cancellation, speech enhancement,
channel equalization, interference rejection, beam forming, direction finding, active noise control,
wireless systems, and others. Prerequisites: EESC 6349, EESC 6360 and knowledge of matrix algebra. (3-0) T

EESC 6366 Speech and Speaker Recognition (3 semester hours) Introduction to concepts in automatic recognition methods for speech applications; the primary emphasis is for automatic speech recognition and speaker identification techniques. Topics include speech features for recognition, hidden Markov models (HMMs) for acoustic and language applications (speech recognition, dialect/language recognition), Gaussian mixture models (GMMs) for speaker characterization, robustness issues to address noise and channel conditions for automatic recognition. **Co-requisite: EESC 6349. (3-0) Y

EESC 6367 Applied Digital Signal Processing (3 semester hours) Implementation of signal processing algorithms, combination of textual and graphical programming of DSP systems, fixed-point versus floating-point, FPGA/DSP chip architecture, FPGA/DSP software development tools, code optimization, application project. Prerequisites: EE 4361 or equivalent and knowledge of C or MATLAB. (2-3) Y

EESC 6390 Introduction to Wireless Communication Systems (3 semester hours) Principles, practice, and system overview of mobile systems. Modulation, demodulation, coding, encoding, and multiple-access techniques. Performance characterization of mobile systems. Prerequisite: EE 3350 or equivalent. (3-0) Y

EESC 6391 Signaling and Coding for Wireless Communication Systems (3 semester hours) Study of signaling and coding for wireless communication systems. Topics which will be covered include digital modulation schemes, digital multiple access technologies, their performance under wireless channel impairments, equalization, channel coding, interleaving, and diversity schemes. Prerequisites: EESC 6352 and EESC 6390. (3-0) T

EESC 6392 Propagation and Devices for Wireless Communications (3 semester hours) Mobile communication fundamentals, models of wave propagation, simulation of electromagnetic waves in the cellular environment, multipath propagation, compensation for fading, mobile and cell antenna designs, problems of interference and incompatibility, design of active and passive cellular components, comparison of analog and digital cellular designs. Prerequisites: EE 4301 or equivalent; EESC 6390. (3-0) R

EESC 6393 Imaging Radar Systems Design and Analysis (3 semester hours) Radar systems, antenna systems, the radar equation, electromagnetic waves scattering from targets, radar signal and noise, detection and extraction of signal from noise or clutter, range and Doppler profiles, radar image formation, real aperture radar imaging, SAR imaging, ISAR imaging, image distortion, super resolution radar imaging techniques, and advanced holographic radar imaging techniques. Prerequisites: EE 3350 and EE 4301 or equivalents. (3-0) T

EESC 7V84 Special Topics in Telecommunications (1-6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ([1-6]-0) R
EESC 7V85 Special Topics in Signal Processing (1-6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) (1-6)-0 S

EESC 7V86 Special Topics in Wireless Communications (1-6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) (1-6)-0 S

EECT 6379 Energy Harvesting, Storage and Powering for Microsystems (3 semester hours) This course studies the electrical characteristics of various renewable energy sources and the corresponding approaches on harvesting and storage, with emphasis on the imposed requirements of microscale dimension. They are followed by the discussion on power conditioning and cross-layer energy/power management with circuit implementations. Prerequisite: EE 3311 or equivalent. (3-0) Y

EEBM 6380 (BMEN 6380) Introduction to Cellular Microscopy (3 semester hours) Image formation, diffraction, labeling techniques, fluorescence and image processing techniques will be introduced. (3-0) Y

EEBM 6381 (BMEN 6381) Advanced Concepts in Microscopy (3 semester hours) Continuation of BMEN 6380, with emphasis on advanced approaches such as vectorial diffraction, stochastic aspects of image formation and analysis. Prerequisites: BMEN 6380 or by instructor permission. (3-0) Y

EESC 6368 Multimodal Signal Processing (3 semester hours) Theory and applications in the field of multimodal signal processing. Robustness and performance of systems by considering cross-modal integration. Introduction to speech processing, natural language and dialog processing, image and video processing (face recognition, gestures and action recognition). Statistical algorithms and machine learning methods used for fusion/fission of multimodal content at feature, decision and model level. Common graphical models used in multimodal analysis including Dynamic Bayesian Network, Product HMM, Multistream HMM, coupled HMM, Factorial HMM, Input Output HMM and segmental models. Prerequisite: ENGR 3341 or equivalent. Recommended Co-requisite: EESC 6349. (3-0) T

EESC 6395 Wireless Sensor Systems and Networks (3 semester hours) Sensor mote architecture and design. Sensor network types, architecture and protocol stack. Studies on and design of physical layer, data link layer, network layer, transport layer, and application layer. Time synchronization, localization, topology, mobility and task management issues in wireless sensor networks. Security and privacy issues. Case studies on applications. Prerequisite: ECS 4390 or equivalent. (3-0) T

EERF 6392 Millimeter Wave Integrated Circuit Design (3 semester hours) Millimeter wave applications, silicon integrated circuits technology trends, passive components in silicon IC’s for millimeter wave operation, Drude model for silicon substrate, parasitic modeling, NQS transistor model, High frequency limit for thermal noise, chip interface including packaging and antenna, comparison between RF and mm-wave circuits, techniques for extending circuit operation frequency (injection locking and frequency multiplication), and diode circuits including a parametric amplifier. Prerequisite: EECT 6325 and EERF 6311 or equivalent. (3-0) R
MECH 6300 Linear Systems (EESC 6331, SYSM 6307) (MV1) (3 semester hours) State space methods of analysis and design of linear dynamical systems. Coordinate transformations, controllability and observability. Lyapunov stability analysis. Pole assignment, stabilizability, detectability. State estimation for deterministic models, observers. Introduction to the optimal linear quadratic regulator problem. Prerequisites: MECH 4310 or equivalents (3-0) Y

MECH 6303 Computer Aided Design (3 semester hours) This course provides an introduction to design principles and methodologies for geometrical modeling, curve and surface fitting in an automated environment, CAD/CAM simulation of manufacturing, and computer-aided solid modeling. Prerequisite: MECH 3305 or equivalent. (3-0) Y

MECH 6306 Continuum Mechanics (3 semester hours) This course provides an introduction to mechanics of continua within a rigorous mathematical framework. Topics of interest include elements of Cartesian tensors, analysis of stress, kinematics, analysis of deformation, analysis of stress, and constitutive equations. Other areas of discussion focus on material anisotropy, mechanical properties of fluids and solids, derivation of field equations, boundary conditions, and solutions of initial and boundary value problems for material continua. Prerequisite: MECH 3301 or equivalent (3-0) Y

MECH 6307 Thermal and Energy Principles (3 semester hours) This course provides an extended treatment of the fundamentals of thermodynamics as related to energy conversion, storage, transmission and use. Industrial topics may include: conventional and sustainable power generation or efficiency in refrigeration, air-conditioning and heating applications. Further applications may include: studies of internal combustion engines, heat pump systems, and other energy conversion machines. (3-0) Y Prerequisites: MECH 3320, MECH 3315 or equivalents. (3-0) Y

MECH 6311 Advanced Mechanical Vibrations (3 semester hours) Fundamental phenomena of multidegree discrete and continuous systems. Matrix methods of solutions of discrete systems. Determination of natural frequencies and mode shapes of discrete and continuous systems. Passive methods of vibration control. Applications of finite element methods to analysis of mechanical vibrations. Prerequisite: MECH 4340 or equivalent. (3-0) T

MECH 6312 (EESC 6349) (MV2) Random Stochastic Processes (3 semester hours) Introductory course to discrete and continuous stochastic process. Spectral analysis, response of linear systems to stochastic inputs. Introduction to estimation theory, Kalman filtering. Prerequisite: MECH 6300 or equivalent. (3-0) T

MECH 6313 (EEGR 6336) (MV3) Nonlinear Systems (3 semester hours) Fundamental concepts and tools for the analysis of nonlinear systems, design of controllers and estimators for nonlinear systems. Prerequisite: MECH 6300 or equivalent. (3-0) T
Robust Control (3 semester hours) Theory, methodology, and software tools for the analysis and design of model-based control systems with multiple actuators and multiple sensors. Control oriented model parameterizations and modeling errors. Definitions and criteria for robust stability and performance. Optimal synthesis of linear controllers. The loop shaping design method. Methods to simplify the control law. Control law discretization. Mechatronic design examples. Prerequisite: MECH 6300 or equivalent. Co-requisite: MECH 6311 or equivalent. (3-0) T

Robot Control (3 semester hours) Dynamics of robots; methods of control; force control; robust and adaptive control; feedback linearization; Lyapunov design methods; passivity and network control; control of multiple and redundant robots; teleoperation. Prerequisite: MECH 6300. (3-0) T

Multiscale Design & Optimization (3 semester hours) Multi-scale systems consist of components from two or more length scales (nano, micro, meso, or macro-scales). The challenge is to make these components so they are conceptually and model-wise compatible with other-scale components with which they interface. This course covers the fundamental properties of scales, design theories, modeling methods and manufacturing issues which must be addressed in these systems. Examples include precision instruments, nanomanipulators, fiber optics, micro/nano-photronics, nanorobotics, MEMS, carbon nano-tube assemblies. Prerequisite: MECH 6303 (3-0) T

Systems and Control Theory (3 semester hours) Systems and control theory: state space, convolution integrals, transfer functions, stability, controllability, observability, and feedback. Prerequisites: ENGR 2300 and MECH 4310 or equivalents. (3-0) Y

Materials Design & Manufacturing (3 semester hours) This course provides an in-depth analysis of design problems faced in the development and mass manufacture of advanced materials. This course will explore the interplay among mathematical modeling, CAD, mold creation and manufacturing processes for polymers, ceramics and metals. Tradeoffs among various thermomechanical properties, cost and aesthetics will be studied. Prerequisite: MECH 6303. (3-0) T

Lithography and Nanofabrication (3 semester hours) Study of the principles, practical considerations, and instrumentation of major lithography technologies for nanofabrication of devices and materials. Advanced photolithography, electron beam lithography, nanoimprint lithography x-ray lithography, ion beam lithography, soft lithography, and scanning probe lithography, basic resist and polymer science, applications in nanoelectronic and biomaterials. (3-0) Y

Micro & Nano Manufacturing (3 semester hours) This course surveys techniques to fabricate and analyze micrometer, submicron, and nanometer structures, with applications. Additional topics that are covered include: surface characterization, preparation, and measurement techniques, resist technology, optical projection, interferometric, X-ray, ion, and electron lithography; Aqueous, ion, and plasma etching techniques; lift-off and electroplating; and ion implantation. Applications in microelectronics, microphotonics, information storage, and nanotechnology will also be explored. (3-0) T
MECH 6350 Advanced Solid Mechanics of Solids and Structures (3 semester hours) This course provides a foundation for studying fundamental basis from which to explore mechanical behavior of materials analyzing at the macroscopic level and the relationship of mechanical behavior to material structure and mechanisms of deformation and failure problems common in engineering design and materials science. Topics to be covered include elasticity, elastic stability, wave propagation, plasticity, and fracture. This course explores static and dynamic stress analysis, two- and three-dimensional theory of stressed elastic solids, analyses of structural elements with applications in a variety of fields, variational theorems and approximate solutions. Prerequisite: MECH 6306 or equivalent. (3-0) T

MECH 6353 Computational Mechanics (3 semester hours) This course provides an introduction to the use of numerical methods for solving in the solution of solid mechanics and materials problems. The course topics include geometrical, approximation, interpolation, error estimation, optimal, and adaptive meshing, variational, variational problems in linear elasticity, finite, finite element analysis, error estimation, convergence, singularities, adaptive, and constrained, constrained problems, mixed, mixed methods, stability, and convergence, variational, variational problems in nonlinear elasticity, consistent, consistent linearization, the Newton-Rhapson method, bifurcation, bifurcation analysis, adaptive, adaptive strategies in nonlinear elasticity, constrained, constrained finite deformation problems, contact, contact and friction, time, time integration, algorithm, algorithm analysis, accuracy, operator, accuracy, stability, and convergence, operator splitting and product formulas, coupled, coupled problems, impact, impact and friction, subcycling, space, subcycling, space-time methods, inelastic, inelastic solids, constitutive, constitutive updates, applications, stability, and convergence, consistent linearization, applications, to finite deformation viscoplasticity, viscoelasticity, and Lagrangian modeling of fluid flows. Prerequisite: MECH 6306 or equivalent. (3-0) T

MECH 6354 Experimental Mechanics (3 semester hours) This course provides Mechanical Engineering students with experimental techniques for measurements of deformations and analysis of stress for solid engineering materials when subjected to mechanical and thermal loadings; an introduction to the physical mechanisms associated with design-limiting behavior of engineering materials, especially stiffness, strength, toughness, and durability; an understanding of basic mechanical properties of engineering materials, testing procedures used to quantify these properties, and ways in which these properties characterize material response; quantitative skills to deal with materials-limiting problems in engineering design; and a basis for materials selection in mechanical design. Prerequisite: MECH 3301 or equivalent. (3-0) T

MECH 6355 Viscoelasticity (3 semester hours) This course provides an overview of advanced stress analysis of solids with properties strongly influenced by time, temperature, pressure, and humidity. Topics covered include: the material characterization and thermodynamic foundation of the constitutive behavior of time-dependent materials such as polymers, and composites; time-temperature superposition principle for thermorheologically simple materials; correspondence principle; integral formulation for quasi-static boundary value problems; treatment of time-varying boundary conditions; linear viscoelastic stress waves, approximate methods of linear viscoelastic stress analysis; and
introduction to nonlinear viscoelastic constitutive laws. **Prerequisite:** MECH 6306 or equivalent (3-0) T

MECH 6367 Mechanical Properties of Materials (3 semester hours) This course provides an introduction to the mechanical behavior of solids, emphasizing the relationships between microstructure, defects, and mechanical properties. Topics include elastic, inelastic, and plastic properties of crystalline and amorphous materials. Polymer properties, viscoplasticity, and strain-rate dependence. The relationships between stress, strain, strain rate, and temperature for deformable solids. Application of dislocation theory to strengthening mechanisms in crystalline solids. The phenomena of creep, fracture, and fatigue, and their controlling mechanisms. **Prerequisite:** MECH 6306 or equivalent (3-0) T

**MECH 6368 (MSEN 6350) [MV6] Imperfections in Solids (3 semester hours)** Point defects in semiconductors, metals, ceramics, and nonideal defect structures; nonequilibrium conditions produced by irradiation or quenching; effects of defects on electrical and physical properties, effects of defects at interfaces between differing materials. MECH 6306 or equivalent. (3-0) T

MECH 6370 Fluid Mechanics (3 semester hours) This course provides the beginning graduate student with a broad background in the fundamentals of fluid mechanics and an introduction to the various flow regimes. After completing this course, the student should be prepared to take subsequent courses in a broad range of engineering disciplines, such as mechanical, bioengineering, aerospace, and civil engineering. Topics include derivation of the governing equations of motion and an introduction to viscous, inviscid, turbulent, and boundary-layer flows. **Prerequisite:** MECH 3315 or equivalent. (3-0) T

**MECH 6371 Computational Fluid Dynamics** (3 semester hours) This course presents computational methods for viscous flow, boundary layer theory and turbulence. Formulation of finite element methods and other traditional numerical techniques for analysis of dynamic problems in fluid mechanics will be examined. **Prerequisite:** MECH 6370 or equivalent. (3-0) T

MECH 6380 Advanced Heat Transfer (3 semester hours) This course provides an introduction to fundamentals of conductive, convective and radiative heat transfer with an emphasis on numerical and analytical solutions. Steady and transient one- and multi-dimensional thermal conduction are described. Other topics include emphasis on analytical methods, numerical techniques and approximate solutions. **Prerequisite:** MECH 4350, MECH 3315 or equivalents. (3-0) T
MECH 6384 Applied Heat Transfer (3 semester hours) This course provides a rigorous development of heat transfer fundamentals as applied to relevant industrial problems, including heat transfer in buildings, thermal management of electronics, air conditioning & refrigeration systems and study of various thermal mechanical equipments e.g. heat exchangers and furnaces. Prerequisite: MECH 6307 or equivalent. (3-0) T

MECH 6V29 Special Topics in Controls and Dynamic Systems (1-6 semester hours) (May be repeated to a maximum of 9 hours.) For letter grade credit only. ([1-6]-0) R

MECH 6V49 Special Topics in Manufacturing and Design Innovation (1-6 semester hours) (May be repeated to a maximum of 9 hours.) For letter grade credit only. ([1-6]-0) R

MECH 6V69 Special Topics in Mechanics and Materials (1-6 semester hours) (May be repeated to a maximum of 9 hours.) For letter grade credit only-. ([1-6]-0) R

MECH 6V89 Special topics in Thermal and Fluid Sciences (1-6 semester hours) May be repeated to a maximum of 9 hours.) For letter grade credit only. ([1-6]-0) R

MECH 6V97 Research in Mechanical Engineering (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) R

MECH 6V98 Thesis (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) R

MECH 6391 (EEGR6381) [MV7] Computational Methods (3 semester hours) Numerical techniques and their applications in engineering. Topics will include: numerical methods of linear algebra, interpolation, solution of nonlinear equations, numerical integration, Monte Carlo methods, numerical solution of ordinary and partial differential equations, and numerical solution of integral equations. Prerequisites: ENGR 2300 and ENGR 3300 or equivalents, and knowledge of a scientific programming language. (3-0) R

MECH 6314 (SYSM 6306, BMEN 6372 [MV8]) Engineering Systems: Modeling & Simulation (3 semester hours) This course will present principles of computational modeling and simulation of systems. General topics covered include: parametric and non-parametric modeling; system simulation; parameter estimation, linear regression and least squares; model structure and model validation through simulation; and, numerical issues in systems theory. Techniques covered include methods from numerical linear algebra, nonlinear programming and Monte Carlo simulation, with applications to general engineering systems. Modeling and simulation software is utilized (MATLAB/SIMULINK). (3-0) Y

MECH 6334 Smart Materials and Structures (3-0): Introduction to smart materials. Fundamental properties of smart materials including piezoelectric materials, shape memory alloys or polymers, conducting polymers, dielectric elastomers, and ionic polymer metal composites. Constitutive modeling of smart materials. Characterization techniques. Applications as sensors, actuators and in energy harvesting. Prerequisite: MECH 6306. (3-0) T
MECH 6347 (EEMF 6382) Introduction to MEMS (3 semester hours) Study of micro-electromechanical devices and systems and their applications. Microfabrication techniques and other emerging fabrication processes for MEMS are studied along with their process physics. Principles of operations of various MEMS devices such as mechanical, optical, thermal, magnetic, chemical/biological sensors/actuators are studied. Topics include: bulk/surface micromachining, LIGA, microsensors and microactuators in multi-physics domain. (3-0) T

MECH 6348 (EEMF 6322, MSEN 6322) Semiconductor Processing Technology (3 semester hours) Modern techniques for the manufacture of semiconductor devices and circuits. Techniques for both silicon and compound semiconductor processing are studied as well as an introduction to the design of experiments. Topics include: wafer growth, oxidation, diffusion, ion implantation, lithography, etch and deposition. (3-0) T

MECH 5388 (EEMF 5383, MSEN 5383, PHYS 5383) Plasma Processing (3 semester hours) Hardware oriented study of useful laboratory plasmas. Topics will include vacuum technology, gas kinetic theory, basic plasma theory and an introduction to the uses of plasmas in various industries. (3,0) T

MECH 6383 (EEMF 6383, PHYS 6383) Plasma Science (3 semester hours) Theoretically oriented study of plasmas. Topics to include: fundamental properties of plasmas, fundamental equations (kinetic and fluid theory, electromagnetic waves, plasma waves, plasma sheaths) plasma chemistry and plasma diagnostics. Prerequisite: PHYS 5320 or EEMF 6316 or MECH 6310 or equivalents. (3-0) T

MECH 6341 (EEMF 6348, MSEN 6348) Lithography and Nanofabrication (3 semester hours) Study of the principles, practical considerations, and instrumentation of major lithography technologies for nanofabrication of devices and materials. Advanced photolithography, electron beam lithography, nanoimprint lithography, x-ray lithography, ion beam lithography, soft lithography, and scanning probe lithography, basic resist and polymer science, applications in nanoelectronic and biomaterials. (3-0) Y
MSEN 5300 (PHYS 5376) [MV1] Introduction to Materials Science (3 semester hours) This course provides an intensive overview of materials science and engineering and includes the foundations required for further graduate study in the field. Topics include atomic structure, crystalline solids, defects, failure mechanisms, phase diagrams and transformations, metal alloys, ceramics, polymers as well as their thermal, electrical, magnetic and optical properties. (3-0) R

MSEN 5310 Thermodynamics of Materials (3 semester hours) Work, energy and the first law of thermodynamics; the second law of thermodynamics, thermodynamic potentials, the third law of thermodynamics, thermodynamic identities and their uses, phase equilibria in one-component systems, behavior and reactions of gases. Solutions, binary and multicomponent systems: phase equilibria, materials separation and purification. Electrochemistry. Thermodynamics of modern materials. (3-0) S

MSEN 5320 Materials Science for Sustainable Energy (3 semester hours) Sustainable energy solutions require examining current fossil fuel supply, climate change, and renewable energy source development. Fossil fuel supply and climate change are intimately related, and the global community is actively developing renewable energy source to replace the fossil fuel and minimize its impact on the climate change. Materials science will provide key technology solutions to diverse renewable energy technologies, and practical utilization (energy storage, fuel cell, electrical vehicle, etc.). This course will examine the energy and climate issues, and sustainable energy solutions with emphasis on the role of materials science. (3-0) T

MSEN 5331 (CHEM 5331) [MV2] Advanced Organic Chemistry I (3 semester hours) Modern concepts of bonding and structure in covalent compounds. Static and dynamic stereochemistry and methods for study. Relationships between structure and reactivity. Prerequisite: CHEM 2325 or equivalent. (3-0) Y

MSEN 5333 (CHEM 5333) [MV3] Advanced Organic Chemistry II (3 semester hours) Application of the principles introduced in CHEM 5331, emphasizing their use in correlating the large body of synthetic/preparative organic chemistry. Prerequisite: MSEN 5331/CHEM 5331. (3-0) R

MSEN 5340 (CHEM 5340) [MV4] Advanced Polymer Science and Engineering (3 semester hours) Polymer structure-property relations, Linear and nonlinear viscoelasticity. Dynamic mechanical analysis, time-temperature superposition, creep and stress relaxation. Mechanical models for prediction of polymer deformation, rubber elasticity, environmental effects on polymer deformation, instrumentation for prediction of long term properties. (3-0) R

MSEN 5341 (CHEM 5341) Advanced Inorganic Chemistry I (3 semester hours) Physical inorganic chemistry addressing topics in structure and bonding, symmetry, acids and bases, coordination chemistry and spectroscopy. Prerequisite: CHEM 3341 or consent of instructor. (3-0) Y

MSEN 5344 Thermal Analysis (3 semester hours) Differential scanning calorimetry; thermogravimetric analysis; dynamic mechanical and thermomechanical analysis; glass transition; melting transitions,
relaxations in the glassy state, liquid crystalline phase changes. **Prerequisites:** MSEN 5360 or equivalent. (3-0) R

MSEN 5353 Integrated Circuit Packaging (3 semester hours) Basic packaging concepts, materials, fabrication, testing, and reliability, as well as the basics of electrical, thermal, and mechanical considerations as required for the design and manufacturing of microelectronics packaging. Current requirements and future trends will be presented. General review of analytical techniques used in the evaluation and failure analysis of microelectronic packages. **Prerequisite:** MSEN 6324. (3-0) R

MSEN 5355 (CHEM 5355) [MV5] Analytical Techniques I (3 semester hours) Study of fundamental analytical techniques, including optical spectroscopic techniques and energetic particle and x-ray methods including SEM, EDS, STM, AFM, AES, XPS, XRF, and SIMS. (3-0) Y

MSEN 5356 (CHEM 5356) [MV6] Analytical Techniques II (3 semester hours) Study of chromatography (GC, LC, CZE), statistical methods (standard tests and ANOVA), chemical problem solving, and modern bio/analytical techniques such as biochips, microfluidics, and MALDI-MS. Prerequisite: CHEM 5355 or consent or instructor. (3-0) R

MSEN 5360 Materials Characterization (3 semester hours) Survey of atomic and structural analysis techniques as applied to surface and bulk materials. Physical processes involved in the interaction of ions, electrons and photons with solids; characteristics of the emergent radiation in relation to the structure and composition. (3-0) S

MSEN 5361 Fundamentals of Surface and Thin Film Analysis (3 semester hours) Survey of materials characterization techniques; Rutherford backscattering; secondary ion mass spectroscopy; ion channeling; scanning tunneling and transmission microscopy; x-ray photoelectron and Auger electron spectroscopy; x-ray and electron diffraction. Prerequisite: MSEN 5360 or equivalent. (3-0) R

MSEN 5370 Ceramics and Metals (3 semester hours) Emphasis on structure-property relationships: chemical bonding, crystal structures, crystal chemistry, electrical properties, thermal behavior, defect chemistry. Chemical and physical properties of metals and alloys. Topics include: powder preparation, sol-gel synthesis, densification, toughening mechanisms, crystal structure, thermodynamics, phase diagrams, phase transformations, oxidation, mechanical, electrical and magnetic properties. **Prerequisites:** MSEN 5300 and 5310 or equivalents. (3-0) R

MSEN 5371 (PHYS 5371) [MV7] Solid State Physics (3 semester hours) Symmetry description of crystals, bonding, properties of metals, electronic band theory, thermal properties, lattice vibration, elementary properties of semiconductors. Prerequisites: PHYS 5301 and 5320 or equivalent. (3-0) Y

MSEN 5375 (PHYS 5375) [MV8] Electronic Devices Based On Organic Solids (3 semester hours) Solid state device physics based on organic condensed matter structures, including: OLEDs (organic light emitting diodes), organic FETs, organic lasers, plastic photocells, molecular electronic chips. (3-0) R

MSEN 5377 (PHYS 5377) [MV9] Computational Physics of Nanomaterials (3 semester hours) This course introduces atomistic and quantum simulation methods and their applications to modeling study.
nanomaterials (nanoparticles, nanowires, and thin films). The course has three main parts: basic theory of materials (thermodynamics, statistical mechanics, and solid state physics), computational methods to model materials systems, and applications to practical problems. There are three main themes of the course: structure-property relationship of nanomaterials; atomistic modeling for atomic structure optimization; and quantum simulations for electronic structure study and functional property analysis. 

**Prerequisite:** MSEN 6319 or equivalent. [MV10](3-0) R

MSEN 5383 (EEMF 5383, MECH 5383, PHYS 5383) [MV11]Plasma Processing (3 semester hours) Hardware oriented study of useful laboratory plasmas. Topics will include vacuum technology, gas kinetic theory, basic plasma theory and an introduction to the uses of plasmas in various industries. (3-0) T

MSEN 5410 (BIOL 5410) [MV12]Biochemistry of Proteins and Nucleic Acids (4 semester hours) Chemistry and metabolism of amino acids and nucleotides; biosynthesis of nucleic acids; analysis of the structure and function of proteins and nucleic acids and of their interactions including chromatin structure. Prerequisite: BIOL 3361 (biochemistry) or equivalent. (4-0) Y

MSEN 5440 (BIOL 5440[MV13]) Cell Biology (4 semester hours) Molecular architecture and function of cells and subcellular organelles; structure and function of membranes; hormone and neurotransmitter action; growth regulation and oncogenes; immune response; eukaryotic gene expression. Prerequisites: BIOL 5410 and BIOL 5420, or the equivalent, or permission of the instructor. (4-0) Y

MSEN 6310 Mechanical Properties of Materials (3 semester hours) Phenomenology of mechanical behavior of materials at the macroscopic level and the relationship of mechanical behavior to material structure and mechanisms of deformation and failure. Topics covered include elasticity, viscoelasticity, plasticity, creep, fracture, and fatigue. Prerequisite: MECH 3301 or MSEN 5300 or equivalent. (3-0) R

MSEN 6313 (EEOP 6313) [MV14]Semiconductor Opto-Electronic Devices (3 semester hours) Physical principles of semiconductor optoelectronic devices: optical properties of semiconductors, optical gain and absorption, wave guiding, laser oscillation in semiconductors, LEDs, physics of detectors, applications. Prerequisite: EE 3310 or equivalent. (3-0) R

MSEN 6319 Quantum Mechanics for Materials Scientists (3 semester hours) Quantum-mechanical foundation for study of nanometer-scale materials. Principles of quantum physics, stationary-states for one-dimensional potentials, symmetry considerations, interaction with the electromagnetic radiation, scattering, reaction rate theory, spectroscopy, chemical bonding and molecular orbital theory, solids, perturbation theory, nuclear magnetic resonance. (3-0) S

MSEN 6320 (EEMF 6320) [MV15]Fundamentals of Semiconductor Devices (3 semester hours) Semiconductor material properties, band structure, equilibrium carrier distribution, non-equilibrium current-transport processes, and recombination-generation processes. Prerequisite: EEMF 6319 or equivalent. (3-0) R

MSEN 6321 (EEMF 6321) [MV16]Active Semiconductor Devices (3 semester hours) The physics of operation of active devices will be examined, including p-n junctions, bipolar junction transistors and...
field-effect transistors: MOSFETs, JFETs, and MESFETs. Special-purpose MOS devices including memories and imagers will be presented. Recommended co-requisite: EEMF 6320. (3-0) R

MSEN 6322 (EEMF 6322 and MECH 6348) [MV17] Semiconductor Processing Technology (3 semester hours) Modern techniques for the manufacture of semiconductor devices and circuits. Techniques for both silicon and compound semiconductor processing are studied as well as an introduction to the design of experiments. Topics include: wafer growth, oxidation, diffusion, ion implantation, lithography, etch and deposition. (3-0) R

MSEN 6324 (EEMF 6324) [MV18] Electronic, Optical and Magnetic Materials (3 semester hours) Foundations of materials properties for electronic, optical and magnetic applications. Electrical and thermal conduction, elementary quantum physics, modern theory of solids, semiconductors and devices, dielectrics, properties of magnetic and optical materials. Prerequisite: MSEN 5300 or PHYS 5376 or equivalent. (3-0) S

MSEN 6330 Phase Transformations (3 semester hours) Thermodynamic, kinetic, and structural aspects of metallic and ceramic phase transformations: mechanisms and rate-determining factors in solid-phase reactions; diffusion processes, nucleation theory, precipitations from solid solution, order-disorder phenomena, and applications of binary and ternary phase diagrams. Prerequisite: MSEN 5310 or equivalent. (3-0) R

MSEN 6340 Advanced Electron Microscopy (3 semester hours) Theory and applications of scanning and transmission electron microscopy; sample preparation, ion beam and analytical techniques. Prerequisite: MSEN 5360 or equivalent. (3-0) Y

MSEN 6341 Advanced Electron Microscopy Laboratory (3 semester hours) Lab support for MSEN 6340. MSEN 6340 must be taken with or before MSEN 6341. (0-3) Y

MSEN 6348 (EEMF 6348, MECH 6341) [MV19] Lithography and Nanofabrication (3 semester hours) Study of the principles, practical considerations, and instrumentation of major lithography technologies for nanofabrication of devices and materials. Advanced photolithography, electron beam lithography, nanoimprint lithography, x-ray lithography, ion beam lithography, soft lithography, and scanning probe lithography, basic resist and polymer science, applications in nanoelectronic and biomaterials. (3-0) Y

MSEN 6350 Imperfections in Solids (3 semester hours) Point defects in semiconductors, metals, ceramics, and nonideal defect structures; nonequilibrium conditions produced by irradiation or quenching; effects of defects on electrical and physical properties, effects of defects at interfaces between differing materials. Prerequisites: MSEN 5310 and MSEN 6324 or equivalents. (3-0) R

MSEN 6355 (BMEN 6355) [MV20] Nanotechnology and Sensors (3 semester hours) Introduction to the concept of nanotechnology, in context toward designing sensors/diagnostic devices. Identifying the impact of nanotechnology in designing "state-of-the-art" sensors for healthcare applications. Topics
include: nanotechnology and nanomaterials, principles of sensing and transduction and heterogeneous integration toward sensor design. (3-0) Y

MSEN 6358 (BIOL 6358) [MV21] Bionanotechnology (3 semester hours) Protein, nucleic acid and lipid structures. Macromolecules as structural and functional units of the intact cell. Parallels between biology and nanotechnology. Applications of nanotechnology to biological systems. (3-0) T

MSEN 6361 Deformation Mechanisms in Solid Materials (3 semester hours) Linear elastic fracture mechanics, elastic-plastic fracture mechanics, time dependent failure, creep and fatigue, experimental analysis of fracture, fracture and failure of metals, ceramics, polymers and composites. Failure analysis related to material, product design, manufacturing and product application. Prerequisite: MSEN 5300 or MECH 6301/MSEN 6310 or equivalent. (3-0) R

MSEN 6362 Diffraction Science (3 semester hours) Diffraction theory; scattering and diffraction experiments; kinematic theory; dynamical theory; x-ray topography; crystal structure analysis; disordered crystals; quasi-crystals. (3-0) R

MSEN 6371 (PHYS 6371) [MV22] Advanced Solid State Physics (3 semester hours) Continuation of MSEN 5371/PHYS 5371, transport properties of semiconductors, ferroelectricity and structural phase transitions, magnetism, superconductivity, quantum devices, surfaces. Prerequisite: MSEN 5371/PHYS 5371 or equivalent. (3-0) R

MSEN 6374 (PHYS 6374) [MV23] Optical Properties of Solids (3 semester hours) Optical response in solids and its applications. Lorentz, Drude and quantum mechanical models for dielectric response function. Kramers-Kronig transformation and sum rules considered. Basic properties related to band structure effects, excitons and other excitations. Experimental techniques including reflectance, absorption, modulated reflectance, Raman scattering. Prerequisite: MSEN 5371/PHYS 5371 or equivalent. (3-0) R


MSEN 6382 (EEMF 6382, MECH 6382 [MV25]) Introduction to MEMS (3 semester hours) Study of micro-electro-mechanical devices and systems and their applications. Microfabrication techniques and other emerging fabrication processes for MEMS are studied along with their process physics. Principles of operations of various MEMS devices such as mechanical, optical, thermal, magnetic,
chemical/biological sensors/actuators are studied. Topics include: bulk/surface micromachining, LIGA, microsensors and microactuators in multiphysics domain. (3-0) R

MSEN 7320 (EEMF 7320) [MV26]Advanced Semiconductor Device Theory (3 semester hours) Quantum mechanical description of fundamental semiconductor devices; carrier transport on the submicron scale; heterostructure devices; quantum-effect devices. Prerequisite: EEMF 6320 and EEMF 6321. (3-0) R

MSEN 7V80 Special Topics in Materials Science and Engineering (1-6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

MSEN 8V40 Individual Instruction in Materials Science and Engineering (1-6 semester hours) (May be repeated for credit.) For pass/fail credit only. ([1-6]-0) S

MSEN 8V70 Research in Materials Science and Engineering (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) S

MSEN 8V98 Thesis (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) S

MSEN 8V99 Dissertation (1-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([1-9]-0) S
SE 6357 Software Quality Assurance and Metrics (3 semester hours) Concepts of the pervasive system attributes: reliability, efficiency, maintainability, reusability, etc. Software complexity and measures. Software process measures, product measures and resource measure. Validation of software measures. Software measures and measurement theory. Measuring, monitoring and controlling reliability. Supporting tools. Prerequisite: CE/CS/SE 5354. (3-0) Y

SE 5V81 (CS 5V81) Special Topics in Computer Science (1-9 semester hours) Selected topics in Computer Science. (May be repeated to a maximum of 9 credit hours.) ([1-9]-0) S

SE 6V81 (CS 6V81) Special Topics in Computer Science (1-9 semester hours) Topics vary from semester to semester. May be repeated for credit as topics vary. ([1-9]-0) S

SE 8V02 (CS 8V02) Topics in Computer Science (1-6 semester hours) (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

SE 8V98 (CS 8V98) Thesis (3-9 semester hours) (May be repeated for credit.) ([3-9]-0) S

SE 8V99 (CS 8V99) Dissertation (1-9 semester hours) (May be repeated for credit.) ([1-9]-0) S
Revised Current Description

SYSM 6301 Systems Engineering, Architecture and Design (3 credit semester hours)
Architecture The course will consider concepts related to the architecture and design of large-scale and decentralized systems from technical and management perspectives. An overview of Systems architectures, requirements analysis, design tradeoffs, and reliability will be discussed through case studies and mathematical techniques. International Students will explore the history and current state-of-the-art in systems architecture and design concepts, international standardization bodies, engineering frameworks, processes, notations, and tool support from both theoretical and practical perspectives. Prerequisites: none (3-0) Y

SYSM 6302 Dynamics of Complex Networks and Systems (3 credit semester hours) Design, development, and analysis of the dynamics of large, complex interconnected networks and systems. Prerequisites: none (3-0) Y

SYSM 6303 (OPRE 6301) Quantitative Introduction to Risk and Uncertainty in Business (3 credit semester hours) Introduction to statistical and probabilistic methods and theory applicable to situations faced by managers. Topics include: data presentation and summarization, regression analysis, fundamental probability theory and random variables, introductory decision analysis, estimation, confidence intervals, hypothesis testing, and One Way ANOVA (Some sections of this class may require a laptop computer). Prerequisite: MATH 5304 or equivalent. (3-0) T

SYSM 6304 (OPRE 6335) Risk Assessment and Decision Analysis Management (3 credit semester hours) This course will familiarize participants with various kinds of risk that an overview of the main concepts organization may face; methodologies for identifying these risks and classifying them into various categories, their extent and their potential for causing harm; methods of risk assessment, for quantifying the potential impact of various kinds of risk, as well as the cost of implementing risk management, and decision analysis. The methods used in industry, such as probabilistic risk assessment, six sigma, techniques, and reliability, are discussed. Advanced methods from economics risk management and finance (decision optimization and portfolio analysis) are presented. Prerequisite: SYSM 6303 or OPRE 6301 implementation strategies at an organizational level. (3-0) T

SYSM 6305 Dynamic Systems Optimization (3 credit semester hours) System modeling using Modeling & Analysis (2-semester hours). This course will address foundational aspects of linear systems, nonlinear systems and signal processing. Techniques such as time-domain and frequency domain approaches. Dynamic programming, conditions for optimality. Relation to control theory and operations research will be introduced. Applications to real-world engineering. Prerequisites: none systems will be
presented, such as target tracking, large-scale communication networks, and large-scale energy systems. 

SYSM 6306 (BMEN 6372/MECH 6314[MJV 3]) Engineering Systems: Modeling & Simulation of Engineering Systems (3 credit semester hours) This course will present principles of computational modeling and simulation and optimization of complex systems. General topics covered include: parametric and non-parametric modeling; system simulation; parameter estimation, linear regression and least squares; model structure and model validation through simulation; and, numerical issues in systems theory. Techniques covered include methods from numerical linear algebra, hierarchical decomposition, cellular decomposition, nonlinear programming and Monte Carlo simulation, with applications to general engineering systems. Modeling and simulation software is utilized (MATLAB/SIMULINK). Prerequisites: none. (3-0) Y

SYSM 6331 Systems & Control Theory (3 credit semester hours) This course will present widely used concepts and techniques from systems and control theory; such as convolution integrals, transfer functions, state space, stability, controllability, observability, and feedback. Prerequisites: MECH 2300 and MECH 4310 or equivalents or consent of instructor. (3-0) Y

SYSM 6307 (EESC 6331/MECH 6300) [MV4]Linear Systems (3 semester hours) State space methods of analysis and design of linear dynamical systems. Coordinate transformations and tools from advanced linear algebra. Controllability and observability. Lyapunov stability analysis. Pole assignment, stabilizability, detectability. State estimation for deterministic models, observers. Introduction to the optimal linear quadratic regulator problem. Prerequisites: EE 4310 or MECH 4310 or equivalents (3-0) Y
SYSM 6308 (CS 6356/SE 6356) [MV5] Software Maintenance, Evolution & Re-engineering (3 credit semester hours) Principles and techniques of software maintenance. Impact of software development process on software justifiability, maintainability, evolvability, and planning of release cycles. Use of very high-level languages and dependencies for forward engineering and reverse engineering. Achievements, pitfalls, and trends in software reuse, reverse engineering, and re-engineering. Prerequisite: CE/CS/SE 5354 or consent of instructor. (3-0) Y

SYSM 6309 (SE 6361/CS 6361) [MV6] Advanced Requirements Engineering (3 credit semester hours) System and software requirements engineering. Identification, elicitation, modeling, analysis, specification, management, and evolution of functional and non-functional requirements. Strengths and weaknesses of different techniques, tools, and object-oriented methodologies. Interactions and trade-offs among hardware, software, and organization. System and sub-system integration with software and organization as components of complex, composite systems. Transition from requirements to design. Critical issues in requirements engineering. Prerequisite: CS/SE 5354 or consent of instructor. (3-0) S

SYSM 6310 (SE 6367/CE 6367/CS 6367) [MV7] Software Testing, Validation, and Verification (3 credit semester hours) Fundamental concepts of software testing. Functional testing. GUI based testing tools. Control flow based test adequacy criteria. Data flow based test adequacy criteria. White box based testing tools. Mutation testing and testing tools. Relationship between test adequacy criteria. Finite state machine based testing. Static and dynamic program slicing for testing and debugging. Software reliability. Formal verification of program correctness. Prerequisites: CE/CS/SE 5354 or consent of instructor. (3-0) Y

SYSM 6V70 Research In Systems Engineering and Management (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) R
SYSM 6V80 Special Topics in Systems Engineering and Management (1–6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

SYSM 6V90 Thesis (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) S

SYSM 6311 (OPRE 6362) Systems Project Management (3 credit semester hours) Systems project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives. The course will cover critical path methods for planning and controlling projects including time and cost tradeoffs, resource utilization, organizational design, conflict resolution and stochastic considerations. Prerequisites: none (3-0) Y

SYSM 6312 (FIN 6301) Systems Financial Management (3 credit semester hours) Theoretical and procedural considerations in the administration of the finance function in the individual business firm; planning, fundraising, controlling of firm finances; working capital management, capital budgeting and cost of capital. Co-prerequisites: OPRE 6301 and ACCT 6201, or consent of instructor. (3-0) Y

SYSM 6313 (OB 6332) Negotiating Deals & Resolving Conflict within the Organization (3 credit semester hours) This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal, group, and international settings. Emphasis is placed on understanding influence and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises. Prerequisite: OB6301 or consent of instructor. (3-0) Y

SYSM 6314 Manufacturing & Service Systems Planning & Analysis (3 credit semester hours) Manufacturing & Service Systems Planning & Analysis is the study of management related to transforming inputs to outputs for both manufacturing and service organizations. Its fundamental purpose is the adding of value to inputs - materials, labor, capital and management - to create outputs - products or services which customers want - throughout the supply chain. Prerequisites: none (3-0) Y

SYSM 6315 (ENTP 6398) The Entrepreneurial Experience (3 credit semester hours) This course is designed to provide student teams with practical experience in the investigation, evaluation and
recommendation of technology and/or market entry strategies for a significant new business opportunity. Projects will be defined by the faculty and will generally focus on emerging market opportunities defined by new technologies of interest to a sponsoring corporate partner. Teams will be comprised of management and engineering graduate students, mentored by faculty and representatives of the partnering company. Evaluation will be based on papers, presentations and other deliverables defined on a case-by-case basis. Prerequisites: ENTP 6370 or consent of instructor (3-0) Y

**SYSM 6316 (ENTP 6388) [MV12]** Innovation within the Corporation (3 credit semester hours)
Intrapreneurs are the entrepreneurs within established corporations who combine innovation, creativity and leadership to develop and launch new products, new product lines and new business units that grow revenues and profits from within. The course seeks to equip student with the skills and perspectives required to initiate new ventures and create viable businesses in dynamic and uncertain environments in the face of organizational inertia and other sources of resistance to innovation. Course topics include the elements of strategic analysis and positioning for competitive advantage in dynamic markets, and the structuring, utilization and mobilization of the internal resources of existing firms in the pursuit of growth and new market opportunities. Prerequisites: OB 6301 and ENTP 6370 or consent of instructor (3-0) Y

**SYSM 6317 Management of High-Technology Products (3 credit semester hours)** Building on the premise that successful product management involves getting the right product to the right customer at the right price at the right time, the course will teach techniques in product identification and requirements; product development; management of internal resources, including manufacturing, sales and management; costing and pricing decisions; product planning and winning the right design win. Prerequisites: none (3-0) Y

**SYSM 6318 (MKT 6301) [MV13]** Marketing Management and Marketing Systems Analysis (3 credit semester hours) Overview of marketing management methods, principles and concepts including product, pricing, promotion and distribution decisions. Prerequisites: none (3-0) Y

**SYSM 6319 (MECO 6303) [MV14]** Business Economics (3 credit semester hours) Provides foundations of the economic analysis of business problems, with special emphasis on the function and determination of market prices in production and consumption. Supply and demand, price theory, production theory, trade theory with reference to the global economy, the effects of tax and other policies in the economy, and essential elements of the banking system and monetary policy are addressed. Prerequisites: Math 5304 or equivalent or consent of instructor (3-0) Y
SYSM 6320 (BPS 6332) Strategic Leadership (3 credit semester hours) Addresses the challenge of leading organizations in dynamic and challenging environments. Overall goal is to not only question one’s assumptions about leadership, but also enhance skills and acquire new content knowledge. Topics include visionary and transformational leadership; post-heroic leadership; empowerment; leveraging & combining resources; designing organizations; and ethics. Prerequisites: none (3-0) Y

SYSE 6321 Systems Integration (3 credit semester hours) Introduction to systems integration in complex systems using the automotive sector as an example; plan, organize and manage the integration of complex automotive systems; understand the decomposition/integration paradigm to manage complexity; define metrics to define achievement of objectives; and, demonstrate ability to work in cross-functional/multi-disciplinary teams. Features of the course include: Team approach; simulated production environment including (virtual) client and vendor interaction in the face of unpredictable (virtual) external events; cross-disciplinary. Intended for a broad audience of engineering graduate students regardless of their specific knowledge or interest in automotive systems or that industry. Prerequisites: none (3-0) T

SYSE 6322 Digital Control of Automotive Powertrain Systems (3 credit semester hours) Digital control systems, discretization and design by equivalents. Input-output design and discrete-time state variable estimation and control. Introduction to various control problems in automotive powertrains. Application of digital control principles to automotive powertrains for internal combustion engine idle speed control and air-to-fuel ratio control. Prerequisites: EE 4310 or MECH 4310 or equivalents (3-0) T

SYSE 6323 (MECH 6323) Robust Control Systems (3 semester hours) Theory, methodology, and software tools for the analysis and design of model-based control systems with multiple actuators and multiple sensors. Control oriented model parameterizations and modeling errors. Definitions and criteria for robust stability and performance. Optimal synthesis of linear controllers. The loop shaping
design method. Methods to simplify the control law. Control law discretization. Mechatronic design examples. Prerequisites: SYSM 6307 or equivalent. (3-0) T
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**BASIS FOR CATALOG COURSE CHANGES**

**NEW COURSES ADDED**
- CRIM 6305 Law and Social Control
- CRIM 6322 Crime Prevention
- CRIM 6322 GIS Application in Criminology

**COURSES DELETED**

**OTHER**
## GRADUATE CATALOG COURSE CHANGES
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**Economic, Political and Policy Sciences**

| PA 6313 Public Policymaking and Institutions |
| PA 6314 Policy Analysis                      |
| PA 6399 Capstone in Public Affairs          |
| PA 7314 Advanced Policy Process, Implementation and Evaluation |
| PA 7320 Advanced Human Capital Research and Theory |
| PA 7340 Intersectoral and Intergovernmental Relations |
| PA 7350 Advanced Organizational Theory and Behavior |
| PA 7360 Advanced Fiscal and Budgetary Policy |

| PA 7311 Models and Tools of Change Management |
| PA 7321 Ethics and Law in Public Affairs    |
| PA 7332 Legal Environment of Public Affairs |
| PA 7338 Seminar in Human Resources          |
| PA 7v26 Policy Research Workshop in Institutions and Processes |
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# JATE CATALOG COURSE CHANGES
CATALOG YEARS: 2012-2014

## Economic, Political and Policy Sciences

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Doctor of Philosophy in Criminology

http://epps.utdallas.edu/crim/phd.html

Faculty

Professors: Bruce Jacobs, James Marquart, Alex Piquero, Nicole Leeper Piquero, John L. Worrall
Associate Professors: Denise Boots, Tomislav Kovandzic, Lynne Vieraitis (Graduate Director)
Assistant Professors: J.C. Barnes, Nadine Connell, Robert Morris
Clinical Professor: Elmer Polk
Clinical Assistant Professors: Timothy Bray, Sarah Maxwell

Mission

The Mission of the Doctor of Philosophy in Criminology at the University of Texas at Dallas is threefold in nature, in order to:

1. Deliver high-quality education to a diverse body of graduate students regarding the etiology, control, and variation of law-breaking across space and time.
2. Serve local, regional, and national communities through professional development programs, public policy analyses, evaluation research, program and policy design, and a forum for new approaches to the study of crime.
3. Advance the understanding of criminology through a multidisciplinary mix of theoretical and applied research.

Objectives

The doctoral program in Criminology is an interdisciplinary, research-oriented degree offered in conjunction with other graduate programs in the School of Economic, Political, and Policy Sciences at UT Dallas. The objective of the Ph.D. program is to provide students a coherent, yet intellectually challenging degree that adequately prepares them to conduct research among the many aspects of criminology and criminal justice, varying with individual interests and areas of specialty. Graduates of the Ph.D. program will be qualified to teach at the University level as professors. Graduates will also be competent to enter into analytic and administrative posts within the vast array of research and policy institutions, criminal justice organizations, and in the private sector.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences (EPPS) in two computing laboratories which equipped with major social science software packages, including E-Views, R, Rats, PASW, STATA, Lexis/Nexis database, and Westlaw for student use. The University's Computing Center provides personal computers and UNIX Workstations. Data and reference materials are also available online via the library and UTD’s memberships in numerous organizations.

Graduate Assistantships

Criminology Program Funding is limited primarily to doctoral students, with limited opportunities others. Students should note their desire to be considered for graduate student funding as a teaching or research assistant in their letter of intent to the program at the time of. For more specific information, please see our Criminology Graduate Program Handbook located on our website at http://epps.utdallas.edu/crim/.
Application and Admission Requirements

The PhD Program in Criminology seeks applicants from a baccalaureate or Masters in Criminology, Sociology, or a relevant discipline. A 3.2 GPA and a GRE score of 1,000 are desirable, but students may be admitted at the program’s discretion. All transcripts must be submitted, along with three letters of recommendation (preferably academic) and a one-page essay describing their background, education, and professional objectives. For more information please see our Graduate Handbook on our website.

Degree Requirements

On admission to the Ph.D. in Criminology Program, a student must complete a 75–90 semester credit hours across three tiers of graduate coursework. Additionally, students must fulfill other requirements including comprehensive exams, and two writing requirements as follows:

- Coursework: 75 credit hours of graduate study (minus transferred or masters hours)
- Analytical Paper Writing Requirement
- Comprehensive Examination
- Doctoral Dissertation

A grade of "C+" or worse in any graduate class requires that the class be retaken with only one retake allowed per course. If the retake results in a final grade of "C+" or worse, the student will be dropped from the program. In addition, all students must meet the University’s minimum required GPA of 3.0 or higher. See our Criminology Graduate Program Handbook located on our website for more specific requirements.

Semester Credit Hour Requirements

Coursework Tiers and Credit Hours

Tier I

Required Criminology Core Classes: 15 hours

Electives: 15 hours (9 hours in Criminology/6 graduate hours taken in any other subject)

Writing Requirement for Analytical Paper: 6 hours

Total Tier I Hours: 36

Tier II

Required Criminology Core Classes: 12 hours

Required Additional EPPS Methods/Stats Classes: 6 hours

Criminology Electives: 6 hours

Open Electives (in Criminology or any other program/college): 6 hours

Total Tier II Hours: 30

Tier III

Dissertation/Three-Paper Option Research (minimum of 9 hours)
Total Tier III Hours: 9

Total Program Hours: 75 total credit hours minimum beyond BA/BS

- 27 Hours Core Criminology Courses
- 6 Hours Analytical Writing
- 6 Hours Additional EPPS Methods/Stats Classes
- 15 Hours Criminology Electives
- 12 Hours Open Electives (any program/college)
- 9 Hours Dissertation

75 Hours TOTAL

Core Courses

- EPPS 6310 Research Design I
- CRIM 6300 Proseminar in Criminology
- CRIM 6303 Etiology of Crime and Criminality
- CRIM 6307 Extent of Crime and Measurement in Criminology
- CRIM 6311 Crime and Justice Policy
- EPPS 6313 (Intro to Quantitative Methods)
  or EPPS 7316 (Regression and Multivariate Analysis)
- CRIM 7300 Advances in Criminology Theory
- CRIM 7301 Seminar in Criminology Research
- CRIM 6V98 (Analytical Writing) (6 hours)
  or CRIM 6V96 (Thesis Writing Research) (6 hours)
- CRIM 8V99 Dissertation (18 hours)

Criminology Electives

- CRIM 6305 Law and Social Control
- CRIM 6308 Victimology
- CRIM 6309 Communities and Crime
- CRIM 6310 Delinquency and Juvenile Justice
- CRIM 6313 Corrections
- CRIM 6314 Policing
- CRIM 6315 Violent Crime
- CRIM 6317 Courts
- CRIM 6322 Crime Prevention
- CRIM 6323 Violence and Gun Control
- CRIM 6324 Correlates of Crime and Justice
- CRIM 6332 GIS Applications in Criminology
- CRIM 6348 Drugs & Crime
- CRIM 7342 Qualitative Criminology
- CRIM 7351 Advanced Criminological Theory
CRIM 7381 Special Topics in Criminology
CRIM 8V01 Independent Study in Criminology

Sample of Additional Methods/Stats Classes

EPPS 6342 Research Design II
EPPS 6346 Qualitative Research Methods
EPPS 6352 Evaluation Research Methods
EPPS 7318 Structural Equation and Multilevel (Hierarchical) Modeling
EPPS 7344 Categorical and Limited Dependent Variables
EPPS 7368 Spatial Epidemiology
EPPS 7370 Time Series Analysis
EPPS 7370 Applied Multivariate Analysis
EPPS 7386 Survey Research
Doctor of Philosophy in Criminology

http://epps.utdallas.edu/crim/phd.html

Faculty

*John L. Worrall (Program Head)*, **Professors:** Bruce Jacobs, James Marquart, **Alex Piquero,** Nicole Leeper Piquero, John L. Worrall

**Associate Professors:** Denise Boots, **Tomislav Kovandzic,** Lynne Vieraitis (Graduate Director)

**Assistant Professors:** J.C. Barnes, **Nadine Connell,** Robert Morris

**Clinical Professor:** Elmer Polk

**Clinical Assistant Professors:** Timothy Bray, Sarah Maxwell

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Total Tier II Hours: 30

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Total Tier III Hours: 9

Total Program Hours: 75 total credit hours minimum beyond BA/BS

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- 9 Hours Dissertation

75 Hours TOTAL

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- CRIM 6348 Drugs & Crime
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CRIM 8V01 Independent Study in Criminology

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EPPS 6352 Evaluation Research Methods
EPPS 7318 Structural Equation and Multilevel (Hierarchical) Modeling
EPPS 7344 Categorical and Limited Dependent Variables
EPPS 7368 Spatial Epidemiology
EPPS 7370 Time Series Analysis
EPPS 7370 Applied Multivariate Analysis
EPPS 7386 Survey Research
Doctor of Philosophy in Economics

http://www.utdallas.edu/epps/eco/

Faculty

Professors: Daniel G. Arce M., Kurt J. Beron, Rachel Croson, Catherine Eckel, James Murdoch, Todd Sandler, Barry J. Seldon, Donggyu Sul
Associate Professors: Nathan Berg, Susan Williams McElroy, Kevin Siqueira
Assistant Professors: Rodney Andrews, Xin (Sherry) Li

Mission

The mission of the Ph.D. in Economics is to provide a cutting-edge education in economic theory, the development of a rigorous toolkit of mathematical and econometric techniques, and in various research areas in economics. This education allows students to think critically about how to approach the analysis of economic problems and to contribute to the knowledge base of the discipline.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University's Computing Center. The School has three two computing laboratories which have over 100 computers that are network linked and equipped with major social science software packages, including E-Views, R, Rats, SPSS and STATA. A computerized geographic information system, the Lexis Nexis database, and Westlaw are also available for student use. The University's Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are also available online via the library's and school's memberships in numerous organizations.

Admission Requirements

The University’s general admission requirements are discussed here.

Applicants will be judged and evaluated by the existing admission standards as set forth by the University in its Graduate Catalog. These standards include a bachelor’s degree from an accredited institution or its equivalent, fluency in written and spoken English, a grade average of 3.25 or better in upper-division and graduate course work in economics and related courses, submission of official Graduate Record Examination (GRE) scores: GRE scores in the verbal and quantitative components of the exams should total to at least 1200. Students may also wish to consider submitting their score from the writing component of the GRE test as additional evidence of their writing skills. A score of at least 4.5 in analytical writing is considered desirable.

Standardized tests scores are only one of the factors taken into account in determining admission. Given the demands that will be placed on the student in his/her study of economics, a strong background in calculus, linear algebra, and mathematical statistics is highly desirable.

Students should submit all transcripts, three letters of recommendation, and a one-page essay outlining the applicant’s background, education, and personal objectives.
Prerequisites

Students who lack the necessary background to start the program are advised to take courses at the School of Economic, Political and Policy Sciences to strengthen their preparation, but they will not receive credit towards their Ph.D. program. The following courses may be used to gain the prerequisite knowledge (i) ECON 3310 Intermediate Microeconomics; (ii) ECON 3311 Intermediate Macroeconomics; (iii) ECON 4351 Mathematical Economics; (iv) EPPS 7316 Advanced Regression Analysis or ECON 4355 Econometrics; (v) EPPS 7313 Basic and Inferential Statistics or equivalent. It is also necessary to have had undergraduate courses in calculus and matrix or linear algebra. Additional math courses, such as differential equations, mathematical statistics and real analysis, are useful.

Degree Requirements

The University's general degree requirements are discussed here.

Students seeking the Ph.D. in Economics must complete 75 graduate hours. In addition, they must (i) complete core courses with an average GPA of 3.00; (ii) pass comprehensive exams in micro- and macroeconomic theory and in econometrics (although the econometrics exam will be waived for students who complete each of the required econometrics courses with an average grade of A- or better); (iii) be certified in two research areas within the science of Economics; and (iv) submit an approved dissertation. The following paragraphs elaborate on these requirements.

Students are required to complete the following core courses:

- ECON 6301 Microeconomics Theory I
- ECON 7301 Microeconomics Theory II
- ECON 8301 Microeconomics Theory III
- ECON 6302 Macroeconomics Theory I
- ECON 7302 Macroeconomics Theory II
- ECON 6305 Mathematical Economics
- ECON 6311 Statistics for Econometrics
- ECON 6309 Econometrics I
- ECON 7309 Econometrics II
- ECON 8309 Econometrics III

In addition, they are required to register for the following courses at the appropriate stages of their study:
- ECON 7V01 Survey/Research Seminar
- ECON 8V01 Dissertation Seminar

In order to assure that the student progresses satisfactorily, each student is required to consult with the Director of Graduate Studies (DGS) of Economics Programs prior to registration in every semester.

For research area certification, the student must select the two research areas, preferably during the second year of study, and advise the (DGS) of the selection. The DGS will, in conjunction with the Economics Curriculum Committee, advise the student regarding the appropriate certification requirements. The general guidelines for certification consist of (i) making a grade of B or better in three courses within each area; (ii) writing an acceptable research paper in one area.

The submission of an approved dissertation will complete the course of study for the Ph.D. degree in Economics. The procedure for approval of the dissertation is outlined in the U.T.Dallas Graduate Catalog.
Doctor of Philosophy in Geospatial Information Sciences

http://www.utdallas.edu/epps/geospatial-science/degrees.html#phd

This degree program is jointly offered by the School of Economic, Political and Policy Sciences, the School of Natural Sciences and Mathematics (specifically in the Department of Geosciences) and the Eric Jonsson School of Engineering and Computer Science, and is administered by the School of Economic, Political and Policy Sciences.

Faculty

Professors: Carlos Aiken (Geosciences), Brian J. L. Berry (Economic, Political and Policy Sciences), Denis J. Dean (Economic, Political and Policy Sciences), John Ferguson (Geosciences), Daniel Griffith (Economic, Political and Policy Sciences), Paul Jargowsky (Economic, Political and Policy Sciences), James Murdoch (Economic, Political and Policy Sciences), Edwin Sha (Computer Science), Robert Stern (Geosciences)

Associate Professors: Tom Brikowski (Geosciences), Fang Qiu (Economic, Political and Policy Sciences), Michael Tiefelsdorf (Economic, Political and Policy Sciences)

Assistant Professors: Yongwan Chun (Economic, Political and Policy Sciences), Karen Hayslett-McCall (Economic, Political and Policy Sciences), Weili Wu (Computer Science)

Clinical Assistant Professors: Stuart Murchison (Economic, Political and Policy Science)

Powerful technologies have emerged in recent years to collect, store, manage, analyze, and communicate information regarding the features of the Earth's surface and to combine these with other types of environmental, social and economic information. These technologies, which include geographic information systems (GIS), the global positioning system (GPS), and remote sensing, are used in many ways, including the production of digital maps in vehicles, the management and maintenance of city infrastructure, agriculture and forestry, the policing of communities, and the conduct of modern warfare. The PhD in Geospatial Information Sciences aims to develop individuals capable of advancing this field by developing new knowledge or capabilities relevant to it.

The degree program is jointly offered by the School of Economic, Political and Policy Sciences, the School of Natural Sciences and Mathematics (specifically the Department of Geosciences) and the Eric Jonsson School of Engineering and Computer Science. This unique structure reflects geospatial information science's origins as the confluence of multiple disciplines including geography, computer science, engineering, geology, and various social, policy and applied sciences. It is anticipated that many students will enter the program with a bachelor’s or master’s degree (and/or work experience) in an application area (such as public administration, geology, or economics) or in a technical specialization (such as engineering, computer science, or statistics). These students may choose to pursue research projects that advance existing geospatial information sciences practices within that application area. Alternatively, students may opt to pursue research that expands the technological or theoretical base of all the geospatial information sciences.

Mission and Objectives

The mission of the Doctor of Philosophy in Geographic Information Sciences program is to cultivate innovative researchers capable of advancing the frontiers of knowledge in the geospatial information sciences through improved theories, new technologies, innovative methodologies, sophisticated quantitative analyses, and integrative applications. UT Dallas Doctoral graduates will find employment in research departments of public and private organizations and in major academic institutions. Specifically, program graduates will:
• demonstrate their knowledge of the fundamental theories and concepts underlying the geospatial sciences.
• master the advanced methodologies and/or quantitative analyses used in at least one of three geospatial specialization areas: [a] computing and information management, spatial analysis and modeling, or [c] remote sensing and satellite technologies.
• produce innovative research that advances theory or methodology in the geospatial sciences.
• participate at academic conferences, publish in peer-reviewed journals and find employment in research departments of public and private organizations and in major academic institutions.

Facilities

Students have access to state-of-the-art GIS computing facilities housed in the School of Economic, Political and Policy Sciences and at the NASA Center for Excellence in Remote Sensing in the Department of Geosciences. The University’s extensive instructional computing facilities, including those in the Eric Jonsson School of Engineering and Computer Science, are also available. Facilities are open extended hours including evenings and weekends. Enrollment in hands-on courses is controlled to ensure that a computer workstation is available for every student. All major industry-standard GIS and remote sensing software is available. The University is an Oracle Center of Excellence for Spatial Data Management and a member of the University Consortium for Geographic Information Science (UCGIS).

Admission Requirements

The University's general admission requirements are discussed here.

The PhD program in Geospatial Information Sciences seeks applications from students with a baccalaureate, Master of Arts, Master of Science or professional masters-level degree in any field relevant to geospatial information science including, but not limited to, computer science, economics, engineering, geography, geology, management information systems, marketing, natural resource management, public affairs and public administration, statistics, and urban and regional planning. Applicants will be judged and evaluated by the existing admission standards as set forth by the University in its Graduate Catalog and by the standards set forth here by the Geospatial Information Sciences program. A bachelor’s degree from an accredited institution or its equivalent and fluency in written and spoken English are required. A grade average of at least 3.25 in undergraduate and graduate course work, and a combined verbal and quantitative score of 1150 on the GRE are desirable. An analytical writing score of at least 4.5 in the GRE is considered desirable.

Students must submit transcripts from all higher education institutions attended, three letters of recommendation, and a one-page essay outlining the applicant's background, education, and personal objectives as they specifically relate to a Ph.D. in Geospatial Information Sciences.

Prerequisites

The following pre-requisites/co-requisites will also be required for admission to the PhD program: (i) college mathematics through calculus, (ii) competence in at least one modern programming language equivalent to GISC 6317 Computer Programming for GIS, CS 6301 and CS 6311 Computer Science I & II, MIS 6322 Developing Business Applications with Visual Basic, MIS 6323 Object Oriented Systems, or their equivalents, and (iii) at least one course in inferential statistics through to regression analysis equivalent to GISC 6301 Geospatial Data Analysis Fundamentals, EPPS 7313 Descriptive and Inferential Statistics, or GEOS 6313 Data Analysis for Geoscientists. Graduate courses taken at UT Dallas to meet these prerequisites may be counted as electives toward the 75 credit hours required of
students entering the Ph.D. program directly from a B.A. or B.S. degree, but they shall not be considered substitutes for any other specified course.

**Advising**

Because of the cross-disciplinary nature of this doctoral program, to ensure adequate preparation and appropriate course sequencing, every doctoral student is required to consult with the student’s designated advisor and/or the GIS Doctoral Program Director prior to registration in every semester. Students generally will not have a faculty advisor when they first enter the Ph.D. program, but every student is required to select (with consent of the potential advisor) an advisor from the advising faculty before they complete 20 credits after admission.

**Degree Requirements**

The University's general degree requirements are discussed [here](#).

To receive the PhD in Geospatial Information Sciences, students must complete the Geospatial Science Core (15 SCH) to achieve a mastery of appropriate Geospatial Information Science technologies and theory, have a Geospatial Specialization Area (15 SCH), have a Specific Application area or Technical field (12 SCH), evidence research skills through successful completion and defense of a Ph. D. dissertation, and take related electives as necessary— for a total of 75 semester credit hours. In addition, students must satisfy a set of exams and qualifiers. Other courses may be substituted for those listed below with the written permission in advance of the Director of the GIS Doctoral program.

**Geospatial Science Core (15 SCH)**

Students must earn a minimum grade point average (GPA) of 3.0 across the following five courses:

- GISC 6381 GIS Fundamentals
- GISC 6382 Applied GIS
- GISC 6384 Spatial Analysis and Modeling
- GISC 6385 GIS Theories, Models and Issues
- GISC 7310 Regression Analysis with Spatial Applications

**Geospatial Specialization Area**

Students must select from one of the following, with a minimum of 15 SCH. Courses selected must include at least three at successively advanced levels.

**I. Geospatial Computing and Information Management**

- CS 6359 Object Oriented Analysis and Design
- CS 6360 Database Design
- CS 6364 Artificial Intelligence
- CS 6366 Computer Graphics
- CS 6375 Neural Nets and Machine Learning
- CS 6378 Advanced Operating Systems
- CS 6V80 Spatial Data Management
- CS 6381 Combinatorics and Graph Algorithms
- CS 6384 Computer Vision
- GISC 6317 Computer Programming for GIS
- GISC 6388 GIS Application Software Development
GISC 7363 Internet Mapping and Information Management
*MISC 6326 Database Management Systems

II. Spatial Analysis and Modeling

CS 6312 Data Structures
*ECON 6309 Econometrics I
*ECON 6310 Econometrics II
*ECON 6314 Structural Equation and Multilevel (Hierarchical) Modeling
*ECON 6315 (POEC 7370) Time Series Econometrics
*ECON 6316 Spatial Econometrics
EPPS 7364 Demographic Analysis and Modeling
EPPS 7368 Spatial Epidemiology
*GEOS 6313 Data Analysis for Geoscientists
*GISC 6311 (ECON 6311) Statistics for Economists
GISC 7360 GIS Pattern Analysis
GISC 7361 Spatial Statistics
*EPPS 7313 Descriptive and Inferential Statistics
*EPPS 7316 Advanced Regression Analysis

III. Remote Sensing and Satellite Technologies

GEOS 7322 GPS Surveying Techniques
GEOS 7324 3-D GIS Data Capture and Ground Lidar
GISC 6325 (GEOS 6325) Introduction to Remote Sensing
GISC 7366 (GEOS 7366)/ Applied Remote Sensing
GISC/7365 (GEOS 7365) Remote Sensing Digital Image Processing
GISC 7367 (GEOS 7327) Remote Sensing Workshop
EE 6360 Digital Signal Processing
EE 6363 Digital Image Processing

IV. Customized Geospatial Specialization (15 SCH)

Identified by the student with approval in advance by the Director of the GIS Doctoral Program.

* may not be used in conjunction with certain other courses. Consult GIS Doctoral Program Director

Application Area or Technical Field (12 SCH)

Twelve semester-credit hours of specialized course work in an application area or technical field relevant to GIScience. Normally, these will derive from the student's masters degree. These hours may be transferred from another institution, or taken at UT Dallas in an existing master's program area and may be applied toward a master's in that area.

Application area examples: planning, public affairs, criminal justice, health and epidemiology, geoscience, forestry, hydrology, marketing, real estate, economics, civil engineering.

Technical field examples: statistics, computer science, software engineering, management information systems, image analysis, operations research/location science, instrumentation.

Research and Dissertation (<Variable SChs>)
All students must complete the following two classes as part of the research and dissertation requirement:

GISC 7387 GIS Research Design
GISC 7389 GIS PhD Research Project Qualifier

In addition, students must complete sufficient additional research and dissertation credit hours to bring the total number of SCHs they have earned within the UTDallas doctoral program (or transferred into the UTDallas doctoral program) to 75, the minimum required to earn a doctoral degree. Additional research and dissertation SCHs above and beyond those required to reach the 75 credit hour minimum may be required at the discretion of the student’s Ph.D. advisor. Additional research and dissertation SCHs can be earned through any of the following classes:

GEOS 8V29 Research in GIS
GISC 6387 GIS Workshop
GISC 6389 GIS Masters Project
GISC 7367/GEOS 7327 Remote Sensing Workshop
GISC 8V29 Research in GIS
*EPPS 6310 & 6342 Research Design I & II
GISC 8v99 or GEOS 8v99 or CS 8v99 Dissertation

Other Related Electives (0 to 24 SCH)

Students may choose up to 24 SCHs in related electives with consent of their advisor or the GIS Doctoral Program Director.

Exams and Qualifiers

- **Ph.D. Research Project Qualifying Class**

  Doctoral students must complete GISC 7389 Geospatial Information Sciences PhD Research Project Qualifier according to uniform guidelines established by the GIS program.

- **Qualifying Examination and Defense of Proposal**

  After meeting the Research Project Qualifier, doctoral students must (1) demonstrate through a general exam his/her competency in the area chosen for their dissertation, and (2) successfully present and defend a dissertation proposal through an oral examination, according to uniform guidelines established by the GIS program.

- **Grade Point Qualifier**

  Doctoral students must have GPAs of at least 3.25, and preferably 3.5, in courses taken at UT-Dallas at the time they register for GISC 7389 Ph.D. Qualifier, or they must petition the GIS faculty for an exemption for extenuating circumstances beyond the student’s control.

**Defense of Dissertation**

A dissertation must be prepared and defended successfully following the procedures established by the Dean of Graduate Studies.
Doctor of Philosophy in Political Science

http://www.utdallas.edu/epps/sci

Faculty

Associate Professors: Patrick T. Brandt, Jennifer S. Holmes, Linda Camp Keith, Gregory S. Thielemann
Assistant Professors: Brandon Kinne, Banks Miller, Clint Peinhardt
Senior Lecturers: Brian Beary, Karl Ho

Mission Statement

The Doctor of Philosophy in Political Science provides a rigorous, sharply focused disciplinary program with strong multidisciplinary links. The Program consists of innovative, state-of-the-science graduate education in political methodology and the fields of Comparative Politics and International Relations; and Political Institutions and American Politics; and Law and Courts. Students' research skill development and degree completion are facilitated by a rolling cohort design. In the first two years of the cohort program, students acquire basic research skills and tools and work on research projects. Later, they have opportunities to develop their instructional and presentation skills, to participate in summer methodology programs, and to interact with highly regarded scholars and practitioners in their fields of study.

Objectives

- Students will engage in critical and constructive thinking, effective communication to academic audiences, and rigorous design and execution of research projects.
- Students will describe, classify, and analyze the causes and consequences of the unprecedented unfolding of democracy on a global scale, its successes and failures, and its opportunities and problems during an era of globalization and of ongoing subnational, national, and transnational conflicts and negotiations.
- Students will describe, classify, and analyze the major theories, methods, and findings that are used to explain the participation of individuals in a variety of institutional settings in the United States and elsewhere, how public institutions can be designed to promote both collective goods and individual gains, and how changes in institutions have consequences for individuals and public policy.
- Students will describe, classify, and analyze the major theories and empirical findings about the behavior of judges, interactions between the judiciary and other institutions, and the role of courts in the evolution of public policy and the definition and protection of human rights around the world.
- Students will acquire the professional socialization necessary to teach and to conduct research in American, comparative, or international government and politics; democratization, globalization and international relations; governmental and political institutions and processes; and public administration, decision making, and risk management.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University’s Computing Center. The School has three computing laboratories which house over 50 computers that are network linked and equipped with major social science software packages, including E-Views, R, RATS, S-Plus, SPSS, and STATA. Computerized geographic information system
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To attract the best students, editorial, research and teaching assistantships are available. Prospective students interested in teaching assistantships should apply for admission to start in the Fall by February 15. Editorial assistantships are available through several of the professional journals supported by the University. Research assistantships may be available with individual faculty who have funding from external sources. Other assistantships are provided to work with faculty at the Center for Texas Politics or on instructional activities.

**Admission Requirements**

The University’s general admission requirements are discussed here.

The Doctor of Philosophy in Political Science Program seeks applications from individuals with a baccalaureate, Master of Arts, or Master of Science degree in Government and Politics, Political Science, Public Administration, Public Affairs or a relevant discipline. The degree must be from an accredited college or university. An undergraduate grade point average of at least 3.2 and a combined quantitative and verbal Graduate Record Examination (GRE) score of 1200 are desirable for students who expect to progress satisfactorily towards graduation. An analytical writing score of at least 4.5 in the GRE is considered desirable. Applicants also may submit their score from the writing component of the GRE as additional evidence of their admission eligibility. Applicants should submit all transcripts, three letters of recommendation (preferably from individuals who can evaluate the applicant’s potential for graduate study and research), and a one-page essay describing educational and professional objectives. Grade point average, GRE score, and other information pertaining to the applicants’ educational background and professional goals are among the factors that are considered in determining direct admission. Applications are reviewed by the Political Science Program Committee in the School of Economic, Political and Policy Sciences.

Students who lack the necessary background to start the Program are advised to take courses that strengthen their preparation, but these courses do not receive credit towards the Ph.D. Program.

Undergraduate students who are interested in completing their undergraduate degrees while simultaneously taking graduate courses in the Political Science Ph.D. Program are expected to meet the School’s “fast-tracking” requirements.

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The University's general degree requirements are discussed here.
On admission to the Ph.D. in Political Science Program, the student earns a minimum of 75 semester credit hours of coursework and dissertation credit beyond the baccalaureate degree. Core hours include four courses in Political Science Methodology and Theory, and three proseminars in the Program fields. The three fields are Comparative Politics and International Relations; Political Institutions and American Politics; and Law and Courts. Additional coursework includes four courses in the major field, two courses in the minor field, and three to six courses of freely chosen credit. Students may use these electives to complete an optional concentration in research methods. Prior to admission to doctoral candidacy and further work on the dissertation or practicum, the student must pass examinations in the subjects covered by the core and field courses. Students must receive a grade of B- or better in all core courses and must maintain at least a 3.0 grade point average to graduate.

On examination completion, the student proceeds to present a doctoral dissertation or practicum proposal. The proposal must be approved by his/her Advisory Committee not later than two consecutive semesters after examination completion. Upon Committee approval, the student does further work on the doctoral dissertation or practicum while enrolling continuously for credit in research seminars and in dissertation or practicum research. The dissertation has multiple chapters that consist of a clear statement of the research problem, the theoretical framework and research design, the methods of analysis and findings, and an appropriately developed conclusion. The practicum consists of three papers that may or may not be thematically related and are informed by the theories and methodology of the student's major field. All three papers must be suitable for presentation at a major professional meeting and/or submission to a peer-reviewed professional journal.

### Semester Credit Hour Requirements

<table>
<thead>
<tr>
<th>Core Courses in Political Science Methodology and Theory</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Proseminars</td>
<td>9</td>
</tr>
<tr>
<td>Courses in Major Field</td>
<td>12</td>
</tr>
<tr>
<td>Courses in Minor Field</td>
<td>6</td>
</tr>
<tr>
<td>Freely Chosen Elective Credit</td>
<td>9-18</td>
</tr>
<tr>
<td><strong>Total (Minimum)</strong></td>
<td>75</td>
</tr>
</tbody>
</table>

**Dissertation or Practicum Research** 18-27

**Total (Minimum)** 75

**Core Courses**

- EPPS 7313 Descriptive and Inferential Statistics
- EPPS 7316 Regression and Multivariate Analysis
- PSCI 6300 Proseminar in Comparative Politics and International Relations
- PSCI 6311 Proseminar in Law and Courts
- PSCI 63476313 Public Policymaking and Proseminar in Political Institutions
- PSCI and American Politics
- PSCI 6350 Logic, Methodology and Scope of Political Science
- PSCI 6352 Empirical Democratic Theory

Students who lack the math background for EPPS 7313 and 7316 may need to do additional work before completing these requirements.
Comparative Politics and International Relations

PSCI 6309 International Political Economy and Organizations
PSCI 6310 Political Economy of Multinational Corporations
PSCI 6316 International Organizations
PSCI 6335 Institutions and Development
PSCI 6337 Comparative Institutions
PSCI 6357 Political Economy of Latin America
PSCI 6362 Political Development
PSCI 6363 Conflict and Development
PSCI 6365 Political Violence and Terrorism
PSCI 7330 Contemporary International Negotiations and Security

Political Institutions and American Politics

PSCI 6314 Policy Processes, Implementation and Evaluation
PSCI 6324 Local and State Government and Politics
PSCI 6330 Campaigns and Media Relations

PSCI 6331 Executives, Legislatures and Public Policy
PSCI 6333 Political and Civic Organizations
PSCI 6336 Bureaucracy and Public Policy
PSCI 6337 Comparative Institutions

PSCI 6323 Public Choice
PSCI 6339 Election Law and Electoral Systems

PSCI 6343 Law and the Policy Process
PSCI 7344 Gender and Public Policy
PSCI 7350 Institutions and Citizen Behavior
PSCI 7352 Theories of Choice and Decision Making

Law and Courts

PSCI 6301 Constitutional Law
PSCI 6305 Workshop in Constitutional Law Studies

PSCI 6306 Human Rights and International Law

PSCI 6312 Comparative Constitutions and Courts
PSCI 6339 Election Law and Electoral Systems

PSCI 6343 Law and the Policy Process

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EPPS 6304 Advanced Analytic Techniques
EPPS 6310 Research Design I
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PSCI 7372 Game Theory for Political Scientists
Other courses as approved by the Director of Graduate Studies.
Doctor of Philosophy in Political Science

http://www.utdallas.edu/epps/psci

Faculty

Associate Professors: Patrick T. Brandt, Jennifer S. Holmes, Linda Camp Keith, Gregory S. Thielemann
Assistant Professors: Brandon Kinne, Banks Miller, Clint Peinhardt
Senior Lecturers: Brian Beary, Karl Ho

Mission Statement

The Doctor of Philosophy in Political Science provides a rigorous, sharply focused disciplinary program with strong multidisciplinary links. The Program consists of innovative, state-of-the-science graduate education in political methodology and the fields of Comparative Politics and International Relations; Political Institutions and American Politics; and Law and Courts. Students’ research skill development and degree completion are facilitated by a rolling cohort design. In the first two years of the cohort program, students acquire basic research skills and tools and work on research projects. Later, they have opportunities to develop their instructional and presentation skills, to participate in summer methodology programs, and to interact with highly regarded scholars and practitioners in their fields of study.

Objectives

- Students will engage in critical and constructive thinking, effective communication to academic audiences, and rigorous design and execution of research projects.
- Students will describe, classify, and analyze the causes and consequences of the unprecedented unfolding of democracy on a global scale, its successes and failures, and its opportunities and problems during an era of globalization and of ongoing subnational, national, and transnational conflicts and negotiations.
- Students will describe, classify, and analyze the major theories, methods, and findings that are used to explain the participation of individuals in a variety of institutional settings in the United States and elsewhere, how public institutions can be designed to promote both collective goods and individual gains, and how changes in institutions have consequences for individuals and public policy.
- Students will describe, classify, and analyze the behavior of judges, interactions between the judiciary and other institutions, and the role of courts in the evolution of public policy and the definition and protection of human rights around the world.
- Students will acquire the professional socialization necessary to teach and to conduct research in American, comparative, or international government and politics; democratization, globalization and international relations; governmental and political institutions and processes; and public administration, decision making, and risk management.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University’s Computing Center. The School has three computing laboratories which house over 50 computers that are network linked and equipped with major social science software packages, including E-Views, R, RATS, S-Plus, SPSS, and STATA. Computerized geographic information system
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PSCI 7372 Game Theory for Political Scientists

Other courses as approved by the Director of Graduate Studies.
Doctor of Philosophy in Public Affairs

http://www.utdallas.edu/epps/pa/phd/

Faculty

Professors: Marie Chevrier, Euel Elliott, L. Douglas Kiel, Murray Leaf, Richard Scotch
Robert W. Taylor
Associate Professors: Paul Battaglio, Simon Fass, Douglas Goodman, Jeremy L. Hall
Assistant Professors: Young-joo Lee, Meghna Sabharwal
Clinical Professors: Donald Arbuckle, Robert Whelan
Clinical Assistant Professor: Kimberly Aaron

Mission

The mission of the Ph.D. in Public Affairs program is to prepare students for academic research-oriented careers in academia or high-level executive public/nonprofit management positions in public and non-profit organizations by assuring that they gain competency at an. The rigorous core curriculum provides advanced level conceptual and theoretical training in the core subject matters and methodologies that are central to the study of Public Affairs. Principal areas of public administration and management, including: public policy, intergovernmental relations, budget and finance, human capital and organizational theory. Students develop analytical competencies through a sequence of research methods courses, and they develop technical knowledge in specific topics through a flexible elective sequence. Through instruction and research, the faculty will guide students as they obtain a firm understanding of the broad intellectual tradition of public administration and related fields. It will integrate both traditional and innovative methods of educational delivery and emphasize the application of theory to practice.

Objectives

The Doctor of Philosophy in Public Affairs degree is an interdisciplinary doctoral program that prepares graduates to assume either positions in academia, research producing organizations or positions of administrative authority in public (government, public school districts), quasi-public (healthcare, insurance), and nonprofit (producers, foundations) organizations. The degree combines innovative and traditional methods of educational delivery and emphasizes the integration and application of theory to practice. The guiding philosophy of the degree is that "public affairs" involves more than mere functional administration, policy implementation or quantitative policy analysis. Rather, doctoral education in public affairs requires an interface between the traditions of public management, decision science, and policy analysis and processes: public policy, and organizations with a practical appreciation for the challenges of maintaining and building institutions of governance and a civic culture in a complex, democratic society.

The PhD program in Public Affairs begins as a cohort program, where each year entering students remain together through four core courses and the qualifying examination, after which they are able to diverge into specialization courses appropriate for their interests and methodological approach. This approach produces shared experiences and progress through the program that enrich student learning and student research. The program requires 42 hours of coursework plus relevant doctoral dissertation hours. (12 hours).
Well-prepared students (for example, those with a master’s degree in public administration, public affairs, public policy, business administration, health administration, or education administration) may be able to complete the course requirements and the dissertation within 3 years from their initial enrollment. Students in each cohort typically take 6 hours of classes each fall, spring and summer semester. This allows, though the flexibility of the program permits full time students to complete the core and elective in 7 consecutive semesters of enrollment. Students will generally start the production of the dissertation during the seventh semester of enrollment. Entering cohorts begin each fall semester. This approach produces shared experiences and progress through the program that enrich student learning and student research.

Faculty Commitments

The faculty of the PhD program in Public Affairs is committed to producing clear and specific results for our students. Thus, the specific objectives for all graduates of the PhD in Public Affairs program are:

1. **To Demonstrate Comprehensive and Deep Knowledge:** Students will demonstrate their knowledge of the interface between the traditions of public management, decision science, and policy analysis and processes with a practical appreciation for the challenges of maintaining and building institutions of governance and a civic culture in a complex, democratic society. Students must demonstrate familiarity with key principal fields of public administration and management, including: public policy, intergovernmental relations, organization theory, budget and finance, and human capital.

2. **To Understand and Apply Theories and Processes of Knowledge Acquisition:** Students, as executive level administrators, will have a solid grounding in theories in each of the principal fields of public administration and in the process of management, and will apply this theoretical knowledge through the development of research projects that is essential for institutional maintenance and renewal and in the dissertation research projects.

3. **To Produce Scholarly Manuscripts and Publications:** Students, as scholars, will have the ability to execute research projects that utilize state of the art methodologies to produce scholarly manuscripts that are worthy of publication in the journals of the field.

4. **To Develop, Present, and Defend Complex Ideas:** Students will have the ability to develop, present, and defend both orally and in writing complex ideas based on in-depth scholarly research.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University's Computing Center. The School has two computing laboratories which house over 30 computers that are network linked and equipped with major social science software packages, including E-Views, R, RATS, SPSS, and STATA. A computerized geographic information system, the Lexis Nexis database, and Westlaw are also available for student use. The University’s Computing Center provides personal computers and UNIX workstations.
Admission Procedures and Policies

Application Deadlines: The Ph.D. program in Public Affairs admits a cohort program allowing new groups of students to start each fall semester. Cohorts are only admitted during fall semesters. Students, so students intending to begin the program in fall of a particular year must submit their applications by March 1 of that year. Students admitted to the program, but who do not hold one of the master’s degrees noted above, may be required to take master’s level courses in public management, basic statistics, financial management, budgeting or economics for full consideration.

Application/Admission Requirements: Prospective students must complete the University’s graduate application form and arrange to have GRE scores and transcripts of all college coursework sent to UTD. A graduate GPA of 3.0 or better and a minimum combined math and verbal GRE score of 1100 are expected. The program typically admits only students who have completed a Masters degree. Three letters of recommendation are also required. Applicants must submit a written statement that should, at a minimum, include: (1) the student’s interest in pursuing a Ph.D. in Public Affairs, (2) the student’s academic background in research ability related to public affairs; (3) their career goals upon completion of the Ph.D.; (4) the nature of the student’s current work situation and responsibilities; (5) (if applicable); and (5) responsibilities for large scale/strategic issues in their current or past work environment; (3) the nature and frequency of interactions with organizational stakeholders; (4) the student’s current span of control in their work environment; and (5) their career goals upon completion of the Ph.D. (if applicable). All applicants must also submit a complete professional resume.

Graduate Assistantships: Students admitted to the program may be eligible to receive teaching assistantships. Prospective students interested in receiving assistantships must have submitted all application materials including a TA application form for an assistantship by March 1 of the year they intend to start the program. Applications for the assistantships may be obtained from the -Public Affairs Program Office. Offers of teaching assistantships will be made by May 1 of the year of fall enrollment, although additional appointments may be made as new positions become available in subsequent months each semester.
Ph.D. in Public Affairs

The Ph.D. requires a minimum of 42 hours of course work and twelve hours of dissertation work beyond the master’s degree (36 hours) for a total of 90 graduate hours. Students must also complete a qualifying examination and the doctoral dissertation.

Students not holding a master's degree in public affairs, public administration, public policy or other related field may be expected to complete additional course work. These courses will be determined by the program director. Typical courses include: public policy, public management, statistics, financial management, budgeting or economics to provide the necessary preparation for advanced doctoral study. These courses will be determined by the program director. The Ph.D. core curriculum rotates so as to offer flexibility to students taking either two (part-time) or three (full-time) courses per semester. Six courses (five core courses plus research methods) are offered each year (three each fall and three each spring) in the following rotation: Students must also complete a qualifying examination and the doctoral dissertation.

Fall:
- PA 7310 Advanced Policy Process, Implementation and Evaluation (T) (required in year one)
- PA 7320 Advanced Human Capital Research and Theory (W) (may be taken in year one or two)
- PA 7330 Research Design in PA (R) (required in year one)

Spring:
- PA 7340 Intergovernmental and Intersectoral Relations (T) (required in year one)
- PA 7350 Advanced Organizational Theory and Behavior (W) (required in year one)
- PA 7360 Advanced Fiscal and Budgetary Policy (R) (may be taken in year one or two)

All students must take the four courses included on the qualifying exam (7310, 7330, 7340, & 7350) during the first year in the program. Full time students will take the complete rotation presented above, while part time students will take two seminars (7320 & 7360) in the second year, as they are not included on the qualifying exam.
Prerequisites

Prior to enrolling in core classes in the PhD program students must show evidence of completing graduate level course work in general public policy, public management, basic graduate level statistics, financial management and budgeting and economics or public finance. Students admitted to the Ph.D. program without these requirements may be directed to complete relevant courses in the Masters of Public Affairs program at UTD prior to taking Ph.D. level courses. Students lacking a recent graduate level statistics course may be required to complete EPPS 6313 Introduction to Quantitative Methods prior to continuing their methods sequence.

Required Courses (42 hours)

The Program will consist of course work in four substantive knowledge areas. These areas are the central to public affairs core that includes topics of Governance: Leadership, Change, Administration and Conflict Resolution. The three remaining substantive knowledge areas are Social Policy Management, including: public policy, intergovernmental relations and Development, Decision Analysis Management, organizational theory, fiscal and Organizational Management budgetary theory, and Analysis of human capital (15 hours).

Dissertation Research

During the dissertation research students must also be enrolled in PA 8V99 Dissertation.

Research methods provide analytical skills necessary to conduct doctoral level research beginning with Research Design, a regression course suitable for the student's mathematical skill set (EPPS 6316 for algebra, EPPS 7316 for calculus), and a methods course appropriate for the student's intended dissertation research (9 hours).

Building on the core curriculum, elective courses allow students to develop specialized concentrations in their area of interest (15 hours). Students have the flexibility to design their own custom concentration from existing EPPS courses (6000 level or above; with program director approval) or may select courses from one of four existing concentrations:

The dissertation seminar (PA 8340) is a directed study course during which students work one-on-one with an appropriate faculty member to develop and prepare the dissertation proposal (3 hours).

To graduate, students are required to enroll for dissertation research credit (PA 8v99) with their appointed dissertation chairperson (12 hours minimum). To remain in good standing, students must remain enrolled in 8V99 while completing their dissertation.

Program Course Work

Cohort Mapping of Courses: 42 Hours. Public Affairs Core (15 hours of)
*** Indicates the four (4) courses included in the required qualifying examination taken during summer immediately following the student’s first two semesters of coursework through 7 consecutive semesters.

1. **YEAR ONE (18 semester credit)**
   - PA 7310 Advanced Policy Process, Implementation and Evaluation***
   - PA 7320 Advanced Human Capital Research and Theory
   - PA 7340 Intergovernmental and Intersectoral Relations***
   - PA 7350 Advanced Organizational Theory and Behavior***
   - PA 7360 Advanced Fiscal and Budgetary Policy
II. Research Methods (9 hours)

Fall
PA 7321 Ethics
Prerequisites: Students are expected to arrive with EPPS 6313 or equivalent; if not, it must be taken prior to EPPS 6316 and Law does not count toward hours for graduation.

1. PA 7330 Research Design in Public Affairs
2. Applied Regression (EPPS 6316) OR Regression and Multivariate Analysis (EPPS 7316). Note: 6000 presumes algebra; 7000 level presumes calculus.
3. ONE of the following (or alternate with program director approval): Qualitative Research Methods (EPPS 6346), Categorical and Limited Dependent Variables (EPPS 7344), Time Series Analysis (EPPS 7370), Survey of Research (EPPS 7386), Applied Multivariate Analysis (EPPS 7380), Evaluation Research (EPPS 6352).

III. Concentration (See Below; 15 hours)

1. Elective 1
2. Elective 2
3. Elective 3
4. Elective 4
5. Elective 5

IV. Dissertation Seminar (Directed Study, PA 8340) (3 Hours)

V. Dissertation Research (12 hours)

Concentration 1: Policy Analysis and Evaluation (Choose 5 courses)

1. PA 6340 Domestic Social Policy or
2. PA 6344 State/Local Economic Development
3. EPPS 6352 Evaluation Research Methods
4. PA 6336 Bureaucracy and Public Affairs
5. Spring
   PA 7304 Benefit Cost Analysis
6. PA 6314 Policy Analysis
7. Other approved elective(s)

Concentration 2: Emergency Management (Choose 5 courses)

1. PA 6353 Emergency Management
2. PA 6351 Homeland Security
3. PA 6371 Strategies for Homeland Security
4. PA 6390 Administration and Management of Justice Agencies
5. PA 7307 Information Sharing and Communication for HS
6. PA 7309 Protecting Critical Resources and Infrastructure
7. CRIM 6314/PA6319 Policing
8. Other approved elective(s)
Concentration 3: Nonprofit Management (Choose 5 courses)

1. PA 6374 Financial Management for Nonprofit Orgs
2. PA 7375 Nonprofit Orgs
3. PA Leadership and Change in Public/Nonprofit Organizations
4. EPPS 6352 Evaluation Research Methods
5. PA 6375 History and Theories of the American Philanthropic Sector
6. Other approved elective(s)

Concentration 4: Urban Policy and Administration (Choose 5 courses)

1. PA Negotiations for effective managers
2. PA 7305 Leadership and Change in Public/Nonprofit Organizations
3. PA 6326 Decision Tools for Managers
4. PA 7375 Nonprofit organizations: Theory and Practice
5. PA 6320 Organizational Theory

YEAR TWO (18 semester credit hours)

FALL
PA 7322 Negotiations for Effective Management
PA 7338 Seminar in Human Resources

SPRING
PA 7305 Leadership of Public and Non-Profit Organizations
SOC 6312 Socio-Economic Theories or SOC 6340 Domestic Social Policy

SUMMER
PA 7311 Models and Tools of Change Management
5. EPPS 6352 Evaluation Research Methods in the Economic, Political and Policy Sciences

YEAR THREE (18 semester credit hours)

FALL
PA 8340 Dissertation Seminar
Elective — (any 6000 or 7000 level PA or EPPS course)

SPRING
PA 8V99 Dissertation (6 hours)

SUMMER
PA 8V99 Dissertation (6 hours)
6. PA 6344 State/Local Economic Development
7. PA 6327 Land Use Law and Ethics
8. Other approved elective(s)
Concentration 5: Customized and Directed Research (Choose 5 courses; *must be pre-approved by program director)

Qualifying Examinations and Assessment of Student Performance

All students must successfully complete a qualifying examination after completion of their first two semesters in the program in which they take PA 7325 Survey of Public Affairs, 7310 Advanced Policy Process, Implementation and PA 7321 Ethics and Law in Public Affairs in the first fall semester of enrollment. Evaluation and PA 7330 Research Design in Public Affairs in the first fall semester and PA 7340 Intergovernmental and Intersectoral Management and PA 6326 Decision Tools for Managers in the first spring semester of enrollment. The examinations/assessments will occur immediately after the first spring semester of enrollment.

The examinations/assessments consist of three components. These components are an assessment of the student's portfolio of work. Progress is assessed by instructors of record in the four core courses noted above, a required and student GPA of 3.25 in the four courses and a written examination covering the material in the four classes noted above. The examinations/assessments and will occur immediately after the first spring semester of enrollment.

PhD in Public Affairs Program

First Year Review

Every PhD student entering the Public Affairs Program in fall 2008 and later is subject to a comprehensive first year review which takes place after the student completes two semesters of study. This review comprises a Faculty Assessment and a Qualifying Examination. The Assessment identifies priority areas for academic improvement, evaluates the student's likelihood of successful program completion; and student GPA. The completion of these components leads to continuation in the program. Students who do not successfully complete the four courses and sit for the qualifying exam immediately following their first spring semester of enrollment in the program. Students who have
not taken the examination following their second spring semester will be dismissed from the program.

A. Faculty Assessment

The Faculty Assessment is compiled two weeks after the last spring semester final examination date on the UTD academic calendar. It is based on performance in the four classes that the student must complete during the first year in the program:

- PA 7310 Advanced Policy Process, Implementation and Evaluation
- PA 7340 Intergovernmental and Intersectoral Management
- PA 7330 Research Design
- PA 7350 Advanced Organizational Theory and Behavior

Every assessment is completed by the instructor of record at the end of each of the listed courses. It judges the student’s promise with respect to five elements: critical thinking, quality of writing, proper use and application of citations and references, research ability and final course grade. The assessment will be copied in triplicate. The student will receive a copy of the assessment at the end of each course. A copy will be placed in the student’s permanent file at the end of each course and the faculty member producing the report will retain a copy of each student’s assessment.

A Faculty Assessment Committee (FAC) compiles and reviews the four individual assessments for each student. The FAC then prepares a report that specifies areas of academic performance that warrant attention and enhancement, determines the likelihood of successful program completion, and recommends whether the student should remain in or be dismissed from the Program.
B. Qualifying Examination

The qualifying examination takes place during the same time period as the Faculty Assessment. It is a take-home assignment comprising several questions that students collect at or after 8:00 am on Tuesday of the examination week and then submit - in hard copy and electronic form - before 5:00 pm on Thursday of the same week. Assignments are not accepted after this deadline.

The examination consists of two parts: a methods section and a field section. The methods section requires the student to answer one of two proposed questions based on subject matters covered in PA 7330 Research Design.

The field section requires the student to answer two of three proposed questions based on subject matters covered in:

- PA 7310 Advanced Policy Process, Implementation and Evaluation
- PA 7340 Intergovernmental and Intersectoral Management
- PA 7350 Advanced Organizational Theory and Behavior

Answers to each examination question are limited to no more than 10 numbered pages of double-spaced text, prepared in 12-point font size with 1-inch margins on all sides, excluding end notes, reference lists, and other supplementary materials. All references must be properly cited within the text of each answer using a standard academic citation format.

The qualifying examination is assessed and graded within two weeks of its submission by a Qualification Examination Committee (QEC) comprised of program faculty. Students are notified of the result within three weeks of submission. Possible grades for a question are Excellent, Satisfactory or Unsatisfactory. The student passes a question if a majority of QEC members grade the answer as Satisfactory (or better). The student passes the examination if all answers are Satisfactory (or better).

A student receiving an unsatisfactory grade on one question must retake that section (containing a new set of questions) six weeks after notification of the initial qualifying examination result. The examination format and procedure are the same as described above for the initial examination. Failure to receive a grade of Satisfactory (or better) on the qualifying examination a second time results in dismissal from the program.

If an emergency arises and the student is unable to take the examinations on the initially prescribed dates the student may complete the exams six weeks after the initial exam dates. If a student fails to take the exams on the initially prescribed dates and does not provide adequate justification for a change in dates he/she will be dropped from the PhD program. The Program Head will determine if justification for not taking the exam on the prescribed date is justified.
Dissertation Seminar and Dissertation

Students typically enroll in PA 8340 Dissertation Seminar at the beginning of their third year in the program. This is an individual study course, supervised by the student’s likely dissertation chair, and normally would culminate in the completion of a dissertation proposal. Assignment to a dissertation chair is based on a number of factors, and students are encouraged to consult with the program director about the selection of their chair and the rest of their dissertation committee.

Following the public defense of their proposal, students begin work on their dissertation research, and enroll in PA 8V99 Dissertation during the semesters following their successful proposal defense. Students enroll for up to 18 hours of PA 8V99, and typically will complete their dissertation research and writing within a year of the proposal defense. The final dissertation defense is conducted when the student’s chair and committee agree that the dissertation is essentially satisfactorily completed.
Doctor of Philosophy in Public Affairs

http://www.utdallas.edu/epps/pa/phd/

Faculty

Professors: Marie Chevrier, Euel Elliott, L. Douglas Kiel, Murray Leaf, Richard Scotch
Robert W. Taylor
Associate Professors: Paul Battaglio, Simon Fass, Douglas Goodman, Jeremy L. Hall
Assistant Professors: Young-joo Lee, Meghna Sabharwal
Clinical Professors: Donald Arbuckle, Robert Whelan
Clinical Assistant Professor: Kimberly Aaron

Mission

The mission of the Ph.D. in Public Affairs program is to prepare students for academic research-oriented careers in academia or high-level executive public/nonprofit management positions in public and non-profit organizations by assuring that they gain competency at an early stage. The rigorous core curriculum provides advanced level conceptual and theoretical training in the core subject matters and methodologies that are central to the study of Public Affairs. Principal areas of public administration and management, including: public policy, intergovernmental relations, budget and finance, human capital and organizational theory. Students develop analytical competencies through a sequence of research methods courses, and they develop technical knowledge in specific topics through a flexible elective sequence. Through instruction and research, the faculty will help guide students as they obtain a firm understanding of the broad intellectual tradition of public administration and related fields. It will integrate both traditional and innovative methods of educational delivery and emphasize the application of theory to practice.

Objectives

The Doctor of Philosophy in Public Affairs degree is an interdisciplinary doctoral program that prepares graduates to assume either positions in academia, research producing organizations or positions of administrative authority in public (government, public school districts), quasi-public (healthcare, insurance), and nonprofit (providers, foundations) organizations. The degree combines innovative and traditional methods of educational delivery and emphasizes the integration and application of theory to practice. The guiding philosophy of the degree is that "public affairs" involves more than mere functional administration, policy implementation or quantitative policy analysis. Rather, doctoral education in public affairs requires an interface between the traditions of public management, decision science, and policy analysis and processes, public policy, and organizations with a practical appreciation for the challenges of maintaining and building institutions of governance and a civic culture in a complex, democratic society.

The PhD program in Public Affairs begins as a cohort program, where each year entering students remain together through four core courses and the qualifying examination, after which they are able to diverge into specialization courses appropriate for their interests and methodological approach. This approach produces shared experiences and progress through the program that enrich student learning and student research. The program requires 42 hours of coursework plus relevant doctoral dissertation hours. (12 hours).
Well-prepared students (for example, those with a master’s degree in public administration, public affairs, public policy, business administration, health administration, or education administration) may be able to complete the course requirements and the dissertation within 3 years from their initial enrollment. Students in each cohort typically take 6 hours of classes each fall, spring and summer semester. This allows, though the flexibility of the program permits full time students to complete the core take more than two courses and elective in 7 consecutive semesters of enrollment per semester. Students will generally start the production of the dissertation during the seventh semester of enrollment. Entering cohorts begin each fall semester. This approach produces shared experiences and progress through the program that enrich student learning and student research their third year in the program.

Faculty Commitments

The faculty of the PhD program in Public Affairs is committed to producing clear and specific results for our students. Thus, the specific objectives for all graduates of the PhD in Public Affairs program are:

1. To Demonstrate Comprehensive and Deep Knowledge: Students will demonstrate their knowledge of the interface between the traditions of public management, decision science, and policy analysis and processes with a practical appreciation for the challenges of maintaining and building institutions of governance and a civic culture in a complex, democratic society. In principal fields of public administration and management, including: public policy, intergovernmental relations, organization theory, budget and finance, and human capital.

2. To Understand and Apply Theories and Processes of Knowledge Acquisition: Students, as executive level administrators, will have a solid grounding in the principal of the principal fields of public administration and management, and will apply this theoretical knowledge to the development of research that is essential for institutional maintenance and renewal projects ranging from course assignments to their dissertation research projects.

3. To Produce Scholarly Manuscripts and Publications: Students, as scholars, will have the ability to execute research projects that utilize state of the art methodologies to produce scholarly manuscripts based on extensive practical experience or field-based research that are worthy of publication in the journals of the field.

4. To Develop, Present, and Defend Complex Ideas: Students will have the ability to develop, present, and defend both orally and in writing complex ideas based on in-depth scholarly research.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University’s Computing Center. The School has two computing laboratories which house over 30 computers that are network linked and equipped with major social science software packages, including E-Views, R, RATS, SPSS, and STATA. A computerized geographic information system, the Lexis Nexis database, and Westlaw are also available for student use. The University’s Computing Center provides personal computers and UNIX workstations.
Admission Procedures and Policies

Application Deadlines: The Ph.D. program in Public Affairs admits a cohort program allowing new groups of students to start each fall semester. **Cohorts Students are only admitted during fall semesters. Students, so students intending to begin the program in fall cohort of a particular year must submit their applications by March 1 of that year. Students admitted to the program, but who do not hold one of the master's degrees noted above, may be required to take master's level courses in public management, basic statistics, financial management, budgeting or economics for full consideration.**

Application/Admission Requirements: Prospective students must complete the University's graduate application form and arrange to have GRE scores and transcripts of all college coursework sent to UTD. A graduate GPA of 3.0 or better and a minimum combined math and verbal GRE score of 1100 are expected. **The program typically admits only students who have completed a Masters degree.** Three letters of recommendation are also required. Applicants must submit a written statement that should, at a minimum, include: (1) the student's interest in pursuing a Ph.D. in Public Affairs, (2) the student's academic background in research ability related to public affairs; (3) their career goals upon completion of the Ph.D.; (4) the nature of the student's current work situation and responsibilities; (2) (if applicable); and (5) responsibilities for large scale/strategic issues in their current or past work environment; (3) the nature and frequency of interactions with organizational stakeholders; (4) the student's current span of control in their work environment; and (5) their career goals upon completion of the Ph.D. (if applicable). All applicants must also submit a complete professional resume.

Graduate Assistantships: Students admitted to the program may be eligible to receive teaching assistantships. Prospective students interested in receiving assistantships must have submitted all application materials including an TA application form for an assistantship by March 1 of the year they intend to start the program. Applications for the assistantships may be obtained from the Public Affairs Program Office. Offers of teaching assistantships will be made by May 1 of the year of fall enrollment, although additional appointments may be made as new positions become available in subsequent months each semester.
Ph.D. in Public Affairs

The Ph.D. requires a minimum of 42 hours of course work and twelve hours of dissertation work beyond the master's degree (36 hours) for a total of 90 graduate hours. Students must also complete a qualifying examination and the doctoral dissertation.

Students not holding a master's degree in public affairs, public administration, public policy or other related field may be expected to complete additional course work. These courses will be determined by the program director. Typical courses include: public policy, public management, statistics, financial management, budgeting or economics to provide the necessary preparation for advanced doctoral study. These courses will be determined by the program director. The Ph.D. core curriculum rotates so as to offer flexibility to students taking either two (part-time) or three (full-time) courses per semester. Six courses (five core courses plus research methods) are offered each year (three each fall and three each spring) in the following rotation: Students must also complete a qualifying examination and the doctoral dissertation.

Fall:
PA 7310 Advanced Policy Process, Implementation and Evaluation (T) (required in year one)
PA 7320 Advanced Human Capital Research and Theory (W) (may be taken in year one or two)
PA 7330 Research Design in PA (R) (required in year one)

Spring:
PA 7340 Intergovernmental and Intersectoral Relations (T) (required in year one)
PA 7350 Advanced Organizational Theory and Behavior (W) (required in year one)
PA 7360 Advanced Fiscal and Budgetary Policy (R) (may be taken in year one or two)

All students must take the four courses included on the qualifying exam (7310, 7330, 7340, & 7350) during the first year in the program. Full time students will take the complete rotation presented above, while part time students will take two seminars (7320 & 7360) in the second year, as they are not included on the qualifying exam.
Prerequisites

Prior to enrolling in core classes in the Ph.D. program students must show evidence of completing graduate level course work in general public policy, public management, basic graduate level statistics, financial management and budgeting and economics or public finance. Students admitted to the Ph.D. program without these requirements may be directed to complete relevant courses in the Masters of Public Affairs program at UTD prior to taking Ph.D. level courses. Students lacking a recent graduate level statistics course may be required to complete EPPS 6313 Introduction to Quantitative Methods prior to continuing their methods sequence.

Required Courses (42 hours)

The Program will consist of course work in substantive knowledge areas. These areas are the central to public affairs core that includes topics of Governance: Leadership, Change administration and Conflict Resolution. The three remaining substantive knowledge areas are Social Policy management, including: public policy, intergovernmental relations and Development, Decision Analysis management, organizational theory, fiscal and Organizational Management budgetary theory, and Analysis human capital (15 hours).

Dissertation Research

During the dissertation research students must also be enrolled in PA 8V99 Dissertation.

Research methods provide analytical skills necessary to conduct doctoral level research beginning with Research Design, a regression course suitable for the student’s mathematical skill set (EPPS 6316 for algebra, EPPS 7316 for calculus), and a methods course appropriate for the student’s intended dissertation research (9 hours).

Building on the core curriculum, elective courses allow students to develop specialized concentrations in their area of interest (15 hours). Students have the flexibility to design their own custom concentration from existing EPPS courses (6000 level or above; with program director approval) or may select courses from one of four existing concentrations:

The dissertation seminar (PA 8340) is a directed study course during which students work one-on-one with an appropriate faculty member to develop and prepare the dissertation proposal (3 hours).

To graduate, students are required to enroll for dissertation research credit (PA 8v99) with their appointed dissertation chairperson (12 hours minimum). To remain in good standing, students must remain enrolled in 8V99 while completing their dissertation.

Program Course Work

Cohort Mapping of Courses: 42l. Public Affairs Core (15 hours of)
*** Indicates the four (4) courses included in the required qualifying examination taken during summer immediately following the student’s first two semesters of coursework through 7 consecutive semesters.

1. **YEAR ONE (18 semester credit)**
   - PA 7310 Advanced Policy Process, Implementation and Evaluation***
2. PA 7320 Advanced Human Capital Research and Theory
3. PA 7340 Intergovernmental and Intersectoral Relations***
4. PA 7350 Advanced Organizational Theory and Behavior***
5. PA 7360 Advanced Fiscal and Budgetary Policy
II. Research Methods (9 hours)

Fall
PA 7324 EthicPrerequisites: Students are expected to arrive with EPPS 6313 or equivalent; if not, it must be taken prior to EPPS 6316 and Law does not count toward hours for graduation.

1. PA 7330 Research Design in Public Affairs
2. Applied Regression (EPPS 6316) OR Regression and Multivariate Analysis (EPPS 7316). Note: 6000 presumes algebra; 7000 level presumes calculus.
3. ONE of the following (or alternate with program director approval): Qualitative Research Methods (EPPS 6346), Categorical and Limited Dependent Variables (EPPS 7344), Time Series Analysis (EPPS 7370), Survey of Research (EPPS 7386), Applied Multivariate Analysis (EPPS 7380), Evaluation Research (EPPS 6352).

III. Concentration (See Below; 15 hours)

1. Elective 1
2. Elective 2
3. Elective 3
4. Elective 4
5. Elective 5

IV. Dissertation Seminar (Directed Study, PA 8340) (3 Hours)

V. Dissertation Research (12 hours)

Concentration 1: Policy Analysis and Evaluation (Choose 5 courses)

1. PA 6340 Domestic Social Policy
2. PA 6344 State/Local Economic Development
3. EPPS 6352 Evaluation Research Methods
4. PA 6336 Bureaucracy and Public Affairs/Policy
5. Spring
   PA 7304 Benefit Cost Analysis
6. PA 6314 Policy Analysis
7. Other approved elective(s)

Concentration 2: Emergency Management (Choose 5 courses)

1. PA 6353 Emergency Management
2. PA 6351 Homeland Security
3. PA 6371 Strategies for Homeland Security
4. PA 6390 Administration and Management of Justice Agencies
5. PA 7307 Information Sharing and Communication for HS
6. PA 7309 Protecting Critical Resources and Infrastructure
7. CRIM 6314/PA6319 Policing
8. Other approved elective(s)
Concentration 3: Nonprofit Management (Choose 5 courses)

1. PA 6374 Financial Management for Nonprofit Orgs
2. PA 7375 Nonprofit Orgs
3. PA Leadership and Change in Public/Nonprofit Organizations
4. EPPS 6352 Evaluation Research Methods
5. PA 6375 History and Theories of the American Philanthropic Sector
6. Other approved elective(s)

Concentration 4: Urban Policy and Administration (Choose 5 courses)

1. PA Negotiations for effective managers
2. PA 7305 Leadership and Change in Public/Nonprofit Organizations
3. PA 6326 Decision Tools for Managers
   PA 7330 Research Design in Public Affairs
4. Summer
   PA 7375 Nonprofit Organizations
   PA 6320 Organizational Theory
   PA 6326 Decision Tools for Managers

YEAR TWO (18 semester credit hours)

Fall
PA 7322 Negotiations for Effective Management
PA 7338 Seminar in Human Resources

Spring
PA 7305 Leadership of Public and Non-Profit Organizations
SOC 6312 Socio-Economic Theories or SOC 6340 Domestic Social Policy

Summer
PA 7311 Models and Tools of Change Management
5. EPPS 6352 Evaluation Research Methods in the Economic, Political and Policy Sciences

YEAR THREE (18 semester credit hours)

Fall
PA 8340 Dissertation Seminar
Elective—(any 6000 or 7000 level PA or EPPS course)

Summer
PA 8V99 Dissertation (6 hours)

Summer
PA 8V99 Dissertation (6 hours)

6. PA 6344 State/Local Economic Development
7. PA 6327 Land Use Law and Ethics
8. Other approved elective(s)
Concentration 5: Customized and Directed Research (Choose 5 courses; *must be pre-approved by program director)

Qualifying Examinations and Assessment of Student Performance

All students must successfully complete a qualifying examination after completion of their first two semesters in the program in which they take PA 7325 Survey of Public Affairs, PA 7310 Advanced Policy Process, Implementation and PA 7321 Ethics and Law in Public Affairs in the first fall semester of enrollment, Evaluation and PA 7330 Research Design in Public Affairs, the first fall semester and PA 7340 Intergovernmental and Intersectoral Management and PA 6326 Decision Tools for Managers, 7350 Advanced Organizational Theory and Behavior in the first spring semester of enrollment. The examinations/assessments will cover the material in the four classes noted above. The examinations/assessments will occur immediately after the first spring semester of enrollment.

The examinations/assessments consist of three components. These components are an assessment of the student’s portfolio of work, progress is assessed by instructors of record in the four core courses noted above, a required student GPA of 3.25 in the four courses and a written examination covering the material in the four classes noted above. The examinations/assessments will occur immediately after the first spring semester of enrollment.

PhD in Public Affairs Program
First Year Review

Every PhD student entering the Public Affairs Program in fall 2008 and later is subject to a comprehensive first year review which takes place after the student completes two semesters of study. This review comprises a Faculty Assessment and a Qualifying Examination. The Assessment identifies priority areas for academic improvement, evaluates the student’s likelihood of successful program completion and recommends whether the student should remain in the Program.

The qualifying examination, a take-home assignment, is based on student coursework during the first year. To continue in the program, a student must obtain a positive recommendation from the Faculty Assessment and pass the qualifying examination.

All four of the required courses must be completed before sitting for the qualifying examination. Students are expected to immediately following their first spring semester of enrollment in the program. Students may not defer the examination; rather, it must be taken immediately upon completion of the four covered courses. If for any reason a student fails to complete the four courses during the first year of program enrollment, they must complete the four courses and sit for the qualifying exam immediately following their second spring semester of enrollment in the program.
not taken the examination following their second spring semester will be
dismissed from the program.

A. Faculty Assessment

The Faculty Assessment is compiled two weeks after the last spring semester
final examination date on the UTD academic calendar. It is based on performance
in the four classes that the student must complete during the first year in the
program:

- PA 7310 Advanced Policy Process, Implementation and Evaluation
- PA 7340 Intergovernmental and Intersectoral Management
- PA 7330 Research Design
- PA 7350 Advanced Organizational Theory and Behavior

Every assessment process is completed by the instructor of record at the end of
each of the listed courses. It judges the student’s promise with respect to five
elements: critical thinking, quality of writing, proper use and application of
citations and references, research ability and final course grade. The assessment
will be copied in triplicate. The student will receive a copy of the assessment at
the end of each course. A copy will be placed in the student’s permanent file at
the end of each course and the faculty member producing the report will retain a
copy of each student’s assessment.

A Faculty Assessment Committee (FAC) compiles and reviews the four individual
assessments for each student. The FAC then prepares a report that specifies
areas of academic performance that warrant attention and enhancement,
determines the likelihood of successful program completion, and recommends
whether the student should remain in or be dismissed from the Program.
B. Qualifying Examination

The qualifying examination takes place during the same time period as the Faculty Assessment. It is a take-home assignment comprising several questions that students collect at or after 8:00 am on Tuesday of the examination week and then submit - in hard copy and electronic form - before 5:00 pm on Thursday of the same week. Assignments are not accepted after this deadline.

The examination consists of two parts: a methods section and a field section. The methods section requires the student to answer one of two proposed questions based on subject matters covered in PA 7330 Research Design.

The field section requires the student to answer two of three proposed questions based on subject matters covered in:

- PA 7310 Advanced Policy Process, Implementation and Evaluation
- PA 7340 Intergovernmental and Intersectoral Management
- PA 7350 Advanced Organizational Theory and Behavior

Answers to each examination question are limited to no more than 10 numbered pages of double-spaced text, prepared in 12-point font size with 1-inch margins on all sides, excluding end notes, reference lists, and other supplementary materials. All references must be properly cited within the text of each answer using a standard academic citation format.

The qualifying examination is assessed and graded within two weeks of its submission by a Qualification Examination Committee (QEC) comprised of program faculty. Students are notified of the result within three weeks of submission. Possible grades for a question are Excellent, Satisfactory or Unsatisfactory. The student passes a question if a majority of QEC members grade the answer as Satisfactory (or better). The student passes the examination if all answers are Satisfactory (or better).

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If an emergency arises and the student is unable to take the examinations on the initially prescribed dates the student may complete the exams six weeks after the initial exam dates. If a student fails to take the exams on the initially prescribed dates and does not provide adequate justification for a change in dates he/she will be dropped from the PhD program. The Program Head will determine if justification for not taking the exam on the prescribed date is justified.
Dissertation Seminar and Dissertation

Students typically enroll in PA 8340 Dissertation Seminar at the beginning of their third year in the program. This is an individual study course, supervised by the student’s likely dissertation chair, and normally would culminate in the completion of a dissertation proposal. Assignment to a dissertation chair is based on a number of factors, and students are encouraged to consult with the program director about the selection of their chair and the rest of their dissertation committee.

Following the public defense of their proposal, students begin work on their dissertation research, and enroll in PA 8V99 Dissertation during the semesters following their successful proposal defense. Students enroll for up to 18 hours of PA 8V99, and typically will complete their dissertation research and writing within a year of the proposal defense. The final dissertation defense is conducted when the student’s chair and committee agree that the dissertation is essentially satisfactorily completed.
Doctor of Philosophy in Public Policy and Political Economy

http://epps.utdallas.edu/pppe/phd.html

Faculty

Professors: Sheila Amin Gutiérrez De Piñeres, Brian J. L. Berry, Ronald Briggs (emeritus), Marie L. Chevrier, Lloyd J. Dumas, Euel W. Elliott, Donald A. Hicks, Irving J. Hoch (emeritus), Paul A. Jargowsky, Murray J. Leaf, Lawrence J. Redlinger, Richard K. Scotch

Associate Professors: Bobby C. Alexander, Simon M. Fass, Jennifer S. Holmes, Sheryl L. Skaggs

Clinical Assistant Professors: Rodolfo Hernandez Guerrero

Mission Statement

The mission of the Ph.D. program in Public Policy and Political Economy is to prepare our students for professional positions in research, teaching, and practice in fields related to public policy and political economy, and in both academic and nonacademic settings. We prepare students through instruction in social science and public policy concepts, advanced methodological knowledge, applied social research techniques, and professional communication skills. PPPE students and faculty are encouraged to promote an inclusive and diverse environment that is committed to continued scholarship and service.

Objectives

- Students will demonstrate the ability to apply social science and public policy theories and concepts.
- Students will develop competency in advanced methods of social science and public policy research and analysis.
- Students will develop basic skills in professional communication appropriate to the public policy and political economy research and analysis.

Facilities

Students have access to the computing faculties in the School of Economic, Political and Policy Sciences and University’s Computing Center. The School has two computing laboratories that have over 50 computers that are network linked and equipped with major social science software packages, including E-Views, R, Rats, SPSS and Stata. A geographic information system, the Lexis Nexis database, and Westlaw are also available for student use. The University’s Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are also available online via the library and the school’s memberships in numerous organizations.

Admission Requirements

The PhD. in Public Policy and Political Economy seeks applications from students with a baccalaureate degree from an accredited university or college. An undergraduate grade point average of at least 3.2, and a combined verbal and quantitative GRE score of 1200, or equivalent score on the GMAT, are desirable. Students may also wish to consider submitting their score from the writing component of the GRE test as additional evidence of their writing skills. Standardized test scores are only one of the factors taken into account in determining admission. Students should also submit all transcripts, three letters of recommendation, and a one-page essay outlining the applicant’s background, education, and professional objectives.

Prerequisites
While there are no specific course prerequisites, entering students will benefit from exposure to undergraduate courses in economics, political science, sociology, calculus, statistics, and research design.

Degree Requirements

The PhD in Public Policy and Political Economy requires a minimum of 90 post-baccalaureate graduate credit hours. Full-time students can complete the degree in an average of 5 years.

Students must maintain a 3.0 cumulative GPA in their graduate courses in the degree program, including and earn a grade of at least 3.0 (B) for all core courses. If placed on probation, students will have one semester to bring their cumulative grade point average to a 3.0 or greater. Any student who receives two Cs will not be allowed to continue in the program.

Students must complete the following:

- 33 hours of core courses
- 12 hours of field courses (six hours in two fields of the student's choice)

- **Criminology**
  - Development
  - International Political Economy
  - Social Policy

- 6 hours area of specialization (in one of the fields of the student's choice)
- A qualifying examination Methods Qualifying Examination in Quantitative Empirical Methods and Research Design
- Portfolio submitted and approved by Portfolio Committee
- Matriculation to the dissertation phase
- Participation in Dissertation Seminar

- Successful completion of a dissertation
- Successful completion of 90 post-baccalaureate graduate credit hours including electives

The requirements are outlined in further detail below:

I. Core Requirements (33 hours)

Students complete a core sequence of courses as follows:

1. Six hours of coursework in Government and Public Policy:
   
   POEC 6313 Public Policymaking and Institutions
   POEC 7318 Ethics, Culture and Responsibility

   **POEC 6329 Ethics, Culture, and Public Policy**

2. Six hours of Theories of Political Economy
3. Fifteen hours of Empirical Methods

Methods Core (Algebra-based or Calculus based)
- Algebra-based series
  - EPPS 6313 Introduction to Quantitative Methods
  - EPPS 6316 Applied Regression
- Calculus-based series
  - EPPS 7313 Descriptive and Inferential Statistics
  - EPPS 7316 Regression and Multivariate Analysis

Students are strongly encouraged to take the calculus-based sequence, which is better preparation for the methods qualifying exam and more advanced methods courses.

Students will also take at least three additional courses from a set of courses approved by the relevant graduate program committee. Students may obtain a list of those courses from the program office.

4. Six hours of Research Design

EPPS 6310 Research Design I
EPPS 6342 Research Design II

II. Field Courses (12 hours)

Students take a two course introductory sequence in two of the following five fields. The fields and required courses are as follows:

*Criminology:

CRIM 6311 Crime and Justice Policy
CRIM 6305 Law and Social Control

Development:

POEC 6354 Theories and Issues of Development (Required), and:

Select one of the following:

POEC/PSCI 6335 Institutions and Development
POEC 6364 Development Economics
POEC 6360/ECON 6352 World Political Economy
POEC/PSCI 6362 Political Development
POEC 6318 Population and Development
POEC 6364 Development Economics
POEC 6368 Population and Development
POEC 6392 Management and Practice of International Development
International Conflict and Security (Select two of the following):

PA 6351 Introduction to Homeland Security
POEC/PSCI 6361 Political Violence and Terrorism
POEC 6367 Topical Issues and Conflict Resolution
POEC 6369 National and International Security Strategies and Policies
PSCI 6300 Proseminar in Comparative Politics and International Relations

International Political Economy (Select two of the following):

POEC 6360 World Political Economy
PSCI 6300 Proseminar in Democratization, Globalization, Comparative Politics and International Relations
PSCI 6309 International Political Economy and Organization
PSCI 6316 International Organizations
POEC 6360/ECON 6352 World Political Economy

Social Policy

SOC 6340 Domestic Social Policy
SOC 6350 Social Stratification
SOC 6340 Domestic Social Policy

Students may request that alternative courses be substituted in a particular field with the approval of the program director. Moreover, students may, in consultation with the Program Director, define a new field provided that appropriate coursework is available in a coherent research literature is identified. *Note: (1) Students may only count POEC 6360 World Political Economy as a field course for either Development or International Political Economy, not for both.

III. Area of Specialization (6 hours)

The student takes at least six hours of additional coursework in one of the field areas as defined above. The specific required courses are designated by the faculty associated with that area of concentration and may be obtained from the program office. The student completes a dissertation in one of the two fields (see above) and must successfully defend the dissertation before a duly constituted dissertation committee, in accordance with the requirements of the University and the UT System.

IV. Methods Qualifying Exams and Matriculation to the Dissertation Phase

To advance to the dissertation stage of the program, students are evaluated by the Program Committee based on (1) a Methods Qualifying Examination in Methodology and (2) a portfolio paper:

1) A qualifying examination in methods:

This examination will evaluate the students’ methodological skills in areas covering probability, statistics, regression analysis, and research design. The exam will be graded by the Methods Examination Committee as Unsatisfactory, Satisfactory or Excellent. The exam will be administered at the end of a full time student’s first year, or the equivalent point in a part time student's career. A student receiving a grade of unsatisfactory may take the exam for a second time at the start of the fall semester of the
second year. All students are required to take the methods qualifying exam by the end of their second year to be allowed to continue in the doctoral program.

2) A portfolio workshop paper of up to 30 pages prepared for a research workshop offered in PPPE or a related program that includes at least the following elements: a statement of the question, a literature review, and a research design to address the question, and an empirical analysis.

The portfolio workshop paper will be submitted to a committee appointed by the program director, who will review the portfolio papers and advise students of any deficiencies or potential problems. Upon completing the core courses and achieving a grade of Satisfactory or Excellent on the Qualifying Examination, the program committee will make a final evaluation of the student's total portfolio. The committee will assess whether the candidate's portfolio workshop paper demonstrates that the student has the skills and knowledge necessary to attempt to write a dissertation. If all of the items in the portfolio are assessed as satisfactory, the student is designated as doctoral level. Alternatively, the committee could recommend remedial or additional work in a specific area and specify a time frame for the completion of such work. A detailed discussion of the portfolio workshop paper requirement can be found in the PPPE Advising Guide. Students are urged to read and make sure they understand what is expected of them. The Advising Guide is available through the Public Policy and Political Economy program office and on the program's webpage.

If, in the judgment of the committee, the student is not prepared to write a dissertation, the student will either be asked to complete remedial work or will be designated as Masters level. Receipt of a Masters level designation means the student is not allowed to proceed to the doctoral stage. The student may continue taking courses and may pursue one of the school's Master's programs by completing the appropriate degree requirements.

IV. Dissertation Seminar

Students must register for POEC 8398 Dissertation Seminar for a minimum of one semester after passing the MQE and portfolio workshop paper requirements. The aim of the Dissertation Seminar is to assist students in the formulation of a dissertation topic, and prepare a dissertation topic for submission to a dissertation Committee and defense of the proposal before the committee. The Dissertation Seminar is to be taken as an independent study course under the supervision of the student's likely dissertation supervisor. Students seeking advising concerning a suitable dissertation topic or appropriate supervisor are encouraged to consult with the program director.

VI. Electives

Students take free electives in areas of interest to fulfill the 2075-hour PhD requirement.

Ph.D. students should note that they are eligible to receive Master's degrees offered by the School of Economic, Political and Policy Sciences while they matriculate toward the doctorate. These degrees include the Master of Public Affairs, Master of Public Policy, M'S' in Applied Sociology, M'S' in Criminology, M'S' in Economics, M'S' in Geographic Information Sciences and the MS in International Political Economy. Students interested in obtaining one of these degrees should consult the catalog requirements or the graduate advisor.
DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes _______

SCHOOL_____________EPPS______________________

DEPARTMENT_EPPS Certificates

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

______________________________________________________________

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED
Certificate in Homeland Security: new course PA 6390
Certificate in Non-profit Organizations: PA 6321; PA 6333; PA 6335; PA 6375; PA 6376

COURSES DELETED
Certificate in Homeland Security: delete course PA 7307; PA 7308
Certificate in Local Government Management: deleted course listings
Certificate in Non-profit Organizations: PA 6320; PA 7v63; SOC 6340; EPPS 6352

OTHER__change faculty information; Corrected PA 6331 Land Use Law and Ethics to PA 6327 Land Use Law and Ethics in City Planning Certificate; no changes in Economic and Demographic Data Analysis; Evaluation Research; Geospatial Intelligence; Remote Sensing

Approved: ________________________________
Graduate Programs in Economic, Political And Policy Sciences

http://epps.utdallas.edu/

Faculty

Professors: Sheila Amin Gutiérrez de Piñeres, Daniel Arce, Kurt J. Beron, Brian JL Berry (Dean), Thomas Brunell, Anthony M. Champagne, Marie Isabelle Chouinard, Harold D. Clarke, Rachel Croson, Denis Dean, Lloyd J. Dumas, Catherine Eckel, Euel W Elliott, Daniel Griffith, Edward J. Harpham, Donald A. Hicks, Bruce Jacobs, Paul Jargowsky, L. Douglas Kiel, Murray J. Leaf, Robert Lowry, James Marquart, James Murdoch, Alex Piquero, Nicole Leeper Piquero, Lawrence J. Redlinger, Todd Sandler, Richard K. Scotch, Barry J. Seldon, Marianne C. Stewart, Dongyu Sul, John Worrall


Assistant Professors: Rodney Andrews, Paul Battaglio, Patrick Brandt, Yongwan Chun, Karen Hayslett-McCall, Linda Camp Keith, Nadine Connell, Brandon Kinne, Young-joo Lee, Li, Xin (Sherry), Banks Miller, Robert Morris, Clint Peinhardt, Meghna Sabharwal

Clinical Professors: Donald Arbuckle, Calvin Jamison, Stuart Murchison, Elmer Polk, Robert Whelan

Clinical Associate Professors: Donald Dow, Wendy Hassett

Clinical Assistant Professors: Kimberly Aaron, Timothy Bray, Kruti Dholakia, Wenhua Di, Rodolfo Hernandez-Guerrero, Karen Jarrell, Sarah Maxwell, Nicolas Valcik

Research Professors: Tammy Leonard, Sonya Salamon

Professors Emeritus: Ronald Briggs, Irving J. Hoch

Adjunct Associate Professors: Ernan Haruvi (joint appointment with SOM)

Senior Lecturers: Brian Beary, Teodoro Benavides, Cliff Bowden, Karl Ho, Luba Ketsler, Hoja Kim, Meryl Nason, Elmer Polk, Irina Vakulenko, Yuki Watanabe (joint appointment with A&H)

Objectives

There is increasing awareness of the impact that rapid technological, economic and social change is having on society. The graduate programs in the School of Economic, Political and Policy Sciences are designed to prepare students for careers in the rapidly evolving public, private and non-profit sectors by developing expertise in areas such as policy analysis, economic decision making and public management. Our Ph.D. Programs are also designed to prepare students for careers in both teaching and research. Each graduate program is discussed in more detail below.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University’s Computing Center. The School has its own teaching laboratories. The University’s Computing Center also provides personal computers and UNIX workstations for student use. Databases, a computerized geographic information system and WESTLAW, a legal research system, are also available for student research. Doctoral students have opportunities to participate in research programs directed by members of the faculty. Further details are available below.

Admission Requirements
The University’s general admission requirements are discussed here.

All programs require applicants to have a baccalaureate degree from an accredited college or university, GRE or GMAT scores, transcripts and letters of recommendation. Specific additional requirements are discussed for each program in their respective sections below.

Prerequisites

The details for each program are discussed in their respective sections below. Students may be required to take courses to prepare them for coursework.

Research

The School of Economic, Political and Policy Sciences offers graduate degrees in seven master's programs and six Ph.D. programs. These programs represent a wide range of both disciplinary as well as interdisciplinary courses of student. Our master’s degree offerings include M.S. degrees in Applied Sociology, Criminology, Economics, Geospatial Information Sciences, International Political Economy, Master of Public Affairs and the Master of Public Policy degrees. The Ph.D. programs include programs of study in Criminology, Economics, Geospatial Information Sciences, Political Science, Public Affairs, Public Policy and Political Economy. The Economics and Political Science programs offer innovative courses of study in these disciplinary areas. The Ph.D. in Public Policy and Political Economy combines rigorous methodological training with a strong substantive focus in different policy areas. The School also offers non-degree certificate programs in City Planning, Crime and Justice Analysis, Economic and Demographic Data Analysis, Evaluation Research, Geographic Information Sciences, Homeland Security, Local Government Management, and Non-profit Management.

Summary

The School of Economic, Political and Policy Sciences offers twelve masters programs and six Ph.D. programs. These programs and their credit hour requirements are given below.

Master’s Programs

M.A. in Political Science - Constitutional Law Studies (30 hours)
M.A. in Political Science in Legislative Studies (30 hours)
M.A. in Political Science (30 hours)
M.S. in Applied Sociology (36 hours)
M.S. in Criminology (36 hours)
M.S. in Criminology (Online) (36 hours)
M.S. in Economics (36 hours)
M.S. in Geospatial Information Sciences (30 hours)
M.S. in International Political Economy (36 hours)
Executive M.S. in Justice Administration and Leadership (305 hours)
Master of Public Affairs (42 hours)
Master of Public Policy (36 hours)

Ph.D. Programs

Criminology
Economics
Geospatial Information Sciences
Political Science
Public Affairs
Public Policy and Political Economy

All Ph.D. programs require at least 75 hours beyond the baccalaureate degree. Applicants should contact their respective program office to discuss possible transfer credit.

Graduate Certificate Programs

In addition to our degree programs, the School offers the following certificate programs for both degree and non-degree seeking students.

City Planning
Economic and Demographic Data Analysis
Evaluation Research
Geographic Information Systems (GIS)
Geospatial Intelligence (Geoint)
Homeland Security
Local Government Management
Non-Profit Management
Remote Sensing
SCHOOL OF ECONOMIC, POLITICAL AND POLICY SCIENCES

As we begin the 21st century, the School of Economic, Political and Policy Sciences is strategically positioned to offer leadership in addressing society’s most pressing concerns. Our mission is simple: develop scholars and practitioners who love to learn, individuals who can integrate knowledge and analyze sophisticated problems, and who are committed to advancing the search for truth and justice. Our domain is broad: risk management, economic performance, terrorism, voter behavior, health care, democratization, social inequality, international trade, and conflict resolution only hint at the wide variety of specific topics that must be addressed by informed social scientists. Our approach is comprehensive: strong disciplinary foundations, a dynamic interdisciplinary environment, and a striving to achieve a synthesis of theory-based knowledge and practical experience through internships, workshops, and seminars.

The School of Economic, Political and Policy Sciences awards master’s degrees in Applied Sociology, Criminology, Economics, Geospatial Information Sciences (jointly with the School of Natural Sciences and Mathematics), International Political Economy, Justice Administration and Leadership, Political Science, Public Affairs, Public Policy and Ph.D.s in Criminology, Economics, Geospatial Information Sciences (jointly with the Erik Jonsson School of Engineering and Computer Science and the School of Natural Sciences and Mathematics), Political Science, Public Affairs, and Public Policy and Political Economy. Each degree program offers a rigorous foundation with enough flexibility to specialize and earn additional certification in city planning, crime and justice analysis, economic and demographic data analysis, evaluation research, geographic information systems, geospatial intelligence, homeland security, local government management, nonprofit management, and remote sensing. These certificate programs are available to degree-seeking as well as non-degree students seeking highly focused curricula that can benefit their professional development. We invite you to explore our programs, scrutinize our faculty, examine our resources, and, then, to join us as we prepare to face our future.

DEGREES OFFERED

Doctor of Philosophy in Criminology (75 hours)
Doctor of Philosophy in Economics (75 hours)
Doctor of Philosophy in Geospatial Information Sciences (75 hours)
Doctor of Philosophy in Political Science (75 hours)
Doctor of Philosophy in Public Affairs (90 hours)
Doctor of Philosophy in Public Policy and Political Economy (75 hours)

Master of Arts in Political Science (30 hours)
Master of Arts in Political Science - Constitutional Law Studies (30 hours)
Master of Arts in Political Science - Legislative Studies (30 hours)
Master of Science in Applied Sociology (36 hours)
Master of Science in Criminology (36 hours)
Master of Science in Geospatial Information Sciences (30 hours)
Master of Science in International Political Economy (36 hours)
Executive Master of Science in Justice Administration and Leadership (30 hours)
Master of Public Affairs (42 hours)
Master of Public Policy (36 hours)
Certificate in City Planning (15 hours)
Certificate in Crime and Justice Analysis
Certificate in Economic and Demographic Data Analysis (15 hours)
Certificate in Evaluation Research (15 hours)
Certificate in Geographic Information Systems (15 hours)
Certificate in Geospatial Intelligence (15 hours)
Certificate in Homeland Security (15 hours)
Certificate in Local Government Management (15 hours)
Certificate in Non-profit Management (15 hours)
Certificate in Remote Sensing (15 hours)
Executive Master of Science in Justice Administration and Leadership

http://www.utdallas.edu/epps/pa/ms-jal/

Faculty

Professors: Bruce A. Jacobs, James W. Marquart, Robert W. Taylor, John Worrall
Associate Professors: R. Paul Battaglio, Doug Goodman, Jeremy L. Hall, Tomislav Kovandzic, Lynne Vieraitis, Denise Paquette-Boots
Assistant Professors: Young-joo Lee, Robert Morris, Denise Paquette-Boots, Meghna Sabharwal
Clinical Assistant Professors: Donald Arbuckle, Teodoro Benavides, Timothy Bray, Sue Freedman, Robert Hicks, Sarah Maxwell, Elmer Polk, Laurie Ziegler

Mission

The Mission of the Executive Master of Science in Justice Administration and Leadership program at the University of Texas at Dallas is to:

1. Deliver high-quality education to working professionals who in turn will examine the role of leadership within criminal justice agencies and organizations.

2. Prepare students to evaluate and apply relevant research findings on leadership and personnel management administration to lead, influence and manage others in an increasingly diverse workforce and work environment.

3. Advance the understanding of the consequences of change within criminal justice organizations, and lead and manage personnel in periods of organizational change.

4. Prepare students to apply relevant techniques of leadership, management, conflict resolution and negotiation when confronted with change and subsequent conflict in criminal justice and related organizations.

Objectives

The Executive Master of Science in Justice Administration and Leadership (MS-JAL) provides students with a coherent and intellectually challenging degree that prepares a new generation of leaders to manage and administer criminal justice and other social service organizations. The program will deliver an innovative and integrated curriculum that connects such key components of leadership and administrations as organizational behavior, organizational change, policy analysis, research design and program evaluation, decision-making, and conflict resolution to prepare students for leadership supervisory and executive positions.
Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences (or EPPS), the University’s Computing Center, and computing facilities in the School of Management (or SOM). EPPS has two computing laboratories which have over 50 computers that are network linked and equipped with major social science software packages, including E-Views, R, Rats, SPSS and STATA. A computerized geographic information system, the Lexis Nexis database, and Westlaw are also available for student use. The University’s Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are also available online via the library’s and School’s memberships in numerous organizations.

Graduate Assistantships

Graduate teaching and research assistantships will not be available.

Admissions Requirement

The University’s general admission requirements are discussed here. The Executive Master of Science in Justice Administration and Leadership seeks applications from students with a baccalaureate degree from an accredited university or college. Although applications will be reviewed holistically, in general, entering students have earned a 3.0 undergraduate grade point average (on a 4.0 scale) and a combined verbal and quantitative score of at least 1000 on the Graduate Records Examination (GRE). Standardized test scores are only one of the factors taken into account in determining admission. Students should also submit all transcripts, three letters of recommendation, and a one-page essay outlining the applicant’s background, education, and professional objectives. Applications are reviewed by the Committee in the Executive MS in Justice Administration and Leadership Program Director and appropriate faculty in the School of Management. Students should also submit all transcripts, three letters of recommendation, and a one-page essay outlining the applicant’s background, education, and professional objectives. Applications are reviewed by the Committee in the Executive MS in Justice Administration and Leadership Program Director and appropriate faculty in the School of Management. Economic, Political and Policy Sciences.

Prerequisites

For the Executive Master of Science in Justice Administration and Leadership, students with a Bachelor of Arts degree in Criminal Justice, Criminology, Public Administration, and general business will have the necessary foundation for the executive master’s degree. Students who lack this foundation should complete the following undergraduate courses at U.T. Dallas or their equivalents at another institution: CRIM 3302 Advanced Criminology, CRIM 3303 Advanced Criminal Justice, and CRIM 3304 Research Methods in Crime and Justice Studies. Prospective students with concerns about their preparation for the Executive Master of Science Degree in Justice Administration and Leadership program are encouraged to consult with the program coordinator.

Degree Requirements

The University’s general degree requirements are discussed here.
Students seeking an Executive Master of Science in Justice Administration and Leadership degree must complete 35 semester credit hours of coursework in the program. The Core curriculum involves 35 hours including 9 hours of research methods in public administration and statistics, 14 practice courses, 6 hours in organizational dynamics and dispute resolution, and 12 hours in criminal justice policy and criminology and 3 hours of independent research acting as a capstone course to satisfy a writing requirement. Students must achieve at least an overall grade point average of 3.0 to graduate.

**Core Courses**

- EPPS 6310 Research Design
- EPPS 6352 Evaluation Research Methods
- EPPS 7313 Descriptive Statistics
- CRIM 6311: Crime
- EPPS 6352 Evaluation Research Methods
- OB 6336 Motivational Leadership
- CRIM xxxx: Elective
- PA 6316: Leadership in Organizations
- OB 6301 Organizational Behavior
- OB 6331 Power
- PA 6345: Human Resource Management
- PA 6371: Strategies for Homeland Security
- PA 6390: Administration and Leadership in Organizations
- Power
- PA 6395: Contemporary Issues in Justice Administration
- PA 6399: Capstone Course
- OB 6332 Negotiation: Negotiations and Dispute Resolution
- OB 6301: Organizational Behavior
- PA 6399: Capstone Course
- PA 6320: Organizational Theory

**Research Project/Capstone Course Requirement (123 credit hours)**

- CRIM 6v99 Thescis Writing Research (the final 6 hours involves data analysis, policy discussion, and presentation)
- CRIM 6v98 Analytical Writing Research (the initial 6 hours PA 6399: Capstone Course (this course will involve research problem specification, literature review, and research design, analysis and presentation)

Other courses may substitute for those listed with the approval of the Associate Dean for Graduate Education or the Executive MS-JAL Director.
DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes _______

SCHOOL___EPPS_______________________________

DEPARTMENT__MA in Political Science – Constitutional Law Studies_

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

______________________________________________________________

______________________________________________________________

______________________________________________________________

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

______________________________________________________________

______________________________________________________________

______________________________________________________________

COURSES DELETED

______________________________________________________________

______________________________________________________________

______________________________________________________________

OTHER__change faculty information ________________________________

Approved: _________________________________

School/Department
DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes ______

SCHOOL_____________EPPS______________________

DEPARTMENT_MA in Political Science - Legislative Studies

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES


Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED


COURSES DELETED


OTHER__change faculty information

Approved: __________________________________________

School/Department
DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes _______

SCHOOL___EPPS_______________________________

DEPARTMENT__MA in Political Science _____________________________

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED
PSCI 6347

COURSES DELETED
PSCI 6313

OTHER__change faculty information____________________________________

Approved: ________________________________

School/Department
Master of Arts in Political Science – Legislative Studies

Faculty

Professors: Thomas Brunell, Anthony M. Champagne, Marie I. Chevrier, Harold D. Clarke, Euel Elliott, Edward J. Harpham, Robert C. Lowry, Marianne C. Stewart
Associate Professors: Patrick Brandt, Linda Camp Keith, Gregory S. Thielemann

Mission Statement

The mission of the Master of Arts in Political Science - Legislative Studies degree is to offer pre-professional instruction for students interested in positions as legislative staff, political consultants, or other careers in professional politics. Students will receive instruction that moves beyond the standard coursework in American and Texas government and politics by advancing their knowledge of legislative processes and the role that legislatures play at the local, state, and national levels of government. Graduates will have the communication, research and project management skills that are necessary for undertaking policy or political analysis in legislative and/or public affairs offices of the state of Texas and elsewhere.

Objectives

Students in the Master of Arts in Political Science - Legislative Studies program will:

- Demonstrate knowledge of subnational political institutions and processes in the United States and their effects on politics and policy
- Acquire detailed practical knowledge of the workings of the Texas state legislature.
- Acquire detailed knowledge of common campaign practices in the United States, including media relations.
- Develop competency in the design of public opinion surveys.
- Demonstrate the ability to analyze survey data using methods and tools appropriate for the practice of politics.
- Demonstrate proficiency in skills required for at least one position in the practice of politics by successfully completing an internship.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University's Computing Center. The School has two computing laboratories that have over 30 computers that are network linked and equipped with major social science software packages, including E-Views, R. Rats, SPSS, and STATA. A computerized geographic information system, the Lexis Nexis
database and Westlaw are also available for student use. The University’s Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are available online from professional associations or at UTD via the Library's and School's memberships in the American Political Science Association, the European Consortium for Political Research, the Inter University Consortium for Political and Social Research, the Roper Center, and the University Consortium for Geographic Information Systems, and other organizations.

Students also have access to the non-partisan Center for the Study of Texas Politics. The Center develops opportunities for North Texans to interact with Texas' leading policy-makers while simultaneously enhancing the quality of instruction, research and service that exists in the School of Economic, Political and Policy Sciences.

**Admissions Requirement**

The University’s general admission requirements are discussed [here](#).

The Master of Arts in Political Science seeks applications from students with a baccalaureate degree from an accredited university or college. Although applications will be reviewed holistically, in general, entering students have earned a 3.0 undergraduate grade point average (on a 4.0 scale), and a combined verbal and quantitative score of at least 1100 on the Graduate Records Examination (GRE). Standardized test scores are only one of the factors taken into account in determining admission. Applicants should also submit all transcripts, three letters of recommendation (preferably from individuals who can evaluate the applicant’s potential for a career in professional politics), and a one-page essay outlining the applicant’s background, education, and professional objectives. Applications are reviewed by the Political Science Program Committee in the School of Economic, Political and Policy Sciences.

Undergraduate students who are interested in completing their undergraduate degrees while simultaneously taking graduate courses in the M.A. in Political Science - Legislative Studies program are expected to meet the School’s “fast-tracking” requirements.

**Prerequisites**

While there are no specific course prerequisites, entering students will benefit from exposure to undergraduate courses in the Economic, Political and Policy Sciences, statistics, and research design. In cases where undergraduate preparation is not adequate, students may be required to take additional coursework before starting the master's program.

**Transfer Policies**

Students who have previous graduate work pertinent to the requirements of a master's program may be given up to 6 hours of transfer credit, and the hours of coursework required for the degree will be reduced accordingly. Students desiring to transfer graduate courses thought to be equivalent to core courses may be required to demonstrate competency through examination. The award of such transfer credit must be consistent with the University's "Transfer of Credit" policy.

**Degree Requirements**

The University’s general degree requirements are discussed [here](#).

Students seeking a Master of Arts in Political Science - Legislative Studies must complete at least 30 semester credit hours of work in the program, must receive a grade of B- or better in all required classes, and must maintain at least a 3.0 grade point average to graduate.
The curriculum has three components:

1. Fifteen semester hours of required coursework
2. Nine semester hours of prescribed electives
3. Six semester hours of internship.

**Required Courses (15 hours)**

All students should complete the core courses as soon as possible.

- EPPS 6313 Introduction to Quantitative Methods
- PSCI 6324 Local and State Government and Politics
- PSCI 6330 Campaigns and Media Relations
- PSCI 6364 Public Opinion and Survey Research

One of the following:

- PSCI 6340 Texas Legislative Affairs Workshop OR
- PSCI 6341 Texas Legislative Process

**Prescribed Electives (9 hours)**

Three additional courses at the 6000 level on political and civic organizations, bureaucracy and public policy, Congress, or executives, legislatures and policy.

**Internship (6 hours)**

Each student's degree program concludes with a six-credit hour internship over the summer semester. Internships will be done in the state legislature in Austin, in Congress in Washington DC, or at some other state or local agency.
Master of Arts in Political Science

Faculty


Associate Professors: Patrick Brandt, Jennifer S. Holmes, Linda Camp Keith, Gregory S. Thielemann

Assistant Professors: Brandon Kinne, Banks Miller, Clint Peinhardt

Senior Lecturers: Brian Beary, Karl Ho

Mission Statement

The mission of the Master of Arts in Political Science (MAPS) degree is to offer advanced instruction in the social science literature and theories about politics, citizenship and governance. The program serves the interests and needs of talented students who can commit initially to a 30-hour program but may be attracted subsequently to the Ph.D. program, as well as those who can commit initially to the doctoral program but subsequently decide not to complete the program. The Master of Arts in Political Science further can satisfy the interests and talents of students who “fast-track” in the Political Science undergraduate program and who want an additional year of more rigorous, sharply focused graduate coursework in Political Science.

Objectives

Students in the Master of Arts in Political Science program will:

• Demonstrate the ability to apply political science theories and concepts to the study of citizenship, governance and politics.

• Develop a competency in one of the fields of Comparative Politics and International Relations; Political Institutions and American Politics; or Law and Courts.

• Develop basic skills in professional communication appropriate to political science research and analysis.

• Develop competency in analysis, evaluation, and research design relevant to political science research and analysis.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University’s Computing Center. The School has two computing laboratories that have over 30 computers that are network linked and equipped with major social science software packages, including E-Views, R. Rats, SPSS, and STATA. A computerized geographic information system, the Lexis Nexis database and Westlaw are also available for student use. The University’s Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are available online from professional associations or at UTD via the Library’s and School’s memberships in the American Political Science Association, the European Consortium for Political Research, the Inter University Consortium for Political and Social Research, the Roper Center, and the University Consortium for Geographic Information Systems, and other organizations.

Admissions Requirement
The University’s general admission requirements are discussed here.

The Master of Arts in Political Science seeks applications from students with a baccalaureate degree from an accredited university or college. Although applications will be reviewed holistically, in general, entering students have earned a 3.0 undergraduate grade point average (on a 4.0 scale), and a combined verbal and quantitative score of at least 1100 on the Graduate Records Examination (GRE). Standardized test scores are only one of the factors taken into account in determining admission. Applicants should also submit all transcripts, three letters of recommendation (preferably from individuals who can evaluate the applicant’s potential for graduate study), and a one-page essay outlining the applicant’s background, education, and professional objectives. Applications are reviewed by the Political Science Program Committee in the School of Economic, Political and Policy Sciences.

Undergraduate students who are interested in completing their undergraduate degrees while simultaneously taking graduate courses in the M.A. in Political Science program are expected to meet the School’s “fast-tracking” requirements.

Prerequisites

While there are no specific course prerequisites, entering students will benefit from exposure to undergraduate courses in the Economic, Political and Policy Sciences, statistics, and research design. In cases where undergraduate preparation is not adequate, students may be required to take additional course work before starting the master's program.

Transfer Policies

Students who have previous graduate work pertinent to the requirements of a master’s program may be given up to 6 hours of transfer credit, and the hours of coursework required for the degree will be reduced accordingly. Students desiring to transfer graduate courses thought to be equivalent to core courses may be required to demonstrate competency through examination. The award of such transfer credit must be consistent with the University’s “Transfer of Credit” policy.

Degree Requirements

The University's general degree requirements are discussed here.

Students seeking a Master of Arts in Political Science must complete at least 30 semester credit hours of work in the program, must receive a grade of B- or better in all required courses, and must maintain at least a 3.0 grade point average to graduate.

The curriculum has two components:

1. Fifteen semester hours of required coursework
2. Fifteen semester hours of prescribed electives

Required Courses (15 hours)

All students should complete the core courses as soon as possible.

All of the following:
EPPS 6313  Introduction to Quantitative Methods
PSCI 6350  Logic, Scope and Methodology of Political Science
PSCI 6352  Empirical Democratic Theory

Two of the following:

PSCI 6300  Proseminar in Comparative Politics and International Relations
PSCI 6311  Proseminar in Law and Courts
PSCI 6343  Public Policymaking and Proseminar in Political Institutions and American Politics

Prescribed Electives (15 hours)

a)  Two additional courses at the 5000 or 6000 level in one of the following fields: Comparative Politics and International Relations; Political Institutions and American Politics; or Law and Courts.

b) Three additional political science courses at the 5000 or 6000 level, or methodology courses such as applied regression (EPPS 6316) or other methods courses offered throughout the School, or up to three credits of optional thesis (independent study).
Master of Arts in Political Science – Constitutional Law Studies

Faculty

**Professors**: Thomas Brunell, Anthony M. Champagne, Harold D. Clarke, James Marquart, Marianne C. Stewart, John Worrall

**Associate Professors**: Denise Boots, Patrick Brandt, Linda Camp Keith

**Assistant Professors**: Banks Miller

Mission Statement

The mission of the Master of Arts in Political Science - Constitutional Law Studies degree is to provide students with the reasoning and analytic skills necessary to understand the technical rules of law, legal practices and policies, and law more generally as a social phenomenon. It serves the interests and needs of students who want an intellectually rigorous legal education as preparation for law school, for more advanced graduate learning, or for law-related careers in teaching, journalism, government, policy-making, or the private sector.

Objectives

Students in the Master of Arts in Political Science - Constitutional Law Studies program will:

- Acquire detailed knowledge of the role of the judicial system in the evolution of public policy in the United States.
- Acquire detailed knowledge of the roles played by practicing attorneys in the development and application of public law in the United States.
- Demonstrate basic skills in legal research and writing.
- Develop competency in the application of theories of the evolution of constitutional law to United States Supreme Court decisions
- Demonstrate the ability to conduct original research on law and courts using skills in legal research and writing, quantitative research or field research.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University's Computing Center. The School has two computing laboratories that have over 30 computers that are network linked and equipped with major social science software packages, including E-Views, R. Rats, SPSS, and STATA. A computerized geographic information system, the Lexis Nexis database and Westlaw are also available for student use. The University's Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are available online from professional associations or at UTD via the Library's and School's memberships in the American Political Science Association, the European Consortium for Political Research, the Inter University Consortium for Political and Social Research, the Roper Center, and the University Consortium for Geographic Information Systems, and other organizations.
The Center for American and International Law, an internationally known organization that provides professional development to lawyers, judges, and law enforcement officers, helps to administer the Capstone Seminar in Constitutional Law Studies in which leading lawyers and judges provide lectures on law and the legal process.

Admissions Requirement

The University's general admission requirements are discussed here.

The Master of Arts in Political Science seeks applications from students with a baccalaureate degree from an accredited university or college. Although applications will be reviewed holistically, in general, entering students have earned a 3.0 undergraduate grade point average (on a 4.0 scale), and a combined verbal and quantitative score of at least 1100 on the Graduate Records Examination (GRE). Standardized test scores are only one of the factors taken into account in determining admission. Applicants should also submit all transcripts, three letters of recommendation (preferably from individuals who can evaluate the applicant’s potential for graduate study), and a one-page essay outlining the applicant's background, education, and professional objectives. Applications are reviewed by the Political Science Program Committee in the School of Economic, Political and Policy Sciences.

Undergraduate students who are interested in completing their undergraduate degrees while simultaneously taking graduate courses in the M.A. in Political Science - Constitutional Law Studies program are expected to meet the School’s “fast-tracking” requirements.

Prerequisites

While there are no specific course prerequisites, entering students will benefit from exposure to undergraduate courses in the Economic, Political and Policy Sciences, statistics, and research design. In cases where undergraduate preparation is not adequate, students may be required to take additional course work before starting the master's program.

Transfer Policies

Students who have previous graduate work pertinent to the requirements of a master’s program may be given up to 6 hours of transfer credit, and the hours of coursework required for the degree will be reduced accordingly. Students desiring to transfer graduate courses thought to be equivalent to core courses may be required to demonstrate competency through examination. The award of such transfer credit must be consistent with the University's “Transfer of Credit” policy.

Degree Requirements

The University's general degree requirements are discussed here.

Students seeking a Master of Arts in Political Science - Constitutional Law Studies must complete at least 30 semester credit hours of work in the program, must receive a grade of B- or better in all required courses, and must maintain at least a 3.0 grade point average to graduate.

The curriculum has two components:
(1) Eighteen semester hours of required coursework

(2) Twelve semester hours of prescribed electives

Required Courses (18 hours)

All students should complete the core courses as soon as possible.

One of the following:

EPPS 6313 Introduction to Quantitative Methods
PSCI 6350 Logic, Scope and Methodology of Political Science

All of the following:

PSCI 5306 The American Legal System and the Practice of Law
PSCI 5307 Legal Reasoning and Writing
PSCI 6301 Constitutional Law
PSCI 6305 Workshop in Constitutional Law Studies
PSCI 6343 Law and the Policy Process

Prescribed Electives (12 hours)

Four of the following:

CRIM 6305 Law and Social Control
CRIM 6311 Criminal Justice Policy
CRIM 6317 The Courts
CRIM 6348 Drugs and Crime
EPPS 6316 Applied Regression
PA 6319 Topics: Administrative Law
PSCI 5308 Immigration Law
PSCI 6306 Human Rights and International Law
PSCI 6311 Proseminar in Law and Courts
PSCI 6312 Comparative Constitutions and Courts
PSCI 6331 Executives, Legislatures, and Public Policy
PSCI 6339 Election Law and Electoral Systems
PSCI 7320 International Negotiations

Other courses as approved by the Director of Graduate Studies.
Master of Science in Public Policy

http://epps.utdallas.edu/pppe/mpp

Faculty


Associate Professors: Bobby C. Alexander, Simon M. Fass, Jennifer S. Holmes, Susan McElroy, Sheryl L. Skaggs

Mission

The Mission of the Master of Science in Public Policy is to offer students an interdisciplinary graduate education designed to develop skills for careers in which a solid understanding of the public policy process and the analysis and evaluation of public policies are essential. Students will be prepared for analytical and administrative positions and responsibilities in a wide array of professional settings in the public, non-profit, and private sectors as well as advanced study for careers in research. Specific skills include knowledge of the policy process and related ethical concerns, rigorous research skills that provide students with an essential grounding in statistical and data analysis and research design, and effective communication skills.

Objectives

- Students will understand and analyze the principal policy making institutions and the ways in which they formulate debate and implement public policies at the national, sub-national and local levels. Students will examine legislative, executive, and non-governmental roles in policy formation at different levels of government. They will analyze the ways in which the various institutions interact and set policy priorities. They will study policy implementation and the interrelated functions of levels of governments, non-profit and corporate entities in policy implementation.
- Students will learn and apply quantitative skills and economic theories to measure and evaluate public policies. They will learn when to apply appropriate techniques to complex policies. They will demonstrate an understanding of techniques to examine the preferred outcomes of policy alternatives to advise senior officials. Students will acquire skills in applying statistical measures of projected policy outcomes. Students will learn economic theories and acquire skills in applying those theories appropriately to establish policy objectives and outcomes.
- Students will understand the role of and learn appropriate, rigorous ways to design research to increase knowledge of public policy and citizen welfare. Students will learn ways to quantitatively and qualitatively design research projects that address important public policy questions and concerns.
- Students will learn and understand the unique role of ethical theories and behavior as it applies to the public and non-profit sectors. Students will understand the ethical obligation of elected and appointed governmental officials to the body politic. Students will understand the functions of internal and public oversight of the formation and implementation of public policies.
- Students will develop expertise in a substantive area of public policy and learn how to effectively communicate new findings and innovative policies to senior decision makers and the general public. Students will study one of three major public policy disciplines—social policy, health policy or the business-government relationship. Students will understand the theories and scientific principles that support these substantive policy areas and the ways in which those
theories are tested. Students will understand how these policy areas contribute to the well-being of citizens to enhance the quality of life.

- Qualified students are encouraged to consider the Ph.D. in Public Policy and Political Economy (PPPE). Such students should meet with Program Director of PPPE as soon as possible to discuss options.

**Facilities**

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University’s Computing Center. The School has two computing laboratories that have over 50 computers that are network linked and equipped with major social science software packages, including E-Views, R. Rats, SPSS, and Stata. A computerized geographic information system, the Lexis Nexis database and Westlaw are also available for student use. The University’s Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are also available online via the library and the school’s memberships in numerous organizations.

**Admissions Requirement**

The master’s program in Public Policy seeks applications from students with a baccalaureate degree from an accredited university or college. Although applications will be reviewed holistically, in general, entering students have earned a 3.0 undergraduate grade point average (on a 4.0 scale), and a combined verbal and quantitative score of 1100 or greater on the Graduate Records Examination (GRE). Standardized test scores are only one of the factors taken into account in determining admission. Students should also submit all transcripts, three letters of recommendation, and a one-page essay outlining the applicant’s background, education, and professional objectives.

**Prerequisites**

While there are no specific course prerequisites, entering students will benefit from exposure to undergraduate courses in the economics, political sciences, sociology, college algebra, statistics, public policy, and research design.

**Grading Policy**

In order to qualify for graduation, students must maintain a minimum 3.0 grade point average in their degree program’s core courses plus an aggregate grade point average of 3.0 for all graduate courses taken in the student’s degree program at U.T. Dallas.

**Degree Requirements**

Students seeking a Masters in Public Policy must complete at least 36 semester credit hours of graduate coursework in the program. The program has three components:

1. Twenty-one semester hours of required coursework
2. Nine semester hours of prescribed electives
3. Six hours of free electives

Students must maintain at least a 3.0 (B) grade point average to graduate.

**I. Required Core Courses**

1. Policymaking and Institutions (Six 6 hours)
POEC 6313/6323 (PA 6313 and PSCI 6313) Public Policymaking and Institutions
POEC 6329 Ethics, Culture, and Public Policy
or POEC 7318 (PA 7318) Ethics, Culture and Public Responsibility

Methods Core (Algebra-based or Calculus based)
Algebra-based series

EPPS 6313 Introduction to Quantitative Methods
EPPS 6316 Applied Regression

Or

Calculus based series

EPPS 7313 Descriptive and Inferential Statistics
EPPS 7316 Regression and Multivariate Analysis

Students with a concentration in Legal Studies (See prescribed electives) would substitute POEC/PSCI 6343 Law and The Policy Process for EPPS 6316/7316.
Select one of the following:

EPPS 6310 Research Design I
EPPS 6352 Evaluation Research Methods in the Economic, Political and Policy Sciences

PSCI 5307 Legal Reasoning and Writing [Students with a concentration in Legal Studies only]

3. Economics (Three hours)

ECON 6306 Applied Microeconomics or POEC 7317 Economics for 6390 Innovation and Public Policy

4. Policy Workshop or Prescribed Elective approved by the MPP Program Director (Three hours)
Select one of the following:
POEC 6V47 (PA 6V47) Policy Research Workshop in Health Care Policy
POEC 6V62 Policy Research Workshop in Social Policy
POEC 6V76 Policy Research Workshop in Development Studies
Other Workshop or another course, internship or approved elective approved as a substitution as approved by the Program Director. (Three hours)

II. Prescribed Electives

Students complete nine hours in ONE area of the following areas of concentration. All courses must be approved by the Program Director.

A. Criminology
B. Domestic Social Policy
C. Health Policy
D. International Conflict and Security
E. Legal Studies
F. Geographic Information Systems (GIS)

Other concentration proposed by the student and approved by the Director

Students should consult the graduate catalog, and the Program Director, for additional information regarding those courses that would best satisfy the “Prescribed Electives” requirement.

III. Free Electives

Students may select six hours of 6000 level or higher courses. Students may choose courses that are not selected under “Core Courses” to fulfill this requirement and may choose courses outside the School of Economic, Political and Policy Sciences.
Master of Science in Applied Sociology

http://epps.utdallas.edu/soc/ms.html

Faculty

Professors: Paul Jargowsky, Richard K. Scotch
Associate Professors: Bobby C. Alexander, Sheryl Skaggs
Senior Lecturer: Meryl Nason

Program Objectives

With an emphasis on the acquisition of theoretical knowledge and social research skills, the MS degree in Applied Sociology is offered under two different options: (1) the thesis option, which is primarily designed for students continuing on for a Ph.D. in sociology or other social science program; (2) the non-thesis option, which is primarily designed to prepare students for careers in policy analysis, program development and evaluation, and quantitative and qualitative data analysis. As public, private and nonprofit organizations attempt to maximize their human and monetary resources, they often seek professionals with specialized skills to assess program demands and viability, evaluate program success, direct change and inform policy. Graduates of the MSAS program are trained to fill such roles and effectively apply their knowledge and skills in employment areas including healthcare, local, state and national government, nonprofit social services, community activism, marketing research, human resources and business administration.

Although the MA in Applied Sociology is a terminal degree program, a number of our graduates have transitioned into UTD’s doctoral program in Public Policy and Political Economy, as well as external sociology doctoral programs throughout the country. Students planning to apply to a doctoral program are strongly encouraged to pursue the master’s thesis option. The program is open to full-time and part-time students, with many of our classes offered in the late afternoon and evenings. Students may enter the program in the fall, spring or summer semesters.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University’s Computing Center. The School has two computing laboratories which have over 50 computers that are network linked and equipped with major social science software packages, including E-Views, R, Rats, SPSS and STATA. A computerized geographic information system, the Lexis Nexis Database, and WestLaw are also available for student use. The University's Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are also available online via the library’s and the School’s memberships in numerous organizations.

Prerequisites

There are no required prerequisite courses in sociology for the Applied Sociology program, although prior coursework in social theory, research methods, and social statistics is desirable. Prospective students with concerns about their preparation for the Applied Sociology program are encouraged to consult with the program coordinator.
Grading Policy

In order to qualify for graduation, students must maintain a minimum 3.0 grade point average in their degree program’s core courses plus an aggregate grade point average of 3.0 for all graduate courses taken in the student’s degree program at U.T. Dallas.

Degree Requirements

The University’s general degree requirements are discussed here.

Students may select the thesis or non-thesis option. The Master of Science (M.S.) in Applied Sociology has three components and requires the completion of 36 semester credit hours.

Thesis Option

Course Requirements

- 12 credit hours of core courses in Applied Sociology and EPPS*
- 12 credit hours of Applied Sociology guided electives
- 6 credit hours of Economic, Political and Policy Sciences (EPPS) electives
- 6 credit hours of thesis research

The Master's Thesis is supervised by the student's major professor and the thesis committee, chosen in consultation with the major professor. The thesis committee may include a faculty member from another program with the approval of the major professor. Students are advised to consult with the graduate program director in selecting a major professor and thesis committee members. Students must pass a publicly announced defense of the thesis before it is submitted to the Graduate School. A passing grade on the defense is required in order to graduate. The date for the thesis defense should be early enough for required revisions (if any) to be made prior to the Graduate School deadline for submission. The thesis must conform to all Graduate School requirements.

Non-Thesis Option

Course Requirements

- 12 credit hours of core courses in Applied Sociology and EPPS*
- 15 credit hours of Applied Sociology guided electives
- 9 credit hours of Economic, Political and Policy Sciences (EPPS) electives

*Students must achieve at least a 3.0 grade point average in the Applied Sociology core courses and an overall grade point average of 3.0 to graduate.

The Master of Science (M.S.) in Applied Sociology (ASOC) requires the completion of 36 semester credit hours: 12 credit hours of core courses in Applied Sociology, 15 credit hours of Applied Sociology guided electives, and 9 credit hours of electives from any graduate program in the School of Economic, Political, and Policy Sciences (EPPS).
Core Courses in Applied Sociology and EPPS (12 hours):

EPPS 6313 Introduction to Quantitative Methods (usually offered in Fall)
EPPS 6346 Qualitative Research Methods (usually offered in Fall)
Or EPPS 6310 Research Design I (usually offered in Fall)
SOC 6312 Social-Economic Theories (usually offered in Spring)
SOC 6350 Social Stratification (usually offered in Fall)

EPPS 6346 Qualitative Research Methods
Or EPPS 6310 Research Design I

Applied Sociology Guided Elective Courses (15 hours):

Any graduate-level courses with a SOC prefix outside of the core may be applied to this requirement. Students may apply other graduate social science courses from the School of Economic, Political, and Policy Sciences related to Sociology, including an appropriate graduate-level internship, with the permission of the program coordinator.

Social Science Electives (9 hours):

Any graduate 5000 or 6000 level courses in the School of Economic, Political and Policy Sciences may be applied to this requirement. Students are encouraged to consult with the program coordinator in order to select courses appropriate for their academic and professional career goals.

Graduate Certificates

With appropriate planning in consultation with the program coordinator, students enrolled in the ASOC program may use 15 semester credit hours from their elective courses to earn a graduate certificate in Evaluation Research or Nonprofit Management. Information about these certificate programs may be obtained from the program coordinator, Dr. Richard Scotch.

Admission Requirements

The Master of Science in Applied Sociology seeks applications from students with a baccalaureate degree from an accredited university or college. Although applications will be reviewed holistically, in general, entering students should have earned a 3.0 undergraduate grade point average (on a 4.0 scale) and optimally have a combined verbal and quantitative score of at least 1100 on the Graduate Records Examination (GRE). Standardized test scores are only one of the factors taken into account in determining admission. Students should also submit all transcripts, three letters of recommendation, and a one-page essay outlining personal background, education, and professional objectives. UT-Dallas undergraduates in any major may apply to the ASOC fast track program, which involves taking up to 15 semester credit hours of graduate courses as an undergraduate that can subsequently be applied to the masters degree requirements.

For further information about the Applied Sociology Program, contact Betsy Albritton (pppe@utdallas.edu, 972-883-6406), see our web page at http://www.utdallas.edu/epps/soc, or contact the program coordinator: Dr. Sheryl Skaggs (slskaggs@utdallas.edu 972-883-4460).
Master of Science in Criminology

http://epps.utdallas.edu/crim/ms.html

Faculty

Professors: John L. Worrall (Program Head), Bruce Jacobs, James Marquart, Alex Piquero, Nicole Leeper Piquero, John L. Worrall
Associate Professors: Denise Boots, Tomislav Kovandzic, Lynne Vieraitis (Graduate Director)
Assistant Professors: J.C. Barnes, Robert Morris, Nadine Connell
Clinical Professors: Eimer Polk
Clinical Assistant Professors: Timothy Bray, Sarah Maxwell

Mission

The Mission of the Master of Science in Criminology program at the University of Texas at Dallas is threefold, to:

1. Deliver high-quality education to a diverse body of students regarding the etiology, control, and variation of law-breaking across space and time.
2. Serve local, regional, and national communities through professional development programs, public policy analyses and evaluation research, program and policy design, and as a forum for new ideas and approaches to the study of crime.
3. Advance the understanding of criminology through a multidisciplinary mix of theoretical and applied research, as well as to provide a forum for new ideas and approaches to the study of crime.

Objectives

The Master of Science in Criminology provides students with a coherent yet intellectually challenging degree that prepares them to conduct interdisciplinary research among the many aspects of criminology and criminal justice, varying with individual interests and areas of specialty. Graduates of the M.S. program will be competent to teach at the community college and at the University level as adjunct lecturers. Graduates will also be ready to enter into analytic and administrative posts within a vast array of research and policy institutions, criminal justice organizations, and in the private sector.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University’s Computing Center. The School has two computing laboratories which have over 50 computers that are network linked and equipped with major social science software packages, including E-Views, R, Rats, SPSS and STATA. A computerized geographic information system, the Lexis Nexis Database, and WestLaw are also available for student use. The University’s Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are also available online via the library’s and School’s memberships in numerous organizations.

Prerequisites
For the Master of Science in Criminology, students with an undergraduate degree in Criminology or a related field will have the necessary academic foundation to begin their graduate coursework (See the Graduate Program Handbook which is posted on the EPPS Website for more information on Prerequisites and Transfer Policies at http://epps.utdallas.edu/crim).

Program of Studies Policy

Each student admitted to a graduate program will have a specific program of studies agreed upon in consultation with the Graduate Studies Committee or graduate advisor for Criminology per the degree plan for the program. A complete Program of Studies Form will be filed in and approved prior to the student’s registration for his/her 19th semester credit hour to be counted toward a master’s degree.

Analytical Paper Writing Requirement (MS in Criminology)

All Doctoral track students must complete a writing requirement while enrolled in the MS Program. Student must take a minimum of six enrollment hours of CRIM 6V98, complete an analytical research paper and present their findings in a colloquium setting to be eligible for graduation with the MS.

Non-Writing Requirement for the MS in Criminology

MS students on a terminal track who do not wish to be considered for admission into a doctoral program have the option of taking 6 hours of any graduate classes as electives in lieu of the writing requirement.

Coursework and Credit Hours

15 Hours of required Criminology core classes:
CRIM 6300 Proseminar in Criminology
CRIM 6303 Etiology of Crime and Criminality
CRIM 6311 Crime and Justice Policy
EPPS 6310 Research Design I
EPPS 6313 Introduction to Quantitative Methods *

PLUS 15 hours Electives:

9 hours in Elective Criminology graduate courses, and

AND 6 hours in any program or school outside Criminology

AND:

6 hours of CRIM 6V96 Analytical Writing Research (for Ph.D. track students), or 6 hours of graduate-level course electives (for students wishing to terminate at MS)

Total Hours: 36

* Doctoral-track or doctoral students are advised to take EPPS 7313 Descriptive and Inferential Statistics (instead of EPPS 6313) and EPPS 7316 Regression and Multivariate Analysis directly following to ensure continuity and success with the increased rigor in the doctoral level statistics/methods sequence.
Master of Science in Criminology (online)

http://epps.utdallas.edu/crim/ms.html

Faculty

Professors: John L. Worrall (Program Head), Bruce Jacobs, Alex Piquero, Nicole Leeper Piquero, James Marquart, John L. Worrall

Associate Professors: Denise Boots, Tomislav Kovandzic, Lynne Vieraitis (Graduate Director)

Assistant Professors: J.C. Barnes, Nadine Connell, Robert Morris,

Clinical Professors: Elmer Polk

Clinical Assistant Professors: Timothy Bray, Sarah Maxwell

Mission

The Mission of the Master of Science in Criminology program at the University of Texas at Dallas is threefold, to:

1. Deliver high-quality education to a diverse body of students regarding the etiology, control, and variation of law-breaking across space and time.

2. Serve local, regional, and national communities through professional development programs, public policy analyses and evaluation research, program and policy design, and as a forum for new ideas and approaches to the study of crime.

3. Advance the understanding of criminology through a multidisciplinary mix of theoretical and applied research, as well as to provide a forum for new ideas and approaches to the study of crime.

Objectives

The Master of Science in Criminology provides students with a coherent yet intellectually challenging degree that prepares them to conduct interdisciplinary research among the many aspects of criminology and criminal justice, varying with individual interests and areas of specialty. Graduates of the M.S. program will be competent to teach at the community college and at the University level as adjunct lecturers. Graduates will also be ready to enter into analytic and administrative posts within a vast array of research and policy institutions, criminal justice organizations, and in the private sector.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University’s Computing Center. The School has two computing laboratories which have over 50 computers that are network linked and equipped with major social science software packages, including E-Views, R, Rats, SPSS and STATA. A computerized geographic information system, the Lexis Nexis Database, and WestLaw are also available for student use. The University’s Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are also available online via the library’s and School’s memberships in numerous organizations.

Prerequisites
For the Master of Science in Criminology, students with an undergraduate degree in Criminology or a related field will have the necessary academic foundation to begin their graduate coursework (See the Graduate Program Handbook which is posted on the EPPS Website for more information on Prerequisites and Transfer Policies at http://epps.utdallas.edu/crim).

Program of Studies Policy

Each student admitted to a graduate program will have a specific program of studies agreed upon in consultation with the Graduate Studies Committee or graduate advisor for Criminology per the degree plan for the program. A complete Program of Studies Form will be filed in and approved prior to the student's registration for his/her 19th semester credit hour to be counted toward a master's degree.

Analytical Paper Writing Requirement (MS in Criminology)

All Doctoral track students must complete a writing requirement while enrolled in the MS Program. Student must take a minimum of six enrollment hours of CRIM 6V98, complete an analytical research paper and present their findings in a colloquium setting to be eligible for graduation with the MS.

Non-Writing Requirement for the MS in Criminology

MS students on a terminal track who do not wish to be considered for admission into a doctoral program have the option of taking 6 hours of any graduate classes as electives in lieu of the writing requirement.

Coursework and Credit Hours

30 Hours of Coursework:

**15 Hours of required Criminology core classes:**

- CRIM 6300: Proseminar in Criminology
- CRIM 6303: Etiology of Crime and Criminality
- CRIM 6310: Delinquency and Juvenile Justice
- CRIM 6311: Crime and Justice Policy
- CRIM 6313: Corrections
- CRIM 6314: Policing
- CRIM 6317: Courts
- CRIM 6323: Violence and Gun Control
- CRIM 6348: Drugs and Crime
- EPPS 6310: Research Design I
- EPPS 6313: Introduction to Quantitative Methods
PLUS 15 hours Electives:

9 hours in Elective Criminology graduate courses, and 6 hours in any program or school outside Criminology

AND:

6 hours of **graduate electives (online, in any program or school)**: CRIM 6V08 for a writing requirement, Analytical Writing Research (for Ph.D. track students), or OR 6 hours of CRIM 8V01 (for independent study project—directed by a faculty member) graduate-level course electives (for students wishing to terminate at MS)

Total Hours: 36

*Doctoral-track or doctoral students are advised to take EPPS 7313 Descriptive and Inferential Statistics (instead of EPPS 6313) and EPPS 7316 Regression and Multivariate Analysis directly following to ensure continuity and success with the increased rigor in the doctoral level statistics/methods sequence.*
Master of Science in Economics

http://www.utdallas.edu/epps/eco/

Faculty

Professors: Daniel G. Arce M., Kurt J. Beron, Rachel Croson, Catherine Eckel, James Murdoch, Todd Sandler, Barry J. Seldon, Donggyu Sul
Associate Professors: Nathan Berg, Susan Williams McElroy, Kevin Siqueira
Assistant Professors: Rodney Andrews, Xin (Sherry) Li

Mission

The mission of the Master of Science in Applied Economics is to provide excellent graduate-level education in economics, with an emphasis on the development of theoretical understanding of economic phenomena, quantitative skills that can be applied to economic problems, and critical thinking to understand how best to apply economic theory and quantitative skills to real-world problems. Graduates of the Economics program will have an educational background that is conducive to employment in banking or financial institutions, insurance, consulting, corporate strategic planning, real estate, journalism, management, marketing, labor arbitration, regulation, environmental and urban and regional planning and quantitative analysis. Graduates may also choose to undertake further studies in Ph.D. programs in Economics, Political Economy, and Political Science, as well as additional studies in business or law.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University’s Computing Center. The School has two computing laboratories which have over 50 computers that are network linked and equipped with major social science software packages, including E-Views, R. Rats, SPSS and STATA. A computerized geographic information system, the Lexis Nexis database and Westlaw are also available for student use. The University’s Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are also available online via the library’s and school’s memberships in numerous organizations.

Admission Requirements

The University's general admission requirements are discussed here.

The Master's program in Economics seeks applications from students with a baccalaureate degree from an accredited university of college. A 3.0 undergraduate grade point average (on a 4.0 scale), and a combined verbal and quantitative score of at least 1200 on the Graduate Records Examination (GRE). Students may also wish to consider submitting their score from the writing component of the GRE test as additional evidence of their writing skills. Standardized test scores are only one of the factors taken into account in determining admission. Students should also submit all transcripts, three letters of recommendation, and a one-page essay outlining the applicant's background, education and professional objectives.

Prerequisites
For the Master of Science in Economics, students with a Bachelor of Science in Economics and courses in calculus and matrix or linear algebra will have the necessary foundation in economics, statistics and mathematics. Students who lack this foundation should complete the following undergraduate courses at UT Dallas or their equivalents at another institution: ECON 3310 Intermediate Microeconomics, ECON 3311 Intermediate Macroeconomics, ECON 4351 Mathematical Economics, ECON 4355 Econometrics, and EPPS 3405 Introduction to Social Statistics, MATH 1325 Applied Calculus I, MATH 1326 Applied Calculus II, and MATH 2333 Matrices, Vectors, and their Applications in order to begin the program.

**Degree Requirements**

The University's general degree requirements are discussed [here](#).

Students seeking a Master of Science in Economics degree must complete 36 semester credit hours of work in the program. The program has three components: 12 hours (four courses) of Required Core Courses (listed below), 9 hours of Economics Electives and 15 hours of Other Electives. Students must consult with the Director of Graduate Studies of the Economics Program each semester in order to determine the approved Economics Electives and Other Electives each semester. Students must achieve at least a 3.0 grade point average in the required courses and an overall grade point average of 3.0 to graduate.

**Required Core Courses in Economics (12 hours):**

- ECON 5321 Microeconomic Theory for Applications
- ECON 5322 Macroeconomic Theory for Applications
- ECON 6305 Mathematical Economics
- ECON 6306 Applied Econometrics

Advising note: If the student intends to enter the Ph.D. program in Economics upon completion of the M.S. then he or she should consider taking ECON 6301 instead of ECON 5321 and ECON 6302 instead of ECON 5322.

**Economics Electives Courses (9 credit hours):**

Approved ECON courses numbered 5000 and above.

**Other Electives Courses (15 credit hours):**

Approved ECON courses numbered 5000 and above or approved graduate courses from other programs.

Advising note: If the student intends to enter the Ph.D. program in Economics upon completion of the M.S. then he or she should consider taking ECON 7301 Microeconomic Theory II and ECON 7302 Macroeconomic Theory II as electives.
Master of Science in Geospatial Information Sciences

http://www.gis.utdallas.edu

Faculty

Professors: Carlos Aiken (Geosciences), Brian J. L. Berry (Economic, Political and Policy Sciences), Denis J. Dean (Economic, Political and Policy Sciences), Daniel Griffith (Economic, Political and Policy Sciences), Paul Jargowsky (Economic, Political and Policy Sciences), James Murdoch (Economic, Political and Policy Sciences), Robert Stern (Geosciences)

Associate Professors: Tom Brikowski (Geosciences), John Ferguson (Geosciences), Fang Qiu (Economic, Political and Policy Sciences), Michael Tiefelsdorf (Economic, Political and Policy Sciences)

Assistant Professors: Yongwan Chun (Economic, Political and Policy Sciences), Karen Hayslett-McCall (Economic, Political and Policy Sciences)

Clinical Assistant Professors: Stuart Murchison (Economic, Political and Policy Sciences)

Students may choose between two tracks within the Master of Science in Geospatial Information Sciences program. Both tracks are offered jointly by the School of Economic, Political and Policy Sciences and the School of Natural Sciences and Mathematics. The first track is a professional program that focuses on the use of Geographic Information Systems (GIS) and associated technologies such as remote sensing and global positioning systems for acquiring, managing, analyzing and communicating spatially-referenced information. This program emphasizes coursework, and involves a capstone class where, under the supervision of a faculty member, students prepare and present to the faculty and fellow students a professional GIS project. Students are expected to master the concepts underlying GIS, the skills for implementing GIS projects in public or private sector organizations, and the ability to use GIS in pure or applied research in substantive areas. Graduates can apply their skills in a variety of areas such as public administration and policy analysis; public safety, criminology, emergency preparedness management; environmental management; urban, regional, social service and transportation planning and analysis; marketing, site selection, logistics and real estate; and resource exploration, including petroleum.

The second track of the Master’s of Science in Geospatial Information Sciences program is a conventional program that offers a balance between coursework and research, and ultimately leads a student to produce a research-oriented master’s thesis. This track is aimed at students who want to hone their research skills, and is the preferred route for students who may want to move to a doctoral program. Graduates can apply their skills to the same areas as graduates from the first track, but also have the option of moving into research-oriented jobs, and maximizing their ability to move into doctoral programs.

Mission and Objectives

The mission of both tracks the Master of Science in Geographic Information Sciences program is to provide students a rigorous understanding of the technologies, quantitative techniques, models and theories used to acquire and manage spatially referenced information, analyze spatial processes, and communicate spatial information. The second track has the additional mission of providing students with a thorough understanding of the scientific research method. U.T.Dallas graduates will have strong analytical and numerical skills, knowledge of empirical and quantitative research methodologies, and employ novel geographic information sciences technologies. They will use these capabilities to support public and private sector organizations, to address significant societal issues, and to enhance understanding of the human and natural environments. They will successfully compete at the highest level for jobs requiring geospatial skills and for entry into quality doctoral programs in relevant areas. More specifically, graduates of the program will:
• demonstrate their knowledge of the technologies, quantitative techniques, models and theories used to acquire and manage spatially referenced information and to analyze spatial processes.

• have strong analytical and numerical skills, knowledge of empirical and quantitative research methodologies, and be able to employ these skills and methodologies in novel geographic information sciences applications.

• be able to identify and apply appropriate geospatial methodologies to support public and private sector organizations, to address significant societal issues, and to enhance understanding of the human and natural environments.

Facilities

Classes are offered through state-of-the-art GIS computing facilities housed in the School of Economic, Political and Policy Sciences and the NASA Center for Excellence in Remote Sensing in the Department of Geosciences. The University’s extensive instructional computing facilities are also available. Facilities are open extended hours including evenings and weekends. Enrollment in hands-on courses is controlled to ensure that a computer workstation is available for every student. All industry-standard GIS and remote sensing software is available. The University is a an Oracle Center of Excellence for Spatial Data Management and a member of the University Consortium for Geographic Information Science (UCGIS).

Admission Requirements

The University’s general admission requirements are discussed here.

For admission to the program, a baccalaureate degree from an accredited university or college is required and Graduate Record Examination (GRE) or Graduate Management Aptitude Test (GMAT) scores must be presented. A 3.0 undergraduate grade point average (on a 4.0 scale), and a combined verbal and quantitative score of at least 1000 on the GRE, or equivalent score on the GMAT, are desirable. Students must also submit transcripts from all higher education institutions attended, three letters of recommendation, and a personal statement, approximately one page in length, outlining their background, education and professional objectives.

Prerequisites

Beginning students must have the equivalent of GISC 6381 Geographic Information Systems Fundamentals and GISC 6382 Applied Geographic Information Systems, or they must take these courses at UT Dallas in addition to the 30 credit hours required for the Masters. Additionally, beginning students are expected to have at least one course at the graduate or undergraduate level covering descriptive and inferential statistics (or take EPPS 6313 Descriptive and Inferential Statistics, but this will not count toward the 30 hours needed for the degree), to have completed college mathematics through calculus, and to have at least one programming or computer applications course or possess equivalent knowledge.
Degree Requirements

The University’s general degree requirements are discussed here.

To earn the Master of Science in Geospatial Information Sciences, students must complete a minimum of 30 semester credit hours of work beyond the prerequisites mentioned above. Both tracks of the program involve a base requirement of 9 hours (three courses), a core requirement of 9 hours, and prescribed electives for 9 hours. The two tracks differ in their research requirements. Students must achieve at least a 3.0 grade point average in the core requirement and an overall grade point average of 3.0 to graduate.

Base Requirement – Both Tracks (9 credit hours):

Statistics (1 or 2 courses):

GISC 6301 Geospatial Data Analysis Fundamentals or
GEOS 6313 Data Analysis for Geoscientists or
GISC 6311/ECON 6311 Statistics for Geospatial Scientists
GISC 7310 Regression with Spatial Applications or

Programming (1 or 2 courses):

GEOS 6303 Computing for Geoscientists
GISC 6317 Computer Programming for GIS
GISC 6388 GIS Application Software Development
GISC 7363 Internet Mapping and Information Processing

MIS 6326 Database Management Systems

Core Requirement – Both Tracks (9 credit hours):

Students must earn a minimum grade point average (GPA) of 3.0 in at least three of the following courses:

GISC 6325 (GEOS 7365) Introduction to Remote Sensing
GISC 6384 Spatial Analysis and Modeling
GISC 6387 Geographic Information Systems Workshop
GEOS 7327/GISC 7367 Remote Sensing Workshop

Elective Courses (at least 9 credit hours from the following, not duplicated elsewhere)

CS 6359 Object Oriented Analysis and Design
CS 6360 Database Design
CS 6366 Computer Graphics
CS 6384 Computer Vision
EPPS 7368 Spatial Epidemiology
GEOS 7322 Global Positioning System (GPS) Satellite Surveying Techniques
GEOS 7324 3-D Data Capture and Ground Lidar
GISC 6325 (GEOS 6325) Introduction to Remote Sensing
GISC 6380 Spatial Concepts and Organization  
GISC 6383 GIS Management and Implementation  
GISC 6385 GIS Theories, Models, and Issues  
GISC 6388 GIS Application Development  
GISC 7310 Regression Analysis with Spatial Applications  
GISC 7360 GIS Pattern Analysis  
GISC 7361 Spatial Statistics  
GISC 7363 Internet Mapping and Information Processing  
GISC 7364 Demographic Analysis and Modeling  
GISC 7365 Remote Sensing Digital Image Processing  
GISC 7366 Applied Remote Sensing  
GISC 7387 GIS Research Design  
GISC 8320 Seminar in Spatial Analysis  
MIS 6308 Systems Analysis and Project Management  
MIS 6324 Decision Support Systems  
MIS 6326 Database Management Systems  
MIS 6328 Information Strategy Planning  
PA 6318 Information Systems in Policy Environments  
EPPS 6316 Advanced Regression Analysis  

**Research Project Requirement – Track One (3 hours):**  
GISC 6389 GIS Master’s Project  

**Research Project Requirement – Track Two (3 hours):**  
GISC 8V98 Master’s Thesis
Master of Science in International Political Economy

http://epps.utdallas.edu/pppe/msipe

Faculty

Professors: Sheila Amin de Gutiérrez de Piñeres, Brian J.L. Berry, Marie I. Chevrier, Lloyd J. Dumas, Euel W. Elliott, Donald A. Hicks, Paul A. Jargowsky, Murray J. Leaf, Richard K. Scotch
Associate Professors: Bobby C. Alexander, Simon M. Fass, Jennifer S. Holmes, Sheryl L. Skaggs
Assistant Professors: Clint W. Peinhardt

Mission Statement

The mission of the Master of Science in International Political Economy is to offer an experience in interdisciplinary education and policy research through activities in graduate education, scholarly and applied inquiry, and professional service. Today, more careers increasingly require international knowledge and skills that transcend the confines of traditional disciplinary training. We prepare students for careers in research, teaching, and practice in a variety of both academic and non-academic public policy and political economy settings. The Master of Science in International Political Economy will develop students’ critical skill sets to meet the needs and demands of the international diplomatic and business sectors. These skills include critical thinking, knowledge of multiple cultures, and cultural contexts, rigorous research skills, and the ability to communicate effectively in an array of environments. Students will be prepared to advance careers in policy and data analysis, and administrative positions in government, the non-profit and private sectors.

Objectives

- Students will demonstrate the ability to apply social science and international political economy theories and concepts.
- Students will develop competency in advanced methods of social science and international political economy research and analysis.
- Students will develop basic skills in professional communication appropriate to international political economy research and analysis.
- Students will develop competency in analysis, evaluation, and research design relevant to social science and international political economy research and analysis.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University's Computing Center. The School has two computing laboratories that have over 50 computers that are network linked and equipped with major social science software packages, including E-Views, R. Rats, SPSS, and STATA. A computerized geographic information system, the Lexis Nexis database and Westlaw are also available for student use. The University's Computing Center provides personal computers and UNIX Workstations. Many important data and reference materials are also available online via the library and school’s memberships in numerous organizations.

Admissions Requirement

The master's program in International Political Economy seeks applications from students with a baccalaureate degree from an accredited university or college. Although applications will be reviewed holistically, in general, entering students have earned a 3.0 undergraduate grade point average (on a 4.0
scale), and a combined verbal and quantitative score of at least 1100 on the Graduate Records Examination (GRE). Standardized test scores are only one of the factors taken into account in determining admission. Students should also submit all transcripts, three letters of recommendation, and a one-page essay outlining the applicant’s background, education, and professional objectives.

Prerequisites

While there are no specific course prerequisites, entering students will benefit from exposure to undergraduate courses in the Economic, Political and Policy Sciences, statistics, and research design. Students are strongly encouraged to strengthen their foreign language skills.

Degree Requirements

The University’s general degree requirements are discussed here.

Students seeking a Master of Science in International Political Economy must complete at least 36 semester credit hours of work in the program. The program has four components:

1. Eighteen semester hours of required coursework
2. Twelve semester hours of prescribed electives
3. Six hours of free electives.
4. Students must demonstrate a foreign language proficiency equivalent to two years of university level study in one foreign language before graduation.

Students must maintain a 3.0 cumulative GPA in their graduate courses in the degree program, including core courses. If placed on probation, students will have one semester to bring their cumulative grade point average to a 3.0 or greater. Any student who receives two Cs will no longer be allowed to continue in the program.

Required Courses (18 hours)

All students should complete the core courses as soon as possible.

Economic Theory Core (take one of the following):

- ECON 6306 Applied Microeconomics
- POEC 6390 Innovation and Public Policy
- POEC 7317 Economics for Public Policy

Methods Core (Algebra-based or Calculus based)

Algebra-based series

- EPPS 6313 Introduction to Quantitative Methods
- EPPS 6316 Applied Regression

Or
Calculus-based series
EPPS 7313 Descriptive and Inferential Statistics
EPPS 7316 Regression and Multivariate Analysis

One of the following:
POEC 6360 World Political Economy
POEC 6366 International Economics
PSCI 6309 International Political Economy

One of the following:
POEC/PSCI 6335 Institutions and Development
POEC/PSCI 6362 Political Development
PSCI 6308 International Organizations
PSCI 6309 International Political Economy
PSCI 6316 International Organizations

One of the following:
POEC 76V76 Policy Research Workshop in Development Studies
POEC-EPPS 6310 Research Design I
EPPS 6352 Evaluation Research

Prescribed Electives

Students complete 12 hours of Prescribed Electives. These consist of:

1. An area concentration in which the student completes two courses (six hours) in history, advanced language, or area studies courses that address a single region, including Europe, Latin America, or the Middle East/Greater Asia.

2. A theme concentration in which the student completes two courses (six hours) in Development, International Business and Public Policy, International Negotiations, or International Conflict and Security

Courses in both the area concentrations and theme concentrations must have the approval of the Program Director. Internships and independent studies may count toward either area or theme concentrations, with the permission of the Program Director.

Elective Courses

Students also select, in consultation with the Program Director, an additional six hours of coursework. Students may select courses from those courses not selected under Required Courses.
Master of Public Affairs

http://www.utdallas.edu/epps/pa/mpa/

Faculty

Associate Professors: Paul Battaglio, Simon Fass, Doug Goodman, and Jeremy L. Hall
Assistant Professors: Young-Joo Lee, and Meghna Sabharwal
Clinical Professors: Donald Arbuckle, Calvin Jamison, Robert Whelan
Clinical Associate Professor: Wendy Hassett
Clinical Assistant Professor: Kimberly Aaron, Karen Jarrell, Nick Valcik, Sarah Maxwell
Senior Lecturers: Ted Teodoro Benavides

Mission

The Master of Public Affairs program advances excellence in public service. The program accomplishes this mission through three sets of activities aimed at preparing its students to serve as capable and ethical stewards of the common good. It imparts essential knowledge, competencies and perspectives to a diverse array of future and current professionals in government and nonprofit organizations. It supports the wider community through in-service professional and leadership training, and through policy and management analysis services. And it produces new knowledge through practice-centered research.

Objectives

The Master’s degree in Public Affairs is a professional diploma that focuses on skills of management and analysis that contribute to successful carrying out of administrative and leadership responsibilities in government and nonprofit settings. The specific outcome objectives for students who graduate with the MPA degree are:

- Firm understanding of the philosophical, theoretical and legal foundations of public management, policy making, and leadership in government and nonprofit settings;
- Proficiency in organizational and decision analysis, research and evaluation practice, and quantitative and qualitative techniques;
- Sound preparation for advanced study aimed at research centers; and
- Mastery of persuasive written and oral communication.

Facilities

Students have access to the computing facilities in the School of Economic, Political and Policy Sciences and the University’s Computing Center. The School has two computing laboratories which have over 50 computers that are network linked and equipped with major social science software packages, including E-Views, R, Rats, SPSS and STATA. A computerized geographic information system, the Lexis Nexis Database, and WestLaw are also available for student use. The University’s Computing Center provides personal computers and UNIX Workstations. Many
important data and reference materials are also available online via the McDermott Library and School's memberships in numerous organizations.

Admission Requirements

The University's general admission requirements are discussed here.

The Master of Public Affairs program seeks to attract and admit highly motivated students with strong records of academic performance from diverse cultural and professional backgrounds. The program draws from mid-career professionals and from the pool of recent college graduates alike to create a diverse and capable pool of students with a desire to contribute to public service. The minimum requirement for admission to the MPA program is a baccalaureate degree from an accredited college or university. Students' records are evaluated across several performance dimensions in making admission decisions. In accord with Chapter 51, of the Texas Education Code, decisions on admission to degree-granting graduate programs at U. T. Dallas are based on holistic considerations of all information contained in the application material submitted, including academic, career and personal histories. Standardized test scores and GPA levels cited in the catalog descriptions of some degree programs are listed for advisory purposes only, to indicate the typical achievement levels of students enrolled and succeeding in the various programs. No single quantitative or qualitative measure or any specific combination thereof, constitutes a definitive standard for admission. Rather, each application will be considered individually and each applicant's complete profile of strengths and prospects for successful completion of the program will be evaluated.

In general, students who have a 3.0 undergraduate grade point average (on a 4.0 scale) and a combined verbal and quantitative score of at least 1000 on the Graduate Records Examination (GRE) or equivalent score on the Graduate Management Aptitude Test (GMAT), are preferred. Students may submit the score from the writing component of the GRE test as additional evidence of their writing skills. An analytical writing score of at least 4.5 in the GRE is considered desirable. Standardized test scores are preferred. Grade point average is only one of the factors taken into account in determining admission. Students also submit transcripts, three letters of recommendation and a one-page essay outlining the applicant's background, education, and professional objectives. Students who fail to meet these standards may be admitted on a probationary basis until they demonstrate their capabilities in graduate level course work.

To be guaranteed consideration for admission, fall applications must be received by August 1. Applications for spring admission must be received by December 1. Any incomplete application received after these dates will not be considered for admission during the designated semester. Students who do not meet this deadline must reapply for the following semester.

Prerequisites

While there are no specific prerequisites required for any MPA course, students who lack background in particular areas may be advised or required to take preparatory courses. In particular, students who lack background or experience in mathematics and micro computing may be required to develop proficiency in these areas before being admitted into certain courses. Students meet with the Assistant Program Head for Advising and Enrollment MPA Director to determine these requirements.
Degree Requirements

The University’s general degree requirements are discussed here.

Students seeking a Master of Public Affairs (MPA) degree must complete at least 42 semester credit hours of work in the program. The program has three components: a 24 hour core, 1215 hours of directed electives within a chosen specialization and the 3 hour Capstone seminar (Policy Research Workshop in PA 6399 Public Affairs: CAPSTONE). For students without evidence of at least 12 months full time managerial experience in the public or nonprofit sectors, 3 hours of internship credit are also mandatory. Students for whom the internship requirement is waived must complete an additional 3 hours of approved elective coursework.

Grade Point Requirements

Students must maintain at least a 3.0 grade point average in the core courses and an overall grade point average of 3.0 to graduate. If a student’s GPA does not meet these standards University policy concerning academic probation and removal from the program are in effect.

Core Courses (2421 hours)

All MPA students should complete the core courses as soon as possible. A full-time student entering the program will normally take three core courses and one additional course each semester. The workshop Capstone or internship is usually undertaken when the student has completed most of the other degree requirements.

Required core courses for the MPA (2421 hours)

PA 6313: Public Policymaking and Institutions
PA 7317: Economics for Public Policy or PA 6342: Local Economic Development
PA 7318: Ethics, Culture and Public Responsibility
EPPS 6313: Descriptive and Inferential Statistics for the Economic, Political and Policy Sciences
PA 6311: Public Management
PA 6324: Public Policymaking and Institutions
PA 6320: Organizational Theory
PA 6321: Government Financial Management and Budgeting

PA 6320: Organizational Theory
6342: Local Economic Development
or PA 7317: Economics for Public Policy
PA 6345: Human Resource Management

Elective Courses (1215 hours)

Students not wishing to complete a professional specialization must complete 1215 hours of elective coursework in addition to the core courses, capstone and internship. These courses will be determined in consultation with the MPA advisor. Other courses, including online offerings, may be authorized for all tracks at the discretion of the MPA Program Director.

Professional Specialization Core Courses

Students who specialize in Public Management take 15 hours from: PA 6300 Quality and Productivity Improvement in Government, PA 6326 Decision Tools for Managers, PA 6328 Management Process and Analysis, POEC 6336 Bureaucracy and Public Policy, PA 7322 Negotiation Strategies for Effective Management, PA 6344 Local Government Management, or other appropriate courses approved by the MPA Director.

Students who select the Local Government Management Track take 15 hours from: PA 6344 Local Government Management, PA 6345 Human Resources Management, PA 6342 Local Economic Development, SOC 6341 Urban Development and PA 6321 Government Financial Management and Budgeting, PA 6342 Local Economic Development, or other appropriate courses approved by the MPA Director.

Students who choose Policy Analysis complete 15 hours from: PA 7317 Economics for Public Policy, ECO 6361 Public Sector Economics, EPPS 6316 Advanced Regression Analysis, EPPS 6352 Evaluation Research Methods in the Economic, Political and Policy Sciences, EPPS 7304 Cost-Benefit Analysis, or other appropriate courses approved by the MPA Director.

Students who wish to focus on the Non-profit Management Track take 15 hours from: PA 6380 Non-profit Organizations, PA 6381 Non-profit Management, PA 6374 Financial Management for Non-profit Organizations, EPPS 6352 Evaluation Research Methods and an additional elective course, or other appropriate courses approved by the MPA Director.

Students who wish to focus on the Emergency Management Track take the following courses consisting of 15 hours:
PA 6351: Introduction to Homeland Security
PA 6353: Emergency Management
PA 6471: Strategies for Homeland Security
PA 6390: Administration and Leadership in Justice Agencies
PA 7309: Protecting Critical Resources and Infrastructure

Other courses may substitute for those listed in any specialization with the approval of the Associate Dean for Graduate Education or the MPA Director of the MPA degree.

**Capstone Course (3 hours)**
The capstone in public affairs is the culminating experience for graduating MPA students. Students integrate knowledge from across the MPA curriculum in a faculty-directed semester-long applied research project (PA 7362 Policy Research Workshop in Public Affairs: CAPSTONE). This required 3 hour seminar should be taken in the semester in which the student intends to graduate.

**Internship (3 hours)**
3 hours of internship credit (PA 8v97) are required for completion of the MPA. The internship involves work in a professional capacity in an organization, under the joint supervision of an experienced professional mentor at the internship site and a member of the faculty. The standard three hour internship requires approximately a 20-hour per week time commitment to the work experience for a total of 300 internship contact hours.
during the semester. The objective of the internship is to provide an introduction to professional life and to establish sound approaches to the practice of public affairs. **Students shall not take more than 6 hours of approved internship credit toward the MPA.** For students with evidence of at least 12 months full time managerial experience in the public or nonprofit sectors, 3 hours of internship credit may be waived at the discretion of the MPA director. Students who wish to seek the internship waiver must submit a formal written request to the MPA Director that includes a letter documenting the duration of their experience and its relevance to public or nonprofit management. This request must be approved no later than the student’s penultimate semester in the program. Students for whom the internship requirement is waived must complete an additional 3 hours of approved elective coursework in lieu of the internship.
DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:

Please indicate with an X if your department catalog copy has no changes ______

SCHOOL___EPPS_______________________________

DEPARTMENT__Master of Public Policy__

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES
Added core: ECON 6306; POEC 6390

=================================================================================================

Course numbering and changes in credit hour changes should be reflected in the two categories below.
NEW COURSES ADDED

=================================================================================================

COURSES DELETED
Delete core: PA 6313; PSCI 5307; POEC 7317; POEC/PA 6v47; POEC 6v62; POEC 6v76

=================================================================================================

OTHER__change faculty information; changed from master of science in Public Policy to master of Public Policy

=================================================================================================
DATE: 11/2/2011
TO:     GRADUATE DEAN
FROM:

Please indicate with an X if your department catalog copy has no changes _______

SCHOOL___EPPS_______________________________

DEPARTMENT__MS in Applied Sociology_

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

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______________________________________________

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

______________________________________________

______________________________________________

COURSES DELETED

______________________________________________

______________________________________________

OTHER__change faculty information; changed admission requirements

______________________________________________

Approved: ____________________________________

School/Department
DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes ______

SCHOOL___EPPS_______________________________

DEPARTMENT__MS in Criminology_

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.
NEW COURSES ADDED

COURSES DELETED

OTHER__change faculty information _____________________________

Approved: ___________________________________________

School/Department
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes ________

SCHOOL___EPPS_______________________________

DEPARTMENT__MS in Criminology_(Online)

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES
MS in Criminology (Online)

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________________________________________
Course numbering and changes in credit hour changes should be reflected in the two categories below.
NEW COURSES ADDED
CRIM 6310; CRIM 6314; CRIM 6317; CRIM 6348

________________________________________

COURSES DELETED
CRIM 6323

________________________________________

OTHER__change faculty information; add new MS in Criminology (online)______________________________

Approved: __________________________________________

School/Department
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE: 11/2/2011
TO: GRADUATE DEAN
FROM: 
Please indicate with an X if your department catalog copy has no changes ___X____

SCHOOL___EPPS_______________________________

DEPARTMENT__MS in Economics

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

COURSES DELETED

OTHER__

Approved: ___________________________________________

School/Department
DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes ______

SCHOOL ___ EPPS ______________________________

DEPARTMENT ___ MS in Geospatial Information Sciences

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

COURSES DELETED

OTHER__change faculty information

Approved: ________________________________

School/Department
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:

Please indicate with an X if your department catalog copy has no changes ______

SCHOOL__EPPS____________________________________

DEPARTMENT__MS in IPE

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

NEW COURSES ADDED
ECON 6306; POEC 6390; PSCI 6309; POEC 7v76; EPPS 6310; PSCI 6316

COURSES DELETED
PSCI 6308; POEC 6v76; POEC 6310

OTHER__change faculty information

Approved: __________________________________________

School/Department
DATE: 11/2/2011
TO: GRADUATE DEAN
FROM: 

Please indicate with an X if your department catalog copy has no changes ________

SCHOOL_________EPPS_____________________

DEPARTMENT_Executive MS in Justice Administration and Leadership__________________

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES
Executive Master of Science in Justice Administration and Leadership

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED
New core courses: CRIM 6311; PA 6316; PA 6345; PA 6371; PA 6395; PA 6399; PA/CRIM 6390

COURSES DELETED
Deleted core courses: EPPS 6310; EPPS 6352; EPPS 7313; OB 6331

OTHER__changed title from MS in Justice Administration and Leadership to Executive MS in Justice Administration and Leadership; changed from 35 hours to 30 hours; changed faculty information_____

Approved: ____________________________________________

School/Department
DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes _______

SCHOOL___EPPS_______________________________

DEPARTMENT__MS in PA

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

NEW COURSES ADDED
EPPS 7313; PA 6313; PA 6342

COURSES DELETED
PA 6313; PA 7318; EPPS 6313

OTHER__change faculty information

Approved: ___________________________________________

School/Department
DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:  

Please indicate with an X if your department catalog copy has no changes ______

SCHOOL________________EPPS___________________________

DEPARTMENT_PHD in Criminology

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

__________________________________________________________
__________________________________________________________

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

__________________________________________________________
__________________________________________________________

COURSES DELETED

Deleted elective courses: CRIM 6305; CRIM 6322; CRIM 6332

__________________________________________________________

OTHER__changed from 90 to 75 hours

Approved: ____________________________________________

School/Department
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes ______

SCHOOL____________EPPS______________________

DEPARTMENT_PHD in Economics

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

______________________________________________________________

______________________________________________________________

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

______________________________________________________________

______________________________________________________________

COURSES DELETED

Deleted core courses: ECON 8309

______________________________________________________________

OTHER__changed information in facilities

Approved: ________________________________

School/Department
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE: 11/2/2011
TO:   GRADUATE DEAN
FROM:

Please indicate with an X if your department catalog copy has no changes ______

SCHOOL_____________EPPS______________________

DEPARTMENT_PHD in Geospatial Information Sciences

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.
NEW COURSES ADDED

COURSES DELETED
Deleted core courses:

OTHER__changed faculty information

Approved: ________________________________
           School/Department
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE: 11/2/2011
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes ______

SCHOOL_____________EPPS______________________

DEPARTMENT_PHD in Public Affairs

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

COURSES DELETED
Deleted core courses:

OTHER__change mission, objectives, faculty commitments, admission information; change faculty information; degree information has major changes (see catalog copy)

Approved: ____________________________

School/Department
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE: 11/2/2011
TO: GRADUATE DEAN
FROM: 
Please indicate with an X if your department catalog copy has no changes ______

SCHOOL____________EPPS______________________

DEPARTMENT_PHD in Public Policy and Political Economy

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED
Core: POEC 6329; ECON 5321; POEC 6390; POEC/PSCI 6335; POEC 6368; POEC 6392; PSCI 6300; PSCI 6316

COURSES DELETED
Core: POEC 7318; POEC 7317
Field Courses: CRIM 6311; CRIM 6305; POEC 6318; PA 6351; POEC 6367'

OTHER_change from 90 to 75 hours; change faculty information

Approved: ____________________________________________

School/Department
DATE: 11/2/2011
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SCHOOL___________EPPS______________________

DEPARTMENT_PHD in Political Science

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED
Add new core course: PSCI/POEC 6347; PSCI 6316; PSCI 7330
Add new course in research methods concentration: EPPS 7390

COURSES DELETED
Deleted core courses:

OTHER__PSCI 6312 – title change; change faculty information

Approved: __________________________________________

School/Department
Description

PA 7317 (POEC 7317) Economics for Public Policy (3 semester hours) Introduces students to the use of economic methods of the analysis of public policy. The primary theoretical framework for the course is microeconomics, but the course may also include macroeconomics at the discretion of the instructor. A variety of public policy topics are covered in the course such as education, employment and the labor market, taxes and redistribution, access to health care, poverty and inequality, and public assistance programs. (3-0) S

POEC 7317 (PA 7317) Economics for Public Policy (3 semester hours) Introduces students to the use of economic methods of the analysis of public policy. The primary theoretical framework for the course is microeconomics, but the course may include macroeconomics at the discretion of the instructor. A variety of public policy topics are covered including education, employment and the labor market, taxes and redistribution, access to health care, poverty and inequality, and public assistance programs. (3-0) S

PA 7318 (POEC 7318) Ethics, Culture and Public Responsibility (3 semester hours) This course provides a general consideration of traditions of ethical thought, the interactions between personal behavior and cultural groups/norms and the implementation of public responsibility. Topics to be considered will include tensions between personal and collective goals, the nature and limits of tolerance, and the role of institutions such as the family, government, business, churches and interest groups. (3-0) S

POEC 7318 (PA 7318) Ethics, Culture and Public Responsibility (3 semester hours) This course provides a general consideration of traditions of ethical thought, the interactions between personal behavior and cultural groups/norms, and the implementation of public responsibility. Topics to be considered shall include tensions between personal and collective goals, the nature and limits of tolerance, and the role of institutions such as the family, government, business, churches and interest groups. (3-0) S

POEC 7320 (PSCI 7320) International Negotiations (3 semester hours) This course examines both the substance and the process of international negotiations. Students study the theory and analysis of negotiations and identify issues, interests and positions of the parties. The course covers the substantive areas of arms control, trade, and environmental negotiations. The course moves from the analysis of simple, bilateral negotiations with only a few issues in contention to complex multilateral negotiations. (3-0) R

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ECON 6372 (PA 6342) Local Economic Development (3 semester hours) This class will examine the role of local governments in promoting economic development in the United States, and will analyze the
economic development process. Attention will be given to economic theories of local development and practical implications of those theories. Topics include local economic development and poverty, tax incentives, infrastructure credits, firm location decisions and effects of government competition for economic activity. (3-0) S

PA 6342 (ECON 6372) Local Economic Development (3 semester hours) This class will examine the role of local governments in promoting economic development in the United States, and will analyze the economic development process. Attention will be given to economic theories of local development and practical implications of those theories. Topics include local economic development and poverty, tax incentives, infrastructure credits, firm location decisions and effects of government competition for economic activity. (3-0) S

PA 6380 (SOC 6380) Nonprofit Organizations (3 semester hours) This course examines issues related to the rise, scope, development, and impact of nonprofit organizations. The course explores both the unique missions of nonprofit organizations and the management challenges posed by this expanding sector. (3-0) T

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PA 7V62 (POEC 7V62) Policy Research Workshop in Public Affairs (3-9 semester hours) Students join a faculty member in a group research project. May be repeated for credit (12 hours maximum). MPA or doctoral students may not take more than 3 hours of their concentration requirement from policy research workshops and POEC 7376. (3-9-0) R

ECON 6352 (POEC 6360) World Political Economy (3 semester hours) An overview of the major economic, social, political and cultural forces that influence the nature of the international economic and political environment, as well as global economic and political relations. Topics include: theories of global political economy; economic and political transformation in Eastern Europe, China and the former Soviet Union; democratization and development in the less developed countries; military and non-military approaches to national and international security; environmentally sustainable economic development; and the international implications of technological failure. (3-0) T

POEC 6360 (ECON 6352) World Political Economy (3 semester hours) An overview of the major economic, social, political and cultural forces that influence the nature of the international economic and political environment, as well as global economic and political relations. Topics include: theories of global political economy; economic and political transformation in Eastern Europe, China and the former Soviet Union; democratization and development in the less developed countries; military and non-military approaches to national and international security; environmentally sustainable economic development; and the international implications of technological failure. (3-0) T
PA 6313 (POEC 6323 and PSCI 6313) Public Policymaking and Institutions (3 semester hours) Surveys the major institutions associated with policymaking, including Congress, the Presidency, the bureaucracy, and interest groups. These institutions are studied by linking them to the decision-making theories of organizations, social choice and incrementalism. (3-0) S

POEC 6323 (PA 6313 and PSCI 6313) Public Policymaking and Institutions (3 semester hours) Surveys the major institutions associated with policymaking, including Congress, the Presidency, the bureaucracy, and interest groups. These institutions are studied by linking them to the decision-making theories of organizations, social choice and incrementalism. (3-0) S

PSCI 6313 (PA 6313 and POEC 6323) Public Policymaking and Institutions (3 semester hours) Surveys the major institutions associated with policymaking, including Congress, the Presidency, the bureaucracy, and interest groups. These institutions are studied by linking them to the decision-making theories of organizations, social choice and incrementalism. (3-0) S

PA 6382 (SOC 6381) Nonprofit Management (3 semester hours) This course examines issues, strategies, and techniques related to executive leadership and management in nonprofit organizations. (3-0) R

SOC 6381 (PA 6382) Nonprofit Management (3 semester hours) This course examines issues, strategies, and techniques related to executive leadership and management in nonprofit organizations. (3-0) R

POEC 6335 (PSCI 6335) Institutions and Development (3 semester hours) An overview of leading theories, institutional perspectives, issues and policy debates concerning urban, regional, national and global development. Topics may include economic growth, technology and innovation, shifts in industrial structure, spatially imbalanced change, and their welfare consequences. (3-0) T

PSCI 6335 (POEC 6335) Institutions and Development (3 semester hours) An overview of leading theories, institutional perspectives, issues and policy debates concerning urban, regional, national and global development. Topics may include economic growth, technology and innovation, shifts in industrial structure, spatially imbalanced change, and their welfare consequences. (3-0) T

POEC 6362 (PSCI 6362) Political Development (3 semester hours) This course will survey different perspectives and theories of political development. Topics covered include the role of the state, democratization, political stability, civil society and environmental concerns, among others. (3-0) R

PSCI 6362 (POEC 6362) Political Development (3 semester hours) This course surveys different perspectives on and theories of political development. Topics covered include the role of the state, democratization, political stability, civil society and environmental concerns. (3-0) R

ECON 6362 (POEC 6353) Industry, Technology, and Science Policy (3 semester hours) Focuses on the impact of social, economic, and political factors on industry as critical units of production, and how these interact with technology and science. Topics include availability of skilled labor, research and development in industry, business-university relationships, innovation, and international competitiveness of the U.S. economy. (3-0) Y
POEC 6353 (ECON 6362) Industry, Technology, and Science Policy (3 semester hours) Focuses on the impact of social, economic, and political factors on industry as critical units of production, and how these interact with technology and science. Topics include availability of skilled labor, research and development in industry, business-university relationships, innovation, and international competitiveness of the U.S. economy. (3-0) Y

POEC 6363 (PSCI 6363) Conflict and Development (3 semester hours) This module will explore the nexus between violent intrastate conflict and development. It will examine some of the key conceptual frameworks advanced to understand conflict and will explore specific themes that have occupied researchers and policy practitioners in recent years. In addition to assessing the economic costs of the conflicts, this course will also examine the traditional factors that have been purported to explain the prevalence of insurgency. (3-0) R

PSCI 6363 (POEC 6363) Conflict and Development (3 semester hours) This module will explore the nexus between violent intrastate conflict and development. It will examine some of the key conceptual frameworks advanced to understand conflict and will explore specific themes that have occupied researchers and policy practitioners in recent years. In addition to assessing the economic costs of the conflicts, this course will also examine the traditional factors that have been purported to explain the prevalence of insurgency. (3-0) R

POEC 6357 (PSCI 6357) Political Economy of Latin America (3 semester hours) Addresses historical and contemporary issues in Latin American political economy. Uses case studies and cross-regional comparisons to assess competing explanations. Analyzes the current political and economic situation facing Latin America in its quest for economic growth and development. The emphasis is to understand the broad patterns of development and change in the region and the physical, historical, social and economic constraints which have affected development, broadly understood. (3-0) R

PSCI 6357 (POEC 6357) Political Economy of Latin America (3 semester hours) Addresses historical and contemporary issues in Latin American political economy. Uses case studies and cross-regional comparisons to assess competing explanations. Analyzes the current political and economic situation facing Latin America in its quest for economic growth and development. The emphasis is to understand the broad patterns of development and change in the region and the physical, historical, social and economic constraints which have affected development, broadly understood. (3-0) R

POEC 6361 (PSCI 6361) Political Violence and Terrorism (3 semester hours) In this discussion-based seminar, we will cover the topics of terrorism, political violence, and civil war. We will examine concepts, causes, and consequences of different types of political violence. Additionally, we will discuss topics relevant to research, including discussions of different approaches (quantitative, qualitative, and formal) and a perusal of different data sources. We will take advantage of literature from multiple disciplines. (3-0) T

PSCI 6361 (POEC 6361) Political Violence and Terrorism (3 semester hours) In this discussion-based seminar, we will cover the topics of terrorism, political violence, and civil war. We will examine concepts, causes, and consequences of different types of political violence. Additionally, we will discuss
topics relevant to research, including discussions of different approaches (quantitative, qualitative, and formal) and a perusal of different data sources. We will take advantage of literature from multiple disciplines. (3-0) T

ECON 6311 (GISC 6311) Statistics for Economists (3 semester hours) The course introduces calculus-based statistical analysis and probability theory, providing background for econometrics and economic modeling of simple stochastic processes. Standard probability distributions are covered, including Bernoulli, binomial, negative binomial, hypergeometric, Poisson, normal, gamma, beta, t and F distributions. Estimation and hypothesis testing are discussed. Introductory asymptomatic theory, including the Law(s) of Large Numbers and the Central Limit Theorem, will be covered as well as real-world applications of probability theory as time permits. (2-3-0) Y

GISC 6311 (ECON 6311) Statistics for Geospatial Science (3 semester hours) The course introduces calculus-based statistical analysis and probability theory, providing background for econometrics and economic modeling of simple stochastic processes. Standard probability distributions are covered, including Bernoulli, binomial, negative binomial, hypergeometric, Poisson, normal, gamma, beta, t and F distributions. Estimation and hypothesis testing are discussed. Introductory asymptomatic theory, including the Law(s) of Large Numbers and the Central Limit Theorem, will be covered as well as real-world applications of probability theory as time permits. (2-3-0) Y

ECON 6371 (SOC 6341) Urban Economics (3 semester hours) Presents methods and models for understanding urban growth and development processes. Topics include analysis of urban growth, land use patterns, transportation and local public good delivery systems. Welfare consequences of various urban policy options are explored. (3-0) R

SOC 6341 (ECON 6371) Urban Economics (3 semester hours) Presents methods and models for understanding urban and development processes. Topics include analysis of urban growth, land use patterns, transportation and local public good delivery systems. Welfare consequences of various urban policy options are explored. (3-0) R

PSCI 6347 (POEC 6347) Proseminar in Political Institutions and American Politics (3 semester hours) Surveys the scholarly literature on major institutions associated with policymaking in the United States, including Congress, the Presidency, the bureaucracy, and interest groups. (3-0) S

POEC 6347 (PSCI 6347) Proseminar in Political Institutions and American Politics (3 semester hours) Surveys the scholarly literature on major institutions associated with policymaking in the United States, including Congress, the Presidency, the bureaucracy, and interest groups. (3-0) S

PA 7340 (PSCI 7340) Intergovernmental and Intersectoral Relations (3 semester hours) This course explores the conceptual foundations of federalism that prescribe the relationships among federal and state governments in the U.S. It considers the practice of intergovernmental administration (federal, state, local) and intersectoral management (public, private, nonprofit) including devolution, fiscal federalism, and through a review of current issues in the field. (3-0) Y
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PA 6390 (CRIM 6390) Administration and Leadership in Justice Agencies (3 semester hours) This course focuses on the administrative structures, processes, and behavior in managing criminal justice agencies. The focus is on human and financial resources, organizational theory, decision-making, productivity, measurement and enhancement, organizational design, and ethics and culture in police, courts, and correctional agencies. (3-0) Y

CRIM 6390 (PA 6390) Administrative and Leadership in Justice Agencies (3 semester hours) This course focuses on the administrative structures, processes, and behavior in managing criminal justice agencies. The focus is on human and financial resources, organizational theory, decision-making, productivity, measurement and enhancement, organizational design, and ethics and culture in police, courts, and correctional agencies. (3-0) Y

PSCI 6317 (PA 6317) [MJV 1]Intergovernmental/Intersectoral Relations and Management (3 semester hours) This course explores the conceptual foundations of federalism that prescribe the relationships among federal and state governments in the U.S. It considers the practice of intergovernmental administration (federal, state, local) and intersectoral management (public, private, nonprofit) including devolution, fiscal federalism, and through a review of current issues in the field. (3-0) Y

PSCI 6317 (PA 6317) [MJV 2]Intergovernmental/Intersectoral Relations and Management (3 semester hours) This course explores the conceptual foundations of federalism that prescribe the relationships among federal and state governments in the U.S. It considers the practice of intergovernmental administration (federal, state, local) and intersectoral management (public, private, nonprofit) including devolution, fiscal federalism, and through a review of current issues in the field. (3-0) Y
Revised Current Description

ECON 6340 (MECO 6360) Industrial Organization (3 semester hours) Market structure, firm conduct, and economic performance of business with emphasis on firms' strategic behavior in price and nonprice competition. Topics include oligopoly pricing and production decisions, strategic entry deterrence, location strategies, product differentiation, advertising, research and development, and the effects of firms' conduct on economic welfare and market structure. (3-0) T

MECO 6360 (ECON 6340) Topics in Industrial Organization (3 semester hours) Issues in current research on the operation of firms and markets. Prerequisite: consent of instructor. (May be repeated for credit.) (3-0) T
Revised Description

CRIM 6300 Proseminar in Criminology (3 semester hours) Introduction to graduate study in criminology through exposure to issues surrounding concepts of crime, criminals and societal response. Students learn to examine critically the theoretical, methodological and policy issues in criminology and criminal justice. (3-0) Y

CRIM 6303 Etiology of Crime and Criminality (3 semester hours) This course examines the history of criminological thought incorporating the major works of such theorists as Bentham, Beccaria, Marx, Durkheim, Lombroso, Shaw and McKay, Sutherland, Becker, and Merton. (3-0) Y

CRIM 6305 Law and Social Control (3 semester hours) This course addresses the legal and theoretical basis of social control and the use of criminal sanctions to deter and punish criminal conduct. Students will learn to critically assess alternative punishment and sentencing models. (3-0) Y

CRIM 6307 Extent of Crime and Measurement (3 semester hours) This course will address problems in criminology and examine the major data sources available on crimes, criminals who commit them and the limitations of such data. Topics also include measurement issues and problems concerning research on the nature and extent of criminal behavior. (3-0) R

CRIM 6308 Victimology (3 semester hours) This course examines risks and consequences of crime for its victims. Issues considered include victim-offender relationships, characteristics of victims, the nature of the injuries they experience, and criminal justice procedures that involve them. (3-0) R

CRIM 6309 Communities and Crime (3 semester hours) This course examines the trends and sources of crime and social disorder across communities. The course emphasizes fear of crime, neighborhood changes and the resulting affect, responses, relationships, and public policies addressing those factors. (3-0) R

CRIM 6310 Delinquency and Juvenile Justice (3 semester hours) This course will examine youth crime, child victimization, and juvenile justice. Students learn the processes by which specific behaviors are identified as delinquent, the historical evolution of the juvenile justice, and current policies and practices. (3-0) R

CRIM 6311 Crime and Justice Policy (3 semester hours) This course will provide an introduction as well as in-depth study into crime and the efforts to control crime through public policy. (3-0) Y

CRIM 6313 Corrections (3 semester hours) This course will examine the history, forms, and functions of correctional philosophies, institutions, programs, and policies. Topics include the structure and functions of prisons and jails, community corrections, intermediate sanctions, and the growth of correctional control in modern society. (3-0) R

CRIM 6314 Policing (3 semester hours) This course will provide historical, social and political analysis of the roles and functions of policing in America. (3-0) R
CRIM 6315 Violent Crime (3 semester hours) This course will provide an in-depth analysis of the sources and patterns of violent offending across time and space. Topics include conceptions and typologies of violent crimes, offenders, victim-offender relations, and efforts to predict and control violent offending. (3-0) R

CRIM 6317 Courts (3 semester hours) This course will address the objectives, institutions and processes involved in the adjudication of offenders. Topics include the structure and function of the judicial system and principal court actors. (3-0) R

CRIM 6322 Crime Prevention (3 semester hours) This course examines situational, social, and legislative approaches to the prevention of crime and delinquency with emphasis on theories, protective factors, implementation and consequences of these approaches. (2-0) R

CRIM 6323 Violence and Gun Control (3 semester hours) The primary purpose of this course is the examination of facts surrounding one of the most heated issues of our times: the relationship between guns, violence and gun control. The course provides a comprehensive criminological view of the topic rather than a political or legal one. Students will learn about evaluating evidence, the "stricter gun law" debate, flaws in arguments on both sides of issue, as well as tricks used by advocates to persuade people to agree with their point of view. (3-0) R

CRIM 6324 Correlates of Crime and Justice (3 semester hours) This course is intended to examine the nature, relationships, attributes and indices at the situational and aggregate levels to various forms of crime and systems of justice. (3-0) R

CRIM 6332 GIS Applications in Criminology (3 semester hours) This course will examine spatial distributions of crime, criminals, and criminal justice interventions. Students conduct spatial analysis of point patterns within specific area-based data, locations of crime events and rates, offenders, police patrolling practices, judicial districts and community corrections and the manner in which they relate to physical and social characteristics of neighborhoods. (3-0) R

CRIM 6348 Drugs and Crime (3 semester hours) This course provides students with a survey of the historical context of the legislative initiatives that have been attempted to combat the use of drugs, the relationship between drug use/abuse and crime, and the crime and public policy problems surrounding the control of drugs. (3-0) R

CRIM 7300 Advances in Criminology Theory (3 semester hours) This course examines contemporary criminological theories and the degree to which research has provided empirical support for explanations of crime and criminality. (3-0) Y

CRIM 7301 Seminar in Criminology Research and Analysis (3 semester hours) This course examines a variety of quantitative methods and procedures used in criminology research. Students will plan and execute an independent research project. Need working topic for dissertation and dataset is preferred. Prerequisites: EPPS 6310, EPPS 6313 and EPPS 6316 or equivalent. Permission of instructor required. (3-0) Y
CRIM 7310 Advanced Quantitative Methods in Criminology (3 semester hours) This course is designed to be an extension to CRIM 7301. Quantitative research techniques not covered in 7301 will be addressed in depth as they apply to longitudinal and multilevel criminological research. Topics may include, but are not limited to, structural equation modeling (SEM), multilevel growth curve modeling, growth mixture models, panel regression, propensity score matching, and latent class analysis. Topics may vary by semester and may be tailored to fit students' research needs. Enrollment requirements: All students must have successfully completed CRIM 7301 with a B or better. Students should have a firm understanding of varying regression techniques, etc., prior to enrolling. Prerequisites: CRIM 7301. Permission of instructor required. (3-0) Y

CRIM 7342 Qualitative Criminology (3 semester hours) This course will examine ethnography and other qualitative approaches to studying crime, criminals, and criminal justice, particularly participant observation and informant and respondent interviewing. Topics include phenomenology, case study, in-depth interviewing, ethnomethodology, conversation analysis, historical methods, gaining access, sampling, data collection and analysis, and legal and ethical concerns. (3-0) R

CRIM 7351 Advanced Criminological Theory Seminar (3 semester hours) Topics will vary from semester to semester on various criminological theories. Prerequisites: Students must complete CRIM 6303 and CRIM 7300 prior to enrolling. Consult with an advisor to determine the appropriateness for one's degree plan and specialty areas of study. May be repeated for credit as topics vary (9 elective hours maximum). (3-0) R

CRIM 7381 Special Topics in Criminology (3 semester hours) Topics vary from semester to semester. Prerequisite: Consult with an advisor to determine the appropriateness for one's degree plan and specialty areas of study. May be repeated for credit as topics vary (9 elective hours maximum). (3-0) R

CRIM 6V90 Thesis Writing Research (1-6 semester hours) Students conduct a master's level research project under the supervision of faculty. Prerequisite: Permission of instructor required. ([1-6]-0) R

CRIM 6V98 Analytical Writing Research (1-9 semester hours) Students perform independent research under the supervision of faculty. May be repeated for credit. ([1-9]-0) R

CRIM 8V01 Independent Study (1-9 semester hours) Provides faculty supervision for student's individual study of a topic agreed upon by the student and the faculty supervisor. Student performance is assessed by instructor as pass/fail only. Prerequisite: Permission of instructor. May be repeated for elective credit (9 hours maximum for MS students and 12 hours maximum for PhD students). Can be applied for credit additionally at the discretion of the program on a case-by-case basis. ([1-9]-0) R

CRIM 8V99 Dissertation (1-9 semester hours) Provides faculty supervision of a student's dissertation research. Prerequisite: Permission of instructor required. May be repeated as necessary for credit. ([1-9]-0) Y

ECON 5321 Microeconomic Theory for Applications (3 semester hours) For Master of Science students only. Modern approaches to the theory of the firm, the theory of the consumer, and formal
relationships among the various economic functions developed using dual approaches to the optimization of objectives such as profit maximization, utility maximization, and cost minimization. Introduction to game theory; and market analysis through classical/neoclassical and game theoretic approaches. MSAE students who intend to enter the PhD program in ECON should take ECON 6301. (3-0) Y

ECON 5322 Macroeconomic Theory for Applications (3 semester hours) For Master of Science students only. Development of modern macroeconomic theory, including national income accounts and their relation to input-output tables; classical, Keynesian, and monetarist aggregate models; behavior hypotheses of consumption, investment, and government; properties and the role of money and interest; foreign trade and investment; price rigidity, price flexibility, and employment; wage-price interaction and inflation; unemployment; and ad hoc stabilization models. MSAE students who intend to enter the PhD program in ECON should take ECON 6302. (3-0) Y

ECON 6109 Econometrics I Lab (1 semester hour) This course uses STATA both as a data analysis tool and a programming language in econometric analysis. The course parallels ECON 6309, Econometrics I, in the topics covered in econometric data analysis. May be repeated for credit. Corequisite or prerequisite: ECON 6309. (0-1) R

ECON 6301 Microeconomics Theory I (3 semester hours) Modern approaches to the theory of the firm, the theory of the consumer, and formal relationships among the various economic functions developed using dual approaches to the optimization of objectives such as profit maximization, utility maximization, and cost minimization. Introduction to game theory; and market analysis through classical/neoclassical and game theoretic approaches. (3-0) Y

ECON 6302 Macroeconomics Theory I (3 semester hours) This course is the first in a sequence of core graduate macroeconomic theory courses. The main aim is to introduce students to the methods of deterministic dynamic analyses in economics. The second aim is to employ those methods in understanding aggregate empirical regularities as they pertain to economic growth with standard modern macroeconomic theory. Therefore, primary course aims include a thorough discussion of non-stochastic dynamics and optimization. Next, using these methods, exogenous and endogenous growth applications that illustrate the applied general equilibrium analyses that comprise modern macroeconomic growth theory are discussed. The course concludes with an introduction to non-stochastic overlapping generations models and discusses the role of dynamic efficiency in macroeconomic theory. (3-0) Y

ECON 6305 Mathematical Economics (3 semester hours) Mathematical tools used in advanced topics model building and in the social and economic analysis of public policy. (3-0) Y

ECON 6306 Applied Econometrics (3 semester hours) This course investigates the consequences of relaxing the classical linear regression model assumptions and explores solutions when the assumptions do not hold. Topics include a review of the Ordinary Least Squares (OLS) basics (including the assumptions, hypothesis testing, multicolinearity, dummy variables and heteroskedasticity), model
specification and selection, GLS, maximum likelihood estimation, binary choice models, simultaneous equation models, instrumental variables, and fixed and random effects models. (3-0) Y

ECON 6309 Econometrics I (3 semester hours) An introduction to econometrics, with a development of background concepts in linear algebra and statistics. The course focuses on estimation, hypothesis testing, and prediction in the classical linear regression model. Corresponding large sample issues are considered. General testing principles, such as likelihood ratio, Wald, Lagrange multiplier, and Hausman-type tests are also discussed. Other topics include model specification and nonlinear estimation issues. Recommended: ECON/GISC 6311. (3-0) Y

ECON 6316 Spatial Econometrics (3 semester hours) The application of econometric techniques to the explicit treatment of space (geography) in social science models. Covers the specification of spatial regression models, estimation and specification testing. The emphasis is on the application of spatial econometric methods to an empirical data analysis project. Prerequisite: ECON 6306 or ECON 6309. (3-0) R

ECON 6320 Game Theory for the Social Sciences (3 semester hours) Non-technical survey of game theory and its applications in the social sciences. Introduction to concepts such as dominant strategies, Nash equilibrium, evolutionary stability, repeated games, and games with incomplete information. Applications include collective action, conflict, bargaining, the evolution of altruism and cooperation, and signaling. (3-0) R

ECON 6321 Financial Economics I (3 semester hours) A course in quantitative methods for investment analysis, supplemented with detailed descriptions of the prominent players and the rules of the game which prevail in major U.S. financial markets. Security valuation, fixed income pricing formulas, and basic portfolio management are covered. The key concepts and outstanding debates surrounding the efficient market hypothesis are introduced. (3-0) R

ECON 6322 Financial Economics II (3 semester hours) Continuation of Financial Economics I. It covers core concepts in portfolio theory within the mean-variance framework, focusing on the problem of choosing a point on the efficient set. Additional topics to be covered include the CAPM model, arbitrage pricing theory, bond analysis, and the basics of the term structure. (3-0) R

ECON 6331 Labor Economics I (3 semester hours) Labor economics is the branch of economics that deals with how labor markets function. Topics covered will include labor supply, retirement, wage structure, inequality in earnings, discrimination, and labor market frictions. This course is one of two courses in nonsequential course offerings in graduate labor economics. (3-0) R

ECON 6332 Labor Economics II (3 semester hours) This course continues the study of theoretical and applied research of labor markets from Labor Economics I. Topics studied include demand for labor, wage setting institutions, wage structure, investment in human capital, and labor mobility. Labor Economics I is not a prerequisite for Labor Economics II. (3-0) R
ECON 6335 Health Economics (3 semester hours) Economic analysis of the health care industry to explain the demand for and supply of medical care. Includes analysis of behavior of consumers, producers, and insurers; and public policies to regulate the industry and to provide services for the various segments of the population. (3-0) R

ECON 6336 [MJV 1] Economics of Education (3 semester hours) This seminar examines theoretical and empirical writings relating to educational policy. The issues considered will include the link between educational achievement and earnings, the role of early childhood, assessments of head start and preschool programs, the effectiveness of compensatory education and tutoring programs, the large and persistent achievement gap between children from minority and low-income families and those from middle-income Asian and white families, a critical examination of educational production functions, the extent and consequences of school segregation, bilingual education programs, special education programs, international comparisons of student achievement and schools, school finance and an examination of various school reform proposals. (3-0) R

ECON 6340 (MECO 6360) [MJV 2] Industrial Organization (3 semester hours) Market structure, firm conduct, and economic performance of business with emphasis on firms' strategic behavior in price and nonprice competition. Topics include oligopoly pricing and production decisions, strategic entry deterrence, location strategies, product differentiation, advertising, research and development, and the effects of firms' conduct on economic welfare and market structure. (3-0) T

ECON 6343 Economic Regulation of Business (3 semester hours) Studies the rationale for, and the history and political-economic results of, government intervention in markets in the form of (1) direct regulation of prices, quantity, entry and exit, and product quality in industries (utility, communication, and transportation), and (2) indirect intervention through antitrust laws and the regulation of advertising. Government deregulation and changes in antitrust institutions also are explored. Prerequisite: ECON 5321 or ECON 6301 or PA 7317 or POEC 7317. (3-0) T

ECON 6344 Transfer Pricing (3 semester hours) The economics of transfer pricing of goods, services, and intellectual property traded among units (divisions or affiliated firms) of a common parent company. Multidivisional firms and multinational enterprises use transfer pricing for coordination of divisional objectives, allocating internal resources, and maximizing after-tax profits, among other goals. Governments base firms' tax liability on transfer prices; so their taxing authorities operate to ensure transfer prices adequately reflect the value of goods and services, challenging firms' established transfer pricing if it is deemed necessary. Legal issues and methods used by private firms and government agencies for establishing transfer prices are explored. (3-0) T

ECON 6351 Development Economics (3 semester hours) An overview of theories of national economic growth and development in the context of developing countries. This includes macroeconomic models; the role of financial development, trade, and agriculture; domestic sectoral policy; human resource development; the environment; and poverty. (3-0) R

ECON 6355 International Trade (3 semester hours) Provides a broad overview of theory and evidence concerning international trade, direct foreign investment and trade policy. Topics include scale
economies, imperfect competition, and product differentiation, trade dynamics, economic growth, trade policies, and the political process. (3-0) R

ECON 6356 International Finance (3 semester hours) Financial aspects of growth and income determination in open economies. Specific topics include financial risk in the international setting; money and exchange rate regimes; income determination and macroeconomic policy; history of international monetary arrangements, and current issues in international monetary reform. (3-0) R

ECON 6361 Public Sector Economics (3 semester hours) Examines the economic role of government in a mixed economy. Surveys why markets may fail and explores governmental strategies of intervention in light of these failures. Expenditure and tax policies are studied with attention to effects on both efficiency and distribution. (3-0) T

ECON 6363 Public Economics I (3 semester hours) A study of externalities, public goods, club goods, and related topics. Pass/Fail graded only. Prerequisite: ECON 5321 or ECON 6301. (3-0) R

ECON 6380 Experimental Economics I (3 semester hours) Introduction to the methodology of laboratory experimental economics, including principles of experimental design, development of effective protocols, research with human subjects, and statistical analysis of experimental data, designing experiments to test theory, experimental measurement of preferences and attitudes, and market and institutional "wind-tunnel" design. Prerequisites: ECON 6301 and ECON 6309, or instructor's permission. (3-0) T

ECON 7301 Microeconomics Theory II (3 semester hours) General equilibrium theory of markets and welfare economics; discusses the problems of existence, stability, efficiency, and equity of economic equilibrium; and introduces social choice and the special problems created by public goods, externalities, and uncertainty. Recommended: ECON 6301. (3-0) Y

ECON 7302 Macroeconomics Theory II (3 semester hours) This course is the second in a sequence of core graduate (doctoral level) macroeconomic theory courses. The main aim is to introduce students to the methods of stochastic dynamic analyses in economics. The second aim is to employ those methods in understanding aggregate empirical regularities, for instance as they pertain to business cycles, with standard modern macroeconomic theory. Therefore, primary course aims include a thorough discussion of stochastic dynamics and optimization. Next, using these methods, applications that illustrate the applied general equilibrium analyses that comprise: modern macroeconomic business cycle theory, consumption, asset pricing and topics in 'behavioral' macroeconomics are discussed. Recommended: ECON 6302. (3-0) Y

ECON 7303 Microeconomics Theory III (3 semester hours) Primarily a course on the role of strategic interdependence in economics using game theory. Topics include noncooperative games, simultaneous-move games and dynamic games with applications from a wide variety of fields in economics. (3-0) T

ECON 7309 Econometrics II (3 semester hours) This is the second core course in the econometrics sequence of the economics Ph.D. program. The course extends the topics covered in the first course
and covers topics such as serial correlation, unit roots, cointegration, and dynamic models; panel data; simultaneous equation models, maximum likelihood and GMM estimations methods. (3-0) Y

ECON 7311 Special Topics in Econometric and Spatial Analysis (3 semester hours) Topics vary from semester to semester. May be repeated for credit (9 hours maximum). However, students may not take more than 3 hours of the field requirement from ECON 7311. (3-0) R

ECON 7315 Econometrics III (3 semester hours) This is the third core course in the econometrics sequence of the economics Ph.D. program. The course extends the topics covered in the first two courses and covers topics such as Bayesian, semiparametric and nonparametric estimation approaches; discrete choice models, limited dependent variable models and duration models; and bootstrap and jackknife methods. Prerequisite: ECON 6310. (3-0) Y

ECON 7316 Game Theory (3 semester hours) Advanced treatment of topics in noncooperative game theory. May also include a brief survey of cooperative game theory. Major topics covered include correlated equilibrium, equilibrium refinements, evolutionary stability and dynamics, multi-level selection, revelation principle, strategic substitutes and complements, uniqueness and comparative statics. Prerequisites: GISC 7310 or EPPS 7316 or ECON 6306 or permission of instructor. (3-0) R

ECON 7321 Special Topics in Labor Economics (3 semester hours) Topics vary from semester to semester. May be repeated for credit (9 hours maximum). However, students may not take more than 3 hours of the field requirement from ECON 7321. (3-0) R

ECON 7331 Special Topics in Industrial Organization (3 semester hours) Topics vary from semester to semester. May be repeated for credit (9 hours maximum). However, students may not take more than 3 hours of the field requirement from ECON 7331. (3-0) R.

ECON 7341 Special Topics in International Development (3 semester hours) Topics vary from semester to semester. May be repeated for credit (9 hours maximum). However, students may not take more than 3 hours of the field requirement from ECON 7341. (3-0) R

ECON 7351 Special Topics in Public Economics (3 semester hours) Topics vary from semester to semester. May be repeated for credit (9 hours maximum). However, students may not take more than 3 hours of the field requirement from ECON 7351. (3-0) R

ECON 7363 Public Economics II (3 semester hours) A study of positive and normative theories of taxation, the effect of taxation on behavior, behavioral public finance and related topics. Pass/Fail graded only. Prerequisite: ECON 6361 or ECON 6363. (3-0) R

ECON 7381 Special Topics in Experimental and Behavioral Economics (3 semester hours) Topics vary from semester to semester. May be repeated for credit (9 hours maximum). However, students may not take more than 3 hours of the field requirement from ECON 7381. (3-0) R
ECON 7391 Special Topics in Economics (3 semester hours) Topics vary from semester to semester. May be repeated for credit (9 hours maximum). (3-0) R

ECON 6V00 Tools for Economic Research (2-3 semester hours) First two credit hours examines single and multivariate calculus at a level appropriate for entering PhD and MS students in economics, functional areas of business, and social sciences. Includes optimization theory and matrix algebra. Those enrolled in the optional 3rd credit hour will receive basic instruction in a statistical package (e.g., STATA). Pass/fail only. ([2-3]-0) Y

ECON 6V01 Independent Study (1-9 semester hours) Provides faculty supervision for student's individual study of a topic agreed upon by the student and the faculty supervisor. Prerequisite: Consent of instructor. May be repeated for credit (9 hours maximum). ([1-9]-0) R

ECON 7V01 Literature Survey/Paper Seminar (3 or 6 semester hours) Students registering for this seminar work towards the completion of their literature survey requirement. Course includes oral presentations and progress reports. ([3-6]-0) R

ECON 7V02 Research in Economics (3-6 semester hours) Topics vary from semester to semester. May be repeated for credit. Prerequisite: Consent of instructor. ([3-6]-0) R

ECON 7V03 Research Paper Seminar (3-6 semester hours) Students registering for this seminar work towards the completion of their research paper requirement. Oral presentations and progress reports. ([3-6]-0) T

ECON 8V01 Dissertation Seminar (3-9 semester hours) A seminar for students preparing proposals or writing dissertations. Prerequisite: Successful completion of qualifying examination or consent of instructor. May be repeated for credit. ([3-9]-0) R

ECON 8V02 Dissertation (1-9 semester hours) Provides faculty supervision of a student's dissertation research. May be repeated for credit. Prerequisite: Consent of instructor. ([1-9]-0) Y

ECON 8V97 Internship (3-6 semester hours) Provides faculty supervision for a student's internship. Internships must be related to the student's course work. Internships are mainly intended for terminal MSAE students. Prerequisite: Consent of instructor. ([1-9]-0) R

EPPS 6310 Research Design I (3 semester hours) This course is the first in a two-course sequence devoted to the research enterprise and the study of data development strategies and techniques to facilitate effective statistical analysis. Topics generally covered include: (1) issues and techniques in social science research with emphasis on philosophy of science, theory testing, and hypothesis formulation; (2) measurement and data collection strategies, reliability and validity of measures and results, sampling, surveys; and (3) examination of qualitative versus quantitative research techniques, working with observational data, field research issues, and triangulation. (3-0) Y

EPPS 6313 Introduction to Quantitative Methods (3 semester hours) This introductory graduate-level statistics course is geared to the consumption of statistical methods commonly used in social science
research. Topics include creating and interpreting graphical and tabular summaries of data, descriptive statistics, basic probability theory, sampling distributions, basic hypothesis testing (t-tests, chi-square tests, and analysis of variance), estimation of population parameters, confidence intervals and correlation. An introduction to regression analysis will also be provided. Topics are supported by computer-supported data analyses. (3-0) Y

EPPS 6316 Applied Regression (3 semester hours) This course provides a survey of the bivariate and multiple regression models estimated using Ordinary Least Squares (OLS), with an emphasis on using regression models to test social and economic hypotheses. This application-focused course presents examples drawn from economics, political science, public policy and sociology, introduces the basic concepts and interpretation of regression models, and basic methods of inference. Topics are supported by computer-supported data analyses. Prerequisite: EPPS 6313 or EPPS 7313. (3-0) Y.

EPPS 6320 Short Courses in Contemporary Social Science Research Methods (3 semester hours) This course is comprised of three short courses that each last two full days over the course of a calendar year. The classes are each intensive surveys of modern statistical methods that are used in the social sciences. Typically, these classes are taught all day on Thursday/Friday (sometimes Friday/Saturday). In order to get credit, the student must attend all three classes (six full days) over the course of the year. The class will be offered in the Spring semester so the student must have attended the class or classes that were offered in the Fall semester immediately prior to the semester in which the student is taking the class for credit. Taught pass/fail only. (3-0) Y

EPPS 6324 Data Management for Social Science Research (3 credit hours) Covers the principles and practical techniques of data cleaning, data organization, quality control, and automation of research tasks. Topics covered will include data types, useful text and math functions, labeling, recoding, data documentation, merging datasets, reshaping, and programming structures such as macros, loops, and branching using Stata and R. The course will also discuss using LaTeX to automate outputting of results and graphics in publishable formats. Prerequisite: EPPS 6313 or EPPS 7313 or permission of instructor. (3-0) R

EPPS 6342 Research Design II (3 semester hours) This course is the second in a two-course sequence devoted to the study of data development strategies and techniques to facilitate effective statistical analysis. Topics generally covered include: the logic of causal inquiry and inference in the Economic, Political and Policy Sciences, the elaboration paradigm and model specification, anticipating and handling threats to internal validity, hierarchies of design structure (experimental, quasi-experimental and non-experimental): linking design structure to effect estimation strategies and analyzing design elements in published literature. Students will be required to select a research topic in consultation with the instructor and prepare a written comparative design analysis. Recommended: EPPS 6310, EPPS 6316 or equivalents recommended. (3-0) Y

EPPS 6346 Qualitative Research Methods (3 semester hours) This course provides an overview of qualitative research in the Economic, Political and Policy Sciences. Students will investigate the assumptions underlying qualitative research approaches and critically assess the strengths and
weaknesses of such approaches. Possible topics may include participant observation, ethnographic interviewing, ethnomethodology, conversation analysis, case study, and the analysis of historical documents. (3-0) T

EPPS 6352 Evaluation Research Methods in the Economic, Political and Policy Sciences (3 semester hours) A review of research methods used in program evaluation, with an emphasis on public and nonprofit social programs. Issues to be addressed include research design, appropriate performance standards, measurement and selection of individuals, sampling, data collection, and data analysis. (3-0) Y

EPPS 7304 Cost-Benefit Analysis (3 semester hours) Examines methods for measuring costs and benefits of public projects and policies, and the application of cost-benefit analysis to areas such as economic development, water resources, recreation, transportation, regulation, and the environment. (3-0) R

EPPS 7313 Descriptive and Inferential Statistics (3 semester hours) The course provides a thorough introduction to probability and statistics. Probability topics covered include random variables, expectations, and probability distributions. The heart of the course is a rigorous introduction to statistical inference: sampling theory, confidence intervals, and hypothesis tests. The final section of the course is an introduction to regression analysis, with an emphasis on interpretation of regression results, using examples from recent research. Recommended: one semester of calculus. (3-0) Y

EPPS 7316 Regression and Multivariate Analysis (3 semester hours) This course provides a detailed examination of the multiple regression models estimated using Ordinary Least Squares (OLS), with an emphasis on using regression models to test social and economic hypotheses. Also covered are several special topics in regression analysis, including violations of OLS assumptions, the use of dummy variables, and fixed effects models. The course ends with an introduction to advanced topics in regression analysis, qualitative response models, and non-OLS approaches to estimation. Topics are supported by computer-supported data analyses using application-specific software. Prerequisite: EPPS 7313. (3-0) Y

EPPS 7318 Structural Equation and Multilevel (Hierarchical) Modeling (3 semester hours) An introduction to structural equation modeling (SEM) and multilevel modeling (MLM), sometimes called hierarchical linear or mixed modeling. SEM represents a general approach to the statistical examination of the fit of a theoretical model to empirical data. Topics include observed variable (path) analysis, latent variable models (e.g., confirmatory factor analysis), and latent variable SEM analyses. MLM represents a general approach to handling data that are nested within each other or have random components. Topics include dealing with two-level data that may be cross-sectional, such as students within classes, or longitudinal, such as repeated observations on individuals, firms or countries. Recommended: EPPS 7316 or equivalent. Prerequisite: ECON 6306 or ECON 6309 or EPPS 6316 or permission of instructor. (3-0) R

EPPS 7344 Categorical and Limited Dependent Variables (3 semester hours) This course examines several types of advanced regression models that are frequently used in policy analysis and social science research. The key similarity of these models is that they involve dependent variables that
violate one or more of the assumptions of the Ordinary Least Squares (OLS) regression model. The main models examined in the course are binary logit and probit, multinomial logit, ordinal probit, tobit, and the family of Poisson regression models. All these models are estimated using maximum likelihood estimation (MLE). The Heckman correction for selection is also addressed. Recommended: EPPS 6316 or the equivalent. (3-0) Y

EPPS 7368 Spatial Epidemiology (3 semester hours) Examines the conceptual and analytic tools used to understand how spatial distributions of exposure impact processes and patterns of disease. Emphasizes the special design, measurement, and analysis issues associated with spatial patterns of diseases. Contemporary diseases of public health importance are addressed, and the statistical and inferential skills are provided that can be used in understanding how spatial patterns arise and their implications for intervention. Prerequisite: EPPS 6313 or equivalent. (3-0) R

EPPS 7370 Time Series Analysis (3 semester hours) The course considers several important topics in applied time series analysis including the specification and testing Box-Jenkins models and dynamic regressions. Other topics may include forecasting, vector autoregression models, unit root inference, cointegration, autoregressive conditional heterogeneity, Bayesian time series, and regime switching models. Students also learn how to use modern time series software. Recommended: EPPS 7316 or equivalent. (3-0) R

EPPS 7386 Survey Research (3 semester hours) This course exposes students to the use of survey methods in social science research. Emphasis is placed on interview and questionnaire techniques and the construction and sequencing of survey questions. Attention is also devoted to sampling theory, sampling and non-sampling errors, and the use of recent advances in fieldwork to reduce measurement error in surveys. Recommended: EPPS 6313 or equivalent. (3-0) R

EPPS 7388 Workshop in Teaching Effectiveness (3 credit hours) Workshop will focus on preparing students for positions as teaching assistants, lecturers, and those who expect to teach as a career in the Social Sciences. Emphasis will be placed on videotaped student presentations and feedback, guest presentations, student visits to EPPS faculty classes. (3-0) R

EPPS 7390 Bayesian Analysis for Social and Behavioral Sciences (3 semester hours) This course covers the theory and application of Bayesian statistics for economic, political, and other social science data. Students will learn how maximum likelihood and Bayesian estimation are related and how the latter is used to develop decision based inference. Topics include subjective probability, general linear models, posterior simulation methods, model specification and averaging, and sensitivity analysis. Prerequisite: EPPS 7316 or equivalent. (3-0) R

EPPS 7V81 Special Topics in Social Science Research Methodology (1-9 semester hours) May be repeated for credit as topics vary (9 hours maximum). (3-0) R

EPPS 8V95 Frontiers of Social Science Research Methods (1-6 semester hours) Students working on dissertations or research papers receive feedback and advice on research methods, the discussion of methods in their writing, and presentation of results. (3-0) R
GISC 6301 Geospatial Data Analysis Fundamentals (3 semester hours) Focuses on data handling techniques and applying basic statistical methodology to spatial research questions. Concepts of statistical data analysis including descriptive statistics, exploratory methods, sampling theory, statistical inference and correlation analysis are reviewed from a Geo-Information Sciences perspective. Regression analysis and basic methods of spatial pattern analysis are introduced. A prior course in statistics (such as EPPS 3405) is strongly recommended. (3-20) Y

GISC 6317 Computer Programming for GIS (3 semester hours) General introduction to Visual Basic and other languages with GIS related applications. Topics covered include fundamental data structures and algorithms, user-interface design, component object model, and data base management. Emphasis on rapid GIS application development with hands-on experiences. Students are expected to design and implement a project. (3-0) Y

GISC 6326 Geovisualization (3 semester hours) Examines the theoretical concepts and practical applications of cartographic and geographic visualization. Topics covered in lectures include concepts for geographic data representation, symbolization and map design, and methods for geographic visualization and display. 3D visualization, cartographic animation, and web-based mapping may also be included. Lab sessions explore the implementation of cartographic and geographic visualization with industry standard GIS software. Prerequisite: GISC 6381 or equivalent knowledge. (3-0) R

GISC 6379 Special Topics in Geographic Information Sciences (3 semester hours) Topics vary from semester to semester. May be repeated for credit (9 hours maximum). Consult with adviser to determine appropriateness of topic for degree plan. (3-0) R

GISC 6380 Spatial Concepts and Organization (3 semester hours) Examines the recurring patterns of physical and human objects on the Earth's surface, the flows of circulations among them, and the spatial concepts and theories which have been advanced to help understand and explain these spatial arrangements. Provides a fundamental understanding of spatial processes, concepts, and theories. (3-0) R

GISC 6381 Geographic Information Systems Fundamentals (3 semester hours) Examines the fundamentals of Geographic Information Systems and their applications. Emphasizes the concepts needed to use GIS effectively for manipulating, querying, analyzing, and visualizing spatial-based data. Industry-standard GIS software is used to analyze spatial patterns in social, economic and environmental data, and to generate cartographic output from the analysis. (3-0) Y

GISC 6382 Applied Geographic Information Systems (3 semester hours) Further develops hands-on skills with industry-standard GIS software for application in a wide variety of areas including urban infrastructure management, marketing and location analysis, environmental management, geologic and geophysical analysis and the Economic, Political and Policy Sciences. Prerequisite: GISC 6381 or equivalent with instructor's permission. (3-0) Y

GISC 6383 Geographic Information Systems Management and Implementation (3 semester hours) Management strategies for GIS are examined by presenting GIS as an integrated system of people,
computer hardware, software, applications and data. Implementation is examined as a systematic process of user needs assessment, system specification, database design, application development, implementation, operation, and maintenance. Includes design of implementation plans as case studies to explore various techniques associated with each step of this process. (3-0) Y

GISC 6384 Spatial Analysis and Modeling (3 semester hours) Treatment of more advanced topics in the application of spatial analysis in a GIS environment. Topics covered include raster-based cartographic modeling, 3-D visualization, geostatistics and network analysis. Student will be acquainted with state-of-the-art software through hands-on laboratory experiences. Prerequisite: GISC 6381. (3-0) Y

GISC 6385 GIS Theories, Models and Issues (3 semester hours) Provides an understanding of the underlying theories, mathematical and geometric tools, and their computational implementations that establish GIS capabilities to handle and analyze geo-referenced information. Associated issues (such as uncertainty, spatial analysis and spatial data management) highlighted. Prerequisites: GISC 6381 and GISC 6382, or equivalent with instructor's permission. (3-0) Y

GISC 6387 Geographic Information Systems Workshop (3 semester hours) Provides a structured laboratory experience focused on the students' substantive area of interest. Each participant develops a project which should include aspects of database design and manipulation, spatial analysis, and cartographic production. Projects may be designed in coordination with a local government, utility, business, or other entity that uses GIS in its operations and research. Prerequisites: GISC 6381 and GISC 6382. (3-0) Y

GISC 6388 GIS Application Software Development (3 semester hours) Provides instruction and hands-on experience in specific techniques and languages for developing application systems based on GIS concepts. Students will learn to use current generation commercial software to design and implement an application. Prerequisites: GISC 6381 and GISC 6317, or permission of instructor. (3-0) R

GISC 6389 Geospatial Information Sciences Master's Project (3 semester hours) Requires completion of an original GIS project by the student working alone or in a team. Team efforts must result in products that can be associated uniquely with each student. Projects normally continue efforts started in GISC 6387 or GISC 6386. (3-0) S

GISC 7310 Regression Analysis with Spatial Applications (3 semester hours) The specification, interpretation and properties of the multiple linear regression model including spatial and aspatial regression diagnostics are examined. Extensions to the logistic and Poisson regression models and spatial heterogeneity are provided. A review of the key concepts of matrix algebra and simulation techniques is given. Practical data analysis for large datasets is exercised by coupling statistical software with GIS environments. Prerequisite: GISC 6301 or GISC 6311 or equivalent. (3-0) Y

GISC 7360 GIS Pattern Analysis (3 semester hours) Examines univariate and multivariate methods for point pattern analysis, geo-statistical surface interpolations, and spatial regression models. Underlying models and processes leading to spatially clustered and spatially dispersed patterns are discussed.
Course has particular relevance for local and global spatial analyses of crime, disease, or environmental patterns. Prerequisites: (GISC 6381 or GISC 6311) and (GISC 6301 or equivalent). (3-0) R

GISC 7361 Spatial Statistics (3 semester hours) The application of statistical techniques to the explicit treatment of space (geography) in social science models. Covers indices of spatial autocorrelation, the specification of autoregressive models (Gaussian, Poisson, binomial/logistic), geostatistical modeling, spatial filtering, Bayesian map analysis, random effects in models, and imputation of missing geocoded data. Recommended: GISC 7360. Prerequisite: GISC 7310 or EPPS 7316 or equivalent. (3-0) R

GISC 7363 Internet Mapping and Information Processing (3 semester hours) Provides a conceptual overview and hands-on experiences in Internet mapping and web-based geospatial information processing with state-of-the-art commercial software. Topics covered include client/server configuration, distributed data access and display, web-based user interaction and customization. (3-0) T

GISC 7364 Demographic Analysis and Modeling (3 semester hours) Examines key demographic models for population analysis, their underlying theoretical foundations, and extensions into the spatial domain. Incorporates quantitative estimation and projection techniques and their use within a geographic information systems framework. Provides a solid understanding of spatio-temporal population dynamics, either local or global, which is essential to many disciplines engaged in planning for the public and private service sectors, for transportation networks or for regional development projects. Prerequisite: EPPS 7313. (3-0) R

GISC 7387 GI Sciences Research Design (3 semester hours) Examines issues relative to the conduct of effective and valid research in geospatial information sciences and related fields. (3-0) Y

GISC 7389 GI Sciences Ph.D. Research Project Qualifier (3 semester hours) Requires completion, according to uniform guidelines established by the GI Sciences program, of a GI Sciences Research Project and its presentation to a committee of at least three GI Sciences faculty. May be repeated once in the immediately following semester. May substitute for GISC 6389 GI Sciences Master's Project. Pass/Fail only. Prerequisite: completion of 24 hours of coursework in GI Sciences Ph.D. program. (3-0) Y

GISC 8320 Seminar in Spatial Analysis (3 semester hours) Examines selected topics in spatial analysis or GI Science. May be repeated for credit when topics differ. (3-0) R

GISC 6V01 Independent Study in GIS (1-9 semester hours) Provides faculty supervision for a student's individual study of a topic agreed upon by the student and the faculty supervisor. Prerequisite: Permission of instructor. May be repeated for credit. ([1-9]-0) S

GISC 6V98 Master's Thesis (3-9 semester hours) Provides faculty supervision of a student's master's thesis research. Prerequisite: Consent of GIS Program Head and instructor. May be repeated for credit. ([3-9]-0) S

GISC 8V27 Internship in GIS (1-9 semester hours) Provides faculty supervision for a student's internship, which must be related to GIS. ([1-9]-0) S
GISC 8V29 Research in GIS (1-9 semester hours) Provides faculty supervision of research conducted by a student. Prerequisite: Permission of instructor. May be repeated for credit. ([3-9]-0) S

GISC 8V99 Dissertation (1-9 semester hours) Provides faculty supervision of a student's dissertation research. Prerequisite: Permission of instructor. May be repeated for credit. ([1-9]-0) S

IPEC 6V01 Independent Study (1-6 semester hours) Provides faculty supervision for student's individual study of a topic agreed upon by the student and the faculty supervisor. This course can only be taken Pass/Fail. Prerequisite: Permission of instructor. May be repeated for credit. ([1-6]-0) R

IPEC 6V97 Internship (1-6 semester hours) Provides faculty supervision for a student's internship. Internships must be related to the student's coursework. This course can only be taken Pass/Fail. Prerequisite: Permission of instructor. ([1-6]-0) R

PA 6300 Quality and Productivity Improvement in Government (3 semester hours) Examines the implications and challenges of improving public sector quality and productivity. Provides practical methods for improving government productivity and quality efforts. Provides tools for measuring performance and for managing performance. (3-0) R

PA 6311 Public Management (3 semester hours) The application of ideas and techniques of public management and decision-making to examine the various roles of the general manager in public organizations. Utilizes the case method. (3-0) S

PA 6316 Leadership in Public and Nonprofit Management (3 semester hours) This course will examine the major theories and practices of leadership in public and nonprofit organizations. Effective leaders from public and nonprofit organizations will speak to the class about the challenges of leading in complex environments. (3-0) R

PA 6317 (PSCI 6317) Intergovernmental/Intersectoral Relations and Management (3 semester hours) This course explores the conceptual foundations of federalism that prescribe the relationships among federal and state governments in the U.S. It considers the practice of intergovernmental administration (federal, state, local) and intersectoral management (public, private, nonprofit) including devolution, fiscal federalism, and through a review of current issues in the field. (3-0) Y

PA 6318 Information Systems in Policy Environments (3 semester hours) Overview of the technology, role and management of computer-based information systems in policy environments. Provides the managerial foundation for effective decision-making with respect to information technology implementation in public organizations. (3-0) Y

PA 6319 Topics in Public Affairs (3 semester hours) Topics vary from semester to semester. May be repeated to a maximum of 9 hours. (3-0) S

PA 6320 Organizational Theory (3 semester hours) Focuses on bureaucracy and rationality, formal and informal structures, and the role of the environment. Organizational factors such as technology, power,
information, and culture, as well as the implications of organizational theory for public policy are examined. (3-0) T

PA 6321 Government Financial Management and Budgeting (3 semester hours) Management of government finances, including revenue collection and enforcement, cash and debt management, investments, general and special funds, controllership, financial and program audits, purchasing, financial reporting, managerial use of governmental accounting systems, GAO and professional accounting standards. (3-0) S

PA 6324 Community Planning (3 semester hours) This course examines local issues involving growth and development on the local level of government. Specifically, it examines land use planning, zoning, subdivision regulations, and the processes that are involved with these issues. (3-0) R

PA 6326 Decision Tools for Managers (3 semester hours) This course introduces students to the variety of analytical and mathematical tools intended to improve management decision making. Cognitive failures in decision-making and remedies are also explored. Tools range from systems analysis to techniques of management science. Uses available software for management science studies. (3-0) Y

PA 6327 Land Use Law and Ethics (3 semester hours) This course covers two key elements of the planning profession: ethics and law as they relate to plan implementation. Community planning actions and decisions can impact the social and economic welfare of people, neighborhoods, cities, and regions in nontrivial ways. Ethics play an important role in guiding the planner, telling us what we should do. (3-0) Y

PA 6328 Management Process and Analysis (3 semester hours) This course examines rigorous methods for analyzing management processes and decision making. Focuses on the examination, critique and design of management systems. (3-0) T

PA 6330 Basics of Land Development (3 semester hours) Land development is the conversion of land from one use to another. This course emphasizes key concepts of land use practices utilized by local governments in the Dallas metroplex. Land use planning includes use for residential, commercial, industrial, as well as recreational, educational, social, and cultural activities. (3-0) Y

PA 6335 Resource Development for Nonprofit Organizations (3 semester hours) This course examines sources of revenue for nonprofit organizations. Specific topics include fundraising, grant writing, and donor dynamics. The course is designed to prepare the student to work effectively as a member of a fundraising team - either as staff or volunteer board member. (3-0) R

PA 6337 Capital Budgeting (3 semester hours) This course analyzes capital planning and budgeting as central features to economic development, transportation, communication, and to the delivery of other essential services. The course details the steps needed to provide the physical structure of local government, from selecting capital projects to planning how to pay for those projects to structuring and selling debt. (3-0) R
PA 6344 Local Government Management (3 semester hours) This course examines structure of local governments, the roles of key elected and appointed officials, and numerous issues and problems that local government managers and policymakers face. It also presents for discussion and study some of the best management practices that local government managers use in achieving effective and efficient delivery of services. There is a focus on local government management in the Dallas metro area through interaction with elected and appointed officials. (3-0) T

PA 6345 Human Resources Management (3 semester hours) Examines theories, principles, and practices of human resources management in public organizations. Explores implications of social and administrative values as expressed in current human resource policies. (3-0) S

PA 6348 Navigating the Government Workplace (3 semester hours) The governmental workplace is often a complicated work environment with numerous stakeholders. This practical course explores the challenges that public managers face at all levels of government in having successful careers. (3-0) Y

PA 6351 Introduction to Homeland Security (3 semester hours) This course provides a comprehensive overview of the structure of Homeland Security, its origins and developing trends and challenges. Selected material from Congress, FEMA, Department of Justice, local, state, and other government and non-government agencies will be studied. Examines both historical and contemporary Homeland Defense and Security issues. (3-0) R

PA 6353 Emergency Management (3 semester hours) This course examines issues related to the management of emergencies including discussion of emergency preparedness, emergency mitigation, and emergency response. The course will also discuss the interplay of local, state, and federal actors in emergency response as well as the role of government, private, and nonprofit organizations in emergency response. (3-0) T

PA 6354 Transportation Planning (3 semester hours) Transportation planning is the process of making useful information available to decision-makers at the organizational level to better understand the characteristics and constraints of transportation systems. This class explores transportation planning processes, the characteristics of urban travel, as well as management and analytical techniques that deal with the dynamics of urbanization and land use. (3-0) R

PA 6369 Grant Writing and Management (3 semester hours) This course provides the skills and knowledge to seek, solicit, and receive grant awards from foundation and government sources to support public and nonprofit programs and projects. Also covered are the skill sets necessary to manage grants effectively to provide the greatest value to your organization and to the granting agency. (3-0) Y

PA 6370 Project and Contract Management (3 semester hours) This course examines issues related to the management of large projects with particular attention to the management of contracts and grants to third parties. This course will discuss the justifications for contracting out public work, methods of oversight of contracts, and the steps in planning these large projects. The course will also discuss the implications of project planning for grant writing. (3-0) T
PA 6371 Pre-emptive Strategies and Tactics for Homeland Security (3 semester hours) Provides a comprehensive study of formulating pre-emptive strategies and tactics related to terrorist attacks and certain man-made disasters, such as chemical plant explosions. This course is a field-based application. Explores current published pre-emptive strategies and tactics, means and methods for improving current plans and explores new pre-emptive strategies and tactics driven by new intelligence assessments. (3-0) T

PA 6374 Financial Management for Nonprofit Organizations (3 semester hours) This course introduces the basic concepts of third sector financial literacy. Curriculum includes financial planning and budgeting, monitoring of contracts and grants and reporting mechanisms. (3-0) R

PA 7305 Leadership and Change in Public and Nonprofit Organizations (3 semester hours) Examines the range of contemporary theories of leadership with particular emphasis on public and nonprofit organizations. Explores cases of leadership success and failure in public/nonprofit settings, these environments. Examines the set of actions and behaviors requisite for leading contemporary organizations and provides applied tools for enacting change and adapting models of change to varied organizational settings. (3-0) Y

PA 7307 Information Sharing and Communication for Homeland Security (3 semester hours) Provides a comprehensive overview of the structure of network, organizational and group information sharing and communication. Focuses include new theories and applications to information sharing and communication and intelligence gathering techniques of state and local fusion centers. (3-0) R

PA 7308 Social Networks and Intelligence Led Policing (3 semester hours) Provides a comprehensive study of concepts and methods for adopting intelligence as a foundation of law enforcement business operations for sound decision-making. Exploiting social networks is a primary means for preventing terrorism and crime. The course explores how intelligence led policing depends on creating strong community social networks to enhance policing of criminal networks. (3-0) R

PA 7309 Protecting Critical Resources and Infrastructure (3 semester hours) Includes a comprehensive study of the current plans and policies in place for protecting critical resources and infrastructure, both public and private. The class will consist of a thorough review of the current literature pertaining to critical infrastructure protection policies, methods, plans, and identify new technology driven critical infrastructures. (3-0) R

PA 7311 Models and Tools of Change Management (3 semester hours) Examines the set of theories and models of change management as they relate to organizational change. Provides applied tools for enacting change in a variety of organizational environments. Provides tools for adapting models of change to scope and scale of changes required. (3-0) Y

PA 7321 Ethics and Law in Public Affairs (3 semester hours) This course examines legal and ethical mandates in the public realm, and particularly the application of key legal and ethical concepts to issues of governance and the role of public officials. (2-0) Y
PA 7322 Negotiations for Effective Management (3 semester hours) Students in this course will learn about negotiations, principally in the public sector, and will develop and practice skills to become more proficient negotiators and more effective managers. The course will be a combination of learning about negotiations and participating in exercises and simulated negotiations. The exercises and simulations reinforce theories about the role of negotiations in effective management and enable students to develop their own negotiation skills. (3-0) Y

PA 7325 Survey of Public Affairs (3 semester hours) This class examines current issues and challenges in the field of public affairs, with emphasis on the four fields that comprise the PhD program: leadership, change and conflict resolution; social policy and development; decision-making; and management and organizational analysis. The concept and practice of action research will also be explored within the context of public affairs. Open only to PhD students in Public Affairs. (3-0) Y

PA 7328 Economic Theory for Public Affairs (3 semester hours) This course examines concepts and analytical tools of economics and demonstrates how these concepts are used in analyzing public policy problems and designing appropriate responses. Following an exposition of the basic theoretical and analytical concepts in a public policy context, the course examines the role and limitations of economics in public policy making. (3-0) R

PA 7330 Research Design in Public Affairs (3 semester hours) Includes a variety of applied research techniques aimed at enhancing analysis of intra-organizational and extra-organizational settings. Both qualitative and quantitative techniques will be explored and applied. Techniques range from ethnographic analysis of organizational and social cultures to development of survey research methods for needs assessment, environmental sensing and marketing. Prerequisite: EPPS 6313 or equivalent. (3-0) Y

PA 7332 Legal Environment of Public Affairs (3 semester hours) This class explores how the law affects the operation, management and environment of public and nonprofit organizations. Examines topics ranging from administrative law to legal relationships with other governmental and nonprofit entities. (3-0) R

PA 7338 Seminar in Human Resources (3 semester hours) This course is an advanced seminar for PhD students in Public Affairs that will include readings and research on the broader human resource issues in the public and nonprofit workplace. (3-0) Y

PA 7375 Nonprofit Organizations: Theory and Practice (3 semester hours) This class explores the leading theories of nonprofit organizations. Examines the unique elements of nonprofit organizations and the academic and practical challenges produced by these distinctive elements. Examines how theory is applied to the practice of management in nonprofit organizations. (3-0) Y

PA 7381 Special Topics in Public Affairs (3 semester hours) Topics vary semester to semester and are rotated typically among the major fields within the program. May be repeated for credit (9 hours maximum). (3-0) R
PA 8340 Dissertation Seminar in Public Affairs (3 semester hours) Students will explore current issues in public affairs of relevance to their field experiences. The course will focus on the identification of these current issues as sources and challenges for ongoing research in public affairs. May be repeated for credit. Prerequisite: Permission of the Program Director. (3-0) S

PA 7V26 Policy Research Workshop in Institutions and Processes (3-9 semester hours) Students join a faculty member in a group research project on the political economy of public policy decisions in the context of institutional settings, such as legislatures, executive or administrative agencies, courts, or metropolitan systems. May be repeated for credit (12 hours maximum). However, MPA or doctoral students may not take any more than 3 hours of their concentration requirement from POEC 7330. ([3-9]-0) T

PA 8V01 Independent Study (1-9 semester hours) Students will work with a faculty member to develop an individualized course of study relevant to public affairs. May be repeated for credit. ([1-9]-0) S

PA 8V97 Internship (1-9 semester hours) Provides faculty supervision for a student's internship. Internships must be related to the student's course work. May be repeated for credit. Prerequisite: Permission of instructor. ([1-9]-0) S

PA 8V99 Dissertation (1-9 semester hours) May be repeated. Total hours may not exceed 18 semester hours. Students will design and implement an improvement effort within an organization in their chosen field of specialization. The goal of this course is to provide students an applied experience dealing with the challenges of institutional and organizational change. Prerequisite: Permission of the Program Director. ([1-9]-0) Y

POEC 6301 Political-Economic Theories (3 semester hours) A critical analysis of theories of politics and economy. Focuses on such thinkers as Smith, Marx, and Keynes, and on bodies of theory about political and economic systems. Explores the controversies that have shaped the development of political economy and their implications for interdisciplinary policy analysis. (3-0) Y

POEC 6319 Political Economy of MNCs (3 semester hours) The Political Economy of Multinational Corporations will approach the rise of international firms and their behavior from a social scientific approach, utilizing research in economics, political science, and other disciplines. In addition to the historical rise of international firms, the course covers the economic theory of the firm, MNCs as political actors, the dynamics of foreign direct investment, and the relationship of MNCs to developing countries. The aim of the course is to understand the causes and effects of the behavior of transnational corporations, particularly in regard to economic policy. (3-0) R

POEC 6354 Theories and Issues of Development (3 semester hours) In approaching development, there is an important interaction between theories and issues, each to some extent defining the other. This course will review a number of prominent instances in which we see this interaction - where theory has shaped the way people defined and approached practical problems and also where pressing practical problems have sometimes demanded new theoretical developments. Specific theories and issues discussed vary. Possible theories of interest include arguments for and against slavery, mercantilism,
the idea of economic "takeoff," central planning versus pluralism, and the role of democracy and human rights. Issues include labor conditions, urban living conditions, population growth and population quality, environmental pollution and sustainability, and governmental ineffectiveness and corruption. (3-0) Y

POEC 6355 Political Economy of the Middle East (3 semester hours) Analysis of the interplay of cultures and conflicts in the Middle East. The course will examine ancient cultures, Islam and the Ottoman Empire, the Arab-Israeli conflict, the rise of the Oil Kingdoms, the Kurds, the Gulf wars, and terrorism in the name of Islam. The course will also focus on U.S. relations with a number of Middle Eastern countries such as Saudi Arabia, Iran, Iraq, Egypt, and Israel. (3-0) R

POEC 6358 Political Economy of South and Southeast Asia (3 semester hours) Political Economy of South and Southeast Asia. South Asia is the Indian peninsula. Southeast Asia is the great swath of countries from Burma and Thailand through Malaysia to Indonesia and Australia. This is a region of great cultural, political, economic, religious, and historical diversity. This course surveys the political economy of the region by selectively examining key countries and their mutual interactions. The major countries, all of which are rising military and economic powers, are Pakistan, India, Thailand, Indonesia and Australia. Additional countries, which will be included according to interest and available material, include Sri Lanka, Nepal, Bhutan, Bangladesh, Burma, Cambodia, Vietnam, Malaysia, Singapore, Papua New Guinea, East Timor and New Zealand. (3-0) R

POEC 6364 Development Economics (3 semester hours) An overview of theories of national economic growth and development, with emphasis on economy-wide modeling, application of micro-economic theories, and domestic sectoral policy. (3-0) T

POEC 6366 International Economics (3 semester hours) This course focuses on international trade theory and the ongoing process of regional integration in the Americas, with particular emphasis on the North American Free Trade Agreement. (3-0) R

POEC 6367 Topical Issues in Conflict and Conflict Resolution (3 semester hours) This course will examine in detail three recent international or ethnic conflicts and the national and international efforts to resolve the conflicts and/or mitigate their efforts. The course will examine theories of conflict including ethnic conflict and just war theory. It will examine the historical sources of the conflicts, the regional and international dimensions, the precipitating causes and the intensification of the conflicts. Examples of conflicts that could be used include: the former Yugoslavia, India/Pakistan, Iraq and Kuwait, North Korea, Israel/Palestine and Sudan. (3-0) T

POEC 6368 Population and Development (3 semester hours) Examines the relations among population, resources, economic development, and the environment in light of conflicting Malthusian and anti-Malthusian paradigms. Topics include fertility, mortality, public health, human capital, use of resources, and environmental impacts at local, regional, and global scales. (3-0) R

POEC 6369 National and International Security Strategies and Policies (3 semester hours) With the end of the decades-long Cold War, the US has become the world's only superpower. But the problem of
national and international security continue to be a dominant concern of national and international political and economic life, just as it has been for more than sixty years. Many nations continue to maintain high levels of military expenditure as a mainstay of their security policy. Yet, there has been a profound change in the nature of the threats to security since the Cold War. Some, like the threat of intentional full-scale global nuclear war, have receded. Others, like the threat posed by nuclear proliferation and the terrorism of mass destruction, have increased. From acute hot spots to longer-term questions of restructuring power and security arrangements in a post-Cold War world, understanding the deeper issues of national and international security is critical to understanding what lies behind the headlines -- and what strategies are likely to be effective in achieving real security. Topics include: the nature and meaning of security; security and military force; terrorism, accidents and accidental war; nuclear proliferation; the international arms trade; the experience of war; the economics of security policy; social and psychological factors; and strategies for achieving security by nonmilitary means. (3-0) T

POEC 6379 Special Topics in Development Studies (3 semester hours) Topics vary from semester to semester. May be repeated for credit (9 hours maximum). Prerequisite: POEC 6254. (3-0) R

POEC 7306 Macroeconomic Theory and Policy (3 semester hours) Studies various schools of macroeconomic theory, their political and economic implications and the policies that flow from them. Discusses the design and implementation of policies related to inflation, unemployment, business fluctuations and long-term economic growth. (3-0) R

POEC 7319 Economics of Education (3 semester hours) This seminar examines educational policy issues from an economic perspective. The issues considered include the link between educational achievement and earnings, the role of early childhood, assessments of head start and pre-school programs, the effectiveness of compensatory education and tutoring programs, the achievement gap for poor and minority children, educational production functions, the extent and consequences of school segregation, bilingual education programs, special education programs, international comparisons of student achievement and schools, school finance, and an examination of various school reform proposals. (3-0) R

POEC 7321 Seminar on Business and Government (3 semester hours) Examines the interactions between markets and the state from a comparative and public policy perspective. Special emphasis will be placed on issues involving industry regulation/deregulation, antitrust/competition, innovation/industrial policy, infrastructure investment, intellectual property, social regulation, and global trade/investment. (3-0) Y

POEC 7327 Innovation Dynamics and Economic Change (3 semester hours) Examines the convergence of the information technology and telecom industries. Explores the role of technological innovation together with economic, institutional, and legal-regulatory issues shaping the new IT-Telecom industry within both domestic and geopolitical contexts. (3-0) T

POEC 7329 Special Topics in Industry and Public Policy (3 semester hours) Topics vary from semester to semester. May be repeated for credit (9 hours maximum). (3-0) R
POEC 7341 Health Policy (3 semester hours) The history and political economy of the U.S. health care system and a review of major governmental programs to expand access to appropriate services, control rising costs, ensure the quality of care, and promote health through prevention. Analysis of current and recent proposals for reform of health care policy. (3-0) R

POEC 7359 Special Topics in Policy Methods (3 semester hours) Topics vary from semester to semester. May be repeated for credit (9 hours maximum). (3-0) R

POEC 8398 Dissertation Seminar (3 semester hours) A seminar for students preparing proposals or writing dissertations. Prerequisite: Successful completion of qualifying examination or permission of instructor. May be repeated for credit. (3-0) S

POEC 6V81 Special Topics in Political Economy (1-9 semester hours) Topics vary from semester to semester. May be repeated for credit as topics vary. ([1-9]-0) S

POEC 6V91 Evaluation Research (3-6 semester hours) Individual or group project in evaluation research performed for a public or private community organization under faculty supervision. Students will normally enroll in this course for two consecutive semesters. The first semester of enrollment will culminate in the completion of a formal evaluation research proposal; the second will end with a final research report based on conclusions of the proposed research. Permission of the program coordinator required. May be repeated for a total of six semester credit hours. ([3-6]-0) Y

POEC 7V26 Policy Research Workshop in Institutions and Processes (3-9 semester hours) Students join a faculty member in a group research project on the political economy of public policy decisions in the context of institutional settings, such as legislatures, executive or administrative agencies, courts, or metropolitan systems. May be repeated for credit (9 hours maximum). ([3-9]-0) R

POEC 7V47 Policy Research Workshop in Health Care Policy (3-9 semester hours) Students join a faculty member in a group research project. May be repeated for credit (9 hours maximum). ([3-9]-0) R

POEC 7V62 Policy Research Workshop in Social Policy (3-9 semester hours) Students join a faculty member in a group research project. May be repeated for credit (9 hours maximum). ([3-9]-0) R

POEC 7V64 Policy Research Workshop in Poverty Research and Policy (3-9 semester hours) Students join a faculty member in a group research project. May be repeated for credit (9 hours maximum). ([3-9]-0) R

POEC 7V76 Policy Research Workshop in Development Studies (3-9 semester hours) Students join a faculty member in a group research project. Topics vary from semester to semester. However, students may substitute an individual Field Research Project for this workshop; the project must be approved by the faculty of the School of Economic, Political and Policy Sciences. May be repeated for credit (9 hours maximum). Prerequisites: POEC 6341, POEC 6364, and an additional course in the concentration. ([3-9]-0) R

POEC 8V01 Independent Study (1-9 semester hours) Provides faculty supervision for student's individual study of a topic agreed upon by the student and the faculty supervisor. Prerequisite: Permission of
instructor. May be repeated for credit. ([1-9]-0) R

POEC 8V97 Internship (1-9 semester hours) Provides faculty supervision for a student's internship. Internships must be related to the student's coursework. Prerequisite: Permission of instructor. ([1-9]-0) R

POEC 8V99 Dissertation (1-9 semester hours) Provides faculty supervision of a student's dissertation research. Prerequisite: Permission of instructor. May be repeated for credit. ([1-9]-0) S

PSCI 5306 The American Legal System and the Practice of Law (3 semester hours) The American legal system will be examined through seminar presentations by speakers experienced in judging and in legal practice. (3-0) Y

PSCI 5307 Legal Reasoning and Writing (3 semester hours) The process of reaching legal decisions by relying on precedent, history, policy concerns, and tradition will be studied. Additionally, techniques for researching and citing case law and statutes will be examined. (3-0) Y

PSCI 5308 Immigration Law (3 semester hours) This course will cover the core body of immigration law and regulation in the United States, with a special emphasis on asylum law. (3-0) T

PSCI 6300 Proseminar in Comparative Politics and International Relations (3 semester hours) Studies major theories of democracy, democratization, and globalization, relationships between democratization and globalization, and their implications for citizen politics, government performance, and regime legitimacy. (3-0) Y

PSCI 6301 Constitutional Law (3 semester hours) This class addresses the evolution of the American Constitution. The course will examine major constitutional concepts that are important to an understanding of American government. Additionally, major interpretations of the Constitution and the role of courts in the American legal system will be explored. (3-0) Y

PSCI 6304 Internship in Constitutional Law Studies (3 semester hours) Students will gain practical legal experience by working as an intern in a law office, court, or in the office of a legal organization such as a district attorney's or public defender's office. (3-0) Y

PSCI 6305 Workshop in Constitutional Law Studies (3 semester hours) Students will undertake a major research topic on a law-related matter which will develop skills in legal research and writing, quantitative research, or field research. (3-0) Y

PSCI 6306 Human Rights and International Law (3 semester hours) This course explores international agreements and their effects on individual rights in a variety of contexts such as international conflicts, civil wars, and oppressive political regimes. (3-0) R

PSCI 6309 International Political Economy (3 semester hours) An integration of the insights of international relations and international economics. Explores the politics of international trade and
finance, or economic globalization; investigates the simultaneous pursuit of wealth and power in states and other international actors. (3-0) T

PSCI 6311 Proseminar in Law and Courts (3 semester hours) The purpose of this graduate seminar is to survey the different areas of empirical/quantitative research in the subfield of judicial politics. The course will assess the courts as political institutions and examine the interactions between the judiciary and other institutions. We will address the core theoretical debates and assess key methodological issues concerning judicial decision-making in the U.S. context. We will also place these debates within the growing body of comparative judicial behavior literature. (3-0) Y

PSCI 6312 Comparative Constitutions and Courts (3 semester hours) The purpose of this graduate seminar is to survey the growing body of comparative research on constitutions and courts. The course will examine both qualitative and quantitative research that examines the development of constitutions and courts, particularly in newly independent states or states transitioning from authoritarian regimes. We will address the core theoretical debates and research concerning 1) why states adopt these documents and legal institutions and 2) the role these institutions ultimately play in transitioning states, especially in regard to the rights protection. These examinations will span comparative politics, international relations, and the broader sub-field of public law. (3-0) R

PSCI 6314 Policy Processes, Implementation and Evaluation (3 semester hours) Applies models of the policy system to the analysis of legislative, administrative and judicial processes at different points in the policy cycle. Uses case studies, empirical analysis, direct observation, and group projects. Prerequisite: PSCI 6313 or permission of instructor. (3-0) Y

PSCI 6316 International Organizations (3 semester hours) An analysis of international intergovernmental organizations such as the United Nations, the International Monetary Fund, and the European Union. Topics include their historical development, internal political processes, and consequences for the international political system. (3-0) T

PSCI 6317 (PA 6317) [MV5]Intergovernmental/Intersectoral Relations and Management (3 semester hours) This course explores the conceptual foundations of federalism that prescribe the relationships among federal and state governments in the U.S. It considers the practice of intergovernmental administration (federal, state, local) and intersectoral management (public, private, nonprofit) including devolution, fiscal federalism, and through a review of current issues in the field. (3-0) Y

PSCI 6318 Judicial Selection (3 semester hours) This is a course that focuses on the ways in which political systems place judges on courts. We will focus primarily on American courts, with our time split evenly between the appointive systems used by the federal government and some states and the elective systems used by most other states. We will also discuss the methods used in other countries for the selection of judges. (3-0) R

PSCI 6323 Public Choice (3 semester hours) This course covers the application of economic reasoning to non-market decision-making in situations involving collective choice. Topics include market and government failure, collective action, properties of different voting rules, design of constitutions, and
the behavior of candidates, elected officials, bureaucrats, and voters. Recommended: POEC/PA 7317 or equivalent. (3-0) R

PSCI 6324 Local and State Government and Politics (3 semester hours) Examines public policy institutions and processes at the local and state levels in the United States, with particular attention to developments in the Dallas-Fort Worth metroplex and the State of Texas. Addresses issues of policy convergence, divergence, and representation. (3-0) R

PSCI 6325 Decision Theory (3 semester hours) Explores the development of decision-making models and theories across organizational and institutional environments. Includes details analysis of decision-making under conditions of certainty, risk and uncertainty. (3-0) T

PSCI 6330 Campaigns and Elections (3 semester hours) This course surveys the state of the art research on campaigns and elections in American politics with a focus on Congressional and Presidential elections. (3-0) T

PSCI 6331 Executives, Legislatures and Public Policy (3 semester hours) An investigation of the role played by executives and legislatures in shaping public policy in the United States. (3-0) T

PSCI 6332 The U.S. Congress (3 semester hours) This course examines the most recent research on the legislative branch of the United States. We examine the role of parties, incumbency, elections, and organized interests on who gets elected to Congress, how Congress organizes itself, and how Congress makes public policy. (3-0) T

PSCI 6333 Political and Civic Organizations (3 semester hours) An institutional perspective on political parties, interest groups, and other organizations such as labor unions and nonprofit organizations that are important actors in political and civic affairs. The emphasis is on internal operations of organizations, their strategic behavior, and interactions with government, including both regulation by the state and attempts to influence public decision makers. (3-0) T

PSCI 6337 Comparative Institutions (3 semester hours) A comparative analysis of political and economic institutions in different settings. Includes a consideration of different theoretical approaches to the comparative study and design of institutions in the United States and elsewhere. (3-0) T

PSCI 6339 Election Law and Electoral Systems (3 semester hours) An examination of election law in America from redistricting to ballot access to campaign finance. We also spend time looking at different electoral systems in the U.S. and around the world. (3-0) R

PSCI 6340 Texas Legislative Affairs Workshop (3 semester hours) The Texas Legislative workshop is a course offered during semesters when the Texas Legislature is in session. This course is designed to afford students the opportunity to explore the working of the Texas Legislature up close with sessions held in both Dallas and Austin. Students enrolled in this course will have the opportunity to interact with members of the Texas Legislature and their staff as they examine the current public policy issues confronting Texas. (3-0) T
PSCI 6341 Texas Legislative Process (3 semester hours) This course examines the legislative process in the Texas Legislature. Students will learn the intricacies of passing legislation by examining the constitutional rules of Texas' lawmaking and the evolution of each chamber's parliamentary rules. This course also offers a practical element as specific case studies are examined to illustrate the importance of legislative process in Texas. (3-0) T

PSCI 6343 Law and The Policy Process (3 semester hours) Provides the legal perspective on public policy and emphasizes the role of the judicial system in the recent evolution of public policy in selected problem areas. (3-0) T

PSCI 6350 Logic, Methodology, and Scope of Political Science (3 semester hours) Promotes understanding of how and why research projects are conducted, and when and why research programs cease to contribute to knowledge production. Attention also is paid to major modes of analysis in Political Science, the state of the discipline, and future directions in field-specific, cross-field, and cross-disciplinary research. (3-0) T

PSCI 6352 Empirical Democratic Theory (3 semester hours) Encourages critical and constructive thinking about complex and simple, as well as stable and variable, developments in citizenship, government and politics. Additional consideration is given to formal, game-theoretic, and other approaches to individual action, institutional design, and individual-institutional interactions. (3-0) T

PSCI 6353 Mathematical Models in Political and Social Science (3 semester hours) Introduces students to a variety of models in the Economic, Political and Policy Sciences, including primarily rational choice approaches but also some computational work. The course will allow students to understand and compose rudimentary models, including prisoner's dilemma, assurance games, and strategic voting. (3-0) T

PSCI 6358 Refugee and Migration Policy (3 semester hours) This course will examine core policy issues related to refugees, migration, trafficking, forced migration, and internally displaced persons. The course will survey relevant political and social science literature and seek to understand these issues in the context of theories within international relations, comparative politics, and international law. (3-0) T

PSCI 6364 Public Opinion and Survey Research (3 semester hours) Introduces students to the principles and practices of survey research. Topics include the selection of an appropriate survey method, questionnaire design and testing, response problems, interviews and surveys, and the analysis of survey data, including those on political attitudes and public opinion dynamics. Also examines how these data are used in developing successful political campaign strategies. (3-0) T

PSCI 7330 Contemporary International Security (3 semester hours) An examination of current research on security and interstate conflict, with emphasis on social-scientific explanations for why wars occur and how they can be prevented. The course begins with theories of war and models of crisis bargaining, then proceeds to empirical analysis of how war-making is affected by such factors as regime type, domestic audiences, economic interdependence, multinational production, balances of power,
environmental and demographic pressures, intergovernmental organizations, American hegemony, international hierarchies, and social networks. (3-0) T

PSCI 7350 Institutions and Citizen Behavior (3 semester hours) Examines the major theories, concepts and models associated with relationships between public institutions and citizen behavior, particularly how such institutions as elections, interest groups, political parties and social movements mobilize behavior and how behavior, in turn, influences institutional processes and outcomes. (3-0) T

PSCI 7352 Choice and Decision Making (3 semester hours) This course integrates theories of political choice with models of decision-making in the fields of social cognition, economics, and consumer behavior. (3-0) T

PSCI 7372 Game Theory for Political Scientists (3 semester hours) An introduction to formal models with more than one decision-maker, this course will cover basic solution concepts in game theory. The course will pay particular attention to applications in political science, rather than the foundational models in economics. (3-0) T

PSCI 7381 Special Topics in Political Science (3 semester hours) Topics vary semester to semester and are rotated typically among the three fields of the program. May be repeated for credit (9 hours maximum). (3-0) R

PSCI 8381 Research Seminar in Political Science (3 semester hours) Promotes faculty-student research collaboration and students' dissertation or practicum and professional development. May be repeated for credit. (3-0) Y

PSCI 6V42 Legislative Affairs Internship (1-6 semester hours) Students will work with the professor to identify with a relevant government office approved by the professor. Students will be asked to participate in the daily operations of that office and learn the intricacies of staffing from a first-hand perspective. ([1-6]-0) S

PSCI 7V83 Independent Study (1-9 semester hours) Provides faculty supervision of student's individual study of a topic that is directly relevant to dissertation or practicum research and is agreed on by the student and the faculty supervisor. Prerequisite: Permission of instructor and Political Science Program Director. May be repeated for credit. ([(1-9)]-0) R

PSCI 8V99 Dissertation or Practicum (1-9 semester hours) Provides faculty supervision of a student's dissertation research. Prerequisite: Permission of instructor and student's Advisory Committee. May be repeated for credit. ([(1-9)]-0) S

SOC 6312 Social-Economic Theories (3 semester hours) A critical analysis of early and modern social and economic theories. Select classical works of Smith, Marx, and Weber are explored, as they pertain to Western capitalist development, along with more contemporary perspectives related to the accumulation and exchange value of human, social and cultural capital. Emphasis is placed on understanding how social relations and social institutions influence economic exchanges. (3-0) Y
SOC 6340 Domestic Social Policy (3 semester hours) Overview of governmental and non-governmental programs, policies, and institutions dealing with those who cannot function self-sufficiently within the American market economy, including low-income families, the elderly, the unemployed, and people with disabilities. Analyzes how social policy in the United States reflects the political economy and culture, as well as social and demographic trends. (3-0) Y

SOC 6344 Gender and Policy (3 semester hours) Explores issues of gender and public policy in the U.S. Topics include poverty, politics, and workplace and family issues. (3-0) R

SOC 6349 Immigrant Religious Organizations in U.S. Society (3 semester hours) The course examines the religious organizations of immigrants who entered the United States after 1965, their congregational structure and community center model in providing a variety of resources that assist in their settlement, and how these contribute to these new immigrants’ assimilation into U.S. public institutions. The course also examines these organizations’ role in reproducing immigrants’ ethnicity in a multicultural society. Students will design a course project around their literature review. (3-0) R

SOC 6350 Social Stratification (3 semester hours) This seminar will examine the major theories and lines of research on social stratification, defined as the hierarchical ranking of groups based on the unequal distribution of societal resources and positions. Focusing primarily on the U.S. class system, topics covered include: class reproduction and mobility, the educational system and policy, empirical definitions, the implications of race and gender for social class, and forms of legitimation. (3-0) Y

SOC 6353 Immigrants and Immigration in U.S. Society (3 semester hours) The course examines the assimilation into U.S. society and its main public social institutions of immigrants arriving after 1965 with a focus on the two largest groups: Mexicans and Asians, including immigrants from the middle East. The course considers the effects of the economy and immigration law and policy on assimilation. Other topics include the impact of these "newest" immigrants on the racial and ethnic as well as cultural diversification of the U.S. population, multiculturalism, the second generation, and the future of immigrants and immigration in U.S. society. (3-0) R

SOC 6355 Race, Ethnicity, and Community (3 semester hours) Considers cultural and social behavior in multiracial and multiethnic societies. Issues include the formation and maintenance of individual and group identity, patterns of socioeconomic achievement, intergroup conflict, and the causes and consequences of public policy. (3-0) R

SOC 6356 Health and Illness (3 semester hours) A review of medical sociology and related fields, including social epidemiology and the social demography of health and illness; health and illness behavior; health institutions and professions; economic factors and trends in health care; and health policies and programs. (3-0) R

SOC 6357 Health Policy (3 semester hours) The history and political economy of the U.S. health care system and a review of major governmental programs to expand access to appropriate services, control rising costs, ensure the quality of care, and promote health through prevention. Analysis of current and recent proposals for reform of health care policy. (3-0) Y
SOC 6370 Special Topics in Applied Sociology (3 semester hours) Topics vary from semester to semester. May be repeated for credit. (9 hours maximum) (3-0) T

SOC 5V91 Independent Study in Applied Sociology (1-9 semester hours) Provides faculty supervision for student’s individual study of a topic agreed upon by the student and the faculty supervisor. Prerequisite: Permission of instructor. May be repeated for credit. ([1-9]-0) R

SOC 5V92 Internship in Applied Sociology (1-9 semester hours) Provides faculty supervision for a student’s internship. Internships must be related to the student’s course work. Prerequisite: Permission of instructor. ([1-9]-0) R

SOC 6V91 Evaluation Research (3-6 semester hours) Individual or group project in evaluation research performed for a public or private community organization under faculty supervision. Students will normally enroll in this course for two consecutive fall/spring semesters. The first semester of enrollment will culminate in the completion of a formal evaluation research proposal; the second will end with a final research report based on conclusions of the proposed research. Students also are expected to participate in a weekly seminar on topics in evaluation research featuring faculty and student presentations, guest speakers, and group discussion. Permission of the program coordinator required. May be repeated for a total of six semester credit hours. ([3-6]-0) Y

SOC 6V92 Research Workshop in Applied Sociology (3-6 semester hours) Students join a faculty member in a group research project. May be repeated for credit. (6 hours maximum) ([3-6]-0) T

SOC 6V98 Master’s Thesis (3-6 semester hours) Provides faculty supervision of a student’s master’s thesis research. Completion of all, or concurrent enrollment in, major requirements. Prerequisite: Permission of Program Coordinator. May be repeated for credit (6 hours maximum). ([3-6]-0) R

SOC 6348 Immigration Policy (3 semester hours) This course examines immigration policy, focusing on U.S. immigration law, within the context of changing U.S. social institutions and society. The course gives special attention to immigration policy centered on immigrants arriving after 1965. (3-0) R

PA 6313 Public Policymaking and Institutions (3 semester hours) Surveys the major institutions associated with policymaking, including Congress, the Presidency, the bureaucracy, and interest groups. These institutions are studied by linking them to the decision-making theories of organizations, social choice and incrementalism. (3-0) S

PSCI 5V83 Independent Study (1-9 semester hours) Provides faculty supervision of student's individual study of a topic that is directly relevant to the student’s Master’s degree program and is agreed on by the student and the faculty supervisor. Prerequisite: Permission of instructor. May be repeated for credit (9 hours maximum). ([1-9]-0) R

POEC 6356 Political Economy of Latin America (3 semester hours) This is a graduate course in International Political Economy that focuses upon the Republic of Panama. Panama is a very diverse country, with political and economic structures that developed from colonial times, when Panama was under the control of Spain, to its incorporation into Colombia, to an independent nation. While
Panama has, since its discovery, been used for transportation, given the narrowness of the Isthmus of Panama and the development of the Panama Canal, it is very diverse; with cultures ranging from the cosmopolitan City of Panama to the more traditional cultures of sparsely populated vast regions in the Province of Darien. The importance of Panama to international political economy is of high magnitude to the “funnel for world commerce,” the Panama Canal. This course will trace the development of politics and economics in Panama over the course of this period to develop a critical understanding of this country, which is of great importance both regionally and geographically. (3-0) R

PA 6314 Policy Analysis (3 semester hours) This course introduces students to policy analysis, exploring approaches and providing tools to analyze contemporary policy questions at various levels of governance. (3-0) R

PA 6399 Capstone APSTONE in Public Affairs (3 semester hours) The capstone in public affairs is the culminating experience for graduating MPA students. Students integrate knowledge from across the MPA curriculum in a faculty-directed semester-long applied research project. (3-0) Y

PA 7314 Advanced Policy Process, Implementation and Evaluation (3 semester hours) This advanced seminar provides in-depth introduction to central theories of the policy process, implementation and evaluation, reviews classic and contemporary literature in the field, and introduces students to key approaches to public policy research. (3-0) Y

PA 7320 Advanced Human Capital Research and Theory (3 semester hours) This advanced seminar reviews the classic and contemporary literature on human resources management and related issues, presents key theories and explores key approaches to human capital research and analysis, and explores contemporary issues of human capital development in the public/nonprofit sectors. (3-0) Y

PA 7350 Advanced Organizational Theory and Behavior (3 semester hours) This advanced seminar provides in-depth examination of key theories of organizational behavior and change, reviews classic and contemporary literature in the field, and introduces students to common approaches to organizational research. (3-0) Y

PA 7360 Advanced Fiscal and Budgetary Policy (3 semester hours) This advanced seminar reviews central theories of public budgeting and finance, reviews essential literature in the field, and provides a foundation for evaluating and analyzing organizational budgets. (3-0) Y

PSCI 6342 Comparative Courts and Law (3 semester hours) The purpose of this graduate seminar is to survey the growing body of comparative research on courts, law and justice issues. The course will examine a selection of topics within this broadly defined field. The course will examine both qualitative and quantitative work. These examinations will span comparative politics, international relations, and the broader sub-field of public law. (3-0) R

PA 7V62 Policy Research Workshop in Public Affairs (3-9 semester hours) Students join a faculty member in a group research project. May be repeated for credit (12 hours maximum). MPA or
doctoral students may not take more than 3 hours of their concentration requirement from policy research workshops and POEC 7376. ([3-9]-0) R

POEC 6329 Ethics, Culture, and Public Policy (3 semester hours) This course considers the principal schools of ethical thought in the world’s major cultural traditions and their implications for law and public policy. Topics to be considered include tensions between personal and collective interests, the conflict between democratic and authoritarian theories and systems of law and government, the relation between morality and law, the way law itself differs in different cultural regions, and the ethical role of institutions such as the family, government, business, religion, and interest groups. (3-0) Y

POEC 6390 Innovation and Public Policy (3 semester hours) This course examines the phenomenon of innovation, including the role of innovation in theories of economic growth and the relationship between the aggregate macro economy and the micro domain of entrepreneurs and firms. (3-0) Y

POEC 6391 The Political Economy of Technology and Innovation (3 semester hours) An exploration of the relationships among technological advances, markets, and societal contexts, drawing on the social sciences (especially economics and sociology), engineering, and management. The economic impacts of both established and emerging technologies on firms and industries (profit and productivity), the macroeconomy, and society (employment and earnings). Special emphasis will be devoted to how advanced technologies transform both the work of – and work in – industries throughout the economy, even as they blur the distinctions among them. (3-0) T

POEC 6392 Management and Practice of International Development (3 semester hours) This course focuses on the management of international development processes, including the role of context in development, various conceptualizations of poverty, development actors and institutions, and the challenges of development interventions in difficult environments. (3-0) T

PA 7318 Ethics, Culture and Public Responsibility (3 semester hours) This course provides a general consideration of traditions of ethical thought, the interactions between personal behavior and cultural groups/norms and the implementation of public responsibility. Topics to be considered will include tensions between personal and collective goals, the nature and limits of tolerance, and the role of institutions such as the family, government, business, churches and interest groups. (3-0) S

EPPS 7V88 Workshop in Teaching Effectiveness (1-3 credit hours) Workshop will focus on preparing students for positions as teaching assistants, lecturers, and those who expect to teach as a career in the social sciences. Emphasis will be placed on videotaped student presentations and feedback, guest presentations, student visits to EPPS faculty classes. (3-0) R

CRIM 6V96 Master Thesis Research (1-6 semester hours) Students conduct masters level research project under the supervision of faculty. (1-6) Y
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE:
TO: GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes _______

SCHOOL___Interdisciplinary Studies________

DEPARTMENT___Interdisciplinary Studies

BASIS FOR CATALOG CHANGES: Instructors retired for MAIS 5307, 5308, 5310, 5330, and 5331.

NEW PROGRAMS/DEGREES/CERTIFICATES

NEW COURSES ADDED

COURSES DELETED MAIS 5307 Ethics and law, MAIS 5308 Law and Psychiatry, MAIS 5310 Negotiation and Conflict Resolution, MAIS 5330 Human Relation and Motives in the Corporate Arena I, MAIS 5331 Human Relations and Motivation in the Corporate Arena II

OTHER

Approved: ___________________________________________
School/Department
Graduate Program in Interdisciplinary Studies

http://www.utdallas.edu/is/

Faculty

All faculty in the university are eligible to participate.

Professors: George W. Fair, Karen J. Prager, Lawrence J. Redlinger
Associate Professor: Erin A. Smith
Senior Lecturers: Susan P. Chizeck, Dachang Cong, Jillian Duquaine-Watson, Lynne Mabe, Elizabeth M. Salter, Tonja Wissinger

Objectives

The Graduate Program in Interdisciplinary Studies, leading to the degree of Master of Arts in Interdisciplinary Studies, is designed for students who wish to continue their intellectual development within an interdisciplinary framework and for those with specialized training who wish to broaden their education. The objective of the program is to provide students the opportunity to develop an approach to topics and problems from the perspectives of more than one discipline and to develop a better understanding of many of the social, cultural, and scientific forces which affect the individual and society.

Admission Requirements

The University's general admission requirements are discussed here.

For admission to the program, the student must have a bachelor's degree from an accredited institution, with a grade average of B or better. A verbal plus quantitative GRE score of 1000 (or equivalent examination) is advisable based on our experience with student success in the program. All students not meeting the above criteria are considered on an individual basis. A student who has a deficit in either GRE score or grade point average may be conditionally admitted to the program.

Degree Requirements

The University's general degree requirements are discussed here.

For the degree of Master of Arts in Interdisciplinary Studies, 36 hours of course work must be completed. These hours are distributed as follows:

Interdisciplinary Seminars (3 hours)

In the first year the student must complete an interdisciplinary seminar (MAIS 5300, 5301, 5311, 5313, 5315, 5316, 5320, 5331 or 5332, 5335 or 5336). The seminars are designed to introduce students to graduate work and to give them experience in interdisciplinary approaches to subjects and problems.

Core Requirements (9 hours)

From the graduate courses offered in this catalog, the student selects, in consultation with the adviser, at least three hours each from at least two of the following areas: Humanities, which includes Aesthetic Studies, History of Ideas, and Studies in Literature; Natural Sciences and Mathematics, which includes
courses in Biology, Chemistry, Geosciences, Mathematical Sciences, Physics, and selected courses in Science Education; Economic, Political and Policy Sciences, which includes courses in Public Affairs, Criminology, Economics, Geospatial Science, Public Policy & Political Economy, Political Science, and Sociology; Management, which includes Management and International Management Studies, Accounting, Information Technology, Innovation and Entrepreneurship, Management and Administrative Sciences, Finance and Healthcare Management.

**Concentration (12 hours)**

From the graduate courses offered in this catalog, the student selects, in consultation with the adviser, at least 12 additional hours of course work in one or two of the general areas listed above.

**Electives (6 hours)**

From the graduate courses offered in this catalog, the student selects, in consultation with the adviser, at least six semester hours of courses.

**Capstone Seminar and Research Project (6 hours)**

The seminar and project are the culmination of the student's program. The seminar includes readings in, and discussion of, interdisciplinary theory and preparation for the research project. Each student will develop a research topic which lends itself to an interdisciplinary approach. The topic should be sufficiently broad to draw upon knowledge and techniques gained throughout the program. To complete the project, students should synthesize and integrate information from various sources, utilizing different methodologies, and thus draw conclusions which present a new perspective on the topic as a result of this interdisciplinary approach.

**Graduate Program in Interdisciplinary Studies**

At the beginning of the degree program each student participates in a specially designed interdisciplinary seminar on topics related to the development of human beings and their world. At the end of the program, each student participates in a capstone seminar and completes an interdisciplinary research project. The remainder of the program is individually designed by the student, in consultation with the adviser, to meet particular personal interests and professional needs.
SCHOOL OF INTERDISCIPLINARY STUDIES

The Graduate Program in Interdisciplinary Studies, leading to the degree of Master of Arts in Interdisciplinary Studies, is designed for students who wish to continue their intellectual development within an interdisciplinary framework and for those with specialized training who wish to broaden their education. The objective of the program is to provide students the opportunity to develop an approach to topics and problems from the perspectives of more than one discipline and to develop a better understanding of many of the social, cultural, and scientific forces which affect the individual and society.

Teacher Development Center

The University offers opportunities in selected fields for teachers and other school personnel to earn initial teaching certification and certificate endorsements.

Students wishing to pursue an advanced degree should consider programs leading to the Master of Arts in Teaching (M.A.T.) degree in Humanities, Science Education, or Mathematics Education. Students enrolling for one of these degrees should consult the appropriate subject area in this catalog. Students pursuing coursework leading to additional certificate endorsement or initial certification should seek counsel in the Teacher Development Center early in their program of study. Tel: (972) 883-2730.

DEGREES OFFERED

Master of Arts in Interdisciplinary Studies (36 Hours)
Revised Description

ED 5318 Supervised Teaching Internship (3 semester hours) Students are hired by a partner school district as a teacher of record with university supervision, workshops, and mentoring during the two semesters they are enrolled in this course. Prerequisite: Admission to internship program. Student will also enroll in ED 5319 the second semester of the Internship. Prerequisite: passing scores on both state required TExES examinations. (3-0) Y

ED 5319 Supervised Teaching Internship II (3 semester hours) The second semester of supervised teaching internship. Prerequisite: successful completion of ED 5318. (3-0) Y

ED 5320 (online only) Issues in Educational Technology (3 semester hours) This course addresses two key technological issues that directly impact education: information overload and nonlinear processing. These same challenges offer the key to effective design and integration of web-based media into the classroom learning environment. Teachers, administrators, researchers, and curriculum developers will learn how to select/apply appropriate tools to enhance classroom teaching and school management. (3-0) Y

ED 5344 (online only) Chess I: Introduction (3 semester hours) A consideration of methods for using chess to teach critical thinking, math, and reading skills in the elementary classroom, based upon the curricular model developed by McNeil. This course is also appropriate for chess instructors who wish to incorporate additional academic and humanistic goals into their programs. No previous knowledge of chess is required. This course is offered exclusively through eLearning. (3-0) R

ED 5345 Chess II: Institutional and Cultural Contexts of Chess (3 semester hours) A consideration of the role of chess historically and in contemporary culture. This course explores chess research and educational resources. Analysis of the interactions of women and chess through the ages. Each student prepares a proposal based on the curriculum model of Ralph W. Tyler, for chess at an institution. No previous knowledge of chess is required. The course is offered through UTD’s eLearning. (3-0) R

ED 5V01 Independent Study (1-6 semester hours) (May be repeated for credit.) (1-6)-0 R

ED 5V02 Special Topics in Education (1-3 semester hours) (May be repeated for credit to a maximum of 9 hours.) (1-3)-0 R

MAIS 5300 Interdisciplinary Seminar (3 semester hours) Topics will vary each semester. (May be repeated for credit.) (3-0) S

MAIS 5301 Seminar on Close Relationships (3 semester hours) An examination of the psychological, sociological, economic, and philosophical approaches to the study of close relationships. Specific issues that will be discussed include male-female differences, intimacy and self-disclosure, loneliness, conflict. (3-0) Y
MAIS 5302 Capstone Seminar (3 semester hours) Topics will vary. The seminar includes discussion of interdisciplinary theory and preparation for a research project. Must be taken in the student's next-to-last semester. (3-0) S

MAIS 5303 Research Project (3 semester hours) Completion of an interdisciplinary research project. Prerequisite: MAIS 5302. (Students on academic probation may not enroll for MAIS 5303.) (3-0) S

MAIS 5307 Ethics and Law (3 semester hours) An exploration of the ethical foundations of the law and the institutions through which it is created and administered. It will examine the principles upon which our notions of justice rest and inquire how and why these fundamentals may have changed in our own times. (3-0) R

MAIS 5308 Law and Psychiatry (3 semester hours) Covers a wide-ranging field of subject matter in both law and medicine. The primary focus will be upon issues of public concern such as the death penalty; the causes of social and interpersonal violence; drug and alcohol abuse; aberrant sexual behavior; and the direction law and society might take on these and other issues. (3-0) R

MAIS 5310 Negotiation and Conflict Resolution (3 semester hours) An exploration of the dynamics of conflict resolution from the smallest of interpersonal disputes to those of global dimensions. Focus is on the evolution and employment of peaceful techniques for settling disputes and their substitution for the more violent forms of conflict resolution through force. (3-0) Y

MAIS 5311 Business and Competitive Intelligence (3 semester hours) Explores the acquisition of regular and sensitive information and the ethics of the means used to obtain and exploit it. As in many other spheres of human activity, while most of the information necessary to the making of useful informed business decisions lies within the public domain, what is required is a thorough understanding of the sources and the methods to exploit them since over the past two decades, the acquisition, storage and retrieval of all kinds of business intelligence have changed substantially. (3-0) R

MAIS 5313 Doing Business in Greater China (3 semester hours) A study of Mainland China, Taiwan, and Hong Kong with the focus on economic development and current participation in the global economy. The course reviews the experience of multinational corporations and examines strategies of doing business in Greater China. The course also explores how the digital revolution reshapes the three economies. (3-0) R

MAIS 5315 Globalization and Economic Crisis (3 semester hours) Studies the development of globalization and its impact on different economies and cultures. Also, the course will concentrate on the various waves of economic crisis with a historical depth and a global perspective. The main focus is on the United States, China, India, Japan, the Middle East, Russia and Western Europe. (3-0) T

MAIS 5316 Managing The Digital Economy (3 semester hours) Examines how the digital economy (chip-making, computing, IT services, and telecommunications) has transformed American business. Knowledge workers need to cultivate skills in leadership, communication, entrepreneurship, finance, and project/workplace management. (3-0) Y
MAIS 5320 Special Topics in Interdisciplinary Studies (3 semester hours) Topics will vary each semester. May be repeated for credit. (3-0) S

MAIS 5330 Human Relations and Motivation in the Corporate Arena I (3 semester hours) Addresses equal rights/opportunities of the individual, by law, in the workplace, via providing information, regarding compliance with all of the major laws that prohibit discrimination in employment. Laws to be covered: Sex Discrimination, Age Discrimination, National Origin Discrimination, Race Discrimination, Disability Discrimination, and the Civil Rights act of 1964 as amended. (3-0) Y

MAIS 5331 Human Relations and Motivation in the Corporate Arena II (3 semester hours) Second course in two part session. Addresses equal rights/opportunities of the individual, by law, in the workplace, via providing information, regarding compliance with all major laws that prohibit discrimination in employment. (3-0) Y

MAIS 5333 Developmental Characteristics of 9-14 year olds (3 semester hours) This course is designed for students interested in gaining knowledge and in developing their understanding of the middle school aged child, the issues both physical and emotional, attached to this stage. Concepts in adolescent development and current research regarding children aged 9-14 years are examined. Various perspectives on strategies and techniques in working with adolescents are also a focus in this course. (3-0) T

MAIS 5335 Crisis Communication in Schools & Organizations (3 semester hours) An advanced in depth look into crisis communication, strategies and management focusing on organizational and educational institutional responses in crisis situations. Specific past crisis events are examined, positive and negative responses are dissected, lessons learned are investigated and future management strategies for organizations, agencies and schools are formulated so that students may take these skills back to their respective current and future employment environments and implement these strategies. (3-0) T

MAIS 5390 Costa Rica Experience (3 semester hours) Costa Rica is world famous for its dedication to the concept of sustainability. This field trip class will visit different locations in Costa Rica to better understand the diversity of its environment, its non-human primates, its practices that of course may vary from year to year but the major emphasis is sustainability. This course has a service learning component. Student must be in good standing. Permission of instructor required. (3-0) R

MAIS 5V04 Independent Study (1-6 semester hours) Available only to meet particular curricular needs of an individual degree plan. Prerequisite: consent of instructor and approval of MAIS adviser. (May be repeated for credit.) (1-6-0) S

MAIS 5336 Qualitative Research Methods (3 semester hours) This is a hands-on, practically-oriented, how-to-do-it seminar that is ideal for those who intend to utilize qualitative research methods in their research or simply wish to gain further insight into how qualitative data is gathered and analyzed. The primary objective of this course is to mutually explore learn a range of skills, methods, techniques, and "tricks of the trade" that will facilitate successful data gathering. The course
provides a solid analytical background while also exposing participants to qualitative methodology through facilitations of a team-based qualitative research project. (3-0) R
Please indicate with an X if your department catalog copy has no changes ___X____

SCHOOL__Interdisciplinary Studies________________________________

DEPARTMENT____Teacher Education______________________________

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

______________________________________________________________

______________________________________________________________

______________________________________________________________

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

______________________________________________________________

______________________________________________________________

OTHER________________________________________________________

Approved: ____________________________________________

School/Department
Department of Science and Mathematics Education

http://www.utdallas.edu/scimathed/

Preface

The department of Science and Mathematics Education offers two graduate degree programs: Science Education and Mathematics Education.

Degrees Offered

Master of Arts in Teaching/Science Education (37 hours)
Master of Arts in Teaching/Mathematics Education (37 hours)

Faculty

Professors: Robert Hilborn (Chair), Thomas R. Butts (emeritus), Frederick L. Fifer, Jr.(emeritus), Cynthia Ledbetter (emerita), Lynn Melton
Associate Professors: Titu Andreescu, Homer Montgomery, Mary L. Urquhart (Head)
Assistant Professors: Nikki Hanegan, Phillip Kisunzu
Science Education Specialist and Senior Lecturer: Barbara A. Curry
Clinical Professors: Katherine Donaldson, Floyd Dorsey, Bill Gammons, Amin Lalani, Jim McConnell, Bill Neal,
Affiliate Faculty: John Burr, Matthew Goeckner, Pamela Gossin, John Hoffman, Scherry Johnson, Robert Stern

Objectives and Structure

The Master of Arts in Teaching (M.A.T.) in Science Education Program and the M.A.T. in Mathematics Program are designed to enhance the content knowledge and pedagogical content knowledge of science, technology, engineering, and mathematics (STEM) teachers. Both programs share a set of core courses that allow students to explore knowledge common to both disciplines. Students in Science Education or Mathematics Education can then collaborate to integrate science and mathematics education and to provide a better education for their students. Because many graduates of these M.A.T. programs will rise to leadership positions such as department head or science/mathematics coordinator, the core courses provide fundamental skills in cognition, education research, and assessment so that M.A.T. graduates can evaluate educational strategies and thoughtfully advise their colleagues about them. The STEM Content courses provide additional depth in specific science and mathematics content areas. Students may elect to write and defend a research-based thesis.

Both programs are designed for individuals with significant ability in a science/mathematics discipline and a serious commitment to teaching. They provide forward-looking opportunities for professional development for both new and experienced teachers.

The M.A.T. in Science Education seeks to address the professional development of science teachers at all levels, while the M.A.T. Mathematics Education more specifically addresses the professional development of mathematics and computer science teachers in grades 8 – 12. (Mathematics teachers in
grades 4 – 8 may wish to consider the option, "The Teaching of Mathematics in Grades 4-8" in the Master of Arts in Interdisciplinary Studies program.)

**Departmental Activities and Facilities**

The Science/Mathematics Education (SME) Department is a hub for many important activities. In addition to the graduate M.A.T. in Science Education and M.A.T. in Mathematics Education degree programs, faculty in the Science/Mathematics Education Department direct and carry out the UT-Dallas implementation of UTeach, the nationally-acclaimed program for recruitment, preparation, and support of STEM teachers. The Science and Engineering Education Center, directed by Nobel Laureate Russell Hulse, is housed in facilities adjoining the SME area, and collaborations with SEEC continue to grow. Joint meetings with faculty from the School of Brain and Behavioral Sciences and the Center for BrainHealth lead to discussions of ways in which neuroscience and STEM education can grow symbiotically. The Center for Science Education and Research and the UT-Dallas T-STEM Center provide partnership and professional development support for T-STEM Academies in Texas.

In Fall 2010, UT-Dallas opened its new Science Learning Center. It contains not only undergraduate teaching areas for the science students, but also a specially designed classroom area for SME that can be configured for interactive classes. SME instructors can model the best of educational practices and develop research projects to evaluate such strategies.

Scientific equipment supporting the various programs at the university can be available to students in the M.A.T. program. Facilities in biology, chemistry, computer science, geosciences, mathematics and physics are briefly described in the respective sections of the catalog.

**Admission Requirements**

The University’s general admission requirements are discussed [here](#).

**Science Education**

Admission to the Graduate Program in Science Education requires, in addition to general University requirements, a significant background in science. A background of 24 semester hours in science at the undergraduate level or higher is preferred.

**Mathematics Education**

Admission to the Graduate Program in Mathematics Education requires, in addition to the general University requirements, at least one year of calculus, a course in linear algebra, and a junior-level course involving mathematical proof.

**Background Checks**

For both Science Education and Mathematics Education programs, opportunities may arise for students to work directly in local schools. Public schools and many private schools in the state of Texas require criminal background checks of all volunteers or individuals working within the schools regardless of the potential for direct contact with students.

**Degree Requirements**

The University’s general degree requirements are discussed [here](#).
The M.A.T. in Science Education and the M.A.T. in Mathematics Education have a common set of four core courses. Both degrees require satisfactory completion of a minimum of 36-37 semester credit hours, and both degrees allow a student to select a Practitioner Option (coursework only) or a Research Option (coursework plus thesis).

A grade of B or better must be obtained in the Introductory Graduate Seminar and the four core courses, and an overall grade point average of B (3.00) or better is required for graduation.

Requirements common to the M.A.T. in Science Education and to the M.A.T. in Mathematics Education

1. SME SMED 5100 Introductory Graduate Seminar
2. Four (4) Core courses:
   - SME SMED 5301 Science, Mathematics, and Society
   - SME SMED 5302 Teaching and Learning of Science and Mathematics
   - SME SMED 5303 Introduction to Research and Evaluation in Science and Mathematics Education
   - SME SMED 5304 Reflections on Science and Mathematics Education
3. Six (6) STEM Content Courses (Practitioner Option) or four (4) STEM content courses plus at least six semesters hours of SME SMED 6V98 (Research Option). In both cases, four STEM content courses must be taken within a single STEM content area subject to the specific requirements for each program given below.
4. Elective Courses sufficient to bring the total hours to a minimum of 36-37 SCH. Electives must be approved by the SME Graduate Studies Committee. Research Option students must use one of their electives to take SCI 5340 Statistics for Science/Mathematics Education, which must be taken prior to enrolling in thesis hours. Students may petition the Graduate Studies Committee for waiver of requirements or substitution of alternate means of meeting requirements. Students who have particularly strong STEM content backgrounds are encouraged to meet with the Graduate Advisor and develop an appropriate degree plan.

Thesis Option

Students who wish to pursue the thesis option must consult with potential faculty advisors and present to the Graduate Studies Committee the name of the proposed thesis advisor, the proposed thesis topic, and potential committee members. The Graduate Studies Committee may assist in the selection of the full thesis committee. The Graduate Studies Committee will forward the names of proposed committee members to the Graduate Dean, who has the power of appointment. The Graduate Studies Committee, after consultation with the student and appropriate faculty members, may approve the project and committee or require changes. In order to fulfill the thesis requirement, the student must pass a minimum of six semester hours in thesis research, SME 6V98, and submit an acceptable thesis. The thesis is directed by a Supervising Professor and must be approved by the student’s thesis supervisory committee. In addition, the student must comply with the rules set by the Graduate Dean and successfully defend the thesis.

Requirements Specific to the M.A.T. in Science Education

Students in the M.A.T. in Science Education must pass four courses in one of the following Science Content areas: (1) Earth and Space Sciences, (2) Life Sciences, or (3) Physical Sciences. For Practitioner Option students, the other two courses must be taken in a different STEM content area, which may include both Mathematics content areas described below.
Requirements Specific to the M.A.T. in Mathematics Education

Students in the M.A.T. in Mathematics Education must pass four courses in the Mathematics A content area and at least two courses in the Mathematics B content area. It is recommended that those in the Practitioner Option use their elective courses to take two additional courses in the Mathematics B content area.

Requirements Associated with Community College Teaching

Many community colleges require that instructors have 18 SCH of graduate course work in the discipline to be taught. Students with an interest in teaching in community colleges should consult with the Graduate Studies Committee as soon as possible to identify the courses taken as part of the M.A.T. in Science Education or the M.A.T. in Mathematics Education that meet the expected requirements.

STEM Content Area Courses

Earth and Space Sciences

- SCI 5322 Basis of Evolution
- SCI 5337 Rockin´ Around Texas
- SCI 5326 Astronomy: Our Place in Space
- SCI 5327 Comparative Planetology

Life Sciences

- SCI 5322 Basis of Evolution
- SCI 5324 Ecology
- SCI 5329 Bioethics
- SCI 5330 Emerging Topics in Biology

Physical Sciences

- SCI 5323 Laboratories and Demonstrations for Middle School Science Teachers
- SCI 5331 Conceptual Physics I: Force and Motion
- SCI 5332 Conceptual Physics II: Particles and Systems
- SCI 5333 Conceptual Physics III: Atoms, Charges, and Interactions

Mathematics A

- MATH 5301 Elementary Analysis I
MATH 5302 Elementary Analysis II
MATH 5305 Higher Geometry for Teachers
MATH 5306 Non-Euclidean Geometry for Teachers
MATH 6311 Abstract Algebra I
STAT 5351 Probability and Statistics I
STAT 5353 Probability and Statistics II
CS 5333 Discrete Structures

Mathematics B

MTHE 5321 Problems Using Algebra
MTHE 5322 Problems Using Geometry
MTHE 5323 Problems Using Pre-calculus
MTHE 5324 Problems Using Discrete Mathematics
MTHE 5325 Problems Using Mathematical Modeling
MTHE 5326 Problems Using Statistics and Probability

The courses available to students to meet the STEM Content requirements include, but are not limited to, the courses listed in the STEM Content areas above. Use of courses outside these sets must be approved by the Graduate Studies Committee.

Online Course Work and Degree Options

Courses applicable to the M.A.T. in Science Education and M.A.T. in Mathematics Education may be offered online. However, the Science/Mathematics Education Department cannot guarantee that a student can carry out the entire degree program online. Students interested in online work should consult course schedules and contact the Graduate Studies Committee for current advice.

Access to MAT courses by undergraduate students

Undergraduate students at UTD who anticipate entering one of the Master of Arts in Teaching programs after obtaining a bachelors degree are encouraged to begin taking MAT courses under UTD’s reserved for graduate credit option. The most appropriate course for such students to take are SME 5100, SME 5301, SME 5302, or SME 5303.

UTeach students are encouraged to explore with their advisors the possibility that some graduate courses, such as SME 5302 and SCI 5342 may satisfy a portion of the UTeach requirements.
Certificate in Biomedical Sciences for Post-Baccalaureate Students

http://www.utdallas.edu/nsm/biology/

Faculty

**Professors:** Lee A. Bulla, Santosh R. D'Mello, Rockford K. Draper, Juan E. González, Donald M. Gray, Stephen D. Levene, Lawrence J. Reitzer, Li Zhang, Michael Zhang

**Associate Professors:** Gail A.M. Breen, John G. Burr, Jeff L. DeJong, Ernest M. Hannig, Dennis L. Miller, Stephen Spiro

**Assistant Professors:** Tianbing Xia, Zhenyu Xuan, Hyuntae Yoo

**Senior Lecturers:** Irena Borovkov, Mehmet Candas, Vincent P. Cirillo, Wen-Ju Lin, Robert C. Marsh, Ruben Ramirez, Scott A. Rippel, Illya Sapoznikov, Wen-Ho Yu

Objectives

The Certificate in Biomedical Sciences Program at The University of Texas at Dallas offers students the opportunity to further their undergraduate education by taking science coursework focusing on the integrative scientific study of biological issues related to health and medicine. Many students seek this coursework in order to prepare for a career in one of the health professions. The program is a flexible post-baccalaureate certificate program offered through the UT Dallas School of Natural Sciences and Mathematics. Because the program is flexible, it can address the needs of a variety of students who have previously completed a bachelor’s degree including:

- second career students,
- educationally underprepared recent graduates,
- students in need of enhancing their academic record.

The UT Dallas Certificate Program can accommodate part-time students, full-time students, non-science students needing to take all the pre-requisite courses, as well as those with some science background who need to add more advanced coursework to their record. The program is designed to aid a variety of students interested in either medical or dental school or other health professions programs such as pharmacy, optometry, physician assistant, physical therapy and public health.

Admission Requirements

Students interested in enrolling in the Certificate in Biomedical Sciences Program will be considered for admission based on the following standards:

- Meet requirements for admission to the University as a transfer undergraduate student,
- Earned a bachelor’s degree from a regionally accredited U.S. college or university,
- Exhibited clear motivation for a career in a health profession (as evidenced by previous coursework, clinical exposure and/or a realistic plan for preparation),
- Completed the Certificate Program supplemental application,
- Have an undergraduate GPA of at least 2.50.

Application for the program is through the ApplyTexas online application at utdallas.edu/admissions. Applicants should apply as Transfer, Undergraduate students in the School of Natural Science and Mathematics and select the Undergraduate Certificate in Biomedical Sciences.
Once an applicant has made application to the University, they must complete the certificate program supplemental application available on the HPAC website. This supplemental application enables the program director to better assess your motivation for entry into the certificate program and to understand how your past academic experiences relate to your ability to succeed. Applicants should carefully consider their responses to questions posed in the supplemental application.

Students may enter the program in a Fall, Spring or Summer semester. General UT Dallas application deadlines are published on the admissions office website. Because positions for entering students are limited, individuals interested in the Certificate in Biomedical Sciences program are encouraged to apply early and complete their application materials well before the published deadlines. Also, admission is competitive: therefore, not all applicants meeting the admissions requirements will be admitted. Specific information regarding application deadlines for the certificate program can be obtained from the program coordinator in the HPAC office.

**Degree Requirements**

Requirements for completion of the Certificate in Biomedical Sciences Program include:
- A minimum of 24 post-baccalaureate undergraduate credit hours of approved courses at UT Dallas (see [Approved Courses List](#below)),
- Of the 24 credit hours completed toward the certificate, a minimum of 9 credit hours must be upper-division biological science courses,
- Completion of HLTH 3100: Pre-Health Professional Development,
- Completion of all admission pre-requisite courses for the professional school program to which the student will be applying,
- A UT Dallas post-baccalaureate grade point average of at least 3.30,
- Evidence of at least 50 clock hours of approved clinical and/or research exposure activities documented according to program standards (see [Requirements](#listed below)),
- Completion of the Health Professions Evaluation (HPE) Process and recommendation by the HPAC Advisory Committee.

The certificate program is designed for students who are preparing to enter a health profession school. Although the program allows for part-time participation, optimally, students will participate on a full-time basis to reflect their ability to succeed in a science-oriented academic program with heavy course loads. Depending on a student’s previous science coursework (including number of courses taken, when taken, and their performance) the certificate program can be completed in as little as one year. Students with little or no academic background in science should plan on a two-year completion timeline.

**Requirements for Clinical and/or Research Exposure**

Each Biomedical Sciences Certificate program student must document at least 50 hours of research or clinical exposure. 50 hours must be approved by an HPAC advisor, and adhere to the following guidelines.
- No more than 25 hours will be counted from any single health-care facility or setting.
- No more than 25 hours will be counted from a single specialty or patient group. For example, if you log 50 hours of volunteering in pediatrics at two different facilities, only 25 will be counted towards program requirements.
- No more than 25 hours of research will be counted towards program requirements
- No more than 25 hours of paid experience will be counted towards program requirements.

Research or clinical hours above the 50-hour minimum are encouraged, and will certainly improve your candidacy for professional school. If you have further questions, please speak to an HPAC advisor.

The Dallas-Fort Worth metropolitan area provides many opportunities for students to involve themselves in clinical activities. Students are required to arrange for their own experiences. Hospital volunteer programs, physician or dentist shadowing, and health-related community service projects are the most
frequent ways in which students fulfill this requirement.

Program Graduation Requirements

Students must initiate the process for graduation from the certificate program. The Certificate Graduation Checklist is included in the Appendix to this document and is also available on the UT Dallas HPAC website. During the last semester in which they wish to take classes, students should submit a completed Checklist to the HPAC office. HPAC will then validate that the student has completed all program requirements and, assuming such, send official notification to the Registrar’s Office indicating completion. Achievement of the certificate program will be noted on the transcript and the student will receive a printed certificate by mail. Certificate program graduates are not eligible to participate in the University’s commencement ceremony.

Once the student has been noted as complete and the Registrar’s Office has been notified, the student will not be able to register for future semesters unless he/she reappears to the university in a degree program or as a non-degree-seeking student. Therefore, students who have completed all certificate program requirements but wish to remain at the university and take additional courses should delay submitting their Graduation Checklist until they have completed all desired courses.

Course Offerings

A variety of classes are available to students depending on their particular needs and previous experience in undergraduate science courses. Program students enroll in traditional courses alongside other undergraduate students and with the same faculty members. This structure is important since medical and dental schools understand and appreciate the rigor of the UT Dallas undergraduate curriculum and know how to interpret a student’s performance within that curriculum.

HPAC advisors work with students to develop a curricular plan that is based on their individual circumstances including past academic history and career goals. Available courses to fulfill the certificate program requirements are listed below. Not all courses are taught every semester so students should check with an HPAC advisor prior to planning their curriculum for the program.

Biology

BIOL 2111—Introduction to Modern Biology Workshop I
BIOL 2112—Introduction to Modern Biology Workshop II
BIOL 2281—Introductory Biology Laboratory
BIOL 2311—Introduction to Modern Biology I
BIOL 2312—Introduction to Modern Biology II
BIOL 3101—Classical and Molecular Genetics Workshop
BIOL 3102—Eukaryotic Molecular & Cell Biology Workshop
BIOL 3161—Biochemistry Workshop I
BIOL 3162—Biochemistry Workshop II
BIOL 3301—Classical and Molecular Genetics
BIOL 3302—Eukaryotic Molecular and Cell Biology
BIOL 3305—Evolution
BIOL 3335—Microbial Physiology
BIOL 3336—Protein and Nucleic Acid Structure
BIOL 3351—Secrets of Cells
BIOL 3361—Biochemistry I
BIOL 3362—Biochemistry II
BIOL 3370—Exercise Physiology
BIOL 3380—Biochemistry Laboratory
BIOL 3455—Anatomy and Physiology I
BIOL 3456—Anatomy and Physiology II
BIOL 3V20—General Microbiology with Lab
BIOL 4340—Proteomics
BIOL 4341—Genomics
BIOL 4345—Immunobiology
BIOL 4350—Medical Microbiology
BIOL 4352—Medical Molecular and Cell Biology
BIOL 4353—Molecular Biology of HIV/AIDS
BIOL 4354—Molecular Biology of Neurological and Hematological Diseases
BIOL 4366—Molecular Biology of Cancer
BIOL 4370—Developmental Neurobiology

Chemistry
CHEM 1111—General Chemistry Laboratory I
CHEM 1112—General Chemistry Laboratory II
CHEM 1311—General Chemistry I
CHEM 1312—General Chemistry II
CHEM 2123—Introductory Organic Chemistry Lab
CHEM 2125—Introductory Organic Chemistry Lab II
CHEM 2323—Introductory Organic Chemistry I
CHEM 2325—Introductory Organic Chemistry II

Neuroscience
NSC 3361—Behavioral Neuroscience
NSC 4352—Cellular Neuroscience
NSC 4351—Medical Neuroscience
NSC 4354—Integrative Neuroscience
NSC 4356—Neurophysiology
NSC 4363—Neuropharmacology
NSC 4366—Neuroanatomy
NSC 4367—Developmental Neurobiology

Physics
PHYS 1101—College Physics Laboratory I
PHYS 1102—College Physics Laboratory II
PHYS 1301—College Physics I
PHYS 1302—College Physics II
PHYS 2125—Physics Laboratory I
PHYS 2126—Physics Laboratory II
PHYS 2325—Mechanics
PHYS 2326—Electromagnetism and Waves
PHYS 3341—Physics for Bio Science I
PHYS 3342—Physics for Bio Science II
PHYS 4v10—Physics of the Human Body

If students want to apply other UT Dallas courses, those courses must be approved by the program director PRIOR to registration. Courses not included on this list will generally not be accepted to fulfill requirements for the certificate program. Teaching assistant and research credit courses will NOT be accepted toward course requirements. Research credit may, however, be used toward up to 25 hours of the required clinical/research activities.

Pre-Health Professional Development (HLTH 3100)
All certificate students are required to take, as a part of their program curriculum, HLTH 3100 (Pre-health Professional Development). This course introduces students to the concept of professionalism within a healthcare context including issues of appropriate personal attributes and expectations, ethical decision-making, interpersonal communication, and self-appraisal. It also contains an overview of the history of medicine in the U.S., and examination of current issues in healthcare and discussions about personal
enrichment through research, clinical activities, and study abroad experiences. Pre-health Professional Development is taught by Dr. Wright and offered in Fall and Spring semesters as well as the summer term.

**Elective Courses**
Relevant elective courses are also available but do not apply to the number of credit hours required for certificate completion. These courses could serve as important elective credits and supplement the student’s application to professional school. The elective courses, found in a variety of departments around the University, include:

- BA 4362 – Introduction to Healthcare Management
- ECO 3300 – Economics of Health
- GEOG 3351 – Spatial Dimensions of Health and Disease
- GST 4325 – Motherhood and the Technological Womb
- HIST 3328 – History and Philosophy of Science and Medicine
- HLTH 1332—Human Nutrition
- HLTH 3101—Medical Terminology
- HLTH 3301—Issues in Geriatric Healthcare
- HLTH 4380 – Special Topics in Healthcare
- ISGS 4308—Bones, Bodies and Disease
- PHIL 4380—Medical Ethics
- PHIL 4380—Philosophy of Medicine
- PSCI 4365—Law and Medicine
- PSY 4346 – Human Sexuality
- PSY 4328—Health Psychology
- SOC 4369 – Public Health and Society
- SOC 4371 – Mental Health and Illness
- SOC 4372—Health and Illness
- SPAN 3341—Medical Spanish
Department of Molecular and Cell Biology

http://www.utdallas.edu/nsm/biology/

Faculty

Professors: Hans Bremer (emeritus), Lee A. Bulla, Santosh R. D'Mello, Rockford K. Draper, Juan E. González, Donald M. Gray, Stephen D. Levene, Lawrence J. Reitzer, C. S. Rupert (emeritus), Stephen Spiro, Li Zhang, Michael Zhang
Associate Professors: Gail A.M. Breen, John G. Burr, Jeff L. DeJong, Ernest M. Hannig, Dennis L. Miller, Stephen Spiro
Assistant Professors: Tianbing Xia, Zhenyu Xuan, Hyuntae Yoo
Lecturers: John Kolar, Uma Srikanth, Anwu Zhou

Objectives

The Graduate Program offers training in those aspects of molecular and cell biology that are the bases of modern biological and biomedical sciences.

The Master of Science degree is designed for students who wish to learn the methodology of research in molecular and cell biology and the fundamentals of problem solving in these areas.

The Master of Science degree without thesis is intended for students who wish to acquire a working knowledge of biotechnology, for other students who seek to gain knowledge of modern biology without the intent to seek positions as technical laboratory personnel, and for those students who are seeking additional preparation for admission to professional schools.

The Master of Arts in Teaching degree in Science Education with a specialization in Biology is designed to strengthen the knowledge of high school teachers in fundamental aspects of biology and to bring them up to date on advances in this rapidly developing field. For further information on this program and for course descriptions, see the Science/Mathematics Education section of this catalog.

The Doctor of Philosophy degree with a major in Molecular and Cell Biology is appropriate for students who show a potential for originality in research and is designed to develop a critical and analytical understanding of current developments, which will enable them to keep abreast of the rapid advances that are likely to occur in the biological and biomedical fields.

The M.S. and Ph.D. degree plans offer students the opportunity to prepare for academic careers in colleges and universities including medical and dental schools, and for careers in industrial, hospital, public health, environmental and governmental laboratories and organizations.

Specializations

First-year students will normally complete a body of core courses that emphasize fundamental aspects of biochemistry, biophysics, molecular biology, and cell biology. Students may then proceed to advanced course work in any of these four general areas. Elective courses are open to all qualified students as recommended by their supervising committees. First year students are also encouraged to participate in rotations through research laboratories.
In the second year, research is initiated under the supervision of one or more of the Molecular and Cell Biology faculty. The faculty and their research interests are listed below. Prospective students should recognize that it is possible to do research in closely related areas not mentioned in this list, provided a faculty member is prepared to supervise the work.

**Gail A.M. Breen**, Isolation and characterization of the genes that code for proteins of the mammalian mitochondrion; mitochondrial biogenesis; eukaryotic gene regulation.

**Lee A. Bulla**, Molecular basis of biopesticides.

**John G. Burr**, Eukaryotic growth regulation; mechanism of viral oncogenic transformation.

**Santosh D'Mello**, Molecular control of neuronal apoptosis

**Jeff L. DeJong**, Eukaryotic transcription; initiation and activation of RNA polymerase II.

**Rockford K. Draper**, Membrane traffic; protein toxins; bio-nanotechnology

**Juan E. González**, Cell-cell interactions, role of exopolysaccharides in nodulation of legumes by rhizobia; molecular genetics of plant-microbe interactions.


**Dennis L. Miller**, Structure and organization of mitochondrial DNA; mitochondrial gene expression; RNA editing; mitochondrial biogenesis.

**Betty S. Pace**, Gene therapy, sickle cell disease.

**Lawrence J. Reitzer**, Regulation of gene expression and metabolism in prokaryotes.

**Stephen Spiro**, Regulation of bacterial gene expression by environmental signals; genetic and physiological adaptation to stress.

**Tianbing Xia**, Molecular recognition; RNA structure and RNA-protein interaction; conformational dynamics; femtochemistry

**Zhenyu Xuan**, Computational biology and bioinformatics

**Hyuntae Yoo**, Systems biology for drug discovery

**Li Zhang**, Molecular mechanisms of cell signaling, heme signaling and oxygen sensing, genomics, and systems biology

**Michael Zhang**, Computational biology; gene regulation and epigenomics

**Facilities**

Major items of equipment used by the faculty and available for graduate student research include a Leica TCS SP2 AOBS confocal microscope system, complete Spectra-Physics femtosecond laser system, Becton Dickson fluorescence activated cell sorter, Veeco MultiMode SPM atomic force microscope, Molecular Dynamics Phospholimagers, BioRad real-time polymerase chain reaction instruments, Beckman scintillation counters and Optima ultracentrifuges, and a Jasco J-715 spectropolarimeter. Individual laboratories are well-equipped with instrumentation needed for research in molecular and cell biology, including thermal cyclers, spectrophotometers, chromatography and electrophoresis systems, chemical hoods, and mammalian cell culture facilities.

Other shared biology facilities include environmental chambers, a staffed media kitchen with autoclaves and washing machines, a darkroom with an x-ray film developer, and an electronics workshop. There is a modern research animal housing facility on campus, as well as a GE 500 MHz FT multinuclear magnetic resonance spectrometer.

**Admission Requirements**

The University's general admission requirements are discussed [here](#).
For full participation in the Graduate Program in Molecular and Cell Biology, the student should have a good background in calculus, general physics, organic chemistry, biochemistry, and general biology, including genetics. Entering students not having this background may be required to take some additional course work in their first year or in the summer immediately preceding entry. A minimum GRE score of 1000 (verbal plus quantitative) is advisable based on our experience with student success in the program.

**Degree Requirements**

The University’s general degree requirements are discussed [here](#).

Upon satisfactory completion of the core courses (and, for Ph.D. candidates, a favorable evaluation following the Spring semester as described below), a Supervising Committee is appointed for each student (except non-thesis M.S. students) based upon mutual agreement between student and faculty. The Supervising Committee, with the Supervising Professor as chairperson, will help the student plan an elective course curriculum and will oversee the student’s research and thesis or dissertation.

**Master of Science**

All students seeking the Master of Science degree in Molecular and Cell Biology must satisfactorily complete a total of at least 36 graduate semester hours, which must include the following core courses: BIOL 5410, BIOL 5420, BIOL 5430, and BIOL 5440.

M.S. students intending to submit a thesis must, in addition to the core courses specified above, satisfactorily complete a further 20 hours of Biology courses which includes BIOL 6193, BIOL 8398, and a minimum of 6 credit hours of general electives for which a letter grade is assigned. The remainder of the credit hours usually reflects experimental research but may also be based on literature research as determined by mutual agreement of the student and Supervising Committee. For M.S. (thesis) students, the maximum number of Pass/Fail credits allowed within the 36 credit hour minimum is 13 semester credit hours.

M.S. (non-thesis) students must, in addition to the core courses specified, satisfactorily complete a minimum of four general elective courses in Biology (for which a letter grade is assigned) for a minimum of 9 credit hours, up to 11 semester credit hours of special electives, and/or, with approval of the Graduate Adviser, other graduate courses. For non-thesis M.S. students, the maximum number of Pass/Fail credits allowed within the 36 credit hour minimum is 11 semester credit hours.

A [Master of Science Degree in Biotechnology](#) is also offered through the Department of Molecular and Cell Biology.

In addition to the above Master of Science Degrees, a Master of Science in Bioinformatics and Computational Biology (BCBM) is offered jointly by the Departments of Mathematical Sciences and Molecular and Cell Biology. This program combines coursework from the disciplines of biology, computer science, and mathematical sciences. Faculty from both Mathematical Sciences (MMS) and Molecular and Cell Biology (MCB) participate in the Bioinformatics and Computational Biology program, with the Mathematical Sciences Department serving as the administrative unit. Both departments participate in advising students.

See the Department of Mathematical Sciences for more information on this degree program.

**Doctor of Philosophy**
All Ph.D. students must satisfactorily complete a total of at least 90 credit hours beyond the bachelor’s degree. Generally, all core courses are mandatory. In special cases, the requirement for a core course can be substituted, but only with the permission of the instructor and the graduate adviser, and usually only after examination. Students must include a minimum of four general elective courses in Biology (for which a letter grade is assigned) for a minimum of 9 credit hours. After core courses BIOL 5410, BIOL 5420, BIOL 5430 and BIOL 5440 [and, in addition, two laboratory rotations, BIOL 6V02 –(The Art of Scientific Presentation) and BIOL 6193] have been completed, students are evaluated following the Spring semester. The evaluation is based upon performance in the core classes, laboratory rotations, and performance as teaching assistants (if applicable). Students who pass this evaluation must then pass an oral qualifying examination within three semesters to determine the student’s aptitude for continuation of dissertation research. A dissertation defense will be conducted after the dissertation has been written. All students are required to submit a minimum of one manuscript for publication in an internationally recognized, peer-reviewed scientific journal. There is no foreign language requirement.
Department of Chemistry

http://www.utdallas.edu/dept/chemistry/

Faculty

Robert A. Welch Chair in Chemistry; Professor of Chemistry: Ray H. Baughman
Robert A. Welch Chair in Chemistry; Professor of Chemistry: Dennis W. Smith
Cecil and Ida Green Distinguished Chair in Systems Biology; Professor of Chemistry: A. Dean Sherry

Professors: Kenneth J. Balkus, Jr., Rockford K. Draper (Biology), John P. Ferraris, Bruce E. Gnade (Electrical Engineering), Inga H. Musselman
Associate Professors: Michael C. Biewer, Gregg R. Dieckmann, Jinming Gao (UT Southwestern), Warren J. Goux, Paul Pantano, John W. Sibert
Assistant Professors: Jung-Mo Ahn, Mihaela C. Stefan, Steven O. Nielsen, Jie Zheng
Affiliated Professors: Lee A. Bulla (Biology), Anvar A. Zakhidov (Physics)
Research Professors: Garry E. Kiefer, Duck Joo Yang
Emeritus Professors: Richard A. Caldwell
Senior Lecturers: Sergio Cortes, Sandhya R. Gavva, Claudia Taenzler

Objectives

The Ph.D. program is designed to produce graduates with a focus on innovation and problem solving in interdisciplinary cutting edge research areas such as current materials, nanotechnology, biotechnology and polymer chemistry. These graduates, with their broad course background, research skills, and practical attitudes should find ready employment in industry or academic positions. A spectrum of courses provides the student with a broad knowledge of chemistry.

The Master of Science program offers students the opportunity to prepare for positions in industry, for further training in related scientific fields, or for further training in chemistry.

Facilities

The department has the equipment and facilities necessary for routine use by its faculty and students in teaching and research. Larger items include: 270 MHz (2), 400 MHz, and 500 MHz multi-nuclear FT-NMR spectrometers; a powder x-ray diffractometer; assorted spectrophotometers utilizing fluorescence, phosphorescence and absorption; three peptide synthesizers; gel permeation chromatographs; workstations with molecular modeling software; and scanning tunneling and atomic force microscopes. Chemistry also participates in the Alan G. MacDiarmid NanoTech Institute, which houses instrumentation for modern materials science research. Facilities external to chemistry, but readily available to its use, include a library, the computer center, the cleanroom, and well-equipped machine and electronics shops.

Admission Requirements

The University’s general admission requirements are discussed here.

Undergraduate preparation equivalent to the degree of Bachelor of Science in Chemistry is required. The Chemistry program has no other requirements above the general admission requirements beginning on page 24. However, admission is competitive and is decided case by case.
case on the basis of the quality of previous relevant academic work, GRE scores, letters of reference, the student's statement of academic interests and, for foreign students, evidence of fluency in English. Foreign students with TOEFL scores less than 600 (paper test), 250 (computer test), or 100 (internet test) are admitted only in special circumstances.

Degree Requirements

The University's general degree requirements are discussed here.

Graduate students in chemistry are expected to demonstrate fundamental knowledge of lecture and laboratory skills by completing the following courses with a grade of B or better.

Core Courses (12 hours)

CHEM 5314 Advanced Physical Chemistry
CHEM 5331 Advanced Organic Chemistry I
CHEM 5341 Advanced Inorganic Chemistry I
CHEM 5355 Analytical Techniques I

Master of Science

A minimum of 30 total graduate semester hours is required. The M.S. degree can be pursued on a full- or part-time basis.

Other Course Requirements

The remaining requirements beyond the 12-hour core listed above may be satisfied in one of the two ways listed below.

1. Presentation and defense of a written master's thesis. The student must complete, as a minimum, 15 credit hours of research or other graduate electives plus CHEM 8398. A Supervising Committee will be appointed to guide the student's thesis work and to assess the completed thesis.

2. Completion of an approved internship in an industrial or governmental laboratory. The student must complete, as a minimum, 18 credit hours of research, chemistry internship or other graduate electives.

Three of the graduate semester hours beyond the core may be fulfilled by taking an approved graduate elective course.

A Supervising Committee must approve an internship in advance. The final written report must be defended before this committee and filed in the Chemistry department office.

Doctor of Philosophy

Normally pursued by full-time students enrolled in a minimum of 9 credit hours of approved graduate level courses per semester.

Other Course Requirements
In addition to the 12-semester hour core course requirements listed above, students seeking the Ph.D. degree must take two upper level elective courses that are approved by the student's faculty research advisor and the Chemistry Graduate Advisor. Ph.D. students are expected to complete these six required courses within the first two years of their enrollment. CHEM 8399 is also required as part of the preparation of the dissertation. Additional courses may be required by the student's Supervisory Committee.

Well-prepared students may request substitution of portions of the course requirements from the Committee on Graduate Studies in Chemistry. At least three organized courses must be taken at the University of Texas at Dallas. The opportunity exists to take elective courses during their second and subsequent years.

**Qualifying Examination: Original Research Proposal**

*All Ph.D. students must take the qualifying examination.* In the second year, students seeking the Ph.D. degree are required to write, present, and defend an original research proposal. In addition to providing valuable experience to the student, this exam is used to assess the student's originality and skills in organizing an effective approach to solving a novel problem. The results of this examination will be one criterion upon which admission to doctoral candidacy will be judged.

**Research**

Students have the option of completing a thesis Master's degree as part of their doctoral candidacy preparation, unless this requirement has been satisfied at the time of admission. The doctoral research project may be conducted in the same laboratory as the Master's degree research or, in order to gain a broader research experience, in another laboratory. A manuscript embodying a substantial portion of the Ph.D. dissertation research accomplished by the student must be submitted to a suitable professional refereed journal prior to the public seminar and dissertation defense. A public seminar, successful defense of the dissertation, and its acceptance by the Supervising Committee and the Graduate Dean conclude the requirements for the Ph.D.

**Representative Research Areas**

Within the Chemistry program, opportunities exist for course work and/or research in nanotechnology, biochemistry/biotechnology, organic, inorganic, materials, analytical, and physical chemistry. The opportunity to take course work in several of the other university programs allows the student to prepare for interdisciplinary work. Specific topics within these broad research areas include nanoscience (carbon nanotubes, sensors, actuators, nanoscale devices, synthesis of nanoporous materials); organic solid-state and polymer chemistry (energy storage, electrochromism, light-emitting polymers, solar cells, membrane separations); inorganic solid-state (zeolites, membranes, laser ablation, sensors, fuel cells, electrospinning); biological NMR (structural biology, using NMR active tracers to follow metabolism in cells, isolated tissues and in vivo); supramolecular chemistry (design of novel host-guest systems; biologically responsive MRI agents, design, synthesis and study of macrocyclic receptors with applications in catalysis, materials science, and medicine); scanning probe microscopy (instrument development, image contrast, application to polymer microstructure); bioanalytical and bionano chemistry, synthetic chemistry (macrocycles, metalloprotein function); biochemistry/enzymology (study of oxidative stress; oxidative metabolism of signaling molecules; molecular modeling; and catalysis).
Department of Geosciences

Faculty

Professors: Carlos L. V. Aiken, David E. Dunn (emeritus), John F. Ferguson, John W. Geissman, William I. Manton, George A. McMechan, Richard M. Mitterer (emeritus), John S. Oldow, Emile A. Pessagno, Jr. (emeritus), Dean C. Presnall (emeritus), Robert H. Rutford (emeritus), Robert J. Stern
Associate Professors: Alexander Braun, Thomas H. Brikowski, James L. Carter (emeritus), Georgia Fotopoulos
Senior Lecturers: William R. Griffin, Ingnacio Pujana

Objectives

The basic objective of the Department of Geosciences Graduate Program is to provide students with a broad fundamental background in geosciences as well as an in-depth emphasis in a particular specialty.

The Master of Science degree (thesis option) is designed for students desiring research experience in a specific area of the geosciences. This degree will prepare the student for professional employment in the energy, mining, or environmental industries or government, as well as those seeking a doctoral degree. The Master of Science degrees (non-thesis options) are designed for students who seek employment in the energy, mining, or environmental industries, and the industrial application of Geospatial Information Sciences (GIS).

The Doctor of Philosophy degree in Geosciences emphasizes basic research in one of the specialties in geosciences and is designed to prepare students for advanced positions in the energy, environmental or mining professions in industry or government, or for positions in academia.

The Doctor of Philosophy degree in Geospatial Information Sciences (GIS) is supported by the Department of Geosciences, the School of Economic, Political and Policy Sciences, and the School of Engineering and Computer Science. The degree reflects geospatial information science origins at the confluence of work in multiple disciplines. The degree focuses on advancement of the technology, its associated theory, and the enhancement of its applications. Graduates of this program will be well suited to advanced positions in the geospatial technology industry and academic positions.

Facilities

Departmental research facilities include: digital imaging petrographic microscope, rock preparation and mineral separation facilities, electronics shop and machine shop. Separate research facilities for computing, hydrology, thermal ionization mass spectrometry, geophysics and paleomagnetism/rock magnetism are described below.

Computing Facilities

The Geosciences Department has a large number of networked Windows/PC and unix/linux workstations in several laboratories accessible to the students and faculty. A number of laser printers are available, including a color printer. A large format HP 2500CP printer/plotter is available for creating maps and posters. A variety of software licenses are supported for GIS, remote sensing, image processing, geophysical data processing, graphics and visualization. Large scale computing is supported by two state of the art linux clusters, one with 1032 and one with 22192 64-bit processors and 30 terabytes of disk. A GeoWall visualization facility permits immersive interaction with 3-D data and is supported by high-resolution 3D HDTV visualization systems.
Hydrology Laboratory

Field equipment for measuring ground and surface water flow and chemistry, including borehole bailers, electric water level meter, FlowProbe hand-held flow meter, Hach DREL 2010 Basic Water Quality Lab (field spectrophotometer, pH and salinity meters), and YSI-85 DO/salinity/conductivity meter. Software for modeling water flow and transport, including general interfaces GMS and WMS, Hydrus-2D (unsaturated flow and transport), TOUGH2 and Tetrad (2-3D multiphase flow and transport), and many public-domain models. Hardware and software for visualizing model results, including Windows and Linux workstations.

Geochemical Laboratories

A Perkin-Elmer 6100 DRC ICP-MS is used for determining concentrations of a wide range of elements in materials. A Finnigan MAT 261 equipped with 9 collectors and a secondary electron multiplier is supported by Class 100 clean room facilities with sub-boiling acid distillation apparatus, micro- and semi-microbalances, and vessels for pressure decomposition of refractory silicates. Studies focus on using the evolution of Sr, Nd and Pb as indexes of petrogenetic processes, geochronology, environmental Pb, and evolution of marine Sr.

Geophysics Facilities

Geophysical research is supported by two Scintrex CG-5 gravimeters and a Micro-g A-10 absolute gravimeter; a variety of surveying instruments including a Nikon theodolite and data collector, a TOPCON GPT 3005LW total station electronic distance meter and theodolite, two Laser Atlanta Advantage CI reflectorless laser rangefinders, a Riegl LMP 3800 laser scanner and a Riegl LSM Z620 laser scanner, seven dual frequency Leica Viva RTK GPS systems, three dual frequency Topcon HyperLite RTK GPS systems (6 receivers), nine dual frequency Leica SR9500 GPS receiver systems with choke-ring antennas, a Trimble GeoXT GPS system, a Trimble GeoHT GPS system and GPS post-processing software including Leica SKI, Trimble Pathfinder Office and BERNESE. A Geometrics proton-procession total field magnetometer system, An AGI SuperSting R1/IP DC resistivity and induced polarization system is available for near surface electrical conductivity mapping. Seismic and radar equipment include a Geometrics 48-channel floating point seismic acquisition system with Betsy, hammer, and explosive sources for shallow to deep exploration; and pulse EKKO IV, and 1000 and PRO ground penetrating radars.

Paleomagnetism and Rock Magnetsm Laboratory

The newly completed Paleomagnetism and Rock Magnetism laboratory at the University of Texas at Dallas, including a low magnetic field induction space designed and constructed by Dr. Gary Scott of Lodestar Magnetics, is about 2,600 sq feet in footprint, and includes an attached sample preparation/wet chemistry laboratory, equipped with a fume hood, and an attached meeting/office space area for graduate and undergraduate students. The laboratory, to be completed early in 2012, will include all non-magnetic furniture and cabinetry installed by Dr. Gary Scott and colleagues in the low magnetic field space. The workhorse instrument for all remanence measurements is a 2G Enterprises Model 760R horizontal access, three measurement axis (DC SQUID) superconducting rock magnetometer, equipped with DC SQUIDS and superinsulation. A fully automated specimen handling system is interfaced with an on-line alternating field (AF) demagnetizer capable of reaching peak inductions of 160 mT, allowing for automated demagnetization of specimens. We have initiated the purchase of a new, pulse-cooled magnetometer from 2G Enterprises, with anticipated delivery in early 2013. AGICO JR-5 and AGICO JR-6 spinner magnetometers allow for the remanence measurements in both automated and static mode. Thermal demagnetization is conducted using Shaw (MMTD), and three ASC...
(TD48) furnaces, a Schonstedt (TSD-1), as well as a home built large-volume, three heating zone furnace capable of heating/cooling in an inert atmosphere. A large-volume furnace is capable of conducting long-term, elevated temperature magnetic viscosity experiments in a controlled atmosphere. The laboratory includes two ASC impulse magnetizers, with the full range of coil sizes. Two home built impulse magnetizers capable of peak DC induction of 1.3 T and 3.4 T and a horizontal Curie balance for measuring saturation magnetization as a function of temperature in an inert atmosphere. An additional, home built impulse magnetizer, capable of reaching about 9 T, is currently being tested. Two ASC D-2000 AF demagnetizers provide peak field values of 200 mT and are capable of imparting anhysteretic remanent magnetization (ARM) and partial ARM with DC fields up to 1.0 mT. A D-Tech coil interfaced with an externally tuned Schonstedt GSD 1 AF demagnetizer also allows for AF demagnetization and ARM acquisition. Chemical demagnetizations are carried out in a fume hood environment in the laboratory. The leaching and drying of specimens is carried out in a field-reduced environment (less than 300 nT) in the fume hood. Kappabridge KLY-3S, KLY-4S, and MFK1-FA automated susceptibility systems allow bulk and anisotropy of magnetic susceptibility measurements to be made in both static and automated modes. The KLY-3S and MFK1-FA susceptibility units are interfaced with a CS-4 furnace assembly for measuring susceptibility as a function of temperature in an inert atmosphere. The laboratory also has over ten sets of mu-metal shields of different volumes and geometries, to provide very low magnetic field environments for different purposes. We are equipped for all aspects of field sampling and specimen preparation, including four complete sets of drilling equipment and three dual bladed trim saws. An Olympus BX51TRF-5 transmitted light/reflected light microscope, equipped with a dedicated DP72, 12.8 mp digital camera. A Princeton Instruments AGM/VSM, equipped with a high temperature furnace assembly, acquired by the Physics Department in late 2008, has been transferred to the Geosciences Department, and a space remote from the Paleomagnetism Laboratory will house the magnetometer and internal water chiller system. The Physics Department at UTD maintains a Quantum Designs Magnetic Property Measurement System and this is available for use by the PI and students. The UTD Paleomagnetism Laboratory has dedicated field vehicle, a 2011 Toyota Tundra.

Admission Requirements

The University’s general admission requirements are discussed here.

Applicants are expected to take the GRE General Test (Verbal, Quantitative, and Analytical Writing). A combined score of no less than 1000 on the Verbal and Quantitative portions of the exam is advisable based on our experience with student success in the program. In addition, students should complete and submit a Supplemental Geosciences Application Form which can be obtained from the Geosciences Department Office by mail (FO21, University of Texas at Dallas, 800 W Campbell Rd, Richardson, TX, 75080, USA), telephone (972-883-2401), or e-mail (geosci@utdallas.edu).

Entering students are expected to have completed the equivalent of the University’s B.S. degree in Geosciences, including courses in physics, mathematics and chemistry as well as a 3-hour scientific programming course. Students whose undergraduate training is in a science other than geology or geophysics are admitted to the program when their previous course work complements or supports their intended research interests. Students may be admitted with some deficiencies but these must be completed during their first 18 graduate hours. Deficiencies in the undergraduate background of admitted students will be addressed through a sequence of four required graduate courses. It is understood that the minimum course requirements for the intended degree, as specified below, apply to well-prepared students.
Degree Requirements

The University’s general degree requirements are discussed here.

Additional requirements are specified below for each degree.

Graduate Certificate in Remote Sensing

The Remote Sensing Certificate is supported by the Department of Geosciences and the School of Economic, Political and Policy Sciences.

The American Society for Photogrammetry and Remote Sensing (1997) defined remote sensing as the art, science, and technology of obtaining reliable information about physical objects and the environment, through the process of recording, measuring and interpreting imagery and digital representation of energy patterns derived from non-contact sensor systems.

Remote sensing is a powerful set of software and hardware, computer-based techniques for extraction and presentation of information represented by raster and vector spatial data acquired via non-contact sensors. It provides reliable and cost-effective means of studying the environment for protection, natural resources management and urban planning. Government and non-government organizations continuously seek qualified professionals to use remote sensing for a wide range of applications.

Pre-requisites and Admission

- B.S. or B.A. Degree. Competence in personal computers, especially Windows-based, is expected.
- Application for admission to UTD Graduate School as "non-degree or degree seeking"
- Only B.S. or B.A. transcripts are needed. No GRE score or reference letters are needed for non-degree seeking students.
- On-line registration is at: www.utdallas.edu/admissions

Course Requirements

The Graduate Certificate in Remote Sensing is obtained by completing 15 hours of courses. Students must complete the following courses: GEOS 5325 Introduction to Remote Sensing, GISC 6381 Introduction to GIS, GEOS 5326 or GISC 7365 Remote Sensing Digital Image Processing, GISC 7366 Applied Remote Sensing and GEOS 7327 or GISC 7367 Remote Sensing Workshop.

Master of Science in Geosciences

Thesis Option

All students seeking the Master of Science degree (thesis option) must satisfactorily complete the following requirements (a minimum of 36 graduate semester hours):

- GEOS 5327, GEOS 532730, GEOS 5375, and GEOS 5387
- A minimum of 15 hours of additional graduate courses.
- A minimum of nine semester hours of thesis research including GEOS 8398 and submit an acceptable thesis.
In addition to the above requirements, students seeking the M.S. degree (thesis option) must submit, no later than the second semester of enrollment, an acceptable degree plan and a research proposal to their supervising committee. Upon completion of the thesis research, the M.S. degree candidate will publicly defend the thesis.

**Non-Thesis Option**

All students seeking the Master of Science degree (non-thesis option) must satisfactorily complete a minimum of 36 graduate semester hours including the specified Geosciences courses below.

- GEOS 5307, GEOS 5327, GEOS 5375, and GEOS 5387
- A minimum of 21 hours of additional graduate courses, to be selected in consultation with the graduate advisor.
- Research: An 8000 level, 3-hour research course.

In addition to the above requirements, students seeking the M.S. degree (non-thesis option) must submit, no later than the second semester of enrollment, an acceptable degree plan.

**Master of Science in Geographic Information Sciences**

The Master of Science in Geographic Information Sciences is a professional program that is offered jointly by the School of Economic, Political and Policy Sciences and the School of Natural Sciences and Mathematics. The program focuses on the use of Geographic Information Systems (GIS) and associated technologies such as remote sensing and global positioning systems for managing spatially referenced information. Students are provided with the concepts underlying GIS, the skills for implementing GIS projects in public and private sector organizations, and the ability to use GIS in pure or applied research in substantive areas. Prospective students should apply using established procedures to either Geosciences or the School of Economic, Political and Policy Sciences depending on their background.

For the Master’s degree in Geographic Information Sciences, beginning students are expected to have completed college Mathematics through Calculus and at least one programming or computer applications course or possess equivalent knowledge. Students must have the equivalent of GISC 6381 Geographic Information Systems Fundamentals and GISC 6382 Applied GIS, or they must take these courses at UTD in addition to the 30 credit hours required for the MGIS. Additional details of the curriculum can be found under “Master of Science in Geographic Information Sciences,” in the School of Social Sciences section of the catalog.

**Doctor of Philosophy in Geosciences**

All students seeking a Doctor of Philosophy degree in Geosciences must satisfactorily complete the following requirements (75 graduate hours minimum).

- GEOS 5307, GEOS 5327, GEOS 5375, and GEOS 5387
- A minimum of 18 hours of additional Geosciences graduate courses to be specified by the student's research supervisory committee and the Graduate Advisor.
- A minimum of 36 hours of additional graduate courses or research.
- A minimum of nine semester hours of thesis research including GEOS 8399 and submit an acceptable dissertation.

In addition to the above course requirements, students seeking the Ph.D. degree must submit an acceptable degree plan and research proposal describing the intended project to be completed for the dissertation. Students entering with a Master’s should complete this proposal in the third semester;
students entering without a Master’s have until the fourth semester. An oral qualifying examination covering the broad background and detailed knowledge relating to the student’s specialization and research proposal will be held in the same semester that the proposal is submitted. After satisfactory performance on the Qualifying Examination, the student will complete and publicly defend the dissertation.

Also, see the University’s general degree requirements. Please note that more detailed instructions for Geosciences Graduate students are given in the "Guideline for Graduate Students - Geosciences" that is available in the office of the Department Head.

Doctor of Philosophy in Geospatial Information Sciences

The Doctor of Philosophy in Geospatial Information Sciences is an advanced degree offered jointly by the School of Natural Sciences and Mathematics, the School of Economic, Political and Policy Sciences and the Eric Jonsson School of Engineering and Computer Science. Geospatial information is a unifying theme across a wide range of disciplines and the unique organization of this program permits a diverse range of expertise to the prospective student. The Ph.D. in GIS is intended to go beyond the M.S. in GIS degree in terms of analysis, the creation of new technology and the novel application of geospatial information technology. This program will prepare students for leadership positions in academy, industry or government.

Individual students can concentrate in particular discipline areas. The Geosciences component focuses on remote sensing and mapping technologies, including global positioning satellite and three-dimensional laser ranging based data capture as well as other imaging technologies. In particular, these methodologies are applied to geological, hydrological and environmental problems associated with the physical Earth.

It is expected that students will enter this program with diverse educational backgrounds. Applicants may have Bachelors, Masters or other advanced degrees in any relevant field including computer science, economics, engineering, geography, geology, information system management, resource management, geographical information science and possibly others. At least a Bachelors degree from an accredited (or equivalent) institution with an undergraduate/graduate grade point average of 3.25 or better is required. A GRE score of 1150 or higher is desirable. Fluency in written and spoken English is required. (Please see detailed degree requirements under "Doctor of Philosophy in Geospatial Information Sciences," listed in the School of Social Sciences section of the catalog.)
DATE:       
TO:       GRADUATE DEAN  
FROM:  
Please indicate with an X if your department catalog copy has no changes ______

SCHOOL: NSM_________________________

DEPARTMENT: Physics___________________

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES  
N/A

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED  
N/A

COURSES DELETED  
N/A

OTHER: Updated and clarified departmental procedural policies for course selections, qualifying examination, thesis proposals, and minimum grades

Approved: ______________________ for Physics Dept. / NSM
Department of Physics

http://www.utdallas.edu/physics

Faculty

Cecil and Ida Green Chair in Physics: Roderick A. Heelis
Distinguished Chair in Physics: Myron B. Salamon
Green Distinguished Chair in Academic Leadership: Bryan Hobson Wildenthal
Associate Professors: Yuri Gartstein, Mustapha Ishak-Boushaki, Lindsay King, David Lary
Assistant Professors: Anton Malko, Jason Slinker
Senior Lecturers: Paul MacAlevey, Beatrice Rasmussen
Affiliated Faculty: Cyrus D. Cantrell (Engineering), Yves Chabal (Engineering), Kyeongjae Cho (Engineering), John P. Ferraris (Chemistry), Matt Goekner (Engineering), Christopher Hinkle (Engineering), Julia W. P. Ferraris (Engineering), Wenchuang Hu (Engineering), Stephen Levene (Biology), Larry Overzet (Engineering), Dean Sherry (Chemistry), Duck-Joo Yang (Chemistry), Mary Urquhart (Science/Mathematics Education)

Objectives

The goal of the Graduate Program in Physics is to develop individual creativity and expertise in the fields of physics. In pursuit of this objective, study in the program is strongly focused on research. Students are encouraged to begin participating in ongoing research activities from the beginning of their graduate studies. The research experience culminates with the doctoral dissertation, the essential element of the Ph.D. program that prepares students for careers in academia, government laboratories, or industry.

A Master of Science degree is offered to those seeking to acquire or maintain technical mastery of both fundamentals and current applications.

A Master of Science degree in Applied Physics is offered for students wishing to emphasize applications encountered in industrial and high technology environments.

Admission Requirements
The University’s general admission requirements are discussed here.

The Graduate Physics Program seeks students who have a B.S. degree in Physics or closely related subjects from an accredited university or college, and who have superior skills in quantitative and deductive analysis. Decisions on admission are made on an individual basis. However, as a guide, a combined score on the verbal and quantitative parts of the GRE general test of 1200, with at least 700 on the quantitative part, is advisable based on past experience with student success in the program. In addition, taking the GRE Subject Test in Physics is strongly recommended, though not required.

For graduate work it is assumed that the student has an undergraduate background that includes the following courses at the level indicated by texts referred to: mechanics at the level of Symon, Mechanics; electromagnetism at the level of Reitz and Milford, Foundations of Electromagnetic Theory; thermodynamics at the level of Kittel, Thermal Physics; quantum mechanics at the level of Griffiths, Introduction to Quantum Mechanics (chapters 1-4), some upper-division course(s) in modern physics, and atomic physics. Students who lack this foundation may be required to take one or more undergraduate courses to complete their preparation for graduate work.

Financial Support

A limited number of teaching assistantships (TAs) are awarded to those students displaying the most promise in teaching or research. Specific decisions regarding TA awards are made on an individual basis. Students who wish to be considered for financial support are encouraged to submit completed applications by February 1st for admission in the fall semester. Admission for the spring term is possible, but opportunities for financial support in such cases are extremely limited. Ph.D. teaching assistantship awardees are required to complete 12 graduate physics courses approved by the graduate adviser (not including research courses) during the first 24 months in residence. Continuation of support is evaluated yearly and requires achievement of a minimum GPA of 3.0, and a satisfactory record in teaching or research assignments.

Financial support is preferentially provided to students in the MS/PhD track, and is generally not available for students in the Applied Masters program.

Specializations

The central principle in the structure of the graduate program is that a student’s progress and ultimate success is best served by early and varied research experiences coupled with individually tailored course sequences.

Current areas of research specialization in the physics program are: Atmospheric and Space Physics; Astrophysics/Cosmology/Relativity; Condensed Matter Physics/Materials Science; and High Energy Physics. Further details on the current research topics in these areas are provided below.

Astrophysics, Cosmology and Relativity

This research group studies fundamental problems in theoretical astrophysics, contemporary cosmology, and relativity. These research efforts typically involve analytical, numerical, and cosmological-data related projects. The group is instrumental in organizing the biennial Texas Symposia on Relativistic Astrophysics, beginning in Dallas in 1963 and recurring regularly all over the world since then. Current areas of research include: gravitational lensing (lenses) and its applications to cosmology; the acceleration of the expansion of the universe (cosmological constant, dark energy); fitting cosmological
models to observational data (e.g. CMB, lensing, supernovae); dark matter; the structure of the big bang; the role of inflation; computer algebra systems applied to general relativity and cosmology; space-time junction conditions and wormholes; cosmological models of wider generality than the classical homogeneous models and their possible observational signatures. More specific information is available at: [http://www.utdallas.edu/~mishak/relativitycosmology.html](http://www.utdallas.edu/~mishak/relativitycosmology.html).

### Atmospheric And Space Physics

Research in Atmospheric and Space Physics encompasses both theory and experiment, with emphasis on aeronomy, ionospheric physics, planetary atmospheres, atmospheric electricity and its effects on weather and climate, and space instrumentation. Much of the research occurs in the William B. Hanson Center for Space Sciences, which includes laboratory facilities for instrument design, fabrication, and testing. Faculty and students participate in ongoing satellite missions sponsored by NASA and DoD, and suborbital sounding rockets. Most students participate in analysis of large data sets from previous missions, and from ground-based optical and radar instruments at locations ranging from Greenland to South America. Particular areas of interest include large and small scale dynamics and electrodynamics, numerical modeling of the thermosphere and ionosphere, characteristics of the near earth plasma environment, the effects of solar variability on atmospheric electricity, cloud microphysics and tropospheric dynamics, plasma instabilities and irregularities, and development and testing of innovative space flight instrumentation. Computer facilities include a network of dedicated workstations and access to supercomputers. For further details see [http://www.utdallas.edu/research/spacesciences](http://www.utdallas.edu/research/spacesciences).

### High Energy Physics And Elementary Particles

The UTD High Energy Physics Group collaborates on the Atlas experiment at the CERN Large Hadron Collider (LHC) and the BaBar experiment, at the PEP-II asymmetric b factory located at the Stanford Linear Accelerator Center (SLAC). Atlas will search for the Higgs boson, believed to be responsible for electroweak symmetry breaking, for new physics beyond the standard model such as supersymmetric partners to known particles, and for new hadrons. Atlas data-taking will begin in 2009. BaBar measures CP violation in the decays of bottom mesons and is exploring whether the origin of this CP violation lies within the Standard Model. BaBar data is fertile ground for precision and rare decays of bottom and charm particles, and tau lepton. The group explores both charmonia and a class of unexpected particles with charm-anticharm quark content with properties that are quite different from conventional charmonium. BaBar has completed data-taking and is analyzing its data. The group's research is funded by the U.S. Department of Energy. The UTD High Energy Physics group specializes in high performance computing, simulation production, and data analysis while contributing to the commissioning and operation of experiments. Additional information can be found at: [http://www.utdallas.edu/~joe/hepweb/utdhep.html](http://www.utdallas.edu/~joe/hepweb/utdhep.html).

### Solid State/Condensed Matter Physics/Materials Science

Materials Science is at the interface of many disciplines and involves a collaborative approach with colleagues in chemistry, and electrical engineering. Our research facilities are distributed over the physics laboratories, NanoTech Institute (nanotech.utdallas.edu) and Electrical Engineering Clean Room. Research in Materials Science involves both experiment and theory with emphasis on the physical aspects of solid state materials, optical properties of solids, Raman scattering, physical properties of thin films, and carbon nanotubes. Various nanoscale and synthetic materials are being studied for their optical, electronic, magnetic and transport properties, as well as applications in photonics, spintronics and (opto)electronics. The materials of interest include nanostructures (quantum dots and wires, fullerenes and carbon nanotubes) and low-dimensional systems, photonic band gap crystals and “left-handed” electromagnetic meta-materials, organic and polymeric materials. Unconventional superconductivity and superconducting nanostructures are also under investigation.
The interaction of nanoscale materials, such as carbon nanotubes, with biological entities are being investigated for prospective biomedical and electronic applications. For example, chemically functionalized carbon nanotubes are being studied as building blocks in transistor and sensor applications.

**Degree Requirements**

The University's general degree requirements are discussed [here](#).

All candidates for graduate degrees in physics must satisfy general University degree requirements. Well prepared students may demonstrate by examination adequate knowledge of the core and basic course material. In addition to the general university graduation requirements, graduation in physics requires achieving a grade of B or better in all core courses in the M.S., Applied M.S., and Ph. D. programs.

**Master of Science**

A minimum total of 32-30 graduate credit hours is required, including the core courses listed below.

1. **M.S. Core courses (12 hours)**
   
   - PHYS 5301 Mathematical Methods of Physics I
   - PHYS 5311 Classical Mechanics
   - PHYS 5320 Electromagnetism I
   - PHYS 6300 Quantum Mechanics I

2. **M.S. Elective courses (18 hours)**

   In addition to the core courses, 20-18 hours of additional graduate level physics or related field courses must be successfully completed by M.S. candidates in physics, with prior approval from the Graduate Advisor. Up to 6 hours of elective credit may be satisfied through approved industrial internships, supervised research, or the satisfactory completion and defense of an M.S. thesis. Prior approval for these options must be obtained from the Graduate Advisor.

**Master of Science in Applied Physics (MSAP)**

The MSAP degree is intended as a terminal degree that does not lead to the Ph.D. track. A minimum of 32-30 graduate credit hours are required for the MSAP degree. Students in this degree plan must successfully complete a minimum of 16-12 semester credit hours of MSAP core courses, including PHYS 5301. All core courses in the M.S./Ph.D. track are acceptable MSAP core courses, as are courses from the Augmented MSAP Core Courses List provided below. Approved elective credit hours in the MSAP program include any graduate level physics courses, as well as approved graduate-level courses in electrical engineering, computer science, biology, geosciences, chemistry, and operations research. Specific courses should be chosen with the guidance and approval of the graduate advisor for the MSAP program.

**Augmented MSAP Core Course List**

- PHYS 5305 Monte Carlo Simulation Method and its Applications
- PHYS 5315 Scientific Computing
- PHYS 5316 Applied Numerical Methods
- PHYS 5317 Atoms, Molecules and Solids
- PHYS 5318 Atoms, Molecules and Solids II
- PHYS 5321 Experimental Operation and Data Collection Using Personal Computers
Phys 5371 Solid State Physics
Phys 5372 Solid State Devices

**Doctor of Philosophy**

A minimum of 24 credit hours in the graduate core sequence are required for the Ph.D. degree, plus additional courses specified by the student’s thesis committee chair. The required core courses must include Phys 5301, 5302, 5311, 5313, 5320, 5322, 6300, and 6301. Students in space sciences must also take Phys 6383.

A candidate must also take a minimum of 3 elective courses, 1 from within his/her area of specialization and 2 selected from outside the student’s specialty area. Additional courses may be required to satisfy the particular degree requirements and/or to ensure sufficient grounding in physical principles. The graduate advisor and the student’s supervisory committee must approve course selections. A minimum of one year residency after admission to the doctoral program is required.

Ph. D. students are required to take a comprehensive qualifying examination. The first opportunity to take the exam is in the fall spring semester of the first year of graduate study – taking advantage of this opportunity allows the qualifier to be attempted up to 3 times. Students who choose not to take the qualifier in their first second semester are required to take it in the second fall semester in residence. Satisfactory performance on the qualifier allows continuation with financial support beyond the second fall term. Students who fail the qualifier in the second fall semester and wish to remain in the graduate program are required to retake the exam in the subsequent spring semester – failure to pass the qualifier on this attempt will result in loss of financial support from the university in subsequent semesters, and ineligibility to complete the remaining Ph. D. degree requirements.

After a student has completed the required course work with a minimum grade of B in each core course and a minimum GPA of 3.30 for all courses, passed the qualifier examination, and decided upon his/her field of specialization, a committee is formed to guide the student’s dissertation work. Formation of a Supervising Committee is normally expected before the end of the first semester in the student’s third year.

Once a dissertation topic has been identified, the student must submit a proposal that outlines the present state of knowledge of the field and presents the research program the student expects to accomplish for the dissertation. This proposal must be approved by the Supervising Committee and the Department Head.

A seminar on the dissertation proposal must be presented, followed by an oral examination conducted by the faculty on the proposed area of research and related topics. The Supervising Committee shall determine by means of the exam and any ancillary information whether the student is adequately prepared and has the ability to conduct independent research. The approved dissertation proposal is then filed with the Dean of Graduate Studies. An approved dissertation proposal is normally expected before the end of the student’s third year.

A manuscript embodying a substantial portion of the dissertation research accomplished by the student must be submitted to a suitable professional refereed journal prior to the public seminar and dissertation defense. A public seminar, successful defense of the dissertation, and its acceptance by the Supervising Committee conclude the requirements for the Ph.D. In lieu of the traditional dissertation, and at the discretion of the supervising professor, a manuscript dissertation following the guidelines published by the Graduate Dean’s Office may be substituted.
Core Course listing for Doctor of Philosophy (24 credit hours required, 27 for Space Science.)

PHYS 5311 Classical Mechanics
PHYS 5313 Statistical Physics
PHYS 5320 Electromagnetism I
PHYS 5322 Electromagnetism II
PHYS 5301 Mathematical Methods of Physics I
PHYS 5302 Mathematical Methods of Physics II
PHYS 6300 Quantum Mechanics I
PHYS 6301 Quantum Mechanics II
PHYS 6383 Plasma Science (required core course for Space Science students)
Please indicate with an X if your department catalog copy has no changes ___X____

No changes to MS in Biotech, BMS Cert, or Biology

SCHOOL_______________NS and M____________________

DEPARTMENT_________MCB____________________

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED

COURSES DELETED

OTHER__Faculty changes______________________________________________

Approved: ___Stephen Spiro, Acting Head, MCB
GRADUATE CATALOG CHANGES  
CATALOG YEARS: 2012-2014

DATE:  
TO: GRADUATE DEAN  
FROM:  
Please indicate with an X if your department catalog copy has no changes ______

SCHOOL_Natural Sciences and Mathematics________

DEPARTMENT_Geosciences__________________________

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED: GEOS 5376, GEOS5378, GEOS 5340, GEOS 5394, GEOS5396 and GEOS 5381

COURSES DELETED: GEOS 5302, GEOS 5400, GEOS 5484, GEOS 5490 and GEOS 5481

OTHER—added text on Paleomagnetism and Rock Magnetsm Laboratory

Approved: _________ John Furgeson__________________________  
School/Department
DATE: 
TO: GRADUATE DEAN 
FROM: Please indicate with an X if your department catalog copy has no changes __X____

SCHOOL_Natural Sciences and Mathematics__________

DEPARTMENT_Chemistry______________________________

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED:

COURSES DELETED:

OTHER

Approved: ____________________________
School/Department

417
DATE: 
TO:   GRADUATE DEAN 
FROM:  
Please indicate with an X if your department catalog copy has no changes _______

SCHOOL Natural Sciences and Mathematics________

DEPARTMENT MATHEMATICS______________________________

BASIS FOR CATALOG CHANGES: 

NEW PROGRAMS/DEGREES/CERTIFICATES

______________________________________________________

______________________________________________________

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED: 

______________________________________________________

COURSES DELETED: 

______________________________________________________

OTHER Deparment name, Faculty and admission requirements______________________________

Approved: ___________________________________________ 

School/Department
GRADUATE CATALOG CHANGES
CATALOG YEARS: 2012-2014

DATE:
TO:  GRADUATE DEAN
FROM:
Please indicate with an X if your department catalog copy has no changes __ _____

SCHOOL_Natural Sciences and Mathematics___________

DEPARTMENT_SME______________________________

BASIS FOR CATALOG CHANGES:

NEW PROGRAMS/DEGREES/CERTIFICATES

________________________________________________

________________________________________________

________________________________________________

Course numbering and changes in credit hour changes should be reflected in the two categories below.

NEW COURSES ADDED:

________________________________________________

COURSES DELETED:

________________________________________________

________________________________________________

OTHER____Faculty, added section about undergraduate students, Changed courses from SME to SMED

________________________________________________

Approved: _______________________________________

School/Department
Department of Mathematical Sciences

http://www.utdallas.edu/nsm/math/

Faculty

Professors: Larry P. Ammann, Michael Baron, Sam Efroovich, Matthew J. Goeckner, M. Ali Hooshyar, Wieslaw Krawcewicz, Patrick L. Odell (Emeritus), Istvan Ozsvath, Viswanath Ramakrishna, Ivor Robinson (Emeritus), Robert Serfling, Janos Turi, John W. Van Ness (Emeritus), John Wiorkowski

Associate Professors: Zalman I. Balanov, Pankaj Choudhary, Mieczyslaw Dabkowski

Assistant Professors: Yan Cao, Tobias Hagge, Quiongxia (Joanne) Song

Clinical Associate Professor: Natalia Humphreys

Research Assistant Professor: Qingwen Hu

Senior Lecturers I: David L Lewis, Paul Stanford, Bentley T Garrett,

Senior Lecturers II: Manjula Foley, Yuly Koshevnik, Joanna Robinson, William Monte Scott

Senior Lecturers I: Mohammad Akbar, Diana Cogan, Malgorzata Dabkowska, Anatoly Eydelzon, Richard Ketchersid, Brady McCary, Jigarkumar Patel, Michael Tseng

Adjunct Professors: Jose Carlos Gomez Larranage, Adolfo Sanchez Valenzuela

Affiliated Faculty: Herve Abdi (BBS), Raimund J. Ober (EE), Alain Bensoussan (SOM), Thomas Butt and Titu Andreescu (SME), John Wiorkowski (SOM)


Objectives

The Mathematical Sciences Department at The University of Texas at Dallas offers graduate study in five majors:

- Applied Mathematics
- Engineering Mathematics
- Mathematics
- Statistics
- an interdisciplinary degree in Bioinformatics and Computational Biology.

The degree programs offer students the opportunity to prepare for careers in these disciplines themselves or in any of the many other fields for which these disciplines are such indispensable tools. As other sciences develop, problems which require the use of these tools are numerous and pressing.

In addition to a wide range of courses in mathematics and statistics, the Mathematical Sciences Department offers a unique selection of courses that consider mathematical and computational aspects of engineering, biology and other scientific problems.

The Master of Science degree programs are designed for persons seeking specializations in Applied Mathematics, Engineering Mathematics, Mathematics, Statistics, or Bioinformatics and Computational Biology.

The Master of Science degree is available also for those who plan to teach mathematical sciences above the remedial level at a community college or at a college or university. The Master of Science degree is recommended as a minimum, since an earned doctorate is sometimes required.

For information concerning the Master of Arts in Teaching in Mathematics Education, designed for persons who are teaching in grades 6-12, see the Science and Mathematics Education section.
The Doctor of Philosophy degree programs cover two basic areas of concentration: Statistics and Applied Mathematics. They are designed for those who plan to pursue academic, government, financial, actuarial, or industrial careers.

Facilities

The faculty, staff and students have access to a large network of Sun workstations and servers on campus.

In addition, the Department has a classroom equipped with a cluster of 20 high-end Linux PCs that are used for instruction and special research purposes.

Admission Requirements

The University’s general admission requirements are discussed here.

Specific additional admission requirements for students in degree programs in the Department of Mathematical Sciences follow. Students lacking undergraduate prerequisites for graduate courses in their area must complete these prerequisites or receive approval from the graduate advisor and the course instructor before registering.

One of the components of a student’s academic history which is evaluated when the student is seeking admission to the graduate program is his/her performance on certain standardized tests. Since these tests are designed to indicate only the student’s potential for graduate study, they are used in conjunction with other measures of student proficiency (such as GPA, etc.) in determining the admission status of a potential graduate student. Accordingly, there is no rigid minimum cut-off score for admission to the program. Most applicants admitted to either the MS or PhD programs have GRE scores of at least 400 verbal, 700 quantitative, and 1200 combined. However, exceptions are made in some cases when other credentials are especially strong.

Higher standards prevail for applicants seeking Teaching Assistantships. However, a student with at least a Graduate Record Examination (GRE) combined score of 1050 with at least 550 on the math portion would have a reasonable probability of admission as a Master’s student, assuming that the student’s other credentials were in order. Similarly, a student with a GRE score of 1200 (with at least 650 in the quantitative portion) would have a reasonable probability of admission as a Ph.D. student, assuming that all other credentials were in order. Higher standards prevail for students seeking Teaching Assistantships.

Degree Requirements

Master of Science

The University’s general degree requirements are discussed here.

Students seeking a Master of Science in Mathematical Sciences must complete a total of 12 three-credit hour courses. In some cases, credit for 3 hours is approved for good mathematics background. The student may choose a thesis plan or a non-thesis plan. In the thesis plan, the thesis replaces two elective courses with completion of an approved thesis (six thesis hours). The thesis is
directed by a Supervising Professor and must be approved by the Head of the Mathematical Sciences Department.

Each student must earn a 3.0 minimum GPA in the courses listed for the student’s program.

**Applied Mathematics Major**

MATH 5301-5302 Elementary Analysis I and II (or equivalent)
MATH 6303 Theory of Complex Functions
MATH 6313 Numerical Analysis
MATH 6315 Ordinary Differential Equations
MATH 6318 Numerical Analysis of Differential Equations
MATH 6319-6320 Principles and Techniques in Applied Mathematics I and II
MATH 6308 Inverse Problems and their Applications
MATH 6321 Optimization
Plus two guided electives.

**Engineering Mathematics Major**

MATH 5301-5302 Elementary Analysis I and II (or equivalent)
MATH 6303 Theory of Complex Functions
MATH 6313 Numerical Analysis
MATH 6315 Ordinary Differential Equations
MATH 6318 Numerical Analysis of Differential Equations
MATH 6319-6320 Principles and Techniques in Applied Mathematics I and II
MATH 6331 Systems, Signals and Control
MATH 6305 Mathematics of Signal Processing
plus two guided electives.

**Mathematics Major**

MATH 5301-5302 Elementary Analysis I and II (or equivalent)
MATH 6303 Theory of Complex Functions
MATH 6313 Numerical Analysis
MATH 6315 Ordinary Differential Equations
MATH 6318 Numerical Analysis of Differential Equations
MATH 6301 Real Analysis
MATH 6302 Real and Functional Analysis
MATH 6306 Topology and Geometry
MATH 6311 Abstract Algebra I
plus two guided electives.

**Statistics Major**

Students seeking a Master of Science in Mathematical Sciences Mathematics with a major in Statistics must complete the following core courses:
STAT 6331 Statistical Inference I
STAT 6337-38 Statistical Methods I, II
STAT 6339 Linear Statistical Models
STAT 6341 Numerical Linear Algebra and Statistical Computing

One course from each of any two of the following sets of courses:
{STAT 6329, STAT 6343, STAT 7334} Stochastic Processes or Experimental Design or Nonparametric and Robust Statistical Methods
Students must choose remaining courses as electives approved by the Graduate Advisor for Statistics. from among the following electives:
MATH 6301, MATH 6302, MATH 6313, MATH 6331 or any 6300- or 7300-level statistics courses. Up to two of the following prerequisite 5000-level courses may be counted as electives: MATH 5301, 5302, Elementary Analysis I, II and STAT 5351, 5352 Probability and Statistics I, II.

Other Requirements

Electives must be approved by the assigned graduate advisor. Typically, electives are 6000- and 7000-level mathematical sciences courses. Courses from other disciplines may also be used upon approval.

Substitutions for required courses may be made if approved by the assigned graduate advisor. Instructors may substitute stated prerequisites for students with equivalent experience.

Master of Science in Bioinformatics and Computational Biology

Master of Science in Bioinformatics and Computational Biology (BCBM) is offered jointly by the Departments of Mathematical Sciences and Molecular and Cell Biology. This program combines coursework from the disciplines of biology, computer science, and mathematical sciences. The BCBM program seeks to answer the demand for a new breed of scientist that has fundamental understanding in the fields of biology, mathematics, statistics, and computer science. With this interdisciplinary training, these scientists will be well prepared to meet the demand and challenges that have arisen and will continue to develop in the biotechnology arena.

Faculty from the both Mathematical Sciences Department and the Molecular and Cell Biology Department participate in the Bioinformatics and Computational Biology program, with the Mathematical Sciences Department serving as the administrative unit. Both departments participate in advising students.

For the Master's degree in Bioinformatics and Computational Biology, beginning students are expected to have completed multivariate calculus, linear algebra, two semesters of general Chemistry, two semester of organic Chemistry, two semesters of general physics, programming in C/C++, and two semesters of biology. Students without the basic knowledge in one area will be required to take leveling courses.

Requirements for completing a degree in BCBM are:

Core courses:

BIO 5410 Biochemistry
BIO 5420 Molecular Biology
BIO 5381 Genomics
STAT 5351 Probability and Statistics I
STAT 5352 Probability and Statistics II
MATH 6341 Bioinformatics

Additional core courses for the Computational Biology track:
MATH 6313 Numerical Analysis
MATH 6343 Computational Biology
MATH 6345 Mathematical Methods in Medicine & Biology

Additional core courses for the Bioinformatics track:

CS 5333 Discrete Structures
CS 5343 Algorithms Analysis and Data Structures
CS 6360 Database Design

Elective: A minimum of 7 semester credit hours of elective, approved by the student's advisor. Typically, electives are 6000- and 7000-level courses in mathematical sciences, biology or computer science. Courses from other disciplines may also be used upon approval.

Doctor of Philosophy

The University's general degree requirements are discussed here.

Each Doctor of Philosophy degree program is tailored to the student. The student must arrange a course program with the guidance and approval of the graduate advisor. Adjustments can be made as the student's interests develop and a specific dissertation topic is chosen. A minimum of 75 semester hours beyond the bachelor's degree is required.

Applied Mathematics Major

MATH 6301 Real Analysis
MATH 6302 Real and Functional Analysis
MATH 6303 Theory of Complex Functions I
MATH 6306 Topology and Geometry
MATH 6311 Abstract Algebra I
MATH 6313 Numerical Analysis
MATH 6315 Ordinary Differential Equations
MATH 6316 Differential Equations
MATH 6318 Numerical Analysis of Differential Equations
MATH 6319-6320 Principles and Techniques in Applied Mathematics I and II
MATH 7313 Partial Differential and Integral Equations I
MATH 7319 Functional Analysis

Statistics Major

MATH 6301 Real Analysis
MATH 6302 Real and Functional Analysis
STAT 6331-6332 Statistical Inference I, II
STAT 6337-6338 Statistical Methods I, II
STAT 6339 Linear Statistical Models
STAT 6344 Probability Theory I
STAT 7330 Decision Theory
STAT 7331 Multivariate Analysis
STAT 7334 Nonparametric Statistics
STAT 7338 Time Series Modeling and Filtering
STAT 7345 Stochastic Processes

MATH 6303 Theory of Complex Functions I, or MATH 6313 Numerical Analysis, or MATH 6315 Ordinary Differential Equations I, or MATH 7319 Functional Analysis
Electives and Dissertation

An additional 18-24 credit hours for Applied Math and 18-24 credit hours for Statistics designed for the student’s area of specialization are taken as electives in a degree plan designed by the student and the Graduate Advisor. This plan is subject to approval by the Department Head. After completion of the first 3 or 4 academic semesters of the course program, the student must pass a Ph.D. Qualifying Examination in order to continue on to the research and dissertation phase of the Ph.D. program. Finally, a dissertation is required and must be approved by the graduate program. Areas of specialization include, for example:

- **Applied Mathematics**: applied analysis, biomathematics, differential equations, relativity, scattering theory, systems theory, signal processing.

- **Statistics**: statistical inference, applied statistics, biostatistics, statistical computing, probability, stochastic processes, linear models, time series analysis, statistical classification, multivariate analysis, nonparametric and robust statistics, asymptotic theory.

Other specializations are possible, including interdisciplinary topics. There must be available a dissertation research advisor or group of dissertation advisors willing to supervise and guide the student. A dissertation Supervising Committee should be formed in accordance with the UT Dallas policy memorandum (87-III.25-48). The dissertation may be in **Applied Mathematical Sciences** or in **Statistics** exclusively, or it may involve considerable work in an area of application.

Research

Within the **Mathematical Sciences** programs opportunities exist for work and/or research in **Applied Mathematics**, **Engineering Mathematics**, **Mathematics**, and **Statistics**. The opportunity to take course work in several of the other university programs also allows the student to prepare for interdisciplinary work. **Such coursework must be approved by the assigned graduate advisor**.

Special topics within the **Applied Mathematics** research areas include functional analysis, operator theory, differential and integral equations, optimization, numerical analysis, system theory and control with application in material and molecular sciences, inverse problems with applications in geosciences and medical sciences, relativistic cosmology, differential geometry, applications of topology to biology, mathematical logic, quantum computation and mathematical and computational biology with applications in cardiovascular physiology, neurobiology and cell biology.

Special topics within the **Statistics** research area include: probability theory, applied probability, stochastic processes, mathematical statistics, statistical inference, asymptotic theory, statistical time series analysis, Bayesian analysis, robust multivariate statistical methods, robust linear models, robust and nonparametric methods, nonparametric curve estimation, sequential analysis, statistical computing, signal processing, remote sensing, change-point problems, and spatial statistics forecasting and applications in their respective areas such as energy finance, semiconductor manufacturing, psychology, actuarial sciences, physical and medical sciences.

For a complete list of faculty and their areas of research, visit the website [www.utdallas.edu/nsm/math/faculty](http://www.utdallas.edu/nsm/math/faculty).
Master of Science in Bioinformatics and Computational Biology

The Master of Science in Bioinformatics and Computational Biology (BCBM) is offered jointly by the Departments of Mathematics and Molecular and Cell Biology. This program will combine coursework from the disciplines of biology, computer science, and mathematics. The BCBM program seeks to answer the demand for a new breed of scientist who has fundamental understanding in the fields of biology, mathematics, statistics, and computer science. With this interdisciplinary training, these scientists will be well prepared to meet the demand and challenges that have arisen and will continue to develop in the biotechnology arena.

Faculty from both Mathematics and Molecular and Cell Biology will participate in the Bioinformatics and Computational Biology program, with the Mathematics Department serving as the administrative unit. Both departments will participate in advising students.

For the Master’s degree in Bioinformatics and Computational Biology, beginning students are expected to have completed multivariate calculus, linear algebra, two semesters of general Chemistry, two semesters of organic Chemistry, two semesters of general physics, programming in C/C++, and two semesters of biology.

Requirements for completing a degree in BCBM are:

**Core courses:**

- BIO 5410 Biochemistry
- BIO 5420 Molecular Biology
- BIO 5381 Genomics
- STAT 5351 Probability and Statistics I
- STAT 5352 Probability and Statistics II
- MATH 6341 Bioinformatics

**Additional core courses for the Computational Biology track:**

- MATH 6313 Numerical Analysis
- MATH 6343 Computational Biology
- MATH 6345 Mathematical Methods in Medicine & Biology

**Additional core courses for the Bioinformatics track:**

- CS 5333 Discrete Structures
- CS 5343 Algorithms Analysis and Data Structures
- CS 6360 Database Design

**Elective:** A minimum of 7 semester credit hours of elective, approved by the student’s adviser. Typically, electives are 6000- and 7000- level courses in mathematical sciences, biology or computer science.

Courses from other disciplines may also be used upon approval.
Master of Science in Biotechnology

Faculty

The following faculty members work with and teach students in the M.S. in Biotechnology degree program:

**Professors:** Larry P. Ammann (Mathematics), Ray H. Baughman (Chemistry), Lee A. Bulla (Molecular and Cell Biology), Santosh R. D'Mello (Molecular and Cell Biology), Rockford K. Draper (Molecular and Cell Biology), Sam Efromovich (Mathematics), Donald M. Gray (Molecular and Cell Biology), Donald A. Hicks (EPPS), M. Ali Hooshyar (Mathematics), Stephen D. Levene (Molecular and Cell Biology), Betty S. Pace (Molecular and Cell Biology), Lawrence J. Reitzer (Molecular and Cell Biology), Li Zhang (Molecular and Cell Biology), Michael Q. Zhang (Molecular and Cell Biology)

**Associate Professors:** Mark C. Anderson (SOM), Gregg R. Dieckmann (Chemistry), Gail A. Breen (Molecular and Cell Biology), John G. Burr (Molecular and Cell Biology), Ovidiu Daescu (Computer Science), David L. Deeds (SOM), Ernest M. Hannig (Molecular and Cell Biology), Warren J. Goux (Chemistry), Robert L. Kieschnick (SOM), J B Lee (Electrical Engineering), Dennis L. Miller (Molecular and Cell Biology), Paul Pantano (Chemistry), Stephen Spiro (Molecular and Cell Biology)

**Assistant Professors:** Jung-Mo Anh (Chemistry), Yan Cao (Mathematics), Pankaj K. Choudhary (Mathematics), Mieczyslaw K Dabkowski (Mathematics), Wenchuang Hu (Electrical Engineering), Nirup M. Menon (SOM), Tianbing Xia (Molecular and Cell Biology), Zhenyu Xuan (Molecular and Cell Biology), Hyuntae Yoo (Molecular and Cell Biology)

**Senior Lecturers:** Mehmet Candas (Molecular and Cell Biology), Robert Marsh (Molecular and Cell Biology), Joseph C. Picken (SOM), Robert L. Robb (SOM)

Objectives

The M.S. degree in biotechnology is intended to prepare students for careers in biotechnology and biomedicine and to assist currently employed professionals in enhancing their career opportunities.

Biotechnology captures the exciting possibilities made possible by the decoding of the human genome and by the advances in bioanalytical instrumentation, and the field is projected for continued rapid growth. The M.S. in Biotechnology is designed so that students may enter the program with a wide range of prior disciplinary backgrounds, prepare for and take the four core courses, and, by choice from a wide range of approved electives, tailor the remainder of the degree program to their career opportunities. In this manner, students may develop areas of additional depth in fields such as:

- molecular and cell biology
- chemistry
- engineering and computer science
- health care policy
- management and business administration

The M.S. in Biotechnology requires 36 hours of courses, typically twelve courses of three semester hours each. Students may also elect to prepare and defend a thesis; more than 36 hours may be required for such a program.
The M.S. in Biotechnology is administered by the Department of Molecular and Cell Biology. Students seeking further information or advisement should contact the Molecular and Cell Biology Department office.

Core Courses

The core consists of four courses – BIOL 5376 Applied Bioinformatics, or CS 6325 Introduction to Bioinformatics, BIOL 5381 Genomics, BIOL 6373 Proteomics, and BIOL 6384 Biotechnology Laboratory. Students enrolled in the M.S. in Biotechnology program will have priority for enrollment in BIOL 6384. Students who can demonstrate that they have acquired the material and/or skills in a core course may petition the Committee on Biotechnology for permission to substitute an approved elective course.

Program Policies

The program is open to all students who hold a bachelors degree, although those with laboratory science, mathematics, computer science, or engineering degrees are particularly encouraged to apply. In general, students will not be admitted to the M.S. in Biotechnology program if they require more than two courses in order to be ready to take the core courses.

Every student admitted to the M.S. in Biotechnology program shall consult with the program advisor(s) and develop a mutually agreed degree plan. All requests for deviations from the degree program described in this catalog shall be discussed first with a program advisor, who will forward the request to the Committee on Biotechnology for decision.

There are no formal prerequisites for most of the core courses, and a student, after obtaining consent of the program advisor, may attempt one or more core courses. However, the level of the BIOL core courses is such that most students will want to have mastered the material in the following courses:

General Chemistry (two semesters, with lab)
Organic Chemistry (two semesters, with lab)
BIOL 2311 Introduction to Modern Biology I (with workshop)
BIOL 3361 Biochemistry or BIOL 6352 Modern Biochemistry I
BIOL 3301 Classical and Molecular Genetics or BIOL 6V31 Molecular Genetics
BIOL 3302 Eukaryotic Molecular and Cell Biology or BIOL 6356 Eukaryotic Molecular and Cell Biology

The four core courses should be taken in the following order: BIOL 5376 Applied Bioinformatics, BIOL 5381 Genomics, BIOL 6373 Proteomics, BIOL 6384 Biotechnology Laboratory. Consent of instructor is required for core courses taken out of this sequence.

BIOL 6384 Biotechnology Laboratory is a skills based course. Students must show that they have adequate laboratory skills in order to enroll in BIOL 6384.

Students who elect to prepare and defend a thesis must satisfy the M.S. thesis procedures specified by the department of their thesis supervisor.

Electives

As a general rule, any UTD graduate course that is approved by the advisor as being relevant to the student's tailored degree plan may be taken as an elective for the Biotechnology M.S.
program. Students should consult the program advisor for the current list of recommended electives.

A joint program in Bioinformatics and Computational Biology, administered through the Mathematical Sciences Department, is also available, and courses offered within that program are also available as electives.
SCHOOL OF NATURAL SCIENCES AND MATHEMATICS

The School of Natural Sciences and Mathematics houses six departments, each with graduate programs: Chemistry (M.S., Ph.D); Geosciences (M.S., Ph.D); Mathematical Sciences; Mathematics, emphasizing Applied Mathematics and Statistics (M.S., Ph.D.); Molecular and Cell Biology (M.S., Ph.D.); Physics (M.S., M.S. in Applied Physics, Ph.D.); and Science and Mathematics Education (Master of Arts in Teaching). In addition, there are two interdisciplinary degrees offered: Master of Science in BioInformatics and Computational Biology, and Master of Science in Biotechnology. Each is relatively small and thus able to provide excellent graduate student - faculty contact. However, each maintains a strong research program. Increasingly, Departments interact with each other in research, allowing interdisciplinary efforts to flourish. A number of well-funded Research Centers and Institutes are also housed in NS&M; these allow graduate students to approach real world, cutting edge research problems while working side by side with professional research staff and internationally recognized faculty. They are: the Center for Applied Biology; the Center for Lithospheric Studies; the UTD NanoTech Institute; the Center for Quantum Electronics; the Center for Sickle Cell Disease and Research; and the Center for Space Sciences.

DEGREES

BIOLOGY
Master of Science in Molecular and Cell Biology (36 hours)
Doctor of Philosophy in Molecular and Cell Biology

CHEMISTRY
Master of Science in Chemistry (30 hours)
Doctor of Philosophy in Chemistry

GEOSCIENCES
Master of Science in Geosciences (36 hours)
Master of Science in Geographic Information Sciences (30 hours)
Doctor of Philosophy in Geosciences
Doctor of Philosophy in Geospatial Information Sciences
Graduate Certificate in Remote Sensing

MATHEMATICAL SCIENCES
Master of Science in Mathematical Sciences
Mathematics – Major in Applied Mathematics (36 hours)
Mathematics – Major in Engineering Mathematics (36 hours)
Mathematics – Major in Mathematical Sciences (36 hours)
Mathematics – Major in Statistics (36 hours)
Doctor of Philosophy in Mathematical Sciences
Mathematics – Major in Applied Mathematics (36 hours)
Mathematics – Major in Statistics (36 hours)

PHYSICS
Master of Science in Applied Physics (30 hours)
Master of Science in Physics (30 hours)
Doctor of Philosophy in Physics

EDUCATION
Master of Arts in Teaching in Science Education (37 hours)
Master of Arts in Teaching in Mathematics Education (37 hours)
INTERDISCIPLINARY PROGRAMS
Master of Science in Bioinformatics and Computational Biology (36 hours)
Master of Science in Biotechnology (36 hours)
Revised Description

PHYS 5341 (SCI 5341) Astrobiology (3 semester hours) The ultimate integrated science, astrobiology brings together cutting-edge research from the fields of astrophysics, planetary science, terrestrial geosciences, and biology, to build understanding of how the history and diversity of life on our own planet relates to the possibilities for life on other worlds. This graduate-level survey course is designed to challenge participants of all backgrounds in a thoughtful and scientifically-based exploration of the young and dynamic multidisciplinary field of astrobiology. (3-0) T

SCI 5341 (PHYS 5341) Astrobiology (3 semester hours) The ultimate integrated science, astrobiology brings together cutting-edge research from the fields of astrophysics, planetary science, terrestrial geosciences, and biology, to build understanding of how the history and diversity of life on our own planet relates to the possibilities for life on other worlds. This graduate-level survey course is designed to challenge participants of all backgrounds in a thoughtful and scientifically-based exploration of the young and dynamic multidisciplinary field of astrobiology. (3-0) T

PHYS 5333 (SCI 5333) Conceptual Physics III: Atoms, Charges, and Interactions (3 semester hours) Focus is on deepening the participants' conceptual understanding of physics, emphasizing critical thinking and applications to the pre-college and undergraduate classroom. Uses inquiry-based approaches including examples of physics in the everyday world and connections to other fields of science. This third class in the Conceptual Physics series builds on concepts from SCI 5331 and SCI 5332 to explore interactions between particles of matter. Topics include inter- and intra-molecular forces, light, electricity and magnetism, and the nature of the atom. (3-1) T

SCI 5333 (PHYS 5333) Conceptual Physics III: Atoms, Charges, and Interactions (3 semester hours) Focus is on deepening the participants' conceptual understanding of physics, emphasizing critical thinking and applications to the pre-college and undergraduate classroom. Uses inquiry-based approaches including examples of physics in the everyday world and connections to other fields of science. This third class in the Conceptual Physics series builds on concepts from SCI 5331 and SCI 5332 to explore interactions between particles of matter. Topics include inter- and intra-molecular forces, light, electricity and magnetism, and the nature of the atom. (3-1) T

PHYS 5332 (SCI 5332) Conceptual Physics II: Particles and Systems (3 semester hours) Focus is on deepening the participants' conceptual understanding of physics emphasizing its applicability to the pre-college and undergraduate classroom. Uses an inquiry-based approach including examples of physics in the everyday world and connections to other fields of science. This second class in the Conceptual Physics series builds on concepts from SCI 5331 to explore transfers of energy and forces within and between systems of particles. Topics include states of matter, fluids, waves and sound, and thermodynamics. (3-0) T

SCI 5332 (PHYS 5332) Conceptual Physics II: Particles and Systems (3 semester hours) Focus is on deepening the participants' conceptual understanding of physics emphasizing its applicability to the pre-college and undergraduate classroom. Uses an inquiry-based approach including examples of physics in the everyday world and connections to other fields of science. This second class in the Conceptual
Physics series builds on concepts from SCI 5331 to explore transfers of energy and forces within and between systems of particles. Topics include states of matter, fluids, waves and sound, and thermodynamics. (3-0) T

PHYS 5331 (SCI 5331) Conceptual Physics I: Force and Motion (3 semester hours) Focus is on deepening the participants' conceptual understanding of physics, emphasizing its applicability to the pre-college and undergraduate classroom. Uses inquiry-based approaches including examples of physics in the everyday world and connections to other fields of science. Topics include foundational concepts of forces, Newton's laws, energy, and momentum. (3-0) T

SCI 5331 (PHYS 5331) Conceptual Physics I: Force and Motion (3 semester hours) Focus is on deepening the participants' conceptual understanding of physics, emphasizing its applicability to the pre-college and undergraduate classroom. Uses inquiry-based approaches including examples of physics in the everyday world and connections to other fields of science. Topics include foundational concepts of forces, Newton's laws, energy, and momentum. (3-0) T

PHYS 5327 (SCI 5327) Comparative Planetology (3 semester hours) Every world in the solar system is unique, but none more so than our own planet Earth. The course is an exploration of the astrophysical, chemical, and geological processes that have shaped each planet, moons and the myriad of rocky and icy bodies in our solar system with a special emphasis on what each tells us about Earth, and what discoveries of worlds orbiting other stars may tell us about our planetary system and home world. (3-0) T

SCI 5327 (PHYS 5327) Comparative Planetology (3 semester hours) Every world in the solar system is unique, but none more so than our own planet Earth. The course is an exploration of the astrophysical, chemical, and geological processes that have shaped each planet, moons and the myriad of rocky and icy bodies in our solar system with a special emphasis on what each tells us about Earth, and what discoveries of worlds orbiting other stars may tell us about our planetary system and home world. (3-0) T

PHYS 5319 (SCI 5326) Astronomy: Our Place in Space (3 semester hours) Focus is on developing student understanding of how our planet fits within a larger astronomical context. Topics include common misconceptions in astronomy, scale in the Solar System and beyond, phases of the Moon, seasons, navigating the night sky, our Sun as a star, space weather, properties and lifecycles of stars, galaxies, and cosmology. (3-0) T

SCI 5326 (PHYS 5319) Astronomy: Our Place in Space (3 semester hours) Focus is on developing student understanding of how our planet fits within a larger astronomical context. Topics include common misconceptions in astronomy, scale in the Solar System and beyond, phases of the Moon, seasons, navigating the night sky, our Sun as a star, space weather, properties and lifecycles of stars, galaxies, and cosmology. (3-0) T
Revised Description

BIOL 5375 Genes to Genomes (3 semester hours) is an expansive coverage of molecular genetics with emphasis on genomes rather than genes. Students will gain a new perspective on how genes function together and in concert in living cells, focusing at the genome level. Students also will learn how to study genomes, inspect genome anatomies, analyze how genomes function and determine how genomes replicate and evolve. The course is structured to involve students directly in individual topics by class discussions of research papers and reviews, the latest advances in genome science and new and innovative techniques. (3-0) Y

BIOL 5376 (BMEN 6387) [MJV 1] Applied Bioinformatics (3 semester hours) Genomic information content; data searches and multiple sequence alignment; mutations and distance-based phylogenetic analysis; genomics and gene recognition; polymorphisms and forensic applications; nucleic-acid and protein array analysis; structure prediction of biological macromolecules. Prerequisites: STAT 1342 (introductory statistics) and MATH 1325 and MATH 1326 (2 semesters of calculus). (3-0) T

BIOL 5381 Genomics (3 semester hours) Genome sequence acquisition and analysis; genomic identification; biomedical genome research; DNA microarrays and their use in applied and healthcare research. (3-0) T

BIOL 5420 Molecular Biology (4 semester hours) Genetic analysis of gene structure (mutations and their analysis, complementation, and recombination), gene expression (transcription, RNA processing, translation), and the regulation of gene expression in selected model systems (viral, prokaryotic, organellar, eukaryotic); principles of genetic engineering (cloning and recombinant DNA technology). (4-0) Y

BIOL 5430 Macromolecular Physical Chemistry (4 semester hours) Structures and properties of macromolecules, interactions with electromagnetic radiation, thermodynamics of macromolecular solutions, and transport processes. Prerequisites: MATH 2417 (calculus) and PHYS 1301 (general physics). (4-0) Y

BIOL 6121 Biotechnology I (1 semester hour) Gene cloning, nucleotide sequencing and other aspects of genetic engineering. This course has between one and five components, which will be offered sequentially and which may therefore be taken independently (with consent of instructor). (0-2) Y

BIOL 6122 Biotechnology II (1 semester hour) Gene cloning, nucleotide sequencing and other aspects of genetic engineering. This course has between one and five components, which will be offered sequentially and which may therefore be taken independently (with consent of instructor). (0-2) Y

BIOL 6123 Biotechnology III (1 semester hour) Gene cloning, nucleotide sequencing and other aspects of genetic engineering. This course has between one and five components, which will be offered sequentially and which may therefore be taken independently (with consent of instructor). (0-2) Y
BIOL 6150 Current Research in Molecular and Cell Biology (1 semester hour) Analysis of recent developments in molecular and cell biology. Students will attend presentations of current research literature. P/F grading only. May be repeated for credit (4 hours maximum). (1-0) Y

BIOL 6193 Colloquium in Molecular and Cell Biology (1 semester hour) Required for all degree students except non-thesis M.S., to be taken before a Supervising Committee is appointed. (P/F grading) (1-0) Y

BIOL 6211 Posttranscriptional Regulation of Gene Expression (2 semester hours) Emphasis on current research in regulation of gene expression involving posttranscriptional mechanisms. Topics include translational regulation of gene expression, protein and messenger RNA turnover, regulation of protein folding and localization, protein phosphorylation, and the formation of active and inactive protein complexes. (2-0) T

BIOL 6227 RNA World (2 semester hours) The nature of modern RNA suggests a prebiotic RNA world. This course will begin with a presentation of the arguments that a RNA world existed before the evolution of protein synthesis. Additional topics will include RNA evolution, the origin and evolution of introns, RNA replication, the evolution and involvement of tRNAs and rRNAs in protein synthesis, the structure and mechanism of large catalytic RNAs such as Group I and Group II introns and the RNase P RNA, the structure and mechanism of small nuclear RNAs such as hammerheads and hairpins, RNA editing, and the mechanism of telomerase. (2-0) T

BIOL 6228 Prokaryotic Gene Expression (2 semester hours) Principles of gene regulation in bacteria are discussed. The readings consist of recent developments described in the research literature. Topics will vary, but will include bacterial chromosome structure, function and structure of RNA polymerase and promoters, the mechanism of action of various repressors and activators, the coordination of gene expression in phage lambda, during nitrogen limitation, and during sporulation. (2-0) T

BIOL 6252 Current Research in Molecular Biology (2 semester hours) Recent developments in biosynthesis, structure, function and expression of nucleic acids in prokaryotes and eukaryotes. Students will participate in a critical analysis of current research publications. (P/F grading, may be repeated for credit to a maximum of 8 hours.) (2-0) S

BIOL 6335 Graduate Medical Microbiology (3 semester hours) This course exposes students to advanced concepts and principles of medical microbiology. In addition, the course will deal with mechanisms associated with disease processes, microbial virulence, the control of bacterial growth, and host responses to infection. (3-0) T

BIOL 6336 Parasitology (3 semester hours) A look at the molecular level at microorganisms that live at the expense of higher eukaryotes. Emphasis will be given to the latest scientific literature describing these important pathogenic interactions. Therapeutic treatments and preventive methods will also be covered. (3-0) T

BIOL 6337 Regulation of Gene Expression (3 semester hours) An in depth look at how the cell makes use of its genetic information, with a primary focus on the mechanisms of transcription regulation. The
course emphasizes a critical discussion of techniques and results from the recent scientific literature. Topics are taken from eukaryotic and/or prokaryotic systems and typically cover areas such as promoter organization, RNA polymerase and transcription factor structure and function, the organization and packaging of chromosomes, whole-genome analyses, and the pathways that control gene expression during growth and development. (3-0) Y

BIOL 6338 Symbiotic Interactions (3 semester hours) An in depth look, at the molecular level, of well characterized symbiotic interactions between prokaryotes and eukaryotes. This course makes use of recent scientific literature and the latest discoveries in the area of symbiosis. (3-0) R

BIOL 6340 Developmental Neurobiology (3 semester hours) The course will cover the molecular and cellular mechanisms underlying key processes in the development of the vertebrate nervous system such as neural induction, k morphogenesis of the neural tube, patterning of the brain, differentiation and migration of neurons, axon guidance, synaptogenesis and the regulation of neuronal survival. The course is designed to be interactive and will include lectures, student presentations, and discussion of important discoveries in the area. (3-0) Y

BIOL 6345 Molecular Basis of Acquired Immune Deficiency Syndrome (3 semester hours) Topics include an analysis of the molecular basis of the infection of target cells by HIV, the intracellular replication of retroviruses, with special attention given to the HIV tat and rev genes, and an analysis of the roles of the HIV accessory genes: vif, vpr, vpu and nef. The immunological response of the host to HIV is considered, as is the biological basis for the ultimate failure of the immune system to contain this virus, with attendant immune collapse. The molecular basis of a variety of existing and potential anti-retroviral therapies is considered. (3-0) Y

BIOL 6351 Cellular and Molecular Biology of the Immune System (3 semester hours) Innate and adaptive immunity. Structure and function of immunoglobulins and MHC molecules, and their role in the adaptive immune response. Function of the primary and secondary lymphoid tissues, and the role of professional antigen presenting cells. The molecular basis for the generation of diversity during cellular development of B and T lymphocytes. The role of complement in innate immunity, and details of T cell and B cell mediated immunity. (3-0) Y

BIOL 6352 Modern Biochemistry I (3 semester hours) Structure and function of proteins, including enzyme kinetics and catalytic mechanisms; structure and metabolism of carbohydrates, including oxidative phosphorylation and electron transport mechanisms. For students who have not had undergraduate biochemistry. (3-0) S

BIOL 6353 Modern Biochemistry II (3 semester hours) Continuation of BIOL 6352. Structure and metabolism of lipids, including membrane structure and function. Nitrogen metabolism: amino acids and nucleotides. Polynucleotide replication, transcription, and translation. For students who have not had undergraduate biochemistry. (3-0) Y

BIOL 6354 Microbial Physiology (3 semester hours) Microbial physiology considers the basic processes of microbes, especially those variations that are unique to microbes: energy generation, fermentations,
and other pathways specific to bacteria, cellular structure and differentiation, and bacterial responses to
the environment. (3-0) Y

BIOL 6356 Eukaryotic Molecular and Cell Biology (3 semester hours) Regulation of cellular activities in
eukaryotic cells; structural and molecular organization of eukaryotic cells; molecular basis of cell
specialization; membranes and transport. For students who have not had undergraduate cell biology.
(3-0) S

BIOL 6357 Cell Signaling (3 semester hours) This course will provide information on signal transduction
pathways controlling growth, development and diseases. Students will be required to present research
papers and discuss experimental data. (3-0) R

BIOL 6359 Medical Cell Biology for MAT (3 semester hours) Organization of cells, structure and function
of DNA and proteins, gene therapy, regenerative medicine, and the endocrine system. Designed for
students who are pursuing a MAT degree. (3-0) S

BIOL 6360 Medical Cell Biology for Biotechnology (3 semester hours) This course will explore cell
structure, the structure of DNA, mutations in DNA, gene therapy, stem cells, cell signaling, and the
immune system etc. Emphasis will be placed on understanding the cellular and molecular basis of
health and disease. For students who have not had undergraduate cell biology and/or molecular
 genetics. (3-0) S

BIOL 6373 Proteomics (BMEN 6391) [MV3](3 semester hours) Protein identification, sequencing, and
analysis of post-translational modifications by liquid chromatography/tandem mass spectrometry;
determination of protein three dimensional structure by x-ray crystallography; its use in drug design;
understanding protein interactions and function using protein chip microarrays. Prerequisite:
Undergraduate or graduate biochemistry. (3-0) T

BIOL 6384 Biotechnology Laboratory (3 semester hours) Laboratory instruction in LC/MS/MS mass
spectral analysis of protein sequence, ICAT (isotope coded affinity tag) reagents, and MS analysis of
cellular proteomes, PCR and DNA Sequencing, and DNA microarray analysis; fluorescence
and confocal microscopy and fluorescence activated cell sorting. Instructor may require students to
demonstrate adequate laboratory skills in order to enroll. (1-2) Y

BIOL 6385 (BMEN 6389[MV4]) Computational Biology (3 semester hours) Using
computational and statistical methods to analyze biological data, and perform
mathematical modeling and computational simulation techniques to understand the
biological systems. The course introduces methods in DNA/protein motif discovery,
gene prediction, high-throughput sequencing and microarray data analysis,
computational modeling gene expression regulation, and biological pathway and
network analysis. Prerequisite: (BMEN 6374 and BMEN 6387) or BIOL 5376 or instructor
permission. (3-0) Y

BIOL 63__ (BMEN 6390) [MV5]Metabolic Pathways for Translational Medicine (3 semester
hours) This course will provide extensive discussion of major metabolic pathways in
human and other experimental models of human diseases with emphasis on biochemical understanding, roles and effects of the pathways in the entire cellular network, and potential application to medicine. Prerequisites: BMEN 6374 or instructor permission. (3-0) Y

BIOL 7450 Research Seminar in Molecular and Cell Biology (4 semester hours) Presentation and analysis of ongoing independent research projects, accompanied by evaluation of recent related literature. (P/F grading. May be repeated for credit.) (4-0) S

BIOL 5V00 Topics in Biological Sciences (1-6 semester hours) May be repeated for credit to a maximum of 9 hours. ([1-6]-0) Y

BIOL 5V01 Topics in Biological Sciences (1-6 semester hours) Includes a laboratory component. May be repeated for credit to a maximum of 9 hours (1-[0-10]) Y

BIOL 5V95 Advanced Topics in Molecular and Cell Biology (Individual instruction) (1-6 semester hours) May be repeated for credit with permission of the graduate advisor. ([1-6]-0) Y

BIOL 6V00 Topics in Biological Sciences (1-6 semester hours) May be repeated for credit to a maximum of 9 hours. ([1-6]-0) Y

BIOL 6V01 Topics in Biological Sciences (1-6 semester hours) Includes a laboratory component. May be repeated for credit to a maximum of 9 hours. (1-[0-10]) Y

BIOL 6V02 The Art of Scientific Presentation (1-2 semester hours) Students learn how to give an effective seminar by reading scientific articles on a central theme in biology and then delivering a presentation, first to their classmates, followed by another presentation to the Molecular and Cell Biology faculty and students. While learning the focused theme, students acquire skill sets in critical reading of scientific literature and oral presentation. Required for all Ph.D. students. (P/F grading) ([1-2]-0) Y

BIOL 6V03 Research in Molecular and Cell Biology (1-9 semester hours) (May be repeated for credit.) ([1-9]-0) S

BIOL 6V04 Biology Seminar (1-6 semester hours) May be repeated for credit to a maximum of 6 hours. ([1-6]-0) Y

BIOL 6V19 Topics in Biochemistry (2-5 semester hours) May be repeated for credit to a maximum of 9 hours. ([2-5]-0) Y

BIOL 6V28 DNA Replication, Recombination, and Repair (2-3 semester hours) Focuses on central aspects of DNA enzymology and metabolism. The mechanisms of DNA replication, recombination, and repair are fundamental to understanding many principles of molecular biology, genetics, molecular medicine, and evolution. This course is mechanistically oriented and will provide a strong working knowledge of these processes through an extensive overview, which includes discussions of some of the most recent publications on these topics. ([2-3]-0) T
BIOL 6V29 Topics in Molecular Biology (2-5 semester hours) May be repeated for credit to a maximum of 9 hours. ([2-5]-0) Y

BIOL 6V30 Biopolymers (2-4 semester hours) Structure and properties of biologically important macromolecules. ([2-4]-0) R

BIOL 6V31 Molecular Genetics (3-4 semester hours) A graduate survey of the phenomena and mechanisms of heredity, its cytological and molecular basis, with a focus on bacterial and model eukaryotic systems. Topics will include fundamentals of Mendelian Genetics, genetic recombination and genetic linkage, as well as gene structure and replication, gene expression and the transfer of genetic information, mutation and mutagenesis, and applications of recombinant DNA techniques to genetic analysis. For students who have not had undergraduate genetics. ([3-4]-0) Y

BIOL 6V32 Electron Microscopy (2-3 semester hours) Theory and practice of electron microscopy. The laboratory section includes specimen preparation, operation of the electron microscope, and darkroom work. ([1-2]-2) R

BIOL 6V33 Biomolecular Structure (2-3 semester hours) This course includes a discussion of DNA structures, protein structures, the folding and stability of domains, and the binding of proteins to DNA. Methods used to investigate the relation of structure to function are emphasized. Types of protein structures whose structure and function are considered include transcription factors, proteinases, membrane proteins, proteins in signal transduction, proteins on the immune system, and engineered proteins. ([2-3]-0) Y

BIOL 6V34 Quorum Sensing (2-3 semester hours) The focus of this course is the analysis of quorum sensing and its role in pathogenic and symbiotic interactions. This course makes use of recent scientific literature and the latest discoveries in the area of population density dependent gene expression. ([2-3]-0) R

BIOL 6V39 Topics in Biophysics (2-5 semester hours) May be repeated for credit to a maximum of 9 hours. ([2-5]-0) T


BIOL 6V42 Membrane Biology I (2-4 semester hours) Membrane traffic in the secretory pathway. Topics covered include insertion of proteins into membranes, the mechanism of vesicular traffic from the rough endoplasmic reticulum through the Golgi apparatus to the plasma membrane, protein sorting during secretion and membrane biogenesis. ([2-4]-0) T
BIOL 6V43 Membrane Biology II (2-4 semester hours) Membrane traffic in the endocytic pathway. Topics covered include the structure, function and sorting of membrane receptors, the formation and function of clathrin-coated pits, membrane recycling and the biogenesis of endosomes and lysosomes. ([2-4]-0) R

BIOL 6V44 Animal Cell Culture (2-4 semester hours) Theory and practice of the growth of animal cells in culture. Topics include: the isolation and characterization of mammalian cell mutants, chromosome mapping, the use of somatic cell hybrids to investigate eukaryotic gene regulation, gene transfer into animal cells, gene targeting and production of gene knockouts. ([2-4]-0) R

BIOL 6V49 Topics in Cell Biology (2-5 semester hours) May be repeated for credit to a maximum of 9 hours. ([2-5]-0) Y

BIOL 6V50 Internship in Biotechnology/Biomedicine (1-6 semester hours). Provides faculty supervision for a student’s internship. Internships must be in an area relevant to the student’s coursework for the MS in Biotechnology. ([1-6] - 0) R

BIOL 6V92 Readings in Molecular and Cell Biology (3-9 semester hours) ([3-9]-0) Y

BIOL 6V95 Advanced Topics in Molecular and Cell Biology (Individual Instruction) (1-6 semester hours) May be repeated for credit with permission of the graduate advisor. ([1-6]-0) Y

BIOL 6V98 Thesis (3-9 semester hours) (May be repeated for credit.) ([3-9]-0) S

BIOL 7V10 Research Seminar in Biochemistry (2-5 semester hours) Presentation and analysis of ongoing independent research projects, accompanied by evaluation of recent related literature. (P/F grading. May be repeated for credit.) ([2-5]-0) Y

BIOL 7V20 Research Seminar in Molecular Biology (2-5 semester hours) Presentation and analysis of ongoing independent research projects, accompanied by evaluation of recent related literature. (P/F grading. May be repeated for credit.) ([2-5]-0) Y

BIOL 7V30 Research Seminar in Biophysics (2-5 semester hours) Presentation and analysis of ongoing independent research projects, accompanied by evaluation of recent related literature. (P/F grading. May be repeated for credit.) ([2-5]-0) Y

BIOL 7V40 Research Seminar in Cell Biology (2-5 semester hours) Presentation and analysis of ongoing independent research projects, accompanied by evaluation of recent related literature. (P/F grading, may be repeated for credit.) ([2-5]-0) Y

BIOL 8V01 Research in Molecular and Cell Biology (1-9 semester hours) (May be repeated for credit.) ([1-9]-0) S

BIOL 8V50 Internship in Biotechnology/Biomedicine (3-6 semester hours) Provides faculty supervision for a student's internship. Internships must be in an area relevant to the student's coursework for the MS in Biotechnology. ([1-6]-0) R
BIOL 8V99 Dissertation (1-9 semester hours) (May be repeated for credit.) ([1-9]-0) S
Revised Description

CHEM 5314 Advanced Physical Chemistry (3 semester hours) Modern concepts from the three pillars of physical chemistry: quantum mechanics, thermodynamics/ statistical mechanics, and kinetics. Prerequisite: CHEM 3322 or equivalent. (3-0) Y

CHEM 5341 (MSEN 5341) Advanced Inorganic Chemistry I (3 semester hours) Physical inorganic chemistry addressing topics in structure and bonding, symmetry, acids and bases, coordination chemistry and spectroscopy. Prerequisite: CHEM 3341, or consent of instructor. (3-0) Y

CHEM 5343 Advanced Inorganic Chemistry II (3 semester hours) Builds on CHEM 5341 to explore the synthesis and reactivity of inorganic/organometallic molecules. Practical applications will be demonstrated by discussing industrial processes catalyzed by metal complexes. Prerequisite: CHEM 5341. (3-0) R

CHEM 5357 Process Analytical Chemistry (3 semester hours) An introduction to process analytical chemistry as practiced in the chemical process and other industries. Includes process control, instrumental techniques, sample and conditioning systems, project integration, and chemometrics. Prerequisite: CHEM 5355 or consent of instructor. (3-0) R

CHEM 6100 Chemistry Department Seminar (1 semester hour) A weekly seminar that features accounts of current research by outstanding investigators in chemistry and related scientific areas. Course not eligible for audit. Prerequisite: graduate standing in chemistry. (May be repeated for credit.) (1 -0) S

CHEM 6317 Industrial Chemistry (3 semester hours) Survey of chemical industry including commodities, chemical processes, scale-up and process development, environmental concerns, patents. Study of chemical engineering principles. (3-0) R

CHEM 6361 Physical Biochemistry (3 semester hours) Protein structure, fundamental metabolism, structures and properties of macromolecules, interactions with electromagnetic radiation, thermodynamics of macromolecular solutions, transport processes, and other topics. Prerequisite: Consent of instructor. (3-0) R

CHEM 6372 Materials Science (3 semester hours) Relationship between the properties and behavior of materials and their internal structure. Treatment of the mechanical, thermal and electrical properties of crystalline and amorphous solids including metals, ceramics, synthetic polymers and composites. Prerequisite: Consent of instructor. (3-0) R

CHEM 6383 Computational Chemistry (3 semester hours) The application of computer techniques to the understanding of molecular structure and dynamics: force field, semi-empirical, ab initio, and molecular dynamics techniques. Information retrieval from large structural databases and use of this information. Prerequisite: Consent of instructor. (3-0) R

CHEM 6389 Scientific Literature and Communication Skills (3 semester hours) Acquaints students with techniques for searching the scientific literature using hard copy and electronic approaches. Introduces
students to important steps in creating and improving technical communications in both written and oral formats. (3-0) Y

CHEM 8398 Thesis (3 semester hours) May be repeated for credit. (3-0) S

CHEM 8399 Dissertation (3 semester hours) May be repeated for credit. (3-0) S

CHEM 8981 Research Practicum (9 semester hours) Offers training of students in the direct solution of chemical problems through use of the literature; analysis; and the design, construction and performance of experiments. Method of instruction will be primarily individual direction, questioning, and feedback by the responsible faculty member and/or industrial scientist. Intended for Ph.D. students. May be repeated for credit. (9-0) S

CHEM 5V84 Special Topics in Chemistry/M.A.T. (1-9 semester hours) Various special topics in chemistry of interest to teachers will be discussed. (May be repeated for credit.) (May not be counted as credit toward the M.S. or Ph.D. degrees.) ([1-9]-0) R

CHEM 5V87 Independent Study in Chemistry (1-9 semester hours) In conjunction with a member of the Chemistry faculty, the student will develop a paper or project which emphasizes the ways in which chemical knowledge is confirmed and extended or which leads to improved instruction in chemistry. (May not be counted as credit toward the M.S. or Ph.D. degrees.) May be repeated for credit (9 hours maximum). ([1-9]-0) R

CHEM 6V19 Special Topics in Physical Chemistry (1-9 semester hours) Subject matter will vary and the course may be repeated for credit. Examples of topics include spectroscopy, quantum mechanics, computational chemistry, and surface chemistry. Prerequisite: CHEM 5314 or consent of instructor. ([1-9]-0) R

CHEM 6V39 Special Topics in Organic Chemistry (1-9 semester hours) Subject matter will vary and the course may be repeated for credit. Examples of topics include organic photochemistry, organometallic chemistry, homogeneous and heterogeneous catalysis, solid state, polymer chemistry, and advanced NMR techniques. Prerequisite: CHEM 5331 or consent of instructor. ([1-9]-0) R

CHEM 6V49 Special Topics in Inorganic Chemistry (1-9 semester hours) Subject matter will vary and the course may be repeated for credit. Examples of topics include physical methods of inorganic chemistry, and bioinorganic chemistry. Prerequisite: CHEM 5341 or consent of instructor. ([1-9]-0) R

CHEM 6V59 Special Topics in Analytical Chemistry (1-9 semester hours) Subject matter will vary. Examples of topics include NMR, X-ray crystallography. May be repeated to a maximum of 9 hours. Prerequisite: CHEM 5355 or consent of instructor. ([1-9]-0) R

CHEM 6V69 Special Topics in Biochemistry (1-9 semester hours) Subject matter will vary. May be repeated for credit (9 hours maximum). Prerequisite: Consent of instructor. ([1-9]-0) R
CHEM 6V79 Special Topics in Materials Chemistry (1-9 semester hours) Subject matter will vary. Examples of topics include polymers, membrane technology, zeolites, nanoscience and technology. May be repeated to a maximum of 9 hours. Prerequisite: Consent of instructor. ([1-9]-0) R

CHEM 6V84 Special Topics in Applied Chemistry (1-9 semester hours) Subject matter will vary and may be repeated for credit to a maximum of 9 hours. Prerequisite: Consent of instructor. ([1-9]-0) R

CHEM 8V91 Research in Chemistry (2-9 semester hours) May be repeated for credit. ([2-9]-0) S

CHEM 8V19 Dissertation (1-9 semester hours) May be repeated for credit. ([1-9]-0) S
Revised

GEOS 5100 Introductory Graduate Seminar (1 semester hour) Presentations of current research by the Geosciences faculty members and orientation for new graduate students. (1-0) Y

GEOS 5300 Cooperative Geosciences (3 semester hours) An industrial internship in which a student gains real-world industry experience through temporary employment at a geoscience company or government agency. The activity may be in any area of geosciences, and must have a faculty monitor to receive UTD credit. The topic must be approved in advance by the faculty monitor. The student is required to provide regular updates on progress and a final project report for evaluation. Grading is P/F. Designed as an Individual Instruction Course. May be repeated for credit. (3-0) R

GEOS 5301 Geology of the Metroplex (3 semester hours) Lithologic constituents, stratigraphic history, and geologic environments of the greater Dallas-Fort Worth metropolitan area. Special emphasis is given to the Cretaceous sediments that underlie Tarrant and Dallas Counties, with a secondary focus on the broader geologic environment. Three to four 1-day (Saturday) field trips. (3-0) T

GEOS 5302 Ocean Science (3 semester hours) Overview of geological, chemical, physical and biological aspects of oceanography, marine resources and environmental concerns. This course is for students seeking the M.A.T. degree. This course cannot be used to satisfy degree requirements of geosciences majors. (3-0) R

GEOS 5303 Computing for Geoscientists (3 semester hours) Application of computer techniques in solving geological problems. Includes instruction in the MATLAB (r) software, plotting facilities, introductory matrix theory, and statistics. Students will examine problems in basic statistical analysis, graphics, and mapping of geological and geophysical data. Development of programming skills in areas directly related to thesis and dissertation research is encouraged. Serves as introduction to UNIX and the U.T.-Dallas computing facility. (3-0) Y

GEOS 5304 Geosciences Field Trip (3 semester hours) A study of the geology of a selected region within North America and the Caribbean followed by a field trip to the selected region in order to study the relationships of geologic features within that region. This course can only be used to partially satisfy the field experience requirement and breadth requirement for geosciences majors. Field trip course. (May be repeated for credit.) (3-0) Y

GEOS 5305 Petroleum Geosciences (3 semester hours) Survey of geological and geophysical methods used to find and produce oil and gas, and to perform economic and risk analyses that are crucial in reserve estimates and prospect evaluation. The course is designed to provide the student with the necessary knowledge to become an effective contributor in the oil and gas industry. Students are expected to have the equivalent of a BS or BA degree in Geosciences. (3-0) R

GEOS 5306 Data Analysis for Geoscientists (3 semester hours) Advanced statistical techniques with important applications in Earth science, beyond the level of GEOS 5303. Topics include robust statistics, exploratory data analysis, surface modeling and contouring, Kriging, analysis of point patterns and
directional data. Factor, cluster and time series analysis may also be considered. Emphasis will be on application and theoretical understanding. Prerequisite: GEOS 5303 or equivalent. (3-0) R

GEOS 5310 Hydrogeology (3 semester hours) Introduction to the principles and practice of ground- and surface-water hydrology. Study of the principles of occurrence and geologic controls of groundwater, physical flow and geochemistry of waters. Design and use of procedures for typical hydrologic investigations. (3-0) Y

GEOS 5311 Applied Groundwater Modeling (3 semester hours) This course is designed to provide students with hands-on experience using the most commonly-applied groundwater flow and transport models (e.g. modflow/modpath, MT3D/RT3D, GMS). Practical application of the models and design of modeling studies is emphasized, modeling theory and mathematics is de-emphasized. (3-0) Y

GEOS 5313 Applied Surface Water Modeling (3 semester hours) The development and application of watershed models emphasizing runoff, stormflow and stormwater management design. This class combines aspects of GIS, remote sensing and surface water hydrology from an applied modeling perspective, using commonly applied computer models (e.g. Rational Method, TR-20, HEC-1) to address drainage problems related to urbanization and land-use changes. (3-0) T


GEOS 5319 Principles of Environmental Health (3 semester hour) Introduction to epidemiology and biostatistics. U.S. regulatory agencies. Ethics, risk assessment and public policy. Diseases spread by food and water. Lung diseases associated with particles and fibers. Health significance of exposures to arsenic, cadmium, chromium, lead and mercury compounds and to chemical substances - solvents, PCBs, PBBs, dioxins, and dibenzofurans. Ionizing radiation. Health implications of global warming (3-0) T

GEOS 5322 GPS (Global Positioning System) Satellite Surveying Techniques (3 semester hours) The theory and application of satellite positioning utilizing the Global Positioning System Code and phase methodology in field observations, data processing and analysis of Differential GPS, high accuracy static and other rapid measurements, in real time and with post-processing. (3-0) Y

GEOS 5324 3D Data Capture and Ground Lidar (3 semester hours) The theory and applications of 3D data acquisition in the field for geosciences and non-geosciences studies. The basics and applications of field digital mapping with emphasis on RTK GPS, laser range finder, and terrestrial scanners (ground lidar). 3D digital photorealistic modeling with field photogrammetry and digital cameras. (3-0) T
GEOS 5330 Geospatial Applications in Earth Science (3 semester hours) Application of geospatial techniques in solving earth science problems. Emphasis will be placed on the use of the Global Positioning System in survey and geodetic applications, airborne and ground-based LiDAR (Light Detection and Ranging), and digital acquisition and analysis techniques. Case histories will be considered and supplemented by hands-on exercises using a broad range of digital acquisition and analysis equipment and tools. (3-0) Y

GEOS 5352 Geochemistry of Igneous Rocks (3 semester hours) Chemical composition of igneous rocks and the major processes that control the distribution of the elements in silicate melts. Topics to be covered include the composition of the earth, the structure of silicate melts, trace element partitioning between crystals and melts, and the use of major and trace elements in deciphering the formation and evolution of silicate melts. (3-0) T

GEOS 5356 Isotope Geochemistry (3 semester hours) Synthesis of the elements in stars and chronologies for the galaxy. Isotope systematics in meteorites, abundance anomalies, cosmogenic nuclides, and solar system chronologies. The development of the modern multi-collector mass spectrometer. Mass fractionation laws, double spiking techniques, and high precision isotope ratio measurements. Isotope geochemistry of noble gases and radiogenic nuclides as pertaining to the composition and history of the mantle and crust. Application of stable isotopes to studies of diagenesis and water-rock interaction, groundwater management, paleoceanography and secular variations in the isotopic composition of seawater. High-temperature and, where applicable, low-temperature water-rock interactions pertaining to the origin of igneous rocks. The evolution of radiogenic Sr in sea water. Radiometric age dating as applied to the solution of geologic problems. (3-0) R

GEOS 5373 Physical Properties of Rocks (3 semester hours) This course provides an understanding of the physical phenomena and processes that determine properties of rocks and soils. Topics include porosity and permeability; surface energy, roughness, and absorption; percolation, fractures and heterogeneous media; problems of scale; mechanical behavior of dry and fluid saturated rocks; elasticity; viscoelasticity, and plasticity; acoustic, electric, dielectric, thermal, and magnetic properties. The approach is practical, with emphasis on understanding why rocks behave as they do, and how simple physical principles can be used to predict rock and soil properties under various conditions. Suitable for graduate students in any branch of geosciences who wish to obtain a broad introduction to physical properties as they pertain to lab and field measurements, and are applied to reservoir, engineering, and environmental problems. (3-0) R

GEOS 5375 Tectonics (3 semester hours) Study of the earth’s present tectonic environments, including geochemistry, sedimentology, and structure; application of present tectonic environments towards the reconstruction of ancient crustal events; consideration of temporal aspects of crustal evolution. Oral and written presentations required. (3-0) Y

GEOS 5380 Seismic Interpretation (3 semester hours) Seismic reflection profiling as it is used to map the distribution of sedimentary layers and faults in the subsurface. Special emphasis is given to applications in hydrocarbon exploration. Extensive use is made of software processing packages. (3-0) T
GEOS 5387 Applied Geophysics (3 semester hours) This is the Geosciences core graduate course in geophysics. Emphasis is on the application of geophysical methods to the solution of geological problems and the connection between geophysical measurements and the physical properties of Earth materials. Topics include seismology; gravity; magnetics; electromagnetics; resistivity; ground penetrating radar; and well logging. Case histories will be considered in addition to the technical aspects of data collection, processing and interpretation. (3-0) Y

GEOS 5395 Satellite Geophysics and Applications (3 semester hours) This course concerns both the theory and application of observing geophysical fields from space-borne platforms. The observation procedures including orbital mechanics are introduced and signal propagation, errors and uncertainties will be addressed. Concepts of current satellite missions such as radar and laser altimetry, space gravimetry and magnetometry, and synthetic aperture radar will be discussed. Applications of satellite geophysical observations in tectonics, geodynamics, ocean and ice surface monitoring, hydrology, and terrain modeling will be introduced through student projects and presentations. (3-0) Y

GEOS 5400 Earth Science (4 semester hours) A review of Earth processes as a whole: time and geology; igneous and sedimentary processes and products; metamorphism; structure; evolution of continents and oceans. This course is open only to those students whose major undergraduate study was in subjects other than geology. Laboratory and field trip course. (3-3) R

GEOS 5441 Stratigraphy and Sedimentology (4 semester hours) Origin and classification of sedimentary rocks, reconstruction of ancient environments, and basic principles of modern stratigraphic nomenclature. Concepts of space and time in the rock record and methods of stratigraphic correlation. Integrated stratigraphic techniques. Study of sedimentary rocks in hand specimen and outcrop. Laboratory course. Field trips. Course is directed to graduate students not majoring in geology and is meant to provide a practical overview of sedimentary geology. Permission of instructor is required to take this course. (3-3) Y

GEOS 5470 Structural Geology (4 semester hours) Examination of stress and strain, failure criteria, fault analysis, rheologic properties of geologic materials, fold analysis, and a survey of major structural provinces in North America, with supplemental readings. Laboratory includes map interpretation, standard graphical techniques, and use of stereographic projections, oral presentations, and problem sets. Laboratory and field trip course. Prerequisite: PHYS 1301 or equivalent. (3-3) Y

GEOS 5481 Digital Geophysical Signal Processing (4 semester hours) Principles of the analysis of geophysical signals in both time and space. Includes integral transforms, spectral analysis, linear filter theory and deconvolution techniques. Computer applications are emphasized. Laboratory course. Prerequisite: GEOS 5303 or equivalent, may be taken concurrently. (3-3) R

GEOS 5484 Near-Surface Geophysical Imaging (4 semester hours) This course concerns the theoretical and practical aspects of geophysical data collection. The planning and execution of small-scale surveys, of the type employed in engineering, groundwater and environmental site evaluations, is featured. Techniques covered include both refraction and reflection seismology and both low and high frequency, single and multi-channel ground-penetrating radar. Advantage is taken of both the similarities and
complementary behaviors of seismic and radar waves. An integration, of both seismic and radar data is emphasized in interpretation. A background in calculus (MATH 2417) and general physics (PHYS 1301) is required. Permission of instructor is required. (3-3) T

GEOS 5490 Applied Geophysics (4 semester hours) The theoretical basis and practical aspects of the collection, processing and interpretation of geophysical data. A broad range of methods will be discussed including: gravity, magnetic, electrical and seismic. Applications to geologic problems at a variety of scales from the near surface to continental will be considered. A laboratory will feature geophysical data acquisition and interpretation for a specific local geological target. (3-3) Y

GEOS 6382 Geophysical Inversion Theory (3 semester hours) Theoretical and practical aspects of fitting mathematical models to data in geophysics. Topics covered include the inversion of both discrete systems and integral equations, for linear and non-linear relationships between data and parameters. Particular attention is paid to assessment of model accuracy and uniqueness. Prerequisites: Advanced calculus (MATH 2419) and linear algebra (MATH 2418) or equivalent. (3-0) R

GEOS 6392 Reflection Seismology (3 semester hours) Theoretical and practical aspects of seismic reflection data acquisition and processing. Includes the wave equation, the convolutional model, coded sources, the array response, velocity estimation, statics, filtering, pre- and post-stack migration, and direct and indirect detection of hydrocarbons, VSPs, AVO and 3-D processing. Prerequisites: GEOS 5481, and GEOS 5392 or equivalent. (3-0) R

GEOS 6393 Computational Seismology (3 semester hours) Principles of parallel computing with applications to seismology. Includes overviews of current computer cluster and switch architectures, writing and debugging parallel code, characterization of machine performance, fast Fourier transforms, Radon transforms, solution of matrix and wave equations. Laboratory course. Prerequisites: GEOS 5303, GEOS 5481, and any numerical analysis course. (2-3) R

GEOS 6395 Seismic Modeling (3 semester hours) Theory and application of the major techniques for computation of synthetic seismograms. Topics include asymptotic ray theory, spectral and slowness methods, finite differences, finite elements, Kirchhoff, and boundary integral methods. Readings will be drawn from the literature. Prerequisites: GEOS 5392 and any two graduate seismology courses. (3-0) R

GEOS 6396 Seismic Inversion (3 semester hours) Theory and application of the major techniques for inversion of seismic data. Topics include linear and nonlinear matrix methods, Wiechert-Herglotz integration, extremal inversion, migration, wavefield imaging of body and surface waves, and tomography, imaging of VSPs, and Born inversion. Readings will be drawn from the literature. Prerequisite: Any two graduate seismology courses. (3-0) R

GEOS 7110 Workshop in Environmental Geosciences (1 semester hour) Discussion of current topics in environmental geoscience, including student and faculty research, scientific literature, and advanced techniques in environmental geosciences. (1-0) R
GEOS 7170 Workshop in Structure/Tectonics (1 semester hour) Presentation and discussion of current research with emphasis on problems, techniques, and recent literature. (May be repeated for credit.) (1-0) Y

GEOS 7190 Workshop in Seismology (1 semester hour) Informal presentation and discussion of current research of graduate students and faculty, of new computing equipment and software, and of current research literature. (Pass/Fail grading only. May be repeated for credit.) (1-0) S

GEOS 8398 Thesis (3 semester hours) May be repeated for credit. (3-0) S

GEOS 8399 Dissertation (3 semester hours) May be repeated for credit. (3-0) S

GEOS 5V08 Special Topics in Geosciences (1-4 semester hours) Courses dealing with a variety of topics including new techniques and specific problems in rapidly developing areas of the science. Hours vary depending on course requirements. May be repeated for credit as topics vary. ([1-3]-[0-3]) R

GEOS 7V00 Research and Literature Seminar (1 or 2 semester hours) Presentations and critical analysis of independent work and of the recent literature. Pass/Fail only. (May be repeated for credit.) ([1-2]-0) Y

GEOS 8V10 Research in Hydrogeology-Environmental Geosciences (1-9 semester hours) May be repeated for credit. ([1-9]-0) S

GEOS 8V21 Research in Remote Sensing, GIS and GPS (1-9 semester hours) May repeat for credit. ([1-9]-0) S

GEOS 8V50 Research in Geochemistry (1-9 semester hours) (May be repeated for credit.) ([1-9]-0) S

GEOS 8V70 Research in Structural Geology-Tectonics (1-9 semester hours) May be repeated for credit. ([1-9]-0) S

GEOS 8V80 Research in Geophysics (1-9 semester hours) May be repeated for credit. ([1-9]-0) S

GEOS 8V90 Research in Seismology (1-9 semester hours) May repeat for credit. ([1-9]-0) S

GEOS 8V99 Dissertation (1-9 semester hours) May be repeated for credit. ([1-9]-0) S
Revised \textbf{Current} Description

MATH 5301 Elementary Analysis I (3 semester hours) Real numbers, differentiation, integration, metric spaces, basic point set topology, power series, analytic functions, Cauchy's theorem. Prerequisite: Multivariable calculus (MATH 2451\textsuperscript{2421}) and theoretical concept of calculus (MATH 3310) or equivalent. (3-0) Y

MATH 5302 Elementary Analysis II (3 semester hours) Continuation of MATH 5301. Prerequisite: MATH 5301. (3-0) Y

MATH 5304 Applied Mathematical Analysis for Non-Majors (3 semester hours) Techniques of mathematical analysis applicable to the social, behavioral and management sciences. Differential and integral calculus of one and many variables. No credit allowed to mathematical sciences majors. Prerequisite: MATH 1314 (College Algebra). (3-1) S

MATH 5305 Higher Geometry for Teachers (3 semester hours) Topics in modern Euclidean geometry including distinguished points of a triangle, circles including the nine-point circle, cross ratio, transformations; introduction to projective geometry. No credit allowed to mathematical sciences majors except those in M.A.T. program. Prerequisite: Junior-level mathematics course. (3-0) T

MATH 5306 Non-Euclidean Geometry for Teachers (3 semester hours) The relations among elliptic, Euclidean and hyperbolic geometries, Euclidean models of elliptic and hyperbolic geometries. No credit allowed to mathematical sciences majors except those in M.A.T. program. Prerequisite: Junior-level mathematics course. (3-0) T

MATH 5313 Modern Algebra for Teachers (3 semester hours) Study of modern algebra involving groups, rings, fields and Galois Theory. No credit allowed to mathematical sciences majors except those in M.A.T. program. Prerequisite: Junior-level mathematics course. (3-0) R

MATH 5390 Topics in Mathematics (3 semester hours) May be repeated for credit as topics vary (9 hours maximum). (3-0) R

MATH 6301 Real Analysis (3 semester hours) Measure theory and integration. Hilbert and Banach spaces. Prerequisites: Undergraduate analysis course (e.g., MATH 4301-2) or MATH 5301-2\textsuperscript{5302}; undergraduate course in linear algebra (MATH 2418) or equivalent. (3-0) Y

MATH 6302 Real and Functional Analysis (3 semester hours) Continuation of MATH 6301, Hilbert and Banach space techniques. Prerequisite: MATH 6301. (3-0) Y

MATH 6303 Theory of Complex Functions I (3 semester hours) Complex integration, Cauchy's theorem, calculus of residues, power series, entire functions, Riemann mapping theorems. Riemann surfaces, conformal mapping with applications. Prerequisite: Undergraduate analysis (e.g., MATH 4301-2). (3-0) Y

MATH 6304 Theory of Complex Functions II (3 semester hours) Continuation of MATH 6303. Prerequisite: MATH 6303. (3-0) T
MATH 6305 Mathematics of Signal Processing (3 semester hours) The course is devoted to a mathematical foundation of some of the key topics in signal processing: discrete and continuous signal transforms, analysis and design of filters (e.g., lattice filters), least square methods and algorithms. Prerequisites: Undergraduate analysis (MATH 4301-2) or MATH 5301-2, undergraduate course in linear algebra (MATH 2418), undergraduate course in complex variables (MATH 3379) or equivalent. (3-0) T

MATH 6306 Topology and Geometry (3 semester hours) Topics in topology, differential geometry and their applications to areas such as biological sciences and engineering. Prerequisite: Undergraduate analysis (MATH 4301-2) or MATH 5301-2. (3-0) T

MATH 6307 Wavelets and Their Applications (3 semester hours) An introduction to windowed Fourier and continuous wavelet transforms, generalized frames, discrete wavelet frames, multiresolution analysis, Daubechies' orthogonal wavelet bases, and their applications in partial differential equations and signal processing. Prerequisite: Undergraduate linear algebra (MATH 2418) and differential equations (MATH 2420) or equivalent. (3-0) T

MATH 6308 Inverse Problems and Applications (3 semester hours) Exact and approximate methods of nondestructive inference, such as tomography and inverse scattering theory in one and several dimensions, with applications in physical and biomedical sciences and engineering. Prerequisite: Undergraduate linear algebra (MATH 2418) and differential equations (MATH 2420) or equivalent. (3-0) T

MATH 6311 Abstract Algebra I (3 semester hours) Basic properties of groups, rings, fields, and modules. Topics selected from group representations, Galois Theory, local rings, algebraic number theory, classical ideal theory, basic homological algebra, and elementary algebraic geometry. Prerequisite: Undergraduate algebra course (MATH 3311) or equivalent. (3-0) Y

MATH 6313 Numerical Analysis (3 semester hours) A study of numerical methods including the numerical solution of non-linear equations, linear systems of equations, interpolation, iterative methods and approximation by polynomials. Prerequisites: Knowledge of a high-level programming language, linear algebra (MATH 2418) and multivariable calculus (MATH 2451). (3-0) Y

MATH 6315 Ordinary Differential Equations (3 semester hours) The study of ordinary differential equations with emphasis on existence, uniqueness, linear systems, boundary value problems, and stability. Prerequisites: Undergraduate course in linear algebra (MATH 2418) or equivalent; undergraduate analysis (MATH 4301-2) or Math 5301/5302); and undergraduate course in ordinary differential equations (MATH 2420). (3-0) Y

MATH 6316 Differential Equations (3 semester hours) Continuation of MATH 6315 and an introduction to partial differential equations. Prerequisite: MATH 6315. (3-0) T

MATH 6318 Numerical Analysis of Differential Equations (3 semester hours) Practical and theoretical aspects of numerical methods for both ordinary and partial differential equations are discussed. Topics
selected from: initial value problems for ordinary differential equations, two-point boundary value problems, projection methods, finite difference, finite element and boundary element approximations for partial differential equations. Prerequisites: MATH 6313 or equivalent. (3-0) T

MATH 6319 Principles and Techniques in Applied Mathematics I (3 semester hours) Mathematical methods usually used in applied sciences and engineering. Topics chosen from advanced linear algebra space theory; Hilbert spaces; positivity; quaternions; fixed point theorems and applications to differential and integral equations; Fourier analysis spectral theorem; distributions; convexity; Sobolev spaces; the Fourier transforms; complex function theory, calculus of residues; exact, approximate and asymptotic solutions to Laplace, heat and wave equations, Eikonal and WKB methods; and special functions. Prerequisite: Undergraduate linear algebra (MATH 2418), and differential equations (MATH 2420) or equivalent. (3-0) T

MATH 6320 Principles and Techniques in Applied Mathematics II (3 semester hours) Continuation of Math 6319. Prerequisite: MATH 6319. (3-0) T

MATH 6321 Optimization (3 semester hours) Introduction to theoretical and practical concepts of optimization in finite and infinite dimensional setting, least-squares estimation, optimization of functionals, local and global theory of constrained optimization, iterative methods. Prerequisites: Undergraduate ordinary differential equations (MATH 2420) and linear algebra (MATH 2418). (3-0) T

MATH 6331 Linear Systems and Signals (3 semester hours) Basic principles of systems and control theory: state space representations, stability, observableness, controllability, realization theory, transfer functions, feedback. Prerequisites: Undergraduate course in linear algebra (MATH 2418) and undergraduate analysis course (MATH 4301/4302) or (MATH 5301/5302). (3-0) T

MATH 6332 Advanced Control (3 semester hours) Theoretical and practical aspects of modern control methodologies in state space and frequency domain, in particular LQG and H-infinity control: coprime factorizations, internal stability, Kalman filter, optimal regulator, robust control, sensitivity minimization, loop shaping, model reduction. Prerequisite: MATH 6331. (3-0) T

MATH 6336 Nonlinear Control Systems (3 semester hours) Differential geometric tools, input-output maps, feedback linearization, nonlinear observers, input-output linearization, output tracking, and regulation. Prerequisites: MATH 6315 and MATH 6331. (3-0) T

MATH 6339 Control of Distributed Parameter Systems (3 semester hours) Theoretical and technical issues for control of distributed parameter systems in the context of linear infinite dimensional dynamical systems: Evolution equations and control on Euclidean space, elements of functional analysis, semigroups of linear operators, abstract evolution equations, control of linear infinite dimensional dynamical systems, approximation techniques. Prerequisites: Undergraduate course in partial differential equations (MATH 4362) and analysis (MATH 4301). (3-0) T

MATH 6341 Bioinformatics (3 semester hours) Fundamental mathematical and algorithmic theory behind current bioinformatics techniques are covered and implemented. They include hidden Markov
models, dynamic programming, genetic algorithms, simulated annealing, neural networks, cluster analysis, and information theory. Prerequisites: Knowledge of Unix and a high level programming language. (3-0) T

MATH 6343 Computational Biology (3 semester hours) Mathematical and computation methods and techniques to analyze and understand problems in molecular biology are covered. Topics include sequence homology and alignment, genetic mapping, protein folding, and DNA computing. Prerequisite: MATH 2418 or equivalent. (3-0) T

MATH 6345 Mathematical Methods in Medicine and Biology (3 semester hours) Introduction to the use of mathematical techniques in solving biologically important problems. Some examples of topics that might be covered are biochemical reactions, ion channels, cellular signaling mechanisms, kidney function, and nerve impulse propagation. Prerequisites: MATH 2417, MATH 2419. (MATH 2420 recommended). (3-0) T

MATH 6364 Stochastic Calculus in Finance (3 semester hours) Brownian Motion, Ito Calculus, Feynman-Kac formula and an outline of Stochastic Control, Black Scholes Analysis, Transaction Costs, Optimal Portfolio Investment. Prerequisites: STAT 4351 or equivalent, and MATH 2451 or equivalent. (3-0) T

MATH 6390 Topics in Mathematics (3 semester hours) May be repeated for credit as topics vary (9 hours maximum). (3-0) R

MATH 7313 Partial Differential and Integral Equations I (3 semester hours) Topics include theory of partial differential and integral equations. Classical and modern solution techniques to linear and nonlinear partial differential equations and boundary value problems. Introduction to the theory of Sobolev spaces. Prerequisite: MATH 6316 recommended. (3-0) T

MATH 7314 Partial Differential and Integral Equations II (3 semester hours) Continuation of MATH 7313. General theory of partial differential and integral equations, with emphasis on existence, uniqueness and qualitative properties of solutions. Prerequisite: MATH 7313. (3-0) T

MATH 7316 Wave Propagation with Applications (3 semester hours) Study of the wave equation in one, two and three dimensions, the Helmholtz equation, associated Green's functions, asymptotic techniques for solving the propagation problems with applications in physical and biomedical sciences and engineering. Prerequisites: MATH 6303, MATH 6318. (3-0) T

MATH 7319 Functional Analysis (3 semester hours) Elements of operator theory, spectral theory, topics in Banach and operator algebras. Prerequisites: MATH 6301/6302. MATH 6303 recommended. (3-0) T

MATH 7390 Topics in Mathematics (3 semester hours) May be repeated for credit as topics vary (9 hours maximum). (3-0) R

MATH 6V81 Special Topics in Mathematics (1-9 semester hours) Topics vary from semester to semester. May be repeated for credit as topics vary. ((1-9)-0) S
MATH 8V02 Individual Instruction in Mathematics (1-6 semester hours) Topics may vary. May be repeated for credit. Topics may vary. ([1-6]-0) S

MATH 8V04 Topics in Mathematics (1-6 semester hours) May be repeated for credit. ([1-6]-0) R

MATH 8V07 Research (1-9 semester hours) Open to students with advanced standing subject to approval of the Graduate Advisor. May be repeated for credit. ([1-9]-0) S

MATH 8V98 Thesis (3-9 semester hours) May be repeated for credit. ([3-9]-0) S

MATH 8V99 Dissertation (1-9 semester hours) May be repeated for credit. ([1-9]-0) S

STAT 5191 Statistical Computing Packages (1 semester hour) Introduction to use of major statistical packages such as SAS, BMD, and Minitab. Based primarily on self-study materials. No credit allowed to mathematical sciences majors. Prerequisite: One semester of statistics. (1-0) S

STAT 5351 Probability and Statistics I (3 semester hours) A mathematical treatment of probability theory. Random variables, distributions, conditioning, expectations, special distributions and the central limit theorem. The theory is illustrated by numerous examples. This is a basic course in probability and uses calculus extensively. Prerequisite: Multivariable calculus (MATH 2451). (3-0) T

STAT 5352 Probability and Statistics II (3 semester hours) Theory and methods of statistical inference. Sampling, estimation, confidence intervals, hypothesis testing, analysis of variance, and regression with applications. Prerequisite: STAT 5351. (3-0) T

STAT 5390 Topics in Statistics (3 semester hours) May be repeated for credit as topics vary (9 hours maximum). (3-0) R

STAT 6326 Sampling Theory (3 semester hours) Introduction to survey sampling theory and methods. Topics include simple random, stratified, systematic, cluster, unequal probability, multistage, spatial sampling designs. Estimation of means, proportions, variances, ratios, and other parameters for a finite population, optimal allocation, detectability, multiplicity. Prerequisite: STAT 5351. (3-0) T

STAT 6329 Applied Probability and Stochastic Processes (3 semester hours) Basic random processes used in stochastic modeling, including Poisson, Gaussian, and Markov processes with an introduction to renewal processes and queuing theory. Measure theory not required. Prerequisite: STAT 5351. (3-0) T

STAT 6331 Statistical Inference I (3 semester hours) Introduction to fundamental concepts and methods of statistical modeling and decision making. Basic distribution theory. Decision theory. Exponential families of models. Sufficiency. Estimation and hypothesis testing. Likelihood methods and optimality. Large sample approximations. Prerequisites: STAT 5352 or equivalent and MATH 5302 or equivalent. (3-0) Y

STAT 6332 Statistical Inference II (3 semester hours) Elementary and advanced asymptotic methods, treating sample quantiles, U-statistics, differentiable statistical functions, and influence curves, the MLE, L-statistics, M-statistics, and the bootstrap. Advanced aspects of statistical inference, likelihood-based

STAT 6337 Advanced Statistical Methods I (3 semester hours) Statistical methods most often used in the analysis of data. Study of statistical models, including multiple regression, nonlinear regression, stepwise regression, regression diagnostics, balanced and unbalanced analysis of variance, analysis of covariance and log-linear analysis of multiway contingency tables. Prerequisites: MATH 2418 and STAT 5352 or STAT 6331. (3-0) T

STAT 6338 Advanced Statistical Methods II (3 semester hours) This course continues STAT 6337. Topics include one way and multiway analysis of variance, fixed, random, and mixed effects models, nested designs, repeated measures designs, fractional designs, Latin squares, diagnostics, and implementation of statistical methods in SAS. Prerequisite: STAT 6337. (3-0) T

STAT 6339 Linear Statistical Models (3 semester hours) Vectors of random variables, multivariate normal distribution, quadratic forms. Theoretical treatment of general linear models, including the Gauss-Markov theorem, estimation, hypotheses testing, and polynomial regression. Introduction to the analysis of variance and analysis of covariance. Prerequisites: STAT 6331 and MATH 2418 or equivalent. (3-0) T

STAT 6341 Numerical Linear Algebra and Statistical Computing (3 semester hours) A study of computational methods used in statistics. Topics to be covered include the simulation of stochastic processes, numerical linear algebra, QR decomposition and least squares regression, SV decomposition and multivariate data, statistical programming languages, and graphical methods. Prerequisite: STAT 5352 or STAT 6337. (3-0) T

STAT 6343 Experimental Design (3 semester hours) This course focuses on the planning, development, implementation and analysis of data collected under controlled experimental conditions. Repeated measures designs, Graeco-Latin square designs, randomized block designs, balanced incomplete block designs, partially balanced incomplete block designs, fractional replication and confounding. The course requires substantial use of computer facilities. Prerequisite: STAT 6338 or equivalent knowledge of fixed and random effects crossed ANOVA designs. (3-0) T


STAT 6347 Applied Time Series Analysis (3 semester hours) Methods and theory for the analysis of data collected over time. The course covers techniques commonly used in both the frequency domain
(harmonic analysis) and the time domain (autoregressive, moving average models). Prerequisite: STAT 6337 or equivalent. (3-0) T

STAT 6348 Applied Multivariate Analysis (3 semester hours) Currently The most frequently used techniques of multivariate analysis. Topics include Hotelling's T test, the multivariate linear model, MANOVA, principal components analysis, discriminant analysis and factor analysis, cluster analysis, classification problems, graphics and visualization tools. Emphasis on computations with R or other softwares. Additional topics may be covered based on current research of the instructor. Prerequisite: STAT 5352 or STAT 6331. (3-0) T

STAT 6365 Statistical Quality and Process Control (3 semester hours) Statistical methodology of monitoring, testing, and improving the quality of goods and services is developed at the intermediate level. Topics include control charts for variables and attributes, assessment of process stability and capability, construction and interpretation of CUSUM, moving average charts and V-masks, optimal sampling techniques, and evaluation of operating-characteristic curves and average time to detection. Prerequisite: STAT 5351 or equivalent. (3-0) T

STAT 6390 Topics in Statistics (3 semester hours) May be repeated for credit as topics vary (9 hours maximum). Topics selected from but not limited to choices such as spatial statics, nonparametric curve estimation, functional data analysis, statistical learning and data mining, actuarial science, sampling theory, statistical quality and process control, sequential analysis, survival analysis, longitudinal data analysis, categorical data analysis, and clinical trials, for example. (3-0) R

STAT 7330 Decision Theory and Bayesian Inference (3 semester hours) Statistical decision theory and Bayesian inference are developed at an intermediate mathematical level. Prerequisites: MATH 5302 or equivalent and STAT 6331. (3-0) T

STAT 7331 Multivariate Analysis (3 semester hours) Vector space foundations and geometric considerations. The multivariate normal distribution: properties, estimation, and hypothesis testing. Multivariate t-test. Classification problems. The Wishart distribution. General linear hypothesis and MANOVA. Principal components, canonical correlations, factor analysis. Multivariate nonparametric and robust methods. Prerequisite: STAT 6331 or equivalent. (3-0) T


STAT 7338 Time Series Modeling and Filtering (3 semester hours) Theory of correlated observations observed sequentially in time. Stationary processes, Autocovariance function. ARMA models. Optimal forecasting in time domain and in frequency domain. Spectral representation. Estimation and power
spectra, stationary model selection. Nonstationary time series models. fitting, correlation analysis and regression. Prerequisite: STAT 6331 or equivalent. (3-0) T

STAT 7345 Advanced Probability and Stochastic Processes (3 semester hours) Taught as a continuation of STAT 6344. Martingales, Kolmogorov’s existence theorem, random walk, Markov chains, the Poisson process, the general birth and death process, other Markov processes, renewal processes, Brownian motion and diffusion, stationary processes, and the empirical process. Prerequisite: STAT 6344. (3-0) T

STAT 7390 Topics in Statistics (3 semester hours) May be repeated for credit as topics vary (9 hours maximum). Topics selected from but not limited to choices such as spatial statistics, nonparametric curve estimation, functional data analysis, statistical learning and data mining, actuarial science, sampling theory, statistical quality and process control, sequential analysis, survival analysis, longitudinal data analysis, categorical data analysis, and clinical trials, for example. (3-0) R

STAT 6V99 Statistical Consulting (1-3 semester hours) Practical experience in collaboration with individuals who are working on problems which are amenable to statistical analysis. Problem formulation, statistical abstraction of the problem, and analysis of the data. Course may be repeated but a maximum of three hours may be counted toward the requirements for the master's degree. Prerequisite: Consent of instructor. ([1-3]-0) T

STAT 8V02 Individual Instruction in Statistics (1-6 semester hours) May be repeated for credit. ([1-6]-0) S

STAT 8V03 Advanced Topics in Statistics (1-6 semester hours) May be repeated for credit. ([1-6]-0) R

STAT 8V07 Research in Statistics (1-9 semester hours) Open to students with advanced standing, subject to approval of the graduate adviser. May be repeated for credit. ([1-9]-0) S

STAT 8V98 Thesis (3-9 semester hours) May be repeated for credit. ([3-9]-0) S

STAT 8V99 Dissertation (1-9 semester hours) May be repeated for credit. ([1-9]-0) S

STAT 7348 Multivariate Analysis (3 semester hours) Vector space foundations and geometric considerations. Multivariate normal distribution. Hotelling’s T test. Wishart distribution. Multivariate linear hypotheses. Dimension Reduction. Principal components. Factor analysis. Classification and clustering problems. Additional topics may be covered based on current research of the instructor. Emphasis on theoretical underpinnings of methods. Prerequisite: STAT 6331 or equivalent. (3-0) T
Revised Description

MTHE 5321 Problems Using Algebra (3 semester hours) Analysis of the relationship of "school algebra" to "abstract algebra," solving non-routine problems involving these concepts and adapting them for classroom use. The role of functions, the relationships between the verbal, visual, and symbolic representations of algebraic concepts, and the role of technology in learning algebra will be emphasized. No credit allowed to mathematical sciences majors except those in M.A.T. program. Prerequisite: A junior-level mathematics course. (3-0) T

MTHE 5322 Problems Using Geometry (3 semester hours) Analysis of the relationship of "school geometry" to "college geometry," solving non-routine problems involving these concepts, and adapting them for classroom use. Topics include the van Hiele levels of reasoning, geometric transformations, the role of conjecture and proof, applications of geometry, and the role of technology in learning geometry. No credit allowed to mathematical sciences majors except those in M.A.T. program. Prerequisite: A junior-level mathematics course. (3-0) T

MTHE 5323 Problems Using Pre-calculus (3 semester hours) Analysis of the relationship of pre-calculus to real analysis, solving non-routine problems involving these concepts and adapting them for classroom use. The role of functions will be emphasized. Topics include functions [polynomial, rational, trigonometric, exponential, logarithmic], measurement trigonometry, vector functions [parametric equations], conic sections, real-world applications, and the role of technology in learning pre-calculus. No credit allowed to mathematical sciences majors except those in M.A.T. program. Prerequisite: A junior-level mathematics course. (3-0) T

MTHE 5324 Problems Using Discrete Mathematics (3 semester hours)

Selected concepts in discrete mathematics. Solving non-routine problems and adapting them for classroom use and incorporating topics from discrete mathematics into existing high school courses. Topics include number theory, combinatorics, probability, and applications of matrices. Appropriate technology will be used. No credit allowed to mathematical sciences majors except those in M.A.T. program. Prerequisite: A junior-level mathematics course. (3-0) T

MTHE 5325 Problems Using Mathematical Modeling (3 semester hours) Selected concepts in mathematical modeling. Solving non-routine problems and adapting them for classroom use and incorporating topics from mathematical modeling into existing high school courses. Topics include the construction, use, and analysis of empirical and analytical mathematical models, using modeling tools such as functions, curve fitting, simulation, matrices, difference and differential equations, finite graph theory. Appropriate technology will be used. No credit allowed to mathematical sciences majors except those in M.A.T. program. Prerequisite: A junior-level mathematics course. (3-0) T

MTHE 5326 Problems Using Statistics and Probability (3 semester hours) Selected concepts in statistics and probability. Solving non-routine problems and adapting them for classroom use and incorporating
topics from statistics, probability, and data analysis into existing high school courses. Topics include describing patterns in data and their variability, sampling and experimental design, exploring random phenomena using probability and simulation, and statistical inference. Appropriate technology will be used. No credit allowed to mathematical sciences majors except those in M.A.T. program. Prerequisite: A junior-level mathematics course. (3-0) T

MTHE 5V06 Special Topics in Mathematics (1-3 semester hours) (May be repeated for credit to a maximum of 9 hours) (May not be counted as credits toward the M.S. or Ph.D. degrees in Mathematical Sciences.) ([1-3]-0) R

MTHE 5V09 Math Ed Independent Study (1-6 semester hours) -Faculty-supervised independent study in mathematics education and mathematics education research. May be repeated for credit regardless of topics (12 hours maximum). ([1-6]-0) (Y)
PHYS 5301 Mathematical Methods of Physics I (3 semester hours) Vector analysis (and index notation); orthogonal coordinates; Sturm-Liouville theory; Legendre & Bessel functions; integral transforms; differential equations (including Green functions). (3-0) Y

PHYS 5302 Mathematical Methods of Physics II (3 semester hours) Functions of complex variable (including contour integration and the residue theorem); tensor analysis; Gamma and Beta functions; probability. (3-0) Y

PHYS 5303 Mathematical Methods of Physics III (3 semester hours) Continuation and extension of topics from PHYS 5301 and 5302 with applications related to problems and techniques encountered in physical sciences. (3-0) R

PHYS 5305 Monte Carlo Simulation Method and its Application (3 semester hours) An introductory course on the method of Monte Carlo simulation of physical events. This course covers the generation of 0-1 random number, simulation of arbitrary distributions, modeling, simulation and statistical analysis of experimental activities in physics research and engineering studies. As a comparison the concepts and applications of the Neural Networks will be discussed. Prerequisites: Calculus (MATH 2417), Statistics (STAT 1342), C (CS 3335) or FORTRAN programming languages. (3-0) T

PHYS 5311 Classical Mechanics (3 semester hours) A course that aims to provide intensive training in problem solving. Rigorous survey of Newtonian mechanics of systems, including its relativity principle and applications to cosmology; the ellipsoid of inertia and its eigenstructure, with applications, Poinso't's theorem; Euler's equations, spinning tops; Lagrangian and Hamiltonian formalism with applications; chaos, small oscillations, velocity dependent potentials, Lagrange multipliers and corresponding constraint forces, canonical transformations, Lagrange and Poisson brackets, Hamilton-Jacobi theory. (3-0) Y

PHYS 5313 Statistical Physics (3 semester hours) Phase space, distribution functions and density matrices; microcanonical, canonical and grand canonical ensembles; partition functions; principle of maximum entropy; thermodynamic potentials and laws of thermodynamics; classical and quantum ideal gases; non-interacting magnetic moments; phonons and specific heat of solids; degenerate electron gas, its specific heat and magnetism; statistics of carriers in semiconductors; Bose-Einstein condensation; Black-body radiation; Boltzmann transport equation and H-theorem; relaxation time and conductivity; Brownian motion, random walks and Langevin equation; Einstein's relation; fluctuations in ideal gases; linear response and fluctuation-dissipation theorem; virial and cluster expansions, van der Waals equation of state; Poisson-Boltzmann and Thomas-Fermi equations; phases, phase diagrams and phase transitions of the first and second order; lattice spin models; ordering, order parameters and broken symmetries; Mean-field theory of ferromagnetism; Landau and Ginzburg-Landau theories; elements of modern theory of critical phenomena. (3-0) Y

PHYS 5314 Applied Numerical Methods (3 semester hours) Core course for Applied Physics Concentration. A hands-on approach to the development and use of computational tools in solving
problems routinely encountered in upper level applied physics and engineering. Main topics include curve fitting and regression analysis, significance tests, principles of numerical modeling, verification and validation of numerical algorithms, and nonlinear model building. Examples from real world applications will be presented and discussed to illustrate the appropriate use of numerical techniques. Prerequisites: PHYS 5301 or equivalent, and proficiency in a programming language. (3-0) Y

PHYS 5315 Scientific Computing (3 semester hours) An introduction to computational methods for solving systems of ordinary and partial differential equations using numerical techniques. Prerequisite or co-requisite: PHYS 5301. (3-0) Y

PHYS 5317 Atoms, Molecules and Solids I (3 semester hours) Core course for Applied Physics Concentration. Fundamental physical description of microsystems starting with the need for quantum mechanics and proceeding through the application of quantum mechanics to atomic systems. Emphasis will be on a physical understanding of the principles which apply to technologically important devices. Computer simulations will be used to focus the student on the important physical principals and not on detailed exact solutions to differential equations. Topics covered include: justification for quantum mechanics, application of quantum mechanics to one-electron problems, application to multi-electron problems in atomic systems. Prerequisites: MATH 2451, PHYS 2325 and PHYS 2326 or PHYS 2327. (3-0) Y

PHYS 5318 Atoms, Molecules and Solids II (3 semester hours) Core course for Applied Physics Concentration. Application of quantum mechanics to molecules and solids. Topics in solids include optical, thermal, magnetic and electric properties, impurity doping and its effects on electronic properties, superconductivity, and surface effects. Various devices, such as transistors, FETs, quantum wells, detectors and lasers will also be discussed. Prerequisite: PHYS 5317, or equivalent. (3-0) R

PHYS 5319 (SCI 5326) Astronomy: Our Place in Space (3 semester hours) Focus is on developing student understanding of how our planet fits within a larger astronomical context. Topics include common misconceptions in astronomy, scale in the Solar System and beyond, phases of the Moon, seasons, navigating the night sky, our Sun as a star, space weather, properties and lifecycles of stars, galaxies, and cosmology. (3-0) T

PHYS 5320 Electromagnetism I (3 semester hours) Electrostatic boundary value problems, uniqueness theorems, method of images, Green's functions, multipole potentials, Legendre polynomials and spherical harmonics, dielectric and magnetic materials, magnetostatics, time-varying field and Maxwell's equations, energy and momentum of the field, Lienard-Wiechert potentials, electromagnetic radiation, polarization, refraction and reflection at plane interfaces. (3-0) Y

PHYS 5321 Experimental Operation and Data Collection Using Personal Computers (3 semester hours) Computer interfacing to physical experiments using high level interface languages and environments. The student will have the opportunity to learn how to develop data acquisition software using LabView and LabWindows/CVI as well as how to write drivers to interface these languages to devices over the general purpose interface bus (GPIB). A laboratory is provided for hands-on training in these devices. (3-0) R
PHYS 5322 Electromagnetism II (3 semester hours) Fields and potentials, Gauge transformations and the wave equation. Electromagnetic waves in unbounded media - non-dispersive and dispersive media. Boundary conditions at interfaces. Solutions to the wave equation in rectangular cylindrical and spherical coordinates. Electromagnetic waves in bonded media - waveguides and resonant cavities. Radiating systems - electric and magnetic dipole radiation, electric quadruple radiation. Fundamentals of scattering and scalar diffraction. Lorentz transformation and covariant forms for Maxwell's equations. Radiation from moving charges - Synchrotron, Cherenkov and Bremstrahlung Radiation. Prerequisite: PHYS 5320 or equivalent. (3-0) Y

PHYS 5323 Virtual Instrumentation with Biomedical Clinical and Healthcare Applications (3 semester hours) The application of the graphical programming environment of LabView will be demonstrated with examples related to the health care industry. Examples will be provided to highlight the use of the personal computer as a virtual instrument in the clinical and laboratory environment. A laboratory is provided for hands-on training to augment the lecture. (3-0) R

PHYS 5351 Basic Aspects and Practical Applications of Spectroscopy (3 semester hours) Atomic and molecular spectroscopy has played a pivotal role in our understanding of atomic structure and in the formulation of quantum mechanics. The numerous and rapidly growing field of spectroscopic applications spans many disciplines. Topics included in course: atomic structure; spin-orbit interactions and coupling; influence of applied fields; molecular bands, vibrations and rotations; selection rules and intensities. Laboratory exercises focus on acquisition and interpretation of spectroscopic signatures from active plasmas and on spectroscopic techniques suitable for surface analysis. (2-3) R

PHYS 5367 Photonic Devices (3 semester hours) Basic principles of Photophysics of Condensed Matter with application to devices. Topics covered include photonic crystals, PBG systems, low threshold lasers, photonic switches, super-prisms and super-lenses. Photodetectors and photocells. (3-0) R

PHYS 5372 Solid State Devices (3 semester hours) Basic concepts of solid state physics with application to devices. Topics covered include semiconductor homojunctions and heterojunctions, low dimensional physics, one and two dimensional electron gases, hot electron systems, semiconductor lasers, field effect and heterojunction transistors, microwave diodes and infrared and solar devices. Prerequisite: PHYS 5318. (3-0) R

PHYS 5381 Space Science (3 semester hours) Introduction to the dynamics of the middle and upper atmospheres, ionospheres and magnetospheres of the earth and planets and the interplanetary medium. Topics include: turbulence and diffusion, photochemistry, aurorae and airglow, space weather and the global electric circuit. (3-0) R

PHYS 5382 Space Science Instrumentation (3 semester hours) Design, testing and operational criteria for space flight instrumentation including retarding potential analyzers, drift meters, neutral and ion mass spectrometers, auroral particle spectrometers, fast ion mass spectrometers, Langmuir probes, and optical spectrometers; ground support equipment; microprocessor design and operations. (3-0) R
PHYS 5385 Natural And Anthropogenic Effects on The Atmosphere (3 semester hours) An examination of the physical, chemical and electrical effects on the atmosphere and clouds due to varying solar photon and solar wind inputs; and of the physical and chemical effects on ozone and atmospheric temperature following anthropogenic release of CFC's and greenhouse gases into the atmosphere. Suitable for Science Education and other non-physics majors. (3-0) R

PHYS 5391 Relativity I (3 semester hours) Mach's principle and the abolition of absolute space; the principle of relativity; the principle of equivalence; basic cosmology; four-vector calculus; special relativistic kinematics, optics, mechanics, and electromagnetism; basic ideas of general relativity. (3-0) T

PHYS 5392 Relativity II (3 semester hours) Tensor calculus and Riemannian geometry; mathematical foundation of general relativity; the crucial tests; fundamentals of theoretical relativistic cosmology; the Friedmann model universes; comparison with observation. (Normally follows PHYS 5391.) (3-0) T

PHYS 5395 Cosmology (3 semester hours) The course is an overview of contemporary cosmology including: cosmological models of the universe and their parameters; large scale structure of the universe; dark matter; cosmological probes and techniques such as gravitational lensing, cosmic microwave background radiation, and supernova searches; very early stages of the universe; dark energy and recent cosmic acceleration. (3-0) T

PHYS 6300 Quantum Mechanics I (3 semester hours) Dirac formalism, kets, bras, operators and position, momentum, and matrix representations, change of basis, Stern-Gerlach experiment, observables and uncertainty principle, translations, wave functions, time evolution, the Schrodinger and Heisenberg pictures, simple harmonic oscillator, wave equation, WKB approximation, rotations, angular momentum, spin, Clebsch-Gordan coefficients, perturbation theory, variational methods. Prerequisite: PHYS 5311 or consent of instructor. (3-0) Y

PHYS 6301 Quantum Mechanics II (3 semester hours) Non-relativistic many-particle systems and their second quantization description with creation and annihilation operators; Interactions and Hartree-Fock approximation, quasi-particles; attraction of fermions and superconductivity; repulsion of e bosons and super fluidity; lattice systems, classical fields and canonical quantization of wave equations; free electromagnetic field, gauge and quantization: photons; coherent states; Interaction of light with atoms and condensed systems: emission, absorption and scattering; vacuum fluctuations and Casimir force; elements of relativistic quantum mechanics: Klein-Gordon and Dirac equations; particles and antiparticles; spin-orbit coupling; fine structure of the hydrogen atom; micro-causality and spin-statistics theorem; non-relativistic scattering theory: scattering amplitudes, phase shifts, cross-section and optical theorem; Born series; inelastic and resonance scattering; perturbative analysis of the interacting fields: Time evolution and interaction representation, S-matrix and Feynman diagrams; simple scattering processes; Dyson's equation, self-energy and renormalization. Prerequisite: PHYS 6300. (3-0) Y

PHYS 6302 Quantum Mechanics III (3 semester hours) Advanced topics in quantum mechanics. Prerequisite: PHYS 6300 and 6301 (3-0) R
PHYS 6303 Applications of Group Theory In Physics (3 semester hours) Group representation theory and selected applications in atomic, molecular and elementary-particle physics. Survey of abstract group theory and matrix representations of SU(2) and the rotation group, group theory and special functions, the role of group theory in the calculation of energy levels, matrix elements and selection rules, Abelian and non-Abelian gauge field theories, the Dirac equation, representations of SU(3), and the Standard Model of elementary-particle physics. Prerequisite: PHYS 5301. (3-0) R

PHYS 6313 Elementary Particles (3 semester hours) Elementary particles and their interaction; classification of elementary particles; fermions and bosons; particles and antiparticles; leptons and hadrons; mesons and baryons; stable particles and resonances; hadrons as composites of quarks and anti-quarks; fundamental interactions and fields; electromagnetic, gravitational, weak and strong interactions; conservation laws in fundamental interactions; parity, isospin, strangeness, G-parity; helicity and chirality; charge conjugation and time reversal; strong reflection and CPT theorem; gauge invariance; quarks and gluons; discovery of c, b and t quarks and the W+ and Z0 particles; recent discoveries. (Normally follows PHYS 6300 or 6301.) (3-0) T

PHYS 6314 High Energy Physics (3 semester hours) Electromagnetic and nuclear interactions of particles with matter; particle detectors; accelerators and colliding beam machines; invariance principles and conservation laws; hadron-hadron interactions; static quark model of hadrons; weak interactions; lepton-quark interactions; the parton model of hadrons; fundamental interactions and their unification; generalized gauge invariance; the Weinberg-Salam Model and its experimental tests: quantum chromodynamics; quark-quark interactions; grand unification theories; proton decay, magnetic monopoles, neutrino oscillations and cosmological aspects; supersymmetries. (3-0) R

PHYS 6339 Special Topics In Quantum Electronics (3 semester hours) Topics vary from semester to semester. (May be repeated for credit to a maximum of 9 hours.) (3-0) R

PHYS 6341 Nuclear Physics I: The Principles of Nuclear Physics (3 semester hours) Atomic physics; atomic spectra, x-rays and atomic structure. The constitution of the nucleus; isotopes, natural radioactivity, artificial nuclear disintegration and artificial radioactivity; alpha-, beta-, and gamma-decay; nuclear reactions, nuclear forces and nuclear structure. Nuclear models, neutron physics and nuclear fission. (3-0) R

PHYS 6342 Nuclear Physics II: Physics and Measurement Of Nuclear Radiations (3 semester hours) Interaction of nuclear radiation with matter; electromagnetic interaction of electrons and photons; nuclear interactions. Operation and construction of counters and particle track detectors; electronic data acquisition and analysis systems. Statistical evaluation of experimental data. (3-0) R

PHYS 6349 Special Topics In High Energy Physics (3 semester hours) Topics vary from semester to semester. (May be repeated for credit to a maximum of 9 hours.) (3-0) R

PHYS 6353 Atomic and Molecular Processes (3 semester hours) Study of theory and experimental methods applied to elastic scattering, excitation and ionization of atoms and molecules by electron and ion impact, electron attachment and detachment, and charge transfer processes. (3-0) R
PHYS 6369 Special Topics in Optics (3 semester hours) Topics vary from semester to semester. (May be repeated for credit to a maximum of 9 hours.) (3-0) R

PHYS 6372 Physical Materials Science (3 semester hours) Advanced concepts of Materials Science. New directions in fabrication routes and materials design, such as biologically-inspired routes to electronic materials. Advanced materials and device characterization. Prerequisite: PHYS 5376 or equivalent. (3-0) R


PHYS 6379 Special Topics in Solid State Physics (3 semester hours) Topics vary from semester to semester. (May be repeated for credit to a maximum of 9 hours.) (3-0) R

PHYS 6388 Ionospheric Electrodynamics (3 semester hours) Generation of electric fields in the earth's ionosphere. The role of internal dynamos and external generators from the interaction of the earth with the solar wind. Satellite and ground-based observations of ionospheric phenomena such as ExB drift, the polar wind and plasma instabilities. Prerequisites: PHYS 5320, PHYS 6383. (3-0) R

PHYS 6389 Special Topics in Space Physics (3 semester hours) Topics will vary from semester to semester. (May be repeated for credit to a maximum of 9 hours.) (3-0) S

PHYS 6399 Special Topics in Relativity (3 semester hours) Topics vary from semester to semester. (May be repeated for credit to a maximum of 9 hours.) (3-0) R

PHYS 8398 Thesis (3 semester hours) (May be repeated for credit.) (3-0) R

PHYS 8399 Dissertation (3 semester hours) (May be repeated for credit.) (3-0) S

PHYS 5V48 Topics in Physics (1-6 semester hours) Topics may vary from semester to semester. May be repeated for credit to a maximum of 9 hours. ([1-6]-0) R

PHYS 5V49 Special Topics in Physics (1-6 semester hours) Topics may vary from semester to semester. P/F grading. (May be repeated for credit to a maximum of 9 hours.) ([1-6]-0) R

PHYS 6V59 Special Topics in Atomic Physics (1-3 semester hours) Topics vary from semester to semester. (May be repeated for credit to a maximum of 9 hours.) ([1-3]-0) R

PHYS 7V10 Internal Research (3-6 Semester Hours) On campus research for Masters in Applied Physics. May be repeated for credit. ([3-6]-0) S
PHYS 7V20 Industrial Research (3-6 Semester Hours) Industrial research for Masters in Applied Physics. May be repeated for credit. ([3-6]-0) S

PHYS 8V10 Research in High Energy Physics And Elementary Particles (3-9 semester hours) (P/F grading) (May be repeated for credit.) ([3-9]-0) S

PHYS 8V20 Research in Cosmology and Astrophysics (3-9 semester hours) (P/F grading) (May be repeated for credit) ([3-9]-0) S

PHYS 8V30 Research in Quantum Electronics (3-9 semester hours) (P/F grading) (May be repeated for credit.) ([3-9]-0) S

PHYS 8V40 Research in Applied Physics (3-9 Semester hours) P/F grading. May be repeated for credit. ([3-9]-0) S.

PHYS 8V49 Advanced Research in Physics (1-3 semester hours) (P/F grading) (May be repeated for credit.) ([1-3]-0) S

PHYS 8V50 Research in Atomic And Molecular Physics (3-9 semester hours) (P/F grading) (May be repeated for credit.) ([3-9]-0) S

PHYS 8V60 Research in Optics (3-9 semester hours) (P/F grading) (May be repeated for credit.) ([3-9]-0) S

PHYS 8V70 Research in Materials Physics (3-9 semester hours) (P/F grading) (May be repeated for credit.) ([3-9]-0) S

PHYS 8V80 Research in Atmospheric And Space Physics (3-9 semester hours) (P/F grading) (May be repeated for credit.) ([3-9]-0) S

PHYS 8V90 Research in Relativity (3-9 semester hours) (P/F grading) (May be repeated for credit.) ([3-9]-0) S

PHYS 8V99 Dissertation (1-9 semester hours) (May be repeated for credit.) ([1-9]-0) S
Revised Current Description

SCE 5334 Instructional Strategies in Science (3 semester hours) Designed for the master teacher/department leader, strategies for fostering an integrated science program based on national and Texas curriculum and assessment standards are presented through hands-on activities. (3-0) T

SCE 5V06 Special Topics in Science Education (1-3 semester hours) (May be repeated for credit to a maximum of 9 hours.) ([1-3]-0) S

SCE 5V07 Independent Study in Science Education (1-6 semester hours) Individual independent study in science education under the supervision of a faculty member. May be repeated for credit to a maximum of 12 hours. [(1-6)-0] R

SCI 5321 Science for Elementary School Teachers (3 semester hours) Fundamental concepts in chemistry, physics, life and earth sciences, with particular emphasis on their applicability to the elementary science curriculum, including laboratory activities. (May be repeated to a maximum of 9 hours.) (2-3) Y

SCI 5322 Basis of Evolution (3 semester hours) From Assembling the Tree of Life to new drug developments, evolution theory is at the core of biology advancements. The concept of evolution is discussed for its relevance as a basic understanding for a scientifically literate society and processes and mechanisms of natural selection are examined. Topics include pertinent history, the fossil record, extinction, emergent species, the human experience, and applied evolution technologies. Students will explore the origins of evolution theory, public misconceptions, teaching, and evolution education research. An intensive scientific argumentation component (rather than debate) through discourse, advanced readings, presentations, panel discussions, and formal writing is required. Viewpoints examined include those of evolutionary biologists and research scientists. (3-0) T

SCI 5323 Laboratories and Demonstrations for Middle School Science Teachers (3 semester hours). This course will emphasize ways that laboratory work and demonstrations help pre-high school students to acquire lasting understanding of concepts in chemistry and physics. Through a variety of laboratory exercises and demonstrations, teachers will be encouraged to select appropriate materials for their curriculum. Development of laboratory and demonstration presentation skills as well as new modules will be included in the course work. (2-3) Y

SCI 5324 Ecology (3 semester hours) Ecology is the study of the interrelationships and patterns of organisms and their environments. Students will examine general ecological principles as related to productivity, population diversity, communities and ecosystem functions. Hands-on activities explore plant/insect interactions through traditional research and digital field sampling methods. This inquiry-based introductory course is aligned with instructional technology and ecology science teaching standards in the context of real-world constructivist practices. Participants will conduct student designed scientific investigations, including research question development, field collections, data analysis methods, and scientific writing. Students will prepare and submit a scientific journal manuscript.
Includes a major field study component with daily and overnight off-campus field trips. Viewpoints examined include those of ecologists, entomologists, environmental scientists, and teachers. (2-3) T

SCI 5326 (PHYS 5319) Astronomy: Our Place in Space (3 semester hours) Focus is on developing student understanding of how our planet fits within a larger astronomical context. Topics include common misconceptions in astronomy, scale in the Solar System and beyond, phases of the Moon, seasons, navigating the night sky, our Sun as a star, space weather, properties and lifecycles of stars, galaxies, and cosmology. (3-0) T

SCI 5328 Marine Science (3 semester hours) Acquaint STEM teachers with basic principles of marine science and with issues surrounding our use of the oceans and their resources. Students will also gain experience in conducting research, presenting results, and developing lessons for their students. (2-3) Y

SCI 5329 Bioethics (3 semester hours) Bioethics incorporates philosophy and values that are at the heart of emerging technology, research, public understanding, and government policy. Focus is on issues related to biotechnology in health care, ecology, agriculture and environmental disciplines including genetic transference, applied evolution technologies, assisted suicide, and new reproductive technologies. Students explore hypothetical and actual cases of bioethical dilemmas. Intensive writing component and discussion of teaching and policy development. Viewpoints examined include those of scientists, health professionals, theologians, policymakers and laypeople. (3-0) T

SCI 5330 Emerging Topics in Biology (3 semester hours) The media frequently announce biology advancements and research that affect human health, basic living needs, and biology education without critical analysis, often resulting in confusing the public and curtailing scientific literacy. Examination of resources and methods to critically evaluate biological information and scientific articles for sound theory development, research methods, and practical application. Topics include recent discoveries in the life sciences that meet the needs of society, health, and environmental issues. Although the topics build on emerging issues, they may include content areas such as cell and molecular biology, agriculture, epidemiology, and global warming. Students will examine effective ways to bring in new curricula into established course settings. Advanced curriculum writing component focused on science literacy. Viewpoints include those of biological research scientists, health professionals, and science education researchers. (3-0) T

SCI 5337 Rockin' Around Texas (3 semester hours) Provides greater familiarity with earth science and a bank of resources and instructional materials needed to lead geology field trips anywhere in Texas. Teachers will participate in extensive field, laboratory, and class work mostly conducted in a problem-based learning format. (2-3) T

SCI 5340 Statistics for Science/Mathematics Education (3 semester hours) Understanding and application of statistical techniques needed in design and interpretation of research in Science/Mathematics Education. Includes descriptive and inferential statistics, computer-based tools, and other appropriate topics. (3-0) Y
SCI 5425 Integrated Science (4 semester hours) Investigation of science standards using pedagogical models of best practice applicable to a variety of learners in diverse contexts. Inquiry-based investigations featuring various topics in physical, earth and life sciences—with a hands-on emphasis on the latest scientific research and educational application. Courses are offered online only. (May be repeated to a maximum of 12 hours as topics vary through earth, life and physical sciences.) (4-4) Y

SCI 5V06 Special Topics in Science (1-3 semester hours) May be repeated for credit to a maximum of 9 hours. [(1-3)-1] S

SCI 5V08 Science Independent Study (1-6 semester hours) Faculty-supervised independent study in science content areas. May be repeated for credit regardless of topics (12 hours maximum). [(1-6]-0) (Y)

SMED 5100 Introductory Graduate Seminar (1 semester hour) An introduction to the resources and opportunities available within the M.A.T. degree programs and the University of Texas at Dallas. (1-0) S

SMED 5301 Science, Mathematics, and Society (3 semester hours) An exploration of STEM issues in society that impact the teaching of science and mathematics. Students define researchable science and mathematics questions, set up research studies, use mathematics and technology in context, make applications to global STEM issues in society, and study the importance of citizen involvement in the learning and teaching of science and mathematics. (3-0) Y

SMED 5302 Teaching and Learning of Science and Mathematics (3 semester hours) Theories of learning and teaching in science and mathematics are explored through the lens of metacognition. Students apply metacognition theory and education research techniques to their own learning. Topics include student motivation, causation vs. correlation, cognitive and psychological development (brain research), qualitative and quantitative research methods, validity and reliability of research, ethics of research with human subjects, and decision-making strategies for education issues and policies. (3-0) Y

SMED 5303 Introduction to Research and Evaluation in Science and Mathematics Education (3 semester hours) Expansion of students' knowledge and application of STEM education research including research approaches to evaluation of curricula and student achievement. Focus on designing research questions concerning current understanding in science and mathematics education and questions for future investigations. What we can know through research and what research cannot/does not tell the teacher will be central to the course. Students explore the appropriateness of specific methods of doing education research in answering particular questions and developing creative education research (as opposed to replication of previous research). Pre-requisite: SME 5302-. (3-0) Y

SMED 5304 Reflections on Science and Mathematics Education (3 semester hours) Critical reflection on prior courses in the Science/Mathematics Education core sequence emphasizing metacognition and STEM education research. Students reflect on themselves as teachers and learners, on research-based strategies for overcoming challenges in teaching and learning, and on their own potential for impacting education as individual practitioners and researchers. All students will conduct a small research study. Pre-requisite: SME 5303. (3-0) Y
SMED 6V98 Thesis Research (3 to 6 semester hours) May be repeated. ([3-6]-0) Y

SCI 5327 [MV2](PHYS 5327) Comparative Planetology (3 semester hours) Every world in the solar system is unique, but none more so than our own planet Earth. The course is an exploration of the astrophysical, chemical, and geological processes that have shaped each planet, moons and the myriad of rocky and icy bodies in our solar system with a special emphasis on what each tells us about Earth, and what discoveries of worlds orbiting other stars may tell us about our planetary system and home world. (Same as PHYS 5327) (3-0) T

SCI 5341 [MV3](PHYS 5341) Astrobiology (3 semester hours) The ultimate integrated science, astrobiology brings together cutting-edge research from the fields of astrophysics, planetary science, terrestrial geosciences, and biology, to build understanding of how the history and diversity of life on our own planet relates to the possibilities for life on other worlds. This graduate-level survey course is designed to challenge participants of all backgrounds in a thoughtful and scientifically-based exploration of the young and dynamic multidisciplinary field of astrobiology. (Same as PHYS 5341) (3-0) T

SCI 5331 [MV4](PHYS 5331) Conceptual Physics I: Force and Motion (3 semester hours) Focus is on deepening the participants' conceptual understanding of physics, emphasizing its applicability to the pre-college and undergraduate classroom. Uses inquiry-based approaches including examples of physics in the everyday world and connections to other fields of science. Topics include foundational concepts of forces, Newton's laws, energy, and momentum. (Same as PHYS 5331) (3-0) T

SCI 5332 [MV5](PHYS 5332) Conceptual Physics II: Particles and Systems (3 semester hours) Focus is on deepening the participants' conceptual understanding of physics emphasizing its applicability to the pre-college and undergraduate classroom. Uses an inquiry-based approach including examples of physics in the everyday world and connections to other fields of science. This second class in the Conceptual Physics series builds on concepts from SCI 5331 to explore transfers of energy and forces within and between systems of particles. Topics include states of matter, fluids, waves and sound, and thermodynamics. (Same as PHYS 5332) (3-0) T

SCI 5333 [MV6](PHYS 5333) Conceptual Physics III: Atoms, Charges, and Interactions (3 semester hours) Focus is on deepening the participants' conceptual understanding of physics, emphasizing critical thinking and applications to the pre-college and undergraduate classroom. Uses inquiry-based approaches including examples of physics in the everyday world and connections to other fields of science. This third class in the Conceptual Physics series builds on concepts from SCI 5331 and SCI 5332 to explore interactions between particles of matter. Topics include inter- and intra-molecular forces, light, electricity and magnetism, and the nature of the atom. (Same as PHYS 5333) (3-1) T

SCI 5342 [MV7] Research Methods in STEM disciplines (3 semester hours) an introduction research process used by faculty in STEM disciplines. Through examples and/or projects, students will see the STEM research process, including conception, design, experimentation, analysis of results, and writing/publication. (3-0) T
## Catalog Copy Changes

**Naveen Jindal School of Management**

2-Nov-11

<table>
<thead>
<tr>
<th>Changes</th>
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<th>Notes</th>
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<tr>
<td>Preface/Degrees Offered</td>
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<td>Certificate in Business Intelligence and Data Mining</td>
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<td>Executive Education Programs and Course Descriptions</td>
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</table>
Combined Master of Science and Master of Business Administration Graduate Degrees

Objectives

Today's graduate students often need to gain depth of knowledge in a particular management area, as well as breadth of knowledge in management in general to succeed in today's organizations. The School of Management at UT Dallas now offers a program which allows students to earn a combination of a master’s level specialist degree and a Masters in Business Administration simultaneously. Specifically, graduates of this program qualify to earn an M.S. or M.A. degree in any of our program offerings and then receive an MBA after a total of 63 semester credit hours.

Admission Requirements

The University's general admission requirements are discussed here.

Students pursuing the Combined MS-MBA must meet the admission requirements for both programs, while submitting all of the required documents for Masters Program admission in the School of Management.

Degree Requirements - Combined MS-MBA graduate degrees

Students first complete their 36-hour masters program, beyond prerequisite courses, satisfying all the requirements for their chosen M.S. or M.A. degree. They then go on to accumulate the remaining required core hours for the MBA, taking into account courses already taken in their M.S./M.A., and add in electives to reach a total of 63 credit hours (specific details with respect to program specific courses and combined program coursework can be obtained from the advising office). Students must maintain a 3.0 grade point average in both core courses and in aggregate to qualify for one or the other or both degrees.
## Graduate Catalog Course Changes

**Catalog Years: 2012-2014**

### School: Management

<table>
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<tr>
<th>Department: Management</th>
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### Basis for Catalog Course Changes

Routine changes in prerequisites, crosslistings, minor modifications to course descriptions, introduction of REAL prefix, CPA Review courses, introduction of new Quantitative Foundations of Business course for graduate student preparation, a Digital Marketing Lab, and deletion of the outdated telecomm course series.

### New Courses Added

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<td>Professional Accounting - Financial</td>
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<td>ACCT 6292</td>
<td>Professional Accounting - Audit</td>
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<tr>
<td>ACCT 6193</td>
<td>Professional Accounting - Regulation</td>
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<td>Professional Accounting - Business</td>
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<td>ACCT 6286</td>
<td>Governance, Risk Management and Compliance</td>
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<td>Special Topics - IMS</td>
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<td>REAL 6322</td>
<td>Real Estate Finance and Investments</td>
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### Courses Deleted

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<td>MIS 6355</td>
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<td>ENTP 6311</td>
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<td>FIN 6321</td>
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<tr>
<td>MKT 6337</td>
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<td>SYSM 6318</td>
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Graduate Programs in Management

Faculty


Assistant Professors: Nina Baranchuk, Jianqing Chen, Zhonglan Dai, Rebecca Files, Bernhard Ganglmair, Xianjun Geng, Umit Gurun, Elisabeth Honka, Todd Kravet, Elisabeth Ngah-King Lim, Xiaohui Liu, Volkan Muslu, Arzu Ozoguz, Jenna Pieper, Valery Polkovnichenko, Roberto Ragozzino, Gonca Soysal, Andrei Strijnev, Upender Subramanian, Yu Wang, Malcolm Wardlaw, Kelsey Wei, Han Xia, Yuanping Ying, Alejandro Zentner, Jun Zhang, Feng Zhao, Yibin Zhou.

Senior Lecturers: Art Agulnek, Shawn Alborz, Frank Anderson, John Barden, George Barnes, Abhijit Biswas, Ron Blair, Daniel Bochsler, Tiffany Bortz, Dick Bowen, Judd Bradbury, Alexander Edsel, Mary Beth Goodrich, Maria Hassenhuttl, Julie Haworth, Jonathan Hochberg, Jennifer Johnson, Marilyn Kaplan, Jackie Kimsey, Chris Linsteadt, Diane S. McNulty, Madison Pedigo, Jared Pickens, Nataliya Polkovnichencko, Matt Polze, Kannan Ramanathan, Carolyn Reichert, James Richards, Tracey Rockett, Mark Salamasick, Phil Sanchez, Michael Savoie, Avanti Sethi, Harpreet Singh, Jeanne Sluder, Charles Solcher, Steve Solcher, Jim Szot, Lou Thompson, Mark Thouin, Amy Troutman, John Watson, Laurie Ziegler

Clinical Associate Professors: Larry Chasteen

Clinical Assistant Professors: Joachim Adler, Holly Lutze, Radha Mookerjee, Justice Tillman.

Clinical Faculty: Christopher Angelo, David Cordell, Tevfik Dalgcik, Forney Fleming, Ayfer Gurun, Charlie Hazzard, Rob Hicks, Gerald Hoag, Peter Lewin, John McCracken, Dennis McCuistion, Mark McNabb, Kumar Nair, Joseph Picken, Divakar Rajamani, Robert Robb, Rajiv Shah, Francisco Szekely, Joe Wells, Hapte Woldu, Fang Wu.

Visiting Faculty: Usman Ghani, Xuying, Xuying Cao, Emily Choi

Objectives

The Master of Business Administration degree provides students with a broad managerial education drawing from all business disciplines. It is obtained by completing the program course requirements of 53 hours beyond the prerequisites. UT Dallas offers several distinct approaches to obtaining an MBA. These include (1) the Cohort MBA Program, a full-time program in which students are admitted as a group each Fall and take their required classes together in a fixed sequence, (2) the Professional MBA Program for students attending school part-time, with classes largely meeting in the evening, and (3) the Global MBA Online with all core and elective courses available by distance learning, online.

Each of these MBA programs consists of 29 hours of required core courses and 24 hours of elective course work, which may include an optional concentration in a selected area of business study. Courses in the Global MBA Online use audio streaming lectures supported by downloadable presentations, online text-based conferences, bulletin board and e-mail exchanges, and teleconferences.
The M.S. in International Management Studies degree provides knowledge of and training in international management, which includes trade across national boundaries, management practices within foreign nations, and management on a global basis. The program provides students the opportunity to learn in-depth the fundamentals of (1) functional areas of management, (2) international management, and (3) cultural, sociopolitical, and geographical constraints affecting international business decisions. In the past, the School has organized study abroad opportunities in Russia, China, Hong Kong, Singapore, Vietnam, Thailand, Indonesia, and India. Foreign study courses, usually offered between semesters, vary in length from two to three weeks and are generally taken as part of an Area Studies course. Many classes for this degree must be taken via distance learning.

The M.S. in Accounting provides a tailored educational experience that encourages (1) a globally-oriented, interdisciplinary focus, (2) a balanced conceptual and pragmatic approach, (3) development of written and oral communication skills, (4) a refinement of research and analytical skills that result in enhanced decision-making abilities, and (5) a commitment to life-long learning. Within the program, students are offered a choice of 18 graduate accounting electives. Classes are tailored towards typical career paths in areas such as corporate accounting, assurance services, taxation services, and internal audit. Upon completion of the M.S. in Accounting, students may be eligible to sit for the Uniform CPA Examination, provided they meet the educational requirements.

The M.S. in Information Technology and Management bridges the gap between the pure information technologist and the business professional. By providing a technology intensive program with a business focus, the program prepares graduates to apply information technology to business problems and create efficient and effective solutions. The degree requires a minimum of 36 credit hours, consisting of basic business courses, IT foundation courses, IT elective courses, and free electives. The business core courses are designed to provide incoming students with the context to better appreciate and understand the complex issues that occur at the interface between IT and business. The IT foundation courses cover the essentials of IT knowledge that any student must possess. The IT elective courses provide in-depth knowledge of the technology and technology management issues. In addition, students may choose approved electives that maximize their individual educational and professional goals. The program also offers opportunities for students to concentrate in specific tracks such as 'Enterprise Systems', 'Business Intelligence', 'Healthcare Systems', and 'Information Security' depending on their interests and goals.

The M.S. in Management and Administrative Sciences degree provides students the opportunity for specialized education in a specific management discipline built upon a core of business courses. It is obtained by completing the program course requirements of 36 hours beyond all prerequisites. The program consists of 10 hours of business core courses, and the remaining hours as elective courses. Potential concentration areas for students include: accounting, enterprise systems, internal audit, corporate finance, investments, marketing, e-commerce, information systems, operations and supply chain, organizations, organizational behavior and coaching, strategy and international topics. The classes for this degree are largely offered in the evenings or online.

The M.S. in Marketing program has been designed to meet the needs of students in today's marketplace; the program prepares those seeking higher level positions in marketing and/or pursuing a graduate program to further advance their marketing knowledge. The M.S. in Marketing program offers four specialized tracks: Advertising & Brand Management, Business Development, Marketing
Analytics and Research, and Marketing Management and Product. The program also offers an opportunity to obtain academic certifications in Marketing Analytics or Product Management.

The M.S. in Healthcare Management prepares students for roles in the leadership and management of the US healthcare industry. The 36 credit hour program integrates a thorough grounding in advanced business management theory and practice with an understanding of the structure, operation and financing of the US healthcare system. The curriculum is customized to accommodate the needs of two different audiences: the Professional Track for healthcare administrators and those desiring a management career in healthcare; and the Executive Track, for physicians and senior level healthcare executives.

The Professional Track classes are offered on a semester-long basis in the evenings, with core business classes also offered online. Admission may be in Fall, Spring, or Summer semesters. The Executive Track is delivered in a different format, consisting of nine 4-day residential classes. A different class is offered every two months and classes may be started at any time and taken in any order. The Executive curriculum is jointly taught by faculty from the University of Texas at Dallas School of Management and the University of Texas Southwestern Medical Center. The Executive program is entirely supported by participant fees and special admission requirements apply. For information, contact the program director at (972) 883-6252.

The M.S. in Finance is designed for students with or without previous educational background in finance. At least 36 hours of management course work beyond prerequisite courses are required, including 12 hours of basic business core courses and 24 hours of graduate finance courses. The M.S. in Finance is designed for students with or without previous educational background in finance. Candidates in the M.S. in Finance choose one of three concentrations: Investment Management, Financial Analyst, or Financial Engineering and Risk Management. In addition, there is the Financial Management option. The Investment Management concentration is designed for students interested in pursuing an investment career and completing the Chartered Financial Analyst (CFA) examinations. The Financial Analyst concentration is designed for students interested in corporate finance, investment banking, venture capital, private equity, or corporate restructuring and turnarounds. The Financial Engineering and Risk Management concentration is designed for students with the quantitative ability to pursue a career applying quantitative methods to investment and risk management problems. The Financial Management option allows students to tailor their course work for careers in a range of activities. Because several of these concentrations have been designed to prepare students for certain certifications, students are recommended to complete all the course work in a particular concentration in order to prepare for its associated certification.

The M.S. in Supply Chain Management (SCM) will explore the key issues associated with the design and management of industrial supply chains. It will entail concepts dealing with the improvement of supply chain operations towards lower costs, faster delivery, higher quality and bigger variety. The ultimate objective is using SCM to mold traditional business operations into competitive weapons for today's global economy. Students will acquire not only fundamental knowledge of business management but also analytical decision-making skills (especially for complex systems) along with real-life experiences gained through projects with area companies.

The M.S. in Innovation and Entrepreneurship (MSIE) prepares students for successful business careers in entrepreneurial new ventures, entrepreneurial finance (venture capital/private equity), or innovation-related roles in mature organizations (product planning, product marketing, product development, etc.). This degree complements baccalaureate or advanced degrees in management, scientific or engineering disciplines, and is valued by employers in technology-related or consumer
products industries. The program provides students with a solid foundation in the management disciplines essential to the successful innovation of new ideas, new products and new business models, whether in the context of an entrepreneurial startup or within the more structured environment of a mature corporation.

The School of Management also offers Executive Education degree programs. Executive Education MBA programs are offered for students with several years of experience. These include (1) the Executive MBA Program with classes meeting for two days (Friday and Saturday) every other week, (2) the Executive MBA with emphasis in Project Management that highlights managing complex projects, (3) the Healthcare Management Executive MBA for physicians and senior level healthcare executives interested in learning how to improve the leadership and management of their organizations, and (4) Global Leadersh

Leaders in high tech firms often need expertise in both engineering and management. Through a unique combined master’s level degree program, graduate students may earn an M.S.E.E. degree from the Jonsson School of Engineering and Computer Science in combination with an MBA, or an M.S. degree from the School of Management. This combined degree program is ideal for students interested in managing new technologies, from conceptualization and development to introduction and production. Students must meet the admission requirements in both schools and have an advisor in both schools. The combination of M.S.E.E. and MBA degrees can be earned by completing a minimum of 68 graduate hours, compared to 86 hours if completing the two degrees separately. The combination of M.S.E.E. and M.S. degrees can be earned by completing a minimum of 51 credit hours beyond prerequisites, compared to 69 hours if completing the two degrees separately. See page XX in the Electrical Engineering section for details.

Another program recently initiated, the Master’s in Systems Engineering and Management (MS-SEM), will focus on educating industry-sponsored corporate employees in the disciplines of Systems Engineering, Systems Management, Entrepreneurship & Intrapreneurship, Product Line Development and Management, and Strategic Business Management. Target industries for the program include: aerospace, defense and space systems; transportation systems; information and communications technology (ICT) systems; information assurance and cyber-security systems; healthcare systems; energy, environment and infrastructure systems; complex biological systems; and macro-economic and financial systems.

The Ph.D. in International Management Studies provides the opportunity to conduct research in the analysis of international business, emphasizing a strong foundation in theory and research in organizations and strategy. International Management Studies focuses on the analysis of organizations, industries, and markets as interdependent systems, stressing structural, strategic, environmental, and international considerations and their implications for management. Topics such as corporate strategy, international business, multinational management, organization design and change, technological and industrial development, and managerial decision making are examined using management theories and empirical methods.

The Ph.D. in Management Science provides the opportunity to conduct research in a functional business area to contribute to the knowledge in that field with respect to its intellectual content or professional practice. The School of Management defines Management Science as the use of economics, behavioral science, mathematics, and statistics, to conduct rigorous scientific research. It encompasses both theory and empirical analysis. Management Science embraces areas of specialization like marketing, finance, accounting, organizational behavior, management strategy and public policy, and decision sciences. It has no clear boundaries among the various areas, and places emphasis on science and is not constrained by the culture of individual disciplines. It is this underlying orientation of science
and integration that distinguishes Management Science from other philosophies and approaches to the study of management.

Both doctoral programs offer preparation for academic and/or research positions in universities, with organizations such as the World Bank, and in industry, both in the United States and in other countries.

Facilities

The School of Management is located in a new facility at the corner of University Parkway and Drive A. This 200,000 square foot building opened in the Fall of 2003. The three wings, arranged around a courtyard, provide classrooms, meeting rooms, and office space. State-of-the-art wireless access to the internet is available throughout the facility.

Admission Requirements to Master’s Programs

The University’s general admission requirements are discussed here.

Evening and Online programs (MBA, Global MBA Online, M.S.)

Admissions to the evening programs are based on a consideration of the applicants’ entire record. The following factors are considered in arriving at an admission decision:

- a bachelor’s degree from an accredited institution in the United States, or its equivalent, as determined by the Dean of Graduate Studies,
- international applicants must submit a TOEFL score of at least 550 on the paper test (or 215 on the computerized test) that is less than two years old,
- undergraduate GPA, calculated on the last 60 hours of academic course work,
- honors and achievements,
- personal essay outlining academic interests and goals
- letters of recommendations (3),
- work experience,
- competitive GMAT performance based on a score that is less than seven years old
- personal characteristics that add to the diversity of the class, such as country of citizenship, gender, multilingual skills, involvement in extracurricular and community activities and socioeconomic history.

Applications are due in the Admissions Office 90 days prior to registration for international students and 45 days prior to registration for all other students. Students are admitted 3 times per year and can start their studies during any one of the three semesters.

Students may apply for the Dean’s Excellence Award which provides financial support in the form of scholarships.

The Global MBA Online has the same admission requirements and tuition as the traditional MBA. And the Online program follows the same academic calendar as the rest of the University. These students receive priority registration for online courses.

Full-time (Cohort) MBA program: In addition to the factors required for admission to the evening programs, admission to the Full-time, Cohort MBA program requires the capability to perform well in a fast-paced, team-oriented curriculum. Applicants are admitted based on a composite evaluation of the submitted measures of performance which include the GMAT, GPA, recommendation letters, and work experience, as well as initiative and interest suggested through essays. The Admission Committee seeks academic and professional excellence. Applications completed by May 1 will be considered for financial
support. International applications are due June 1 and domestic applications by July 1. Students are admitted each fall.

**Executive MBA programs:** Admissions are based on academic transcripts, a personal essay, letters of recommendation, and knowledge of elementary calculus and basic financial accounting. Also, approximately 10 years of business experience with relevant managerial experience, the ability to use a DOS-based personal computer, with Windows, for word processing and spreadsheets (possession of a laptop computer with modem and Internet access is required), and corporate endorsement and support in the case of employed participants. The GMAT is encouraged, but not required. Applications are due by June 30, and students are admitted each fall.

**Master of Science in Healthcare Management:** The M.S. in Healthcare Management is customized to accommodate the needs of two different audiences: the Professional Track for healthcare administrators and those desiring a management career in healthcare; and the Executive Track, for physicians and senior level healthcare executives. The admission requirements for the Professional Track are the same as those listed above for all other School of Management evening and online degree programs.

For physicians, admission to the Executive Track requires an MD or DO degree from an accredited school of medicine or school of osteopathy, a copy of a current unrestricted license to practice medicine in the U.S., and a medical school and undergraduate transcripts. For healthcare executives, the requirements include seven or more years of senior management experience in a U.S. healthcare organization; a baccalaureate degree with an undergraduate GPA of 3.0 or higher; the ability to successfully perform graduate level work as evidenced by either a Master's degree or higher from a U.S. accredited college or university or by providing an acceptable GMAT score; two confidential letters of reference from professional colleagues; a written statement of professional objectives; and a personal or telephone interview at the option of the program director.

**Non-Degree Seeking Students:** Students may be admitted as non-degree seeking students. To be admitted as a non-degree seeking student, students will have to meet all the admission requirements specified for degree seeking students including relevant test scores (GMAT/GRE, TOEFL). Students who want to switch to degree-seeking status, will have to apply to the degree program. If they are admitted, at most six credits taken as a non-degree seeking student can be transferred to the degree program.

Conditional acceptance to the School may be granted with the recommendation of the Admissions Committee and the concurrence of the Dean of Graduate Studies. At the time of their acceptance, the students will be informed of the conditions they need to satisfy to become regular students. The students can be in conditional status for only one semester and need to fulfill the stipulated conditions by the end of the semester. Conditionally accepted students will be restricted to:

- taking at most six credits during the semester,
- enrolling in courses from a pre-specified list.

**Substitutions and Transfers of Credit**

Substitutions of program requirements may be granted in recognition of previous coursework taken in a specific business program area. Substitutions are approved by the appropriate Program Director through a process which allows a student to skip a core course and take the next higher level course in that area with no reduction in the overall program hour requirements.

Transfers of credit may be granted for equivalent graduate coursework taken at other universities with a grade of B or better within the past six years. The appropriate Program Director initiates such transfers which must be approved by the Dean of Graduate Studies. The total number of transfers of credit toward the completion of a master’s degree cannot exceed nine hours toward the M.S. degree, and twelve hours toward the MBA degree.
Applications for approval of substitutions and transfers of credit may be obtained in and submitted to the School of Management Advising Office.

Prerequisites for Graduate Programs

Knowledge of calculus is a requirement for our certain programs (see individual programs for details). Students who have not completed an undergraduate calculus course at the level of MATH 1325 or higher may satisfy the prerequisite by completing MATH 5304 Applied Mathematical Analysis for Non-majors. Degree credit is not earned for program prerequisites; however, the grade achieved in MATH 5304 will count toward the student’s grade point average. For the M.S. in International Management Studies, FIN 6301 has a prerequisite of OPRE 6301, its equivalent, or consent of instructor. Prerequisites must be satisfied within the first twelve hours of graduate study as a degree-seeking student.
Master of Science in Accounting

Degree Requirements

The University’s general degree requirements are discussed here.

At least The MS in Accounting is a 36 hour degree program focused primarily on educating students in Accounting while recognizing the management course work beyond prerequisite courses is required, including 12 hours of business course work foundation. The degree is separated into three components:

1. Basic Business Core
2. Accounting Foundation
3. Accounting Electives

The classes can be completed in any order as long as the following specific course prerequisites have been met:

- Financial Accounting (ACCT 6201) or its equivalent, and
- Managerial Accounting (ACCT 6202) or its equivalent

Students must address any deficiencies in these prerequisites within the first twelve hours of graduate accounting courses. The M.S. in Accounting degree is designed for students either work or prior to taking any course with or without previous educational background in accounting and business. These defined prerequisites. Also, students do not earn degree credit for program prerequisites.

Within the M.S. in Accounting degree program, the candidate may select one of four concentrations based on their previous experience and future aspirations. Concentrations include (I) Corporate Accounting, (II) Assurance Services, (III) Taxation Services, and (IV) Internal Audit. Students must choose 18 elective hours. Students can pick and choose the courses that best fit their unique career goals and needs. Typical career paths include areas such as corporate accounting, assurance services, tax, or internal audit. Students must maintain a 3.0 grade point average in both core courses and in aggregate to qualify for the M.S. in Accounting degree.

The Texas State Board of Public Accountancy (TSBPA) accepts all courses followed by * below towards the requirement of 30 semester hours of upper level accounting for CPA eligibility.

A. Basic Business Core (12 credit hours)
Each candidate must satisfactorily complete the following three courses.

- ACCT 6305 Accounting for Managers
- ACCT 6343 Information Systems* OR OPRE 6302 Operations Management
- OPRE 6301 Quantitative Introduction to Risk and Uncertainty in Business
- MECO 6303 Business Economics OR FIN 6301 Financial Management

B. Accounting Information Systems OR OPRE 6302 Operations Management

ACCT 6344 Financial Statement Analysis*

The candidate may select one of four courses.

ACCT 6343 Information Systems* OR OPRE 6302 Operations Management

ACCT 6330 Intermediate Financial Accounting I*
ACCT 6332 Intermediate Financial Accounting II

* Students that have already taken foundation courses (or their undergraduate equivalents) should
replace them with Acct electives*

(I) Corporate Note: candidates who have completed the accounting foundation courses (or their undergraduate equivalents) may be able to obtain a course waiver and substitute for these required courses with other graduate level ACCT electives. Substitutions are approved by the appropriate Program Director, and forms may be obtained in and submitted to the School of Management Advising Office.

C. Accounting Concentration Electives (18 credit hours), select from any of the following courses:

ACCT 6203 Professional Accounting Communication* (Meets TSBPA requirement of 2 credit hours of communication for CPA eligibility.)

ACCT 6333 Advanced Financial Reporting*
ACCT 6334 Audit* (ACCT 6351 & ACCT 6334 when taken together meet the TSBPA requirement of 2 credit hours of research requirement for CPA eligibility.)
ACCT 6335 Ethics for Professional Accountants (Meets the TSBPA requirement of 3 credit hours of ethics for CPA eligibility.)
ACCT 6336 Information Technology Audit and Risk Management*
ACCT 6337 Data Management*
ACCT 6338 Accounting Systems Integration and Configuration*
ACCT 6341 Planning, Control and Performance Evaluation*
ACCT 6345 Business Valuation*
ACCT 6351 Individual Taxation* (ACCT 6351 & ACCT 6334 when taken together meet the TSBPA requirement of 2 credit hours of research requirement for CPA eligibility.)
ACCT 6352 Corporate Taxation*
ACCT 6354 Partnership Taxation*
ACCT 6356 Tax Research* (Meets the TSBPA requirement of 2 credit hours of research for CPA eligibility.)
ACCT 6362 International Accounting*
ACCT 6365 Governmental/Non Profit Accounting*
ACCT 6370 Business Law
ACCT 6377 Corporate Governance and Accounting*
ACCT 6380 Internal Audit*
ACCT 6382 Advanced Auditing*
ACCT 6383 Forensic Accounting Investigations*
ACCT 6384 Analytical Reviews Using Audit Software*
ACCT 6386 Governance, Risk Management, and Compliance
ACCT Graduate Elective*
ACCT Graduate Elective 6v98 Accounting Internship*

(II) Assurance Services Concentration (18 hours)
ACCT 6333 Advanced Financial Reporting
ACCT CPA Review Courses (Various #s)

And other courses as listed in the Course Catalog.

For students interested in the Internal Audit program and the CIA or CISA designation, 12-15 credit hours from the following courses are required:

ACCT 6380 Internal Audit* (This core course is required and must be taken in the first semester.)

ACCT 6334 Auditing
ACCT Audit* (ACCT 6351 Individual Taxation}
ACCT 6352 Corporate Taxation
& ACCT Graduate Elective

ACCT Graduate Elective

(III) Taxation Services Concentration (18 credit hours when taken together meet the TSBPA requirement of two credit hours of research requirement for CPA eligibility.)

ACCT 6351 Individual Taxation
ACCT 6352 Corporate Taxation
ACCT 6354 Partnership Taxation
ACCT 6356 Tax Research

ACCT Graduate Elective

ACCT Graduate Elective

(IV) Internal Audit Concentration (18 hours)
ACCT 6335 Ethics for Professional Accountants (Meets the TSBPA requirement of three credit hours of ethics for CPA eligibility.)
ACCT 6336 Information Technology Audit and Risk Management
ACCT 6380 Internal Audit*
ACCT 6377 Corporate Governance OR ACCT 6386 Governance, Risk Management and Compliance*
ACCT 6382 Advanced Auditing*
ACCT 6383 Forensic Accounting Investigations OR *
ACCT 6384 Analytical Reviews Using Audit Software*

ACCT Graduate Elective
ACCT Graduate Elective

*course not chosen may be used as elective

Additional information about courses within each concentration may be obtained in the SOM advising office as well as information about the requirements for the CPA exam.

Internal Audit Internship

To learn more about any of the IAEP courses or information about the Internal Auditing Education Partnership program visit IAEP or contact Mark Salamasick, director of the Center for Internal Auditing Excellence, at Mark.Salamasick@utdallas.edu or 972-883-4729.
School of Management Executive Education Degree And Course Descriptions Programs

UT Dallas School of Management Executive Education combines the best of the School’s nationally recognized faculty with a select group of executives to provide an innovative, relevant portfolio of programs. Designed to advance knowledge and skills that improve organizational performance, these programs include both MBA and Master of Science degree programs, as well as certificate programs. Courses are taught on campus, on site, or online.

Executive MBA and Master’s Degrees

- Executive MBA (EMBA)
- Global Leadership Executive MBA (GLEMBA)
- Executive MBA with an emphasis in Project Management
- Master of Science in Management and Administrative Sciences with an emphasis in Project Management
- Healthcare Management Executive MBA for Physicians and senior healthcare administrators
- Master of Science in Healthcare Management for Physicians and senior healthcare administrators
- Master of Science in Management and Administrative Sciences with an emphasis in Organizational Behavior and Coaching

Special admission and fee requirements apply to the following programs and courses.

Executive MBA Program

Ranked nationally and worldwide, the Executive MBA program prepares experienced professionals for upper management, executive levels, and the C-suite. Based in part on personal executive coaching, the program provides a transformative, leadership, educational and personal improvement experience that enhances your success and takes your career to a higher level. The 21-month program has only 3 class days per month, minimizing disruptions for those with busy schedules. Executive MBA students learn versatile confidence and performance-oriented capabilities in an integrated curriculum. Two trips, 1 international, expose students to corporate and governmental decision makers and take you behind the scenes with one-on-one conversations with global leaders.

The EMBA program is supported entirely by participant fees and special admissions requirements apply. Further information may be obtained from the program website: http://som.utdallas.edu/graduate/execed/execMba/

Executive MBA degree programs in the School of Management require a core of 29 credit hours, along with a set of specially designed elective courses equivalent to 24 credit hours, for a total of 53 credit hours. The MBA core is comprised of the following courses:

**MBA Core Curriculum (29 Credit Hours):**
AIM 6201 Financial Accounting
AIM 6202 Managerial Accounting
BPS 6310 Strategic Management
FIN 6301 Financial Management
IMS 6204 Global Business
MIS 6204 Information Technology and MIS Fundamentals
The following courses, comprising a total of 21 semester hours, are currently offered in the Executive MBA Program curriculum:

**BPS 6251 Capstone: Integration/Integrated Transformation** (2 semester hours). This 2 hour course will immerse the student in an initial examination and/or design of a substantial project within a corporation intended to raise corporate value by transforming the business. The emphasis will be on new uses of assets and resources, not the improved management of existing activities. This is intended to develop the executive capacity of the individual student. (2-0) Y

**FIN 6251 Strategic Financial Management and Valuation II** (2 semester hours) This is a second level finance course stressing the linkages of corporate strategy, financial strategy and market valuation. Different methodologies of valuation will be covered. (2-0) Y

**IMS 6150 International Business Management - EMBA** (1 semester hour) Considers the role of general managers (CEO and country/regional managers) in multi-national companies and the working relationship of subsidiary and home offices in such companies. Topics include business strategies, control/cooperative systems, the dynamics of addressing local and global concerns, and corporate learning. (1-0) Y

**BPS 6251-6252 Executive Study Trip – Washington DC** (2 semester hours) This course focuses on economic and policy strategy and management as it related to governmental processes nationally and internationally. Considering business, political, and cultural issues related to conducting business in the United States and around the world, this course goes behind the scenes to learn the processes needed to effectively identify, understand and capture policy and regulatory efforts at early stages. All this is pertinent to business decision making and management anywhere in the world. (2-0) Y

**IMS 6351 Executive International Studies Trip - EMBA** (3 semester hours) This course consists of a class trip to Europe, Asia or South America. We choose destinations that relate to the EMBA program’s themes of managing for change, taking the strategic perspective, and leading effectively. While abroad, participants visit and hear presentations from local university faculty, local business executives, and expert panels. Participants are also expected to identify important cultural variables that impact business decision making and management in the countries visited. (3-0) Y

**ACCT 6286 Governance, Risk Management and Compliance** (2 semester hours) Examines how corporate directors, senior officers, professional service providers, and consultants design, develop, and implement systems of Corporate Governance. Various experts in the field speak to the class on the relationship between Corporate Governance and risk management, compliance, regulations, regulatory reporting, ethics and corporate culture. Prerequisites: ACCT6201 and ACCT6202. (2-0) Y

**ACCT 6286 Governance, Risk Management, and Compliance** (2 semester hours) Corporate Governance is concerned with the balancing of stakeholder interests. Reforms such as Sarbanes-Oxley, the rules of the Self Regulating Organizations, and the new rules of the SEC, have broadened the outlook of accounting professionals. In this course, the central role of risk management is examined, the linkage between risk management and compliance requirements is examined, and the connection between compliance requirements and their intended impact on reporting is considered. (2-0) Y

**OB 6260 Executive Coaching** (2 semester hours) This is a one-on-one, developmental experience with a professional, executive coach. The goals of the coaching experience are: to help the student learn as much as possible from the EMBA program and from working in student teams; to identify the student’s strengths and weaknesses and to develop the person in relevant areas; to focus on career development issues unique to the individual; and to instruct the student on the principles and practices of coaching as a leadership style. (2-0) Y
OB 6261 Executive Workshop (2 semester hours) New students begin the Executive MBA program by attending this workshop and completing the follow-up assignments. The course focuses primarily on lectures and experiential learning exercises conducted by the Leadership Center at UTD and other Centers of Excellence from our School of Management. (2-0) Y

BPS 6332 (SYSM 6320) Strategic Leadership (3 semester hours) Addresses the challenge of leading organizations in dynamic and challenging environments. Overall goal is to not only question one’s assumptions about leadership, but also enhance skills and acquire new content knowledge. Topics include visionary and transformational leadership; post-heroic leadership; empowerment; leveraging and combining resources; designing organizations; and ethics. (3-0)Y

OB 6332 (HMGT 6324) Negotiation and Dispute Resolution (3 semester hours) This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal, group, and international settings. Emphasis is placed on understanding influence and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises. Prerequisite: OB 6301 or consent of instructor. (3-0) T

To complete the requirements for the EMBA, students take an additional 3 credit hour elective from a set of courses currently under development.

Global Leadership Executive MBA Program - GLEMBA

The Global Leadership Executive MBA - GLEMBA is specifically designed for experienced professionals and managers who desire knowledge and skills to lead with a global mindset. GLEMBA is delivered in 23 months through a defined degree plan that expands the MBA core curriculum with an international curriculum.

GLEMBA is supported entirely by participant fees and special admissions requirements apply. Further information may be obtained from the program website: http://som.utdallas.edu/graduate/execed/glemba/.

GLEMBA students take additional courses from the following list specific to the Global Leadership Executive MBA Program curriculum.

ENTP 6351 International Entrepreneurship and Innovation (Executive Education Course: 3 semester hours) This course is an introduction to the International Business Plan and provides an introduction to entrepreneurship with an emphasis on identifying, evaluating and developing new venture opportunities for international markets. Topics include opportunity identification and evaluation, startup strategies, business valuation, business plan development, financing the venture, managing the growing business and exit strategies. Prerequisites: IMS 5200, MKTG 6301, FIN 6301, AIM 6201, and BPS 6310 (3-0) Y

ENTP 6352 International Business Plan (Executive Education Course: 3 semester hours) This course is a capstone that requires the development of a comprehensive business plan for market entry into a
foreign country or region. The construct builds upon the core business and international coursework including the successful completion of key courses in accounting, finance, marketing and strategy, as well as, the international entrepreneurship and innovation. The course consists of lectures, research, and faculty coaching and guidance. Prerequisite: ENTP 6351 (3-0) Y

**IMS 6151 Global Business Ethics** (1 semester hour) This course examines practical issues in global business ethics, including compliance requirements and their application, effective reactions to global ethical dilemmas and best practices in global and multicultural environments. (1-0) Y

**IMS 6251 Globalization and Sustainability** (Executive Education Course: 2 semester hours) This course examines various historical and contemporary theories of globalization from an interdisciplinary perspective. Course content centers on key readings that address the globalization debate with a focus on regionalization versus globalization trends and global sustainability as a strategy. (2-0) Y

**IMS 6352 International Business Implementation** (3 semester hours) This course explores current theories and issues concerning the development of various types of international business entities with a focus on organizational design and execution of strategy and operational delivery. Course content centers on key readings about international business implementation issues and case examples in emerging and developed economies. Prerequisite: IMS 6204. Executive Education Course. (3-0) Y

**IMS 6353 International Study Tour - GLEMBA** (3 semester hours) This course investigates the political, economic, social and cultural forces in countries that attract foreign business investment, as well as, the experiences of local and foreign enterprises doing business in that country. Prerequisite: IMS 6204. Executive Education Course. (3-0) Y

**IMS 6354 Global Marketing** (Executive Education Course: 3 semester hours) This course promotes an appreciation and understanding of theoretical and practical issues involved in marketing products and services in the international context. This course covers the fundamentals and evolution of international marketing, the environment of international marketing, foreign entry methods, evaluation of market potential, management of international marketing mix, consumer behavior and international strategic marketing planning. Prerequisite: MKT 6301 or consent of instructor. (3-0) Y

**IMS 6355 Global Communications and Negotiations** (Executive Education Course: 3 semester hours) This course focuses on understanding national culture and cultural issues in international business. It emphasizes the importance of managing cultural differences to enhance communication, negotiation, leadership, and group dynamics in an international work environment. (3-0) Y

**OB 6151 Intercultural Savvy** (1 semester hour) This course addresses the behavioral and skill competencies required to effectively communicate and develop business relations in multicultural and diverse work environments. Course is highly interactive with assessments and role plays. Prerequisite: IMS 6204. Executive Education Course. (1-0) Y

**OPRE 6350 Global Supply Chain Management** (Executive Education Course: 3 semester hours) This course addresses the design and management of global supply chain including international sourcing, integration of suppliers and distribution channels. Prerequisite: OPRE 6201 or OPRE 6302 or consent of instructor (3-0) Y

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**Certificate and Degree Programs with an emphasis in Project Management**

The Executive Education Project Management Program is one of the emphasis areas designed to begin with a set of specialization area courses followed by additional business management core courses and leading to either a Master of Science or a Master of Business Administration degree with the chosen emphasis. Upon completion of the project management core courses, students earn a graduate certificate in project management and are prepared to take the Project Management Institute’s Project Management Professional (PMP®) certification exam. Following completion of the project management core, students may then continue to complete the requirements for the Master of Science or the Master of Business Administration degree.
Project management faculty members have industrial project management, operations management, management consulting and teaching experience. The program curriculum is delivered both on campus and online. The on-campus program accommodates work and travel schedules by meeting 8 hours per day on one consecutive Thursday, Friday, and Saturday per month. The online program is designed as weekly modules equivalent to one half-day on campus and includes live interaction.

The project management emphasis certificate and degree programs are supported entirely by participant fees and special admissions requirements apply. Further information may be obtained from the program website: http://som.utdallas.edu/graduate/execed/projectMgmtProg/. Both degree and non-degree seeking students with undergraduate degrees can study towards the Graduate Certificate in Project Management. Potential students are required to complete an application, provide written professional references from 3 people, attend an interview with the program director, and request all universities attended send an official transcript.

Graduate Certificates in Project Management

The Graduate certificate in Project Management is awarded after completion of the project management core courses described below totaling 21 credit hours. These courses emphasize a systems approach to project management and follow the lifecycle of a project, integrating relevant topics from multiple knowledge areas rather than presenting topical courses in isolation. This type of learning environment more closely tracks an actual work experience and facilitates learning and application.

Courses Required for Certificate in Project Management:

OPRE 6271 Project Overview, Strategic and Process Management (2 semester hours) Introduces the project lifecycle, typical project management processes, leadership and teaming in project management, the relevance of business process analysis, strategic alignment of projects, and financial considerations in project selection.

OPRE 6372 Project Initiation (3 semester hours) Explores project management in a global environment, then bridges from strategy to project definition with a discussion of project selection and a focus on determining project requirements and managing changes. Course delivery is integrated with relevant modules from OB6301 Organizational Behavior. Prerequisite: OPRE6271.

OPRE 6373 Project Planning (3 semester hours) Covers initial stages in planning a project, including organizational and interpersonal considerations, scope management; quality planning; project team building; dealing with conflict; and negotiation. Course delivery is integrated with relevant modules from OB6301 Organizational Behavior. Prerequisite: OPRE6372.

OPRE 6374 Project Planning and Execution (3 semester hours) Continues the discussion of planning techniques from OPRE6373 and introduces execution phase processes. Topics include scheduling, resource planning, budgeting, cost management, negotiation skills development, and risk management. Prerequisite: OPRE6373.

OPRE 6375 Project Execution and Closeout (3 semester hours) Continues the discussion of planning and execution techniques from OPRE6374 and discusses project closeout. Topics include quantitative decision making, project information databases, balanced scorecards, project procurement management, earned value management, quality measurement and control, and influence and persuasion. Prerequisite: OPRE6374.

OPRE 6376 Advanced Project Management and Simulation (3 semester hours) Explores project organizational competence, maturity models, project portfolio management, program management, PM offices, alternate project management methodologies, and simulates a project lifecycle. Prerequisite: OPRE6375.

MAS 6101 Legal Considerations in Project Management (1 semester hour) Provides an overview of legal issues encountered during a project. Topics include civil and criminal law; intellectual property considerations; and OSHA, safety, environmental and real estate law.

OB 6301 Organizational Behavior (3 semester hours) The study of human behavior in organizations. Emphasizes theoretical concepts and practical methods for understanding, analyzing, and
predicting individual, group, and organizational behavior. Topics include work motivation, group
dynamics, decision making, conflict and negotiation, leadership, power, and organizational
culture. Ethical and international considerations are also addressed. (3-0) S

Master of Science in Management and Administrative Sciences with
an emphasis in Project Management

A Master of Science degree is awarded after the completion of an additional 18 credit hours beyond the
Project Management Core requirements. The MS–MAS in Project Management requires the following
coursework:

**MS-MAS in Project Management supplemental curriculum:**
AIM 6201 Financial Accounting
AIM6202 Managerial Accounting
MECO 6303 Business Economics
MIS 6204 Information Technology and MIS Fundamentals
OPRE 6301 Quantitative Introduction to Risk and Uncertainty in Business
MAS6v03 Seminar in Operations Management
MAS6v03 Seminar in Strategic Management

Executive MBA degree with an emphasis in Project Management

The Executive MBA is earned by waiving the Master of Science degree and completing an additional 14
credit hours, for a total of 53 hours. Students must include the executive core courses listed below to earn
the degree.

**Additional courses to fulfill requirements for the Executive MBA:**
BPS 6310 Strategic Management
FIN 6301 Financial Management
IMS 6204 Global Business
MKT 6301 Introduction to Marketing Management
OPRE 6302 Operations Management

Certificate and Degree Programs with an emphasis in Product
Lifecycle and Supply Chain Management

The graduate certificate and degree programs in Product Lifecycle and Supply Chain Management focus
on educating executives and industry sponsored employees by combining theory and practice. It
emphasizes the need to understand “the big picture”, the importance of renewed focus on product
lifecycle from design to disposal and supply chain from end to end. Students are trained to be effective
problem solvers, and to continuously improve product performance and supply chain efficiency. The
program will employ lectures, case studies, site visits, and the use of quantitative and qualitative methods
to meet the learning objectives of the program. Students are required to integrate classroom learning
with work projects. The program leverages the world-class faculty in the operations management and
industry leaders/practitioners to deliver the program. Following completion of the product lifecycle and
supply chain management core, students may then continue to complete the requirements for the Master of Science or the Master of Business Administration degree.

The project management emphasis certificate and degree programs are supported entirely by participant fees and special admissions requirements apply. Further information may be obtained from the program website: http://som.utdallas.edu/graduate/execed/projectMgmtProg/. Both degree and non-degree seeking students with undergraduate degrees can study towards the Graduate Certificate in Project Management. Potential students are required to complete an application, provide written professional references from 3 people, attend an interview with the program director, and request all universities attended send an official transcript.

Graduate Certificates in Product Lifecycle and Supply Chain Management

The Graduate certificate in Product Lifecycle and Supply Chain Management is awarded after completion of the product lifecycle and supply chain management core courses described below, totaling 15 credit hours.

Courses Required for Certificate in Product Lifecycle and Supply Chain Management (15 credit hours):

- OPRE 6366 Supply Chain Management
- OPRE 6370 Logistics and Distribution
- OPRE 6371 Purchasing and Sourcing Management
- OPRE 6379 Product Lifecycle Management
- OPRE 6364 Lean 6 Sigma

Master of Science in Management and Administrative Sciences with an emphasis in Product Lifecycle and Supply Chain Management

A Master of Science degree is awarded after the completion of an additional 22 credit hours beyond the Project Management Core requirements. The MS–MAS in Project Management requires the following coursework:

- MS-MAS in Product Lifecycle and Supply Chain Management supplemental curriculum (22 credit hours):
  - AIM 6201 Financial Accounting
  - AIM 6202 Managerial Accounting
  - FIN 6301 Financial Management
  - OB 6301 Organizational Behavior
  - OPRE 6301 Quantitative Introduction to Risk and Uncertainty in Business
  - OPRE 6302 Operations Management
  - OPRE 6367 Capstone Project (International Study)
  - OPRE 6368 Industry Supply Chains (International Study)

Executive MBA degree with an emphasis in Product Lifecycle and Supply Chain Management

The Executive MBA is earned by waiving the Master of Science degree and completing an additional 16 credit hours, for a total of 53 hours. Students must include the executive core courses listed below to earn the degree.
**Additional courses to fulfill requirements for the Executive MBA (16 Credit Hours):**

- BPS 6310 Strategic Management
- MIS 6204 Information Technology and MIS Fundamentals
- IMS 6204 Global Business
- MKT 6301 Introduction to Marketing Management
- MECO 6303 Business Economics
- OPRE Elective

**Executive Programs in Healthcare Management for Physicians and Senior Healthcare Administrators**

The *Master of Science in Healthcare Management* is a specialized business degree available to licensed MDs and DOs *and a select number of senior healthcare administrators*. The 36 credit hour healthcare management curriculum consists of nine 4-day residential classes OR any eight classes plus a self-directed field study. A different class is offered every two months and classes may be started at any time and taken in any order. Eight classes are eligible for up to 36 hours each of Category 1 CME credit toward the AMA Physician’s Award *and CEU credit for healthcare administrators*. Successful completion of any five classes is recognized by the award of a Graduate Certificate in Healthcare Management.

The curriculum is centered on real-life healthcare problems and cases. Classes are jointly taught by senior business and medical school faculty with outstanding academic credentials and real-world healthcare experience. Physicians and faculty work collaboratively in small teams to examine facts, evaluate alternatives and develop workable solutions.

The healthcare management curriculum consists of the following courses:

- **HMGT 6401 Negotiation and Conflict Management in Healthcare** *(Executive Education Course; 4 semester hours)* Develops critical negotiating and conflict management skills to significantly improve the quality of life within a medical organization. Topics include recognizing the difference between constructive and disruptive conflict, mediating disagreements among colleagues, negotiating against a stronger opponent and dealing with a disruptive or impaired colleague. (4-0) T

- **HMGT 6402 Financial Management of Healthcare Organizations** *(Executive Education Course; 4 semester hours)* Develops the critical skills needed to make financial decisions that reduce risk and increase the economic value of a healthcare organization. Topics include how to read and interpret healthcare financial statements, determining a medical organization’s cost of capital, using net present value to make value creating investment decisions; and evaluating the ability to attract and retain capital. (4-0) T

- **HMGT 6403 Medical Cost and Performance Management** *(Executive Education Course; 4 semester hours)* Develops powerful tools to measure and control healthcare costs and improve operating performance. Topics include identifying and controlling important medical cost drivers, using flexible budgeting to improve operating performance, measuring the profitability of individual medical services and developing both financial and non-financial measures of organizational performance. (4-0) T

- **HMGT 6404 Service Quality Improvement and Patient Satisfaction** *(Executive Education Course; 4 semester hours)* Provides the tools physicians need to position and grow their practices by improving the quality of their patient service processes. Topics include how to identify and improve key service processes, redesigning critical service processes to improve operating efficiency, and developing products and services that add patient value. (4-0) T

- **HMGT 6405 Healthcare Information Management and Technology** *(Executive Education Course; 4 semester hours)* Examines the critical success factors for the specification, selection and implementation of a healthcare IT system. Topics include analyzing healthcare IT architectures, developing an IT implementation plan and budget, and developing the governance and oversight requirements of a major IT project. (4-0) T
HMGT 6406 Strategic Leadership Management of Healthcare Organizations (Executive Education Course; 4 semester hours) Develops the strategic thinking skills required to create sustainable competitive advantage in a healthcare organization. Topics include critically assessing a medical organization’s competitive strengths and weaknesses, analyzing competitive threats to long-term survival, strategy formulation and the identification of potential strategic partners. (4-0) T

HMGT 6407 Healthcare Policy and Regulation (Executive Education Course; 4 semester hours) Examines the social and economic forces that are shaping US healthcare policy. Analyzes the federal government’s role in the financing and regulation of healthcare, discusses the government’s enforcement role with CMS and the OIG and analyzes the prospects for healthcare reform. This class is held in Washington, DC. (4-0) T

HMGT 6408 Motivational Leadership in Healthcare Organizations (Executive Education Course; 4 semester hours) Analyzes the types of behaviors which lead to high performance within healthcare organizations. Topics include individual behavior and motivation, behavioral job requirements and job/person matching, the differences between leadership and managerial behavior, and how to establish and maintain a high performance work climate. (4-0) T

HMGT 6409 Self-directed Field Study (Executive Education Course; 4 semester hours) A self-directed, faculty supervised field study of the participant’s practice or medical organization using the knowledge and skills acquired in the residential program. This course is non-residential. (4-0) T

HMGT 6410 Coaching as a Leadership Style (Executive Education Course; 4 semester hours) Develops highly effective coaching skills for fostering positive change in both individuals and teams. Topics include developing an effective coaching relationship through intelligent listening and authentic feedback, assessing an individual’s readiness for change and helping to increase colleagues’ personal and professional effectiveness. (4-0) T

HMGT 6V10 Special Topics in Healthcare Management (Executive Education Course) Issues in current Healthcare Management. Topics vary from semester to semester. May be repeated for credit to a maximum of six hours. (1-3-0)Y

HMGT 6V15 Self-Directed Field Study (1-4 credit hours) A self-directed, faculty supervised field study of the participant’s practice or medical organization using the knowledge and skills acquired in the residential program. This course is non-residential. (1-4-0) S

The Healthcare Management Executive MBA is a general business degree preferred by physicians and healthcare administrators who wish to pursue a career in healthcare consulting. It requires the completion of the healthcare management curriculum plus an additional 17 credit hours consisting of six non-healthcare related general business classes. These classes provide an integrated overview of functional areas of management as well as analytical tools for effective decision making.

The general business classes are taken online for maximum flexibility and convenience. The on-line classes require no on-campus visits.

The six general business classes required are:

FIN 6301 Financial Management
IMS 6200-6204 Global Business
MECO 6303 Business Economics

MKT 6301 Introduction to Marketing Management
OPRE 6301 Quantitative Introduction to Risk and Uncertainty in Business

OPRE 6302 Operations Management

The Healthcare Management Executive MS and MBA degrees are supported entirely by participant fees and special admissions requirements apply. Further information may be obtained from the program website: http://amme.utdallas.edu/.
Executive Program in Organizational Behavior and Coaching

As is the case with both Project Management and Healthcare Management for Physicians, students in the executive program in Organizational Behavior and Coaching can complete multiple levels of recognition in the program, including:

1. A Graduate Certificate in Executive and Professional Coaching after 15 credit hours;

2. A Master of Science degree in Management and Administrative Sciences after the completion of an additional 21 credit hours beyond certificate requirements.

This concentration focuses on organizational behavior and coaching theory, methodology and techniques. Students learn how to become instruments of individual and organizational change, lead and manage organizational transitions, work effectively when there is resistance to change, and develop skills as an internal and external practitioner. Students deepen their knowledge of individual and organizational behavior through the integration of theory and practice. They leave the program with a set of tools for personal, group, organization and community transformation, qualified to apply for professional accreditation by the International Coach Federation.

Classes are conducted utilizing the very best in interactive distance learning methodologies, making the program convenient, efficient, and geographically independent for busy professionals. Students are taught by outstanding master coaches with real-world coaching experience within business settings and School of Management faculty. Participants will be eligible to receive fifteen graduate credit hours upon completion of the graduate certificate. More information is available at [http://som.utdallas.edu/coaching](http://som.utdallas.edu/coaching)

### Graduate Certificate in Executive and Professional Coaching

The graduate level certificate requires the successful completion of the following six courses specific to Executive and Professional Coaching, including two Coaching Practicum, OB 6253:

**OB 6350 Introduction to Executive and Professional Coaching** (3 semester hours) The class provides students with a study of the origins and structure of coaching. Topics include, the current status of coaching, the history of coaching as a profession, basic coaching principles, ethics and standards, the core competencies of coaching, and basic coaching techniques and practices. It also addresses the role of personal style in coaching and how to adjust coaching behavior to fit the coaching requirements of clients. (3-0) T

**OB 6351 Coaching in the Business or Organizational Setting** (3 semester hours) This class prepares coaches to work with individuals and teams in a corporate or business environment. Topics include: 1) coaching and organizational behavior theories and models that facilitate client change within an organizational setting; 2) coaching executives with an emphasis on achieving business results; 3) coaching methods for teams and groups; and 4) coaching clients through career transitions. (3–0) T

**OB 6352 Advanced Coaching Models and Methods** (3 semester hours) The course provides students with advanced principles and practices for coaching individuals within the corporate setting. Topics include appreciative inquiry models and techniques, a survey of evidence-based coaching models, the use of language to promote change, research practices, the basics of clinical diagnosis and how to respond as a coach when clients display clinical symptoms.

**OB 6253 Coaching Practicum** (2 semester hours) Individual sessions with a supervising coach and small-group supervised sessions. For the individual sessions, students will be required to submit recordings for review or provide for real-time attendance by the supervising coach so that an evaluation of their coaching competence can occur. Feedback and guidance will help students develop their coaching skills. A comprehensive exam will be used to evaluate coaching competency. The exam will test for their knowledge, skills, and abilities as an executive and professional coach.

**MAS 7200OB 6V99 Special Topics: Coaching Practice Lab** (2 semester hours) Small group practice sessions for the purpose of applying and deepening the principles and techniques learned throughout the
coaching classes. The purpose of this class is to engage in applied learning through peer-to-peer interaction with instructor feedback.

Master of Science in Management and Administrative Sciences with a Concentration in Organizational Behavior and Coaching

After completion of the certificate requirements, students can go on to complete a Master of Science in Management and Administrative Sciences by completing another 21 hours of graduate level courses, including the courses in the MS-MAS core curriculum.

The MS-MAS core is comprised of the following courses:

**MS-MAS Core Curriculum:**
- AIM 6201 Financial Accounting
- MECO 6303 Business Economics
- MIS 6204 Information Technology and MIS Fundamentals
- OPRE 6301 Quantitative Introduction to Risk and Uncertainty in Business
- OB 6301 Introduction to Organizational Behavior (3 semester hours)

Organizational Behavior and Coaching students take the executive MS-MAS core set, and then draw the remainder of their courses from the following list specific to the Organizational Behavior component of the curriculum.

**Organizational Behavior Electives:**
- OB 6331 Power and Politics in Organizations (3 semester hours)
- **OB 6307 Strategic Human Resource Management (3 semester hours)**
- **OB 6326 Organizations and Organizing (3 semester hours)**
- OB 6332 Negotiation and Dispute Resolution (3 semester hours)
- OB 6337 Motivational Leadership in Organizations (3 semester hours) On Campus Only
- OB 6338 Coaching as a Leadership Style (3 semester hours) On Campus Only
- **OB 6355 Capstone in Organizational Behavior and Coaching (3 semester hours)**

Executive Master of Science Degree and Certificate Programs in Systems Engineering and Management (MS-SEM) Joint Degree Program the Erik Jonsson School of Engineering and Computer Science and Naveen Jindal School of Management

The M.S. in SEM program is delivered through an equal partnership between The Naveen Jindal School of Management and the Erik Jonsson School of Engineering and Computer Science. The course of study has been designed to meet the need for formalized education in the design, engineering and management of increasingly complex systems involving a large number of interconnected components.

The Master’s in Systems Engineering and Management (MS-SEM) will focus on educating industry-sponsored corporate employees in the disciplines of Systems Engineering, Systems Management, Entrepreneurship & Intrapreneurship, Product Line Development and Management, and Strategic Business Management. Target industries for the program include: aerospace, defense and space
systems; transportation systems; information and communications technology (ICT) systems; information assurance and cyber-security systems; healthcare systems; energy, environment and infrastructure systems; complex biological systems; and macro-economic and financial systems.

Prospective students should have a minimum of a BS in engineering, mathematics, physics, chemistry, economics or finance (in order to ensure adequate fundamental skills in mathematics) and at least 5 years of industry experience. We draw our faculty for the core courses from both the engineering and management schools; faculty from other schools on campus, and industry leaders with expertise in specific fields will be invited to teach courses as appropriate.

Course Requirements

The MS in SEM degree will require a total of 36 credit hours consisting of 12 courses in the non-thesis option or 10 courses plus 6 hours of thesis credit for the thesis option.

Non-thesis Option:

This program is designed to be flexible to accommodate different student backgrounds, allowing students to pick up areas in which they are deficient, while still guaranteeing core competency in systems engineering and engineering management.

Thesis Option:

An alternative to 36 credit hours required for the MS SEM degree, would be the completion of a minimum of 30 semester hours of graduate level lecture courses, including the required core courses, and 6 semester hours of a combination of Master’s research (SYSM 6V70) and thesis (SYSM 6V98), submitted to the graduate school, and a formal public defense of the thesis.

Students enrolled in the thesis option should meet with individual faculty members to discuss research opportunities and to choose a research advisor during the first or second semester that the student is enrolled. After the second semester of study, course selection should be made in consultation with the research advisor. Part-time students are encouraged to enroll in only one course during their first semester and in no more than two courses during any semester they are also working full-time.

Research and thesis hours cannot be counted in an MS in SEM degree plan unless a thesis is written and successfully defended. A supervising committee, which must be chosen in consultation with the student’s thesis advisor prior to enrolling for thesis credit, administers the defense. With advisor approval, the lecture courses may include some 5000 level courses. Full-time students at UTD who receive financial assistance are required to enroll in 9 semester credit hours during the Fall, Spring and Summer semesters.

Either Option:

In either option, students must earn a grade of B- or better in each of four core courses, two of which must be selected from the following engineering courses and two of which must be selected from the following management courses:

Required Courses:
Students are required to take 4 courses (a total of 12 credit hours) from a set of 8 courses in the table below. Two of the courses must be from the Engineering 1 section and two from the Management 1 section. The 4 required courses contribute a total of 12 credit hours towards the MS degree.

**Engineering Core Courses:**
SYSM 6301 Systems Engineering, Architecture and Design  
SYSM 6302 Dynamics of Complex Networks and Systems  
SYSM 6303 Quantitative Introduction to Risk and Uncertainty in Business  
SYSM 6304 Risk and Decision Analysis

**Management Core Courses:**
SYSM 6311 Systems Project Management  
SYSM 6312 Systems Financial Management  
SYSM 6313 Negotiating Deals & Resolving Conflict Within the Organization  
SYSM 6314 Manufacturing & Service Systems Planning & Analysis

Students will take additional courses from those described in the following pages.

**Recommended Elective Courses:** Choose any 18 hours of 6000 level courses or higher with approval of the advisor.

**Prescribed Elective Courses:** these consist of an additional 4 courses (a total of 12 credit hours) from the set of 20 courses listed in the table, excluding the four courses already taken for the requirement above. At least two of these courses must be chosen from the two Engineering sections in the table.

### SEM Core Curriculum

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<tr>
<th>Section &amp; Course</th>
<th>Course Title</th>
<th>Credit</th>
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<tbody>
<tr>
<td><strong>Engineering 1</strong></td>
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<tr>
<td>SYSM6301</td>
<td>Systems Engineering Architecture &amp; Design</td>
<td>3</td>
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<tr>
<td>SYSM6302</td>
<td>Dynamics of Complex Networks &amp; Systems</td>
<td>3</td>
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<tr>
<td>SYSM6303</td>
<td>Quantitative <em>Introduction to Risk and Uncertainty in Probability, Stochastic Processes</em></td>
<td>3</td>
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<tr>
<td>SYSM6304</td>
<td>Risk and Decision Analysis <em>Assessment and Management</em></td>
<td>3</td>
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<tr>
<td><strong>Management 1</strong></td>
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<tr>
<td>SYSM6311</td>
<td>Systems Project Management</td>
<td>3</td>
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<tr>
<td>SYSM6312</td>
<td>Systems Financial Management</td>
<td>3</td>
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<tr>
<td>SYSM6313</td>
<td>Negotiating Deals &amp; Resolving Conflict within the Organization</td>
<td>3</td>
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<tr>
<td>SYSM6314</td>
<td>Manufacturing and Service Systems Planning and Analysis</td>
<td>3</td>
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<tr>
<td>Engineering 2</td>
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<tr>
<td>SYSM6305</td>
<td>Dynamic Systems Optimization</td>
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<tr>
<td>SYSM6306</td>
<td>Engineering Systems: Modeling and Simulation of Systems</td>
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<tr>
<td>SYSM63107</td>
<td>Linear Systems and Control Theory</td>
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<tr>
<td>SYSM63508</td>
<td>Software Maintenance, Evolution and Re-engineering</td>
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<tr>
<td>SYSM636109</td>
<td>Advanced Requirements Engineering</td>
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<tr>
<td>SYSM636210</td>
<td>Software Testing, Validation, Verification</td>
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<th>Management 2</th>
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<td>SYSM6315</td>
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<td>SYSM6318</td>
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<td>SYSM6319</td>
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<tr>
<td>SYSM6320</td>
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</tbody>
</table>

Free Elective Courses: Working with a SEM program advisor, students take four additional and distinct courses from either the remaining 12 courses from the lists above that have not already been taken as required courses or prescribed elective courses, or from other courses offered in management or engineering that form a “concentration” or “specialization” in specific industry sectors.

For the free electives, students will be able to take any four additional and distinct courses of the remaining 12 core courses that have not already been taken as required courses or prescribed elective courses. Students will also be able to take additional free elective courses that are already being offered in management or in engineering that will allow “concentration” or “specialization” in specific industry sectors, including the following:

<table>
<thead>
<tr>
<th>Areas for Free Electives</th>
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<tbody>
<tr>
<td>1. Healthcare Services</td>
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<tr>
<td>2. Energy, Resources and Infrastructure</td>
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<tr>
<td>3. Complex Brain, Biological and Behavioral</td>
</tr>
<tr>
<td>4. Aerospace, Defense and Space</td>
</tr>
<tr>
<td>5. Telecom and IT Networks</td>
</tr>
<tr>
<td>6. Information Assurance and Cyber-security</td>
</tr>
<tr>
<td>7. Arts and Technology and Web-based</td>
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</tbody>
</table>
Thesis Option: An alternative to 36 credit hours required for the MS SEM degree, would be to take 30 credit hours of courses and, in addition, write a Master’s Thesis, in lieu of 6 credit hours of free electives.

Areas of Research
The faculty in Systems Engineering and Management conduct research in control systems, systems optimization, supply chain management, entrepreneurship and innovation, and several other areas.

Interdisciplinary Opportunities
In keeping with the established tradition of research at UT Dallas, the Systems Engineering and Management Program encourages students to interact with researchers in other strong programs, including computer science, electrical engineering, mechanical engineering, bioengineering, computer engineering, operations management, finance, marketing, innovation and entrepreneurship, and business management.

Note: SEM includes two non-degree certificate options (listed below), one in systems engineering and one in systems management. Students who complete both certificates can go on to earn the M.S. degree by taking additional program courses, and meeting the requirements set out above.

SEM Certificate Programs

Curriculum Requirements
Students have a choice of two different SEM certificates: a Certificate in Systems Engineering, or, a Certificate in Systems Management. Each certificate requires 12 credit hours. The courses are offered in an Executive Education, 4-hour module format.

(1) The Certificate in Systems Engineering requires students to complete over the period of one academic year two courses from the set of engineering courses listed below, and any two additional courses from the remainder of the 20 SYSM-prefix courses listed below in either group, engineering or management.

<table>
<thead>
<tr>
<th>Systems Engineering Courses</th>
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<tbody>
<tr>
<td>Prefix &amp; Number</td>
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<td>------------------</td>
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<tr>
<td>SYSM 6301</td>
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<tr>
<td>SYSM 6302</td>
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<tr>
<td>SYSM 6303</td>
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</tbody>
</table>
(2) The **Certificate in Systems Management** requires students to complete over the period of one academic year two courses from the set of management courses listed below, and any two additional courses from the remainder of the 20 SYSM-prefix courses listed in either group, engineering or management.

<table>
<thead>
<tr>
<th>Prefix &amp; Number</th>
<th>Management Course Titles</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>SYSM 6311</td>
<td>Systems Project Management</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6312</td>
<td>Systems Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6313</td>
<td>Negotiating Deals &amp; Resolving Conflict within the Organization</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6314</td>
<td>Manufacturing and Service Systems Planning and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6315</td>
<td>The Entrepreneurial Experience</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6316</td>
<td>Innovation within the Corporation</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6317</td>
<td>The Management of High-Technology Products</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6318</td>
<td>Marketing Management and Marketing Systems Analysis</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6319</td>
<td>Business Economics</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6320</td>
<td>Strategic Leadership</td>
<td>3</td>
</tr>
</tbody>
</table>
Engineering Course Descriptions:

**SYSM 6301 Systems Engineering, Architecture and Design (3 credit hours)**
The course will consider concepts related to the architecture and design of large-scale and decentralized Systems from technical and management perspectives. An overview of Systems architectures, requirements analysis, design tradeoffs, and reliability will be discussed through case studies and mathematical techniques. Students will explore the history and current state of the art in systems architecture and design concepts, international standardization bodies, engineering processes, notations, and tool support from both theoretical and practical perspectives. Prerequisites: none (3-0 Y)

**SYSM 6302 Dynamics of Complex Networks and Systems (3 credit hours)**
**MECH 6302 Dynamics of Complex Structures (3 semester hours)**
Design, development, manufacturing and analysis of large, complex mechanical systems. Prerequisite: MECH 3302 or equivalent. (3-0 Y)

**SYSM 6303 Quantitative Risk, Probability, Stochastic Processes (3 credit hours)**
Risk analysis is becoming prevalent in most technical and business aspects of economic activity. In this course, basic approaches of risk analysis in industry and finance will be presented. A solid review of the methodology based on probabilistic, statistical and decision making approaches will be made. Prerequisites: none (3-0 Y)

**SYSM 6304 Risk Assessment and Management (3 credit hours)**
This course will familiarize participants with various kinds of risk that an organization may face: methodologies for identifying these risks and classifying them into various categories, their extent and their potential for causing harm; methods for quantifying the potential impact of various kinds of risk, as well as the cost of implementing risk management techniques; and risk management and implementation strategies at an organizational level. Prerequisites: none (3-0 Y)

**SYSM 6305 Dynamic Systems Modeling & Analysis (3 credit hours)**
This course will address linear and non-linear Systems and fundamental properties of dynamical Systems. Techniques such as frequency domain analysis of linear Systems and numerical methods will be discussed. Chaotic Systems and stability of dynamical Systems and will also be addressed. Prerequisites: none (3-0 Y)

**SYSM 6306 Modeling & Simulation of Engineering Systems (3 credit hours)**
Principles of computational modeling and simulation of complex systems. Monte Carlo methods, Hierarchical simulation systems. Prerequisites: none. (3-0 Y)

**SYSM 6331 (MECH 6331) Systems & Control Theory (3 credit hours)**
Systems and control theory: state space, convolution integrals, transfer functions, stability, controllability, observability, and feedback. Prerequisites: MECH 2300 and MECH 4310 or equivalents. (3-0 Y)

**SYSM 6356 (CS 6356/SE 6356) Software Maintenance, Evolution & Re-engineering (3 credit hours)**
Principles and techniques of software maintenance. Impact of software development process on software justifiability, maintainability, evolvability, and planning of release cycles. Use of very high level languages and dependencies for forward engineering and reverse engineering. Achievements, pitfalls, and trends in software reuse, reverse-engineering, and re-engineering. Prerequisite: CE/CS/SE 5354. (3-0 Y)

**SYSM 6361 (SE 6361/CS 6361) Advanced Requirements Engineering (3 credit hours)**
System and software requirements engineering. Identification, elicitation, modeling, analysis, specification, management, and evolution of functional and non-functional requirements. Strengths and weaknesses of different techniques, tools, and object-oriented methodologies. Interactions and trade-offs among hardware, software, and organization. System and sub-system integration with software and organization as components of complex, composite systems. Transition from requirements to design. Critical issues in requirements engineering. Prerequisite: CS/SE 5364. (3-0 Y)

**SYSM 6367 (SE 6367/CE 6367/CS 6367) Software Testing, Validation, Verification (3 credit hours)**
Fundamental concepts of software testing. Functional testing. GUI based testing tools. Control flow
Management Course Descriptions

SYSM 6311 Systems Project Management (3 credit hours) Systems project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives. The course will cover critical path methods for planning and controlling projects including time and cost tradeoffs, resource utilization, organizational design, conflict resolution and stochastic considerations. Prerequisites: none (3-0) Y

SYSM 6312 Systems Financial Management (3 credit hours) Theoretical and procedural considerations in the administration of the finance function in the individual business firm; planning, fundraising, controlling of firm finances; working capital management, capital budgeting and cost of capital. This course is intended to develop capacity to both (1) recognize the relevant costs of engineering and systems projects for investment decision purposes, and (2) measure the true economic value (to be) created, including consideration of associated project and system risks. We will deal with the relationship of project risk to those of the entire firm, with performance indicators that are used by investors and managers, and with costs of capital that are affected by funding choices and project risk. Prerequisites: none (3-0) Y

SYSM 6313 Negotiating Deals & Resolving Conflict Within the Organization (3 credit hours) This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal, group, and international settings. Emphasis is placed on understanding influence and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises. Prerequisites: none (3-0) Y

SYSM 6314 Manufacturing & Service Systems Planning & Analysis (3 credit hours) Manufacturing & Service Systems Planning & Analysis is the study of management related to transforming inputs to outputs for both manufacturing and service organizations. Its fundamental purpose is the adding of value to inputs—materials, labor, capital and management—to create outputs—products or services which customers want—throughout the supply chain. Prerequisites: none. (3-0) Y

SYSM 6315 The Entrepreneurship Experience (3 credit hours) This course is designed to provide student teams with practical experience in the investigation, evaluation and recommendation of technology and/or market entry strategies for a significant new business opportunity. Projects will be defined by the faculty and will generally focus on emerging market opportunities defined by new technologies of interest to a sponsoring corporate partner. Teams will be comprised of management and engineering graduate students, mentored by faculty and representatives of the partnering company. Evaluation will be based on papers, presentations and other deliverables defined on a case-by-case basis. Prerequisites: none (3-0) Y

SYSM 6316 Innovation within the Corporation (3 credit hours) Intrapreneurs are the entrepreneurs within established corporations who combine innovation, creativity and leadership to develop and launch new products, new product lines and new business units that grow revenues and profits from within. The course seeks to equip student with the skills and perspectives required to initiate new ventures and create viable businesses in dynamic and uncertain environments in the face of organizational inertia and other sources of resistance to innovation. Prerequisites: none (3-0) Y
SYSM 6317 The Management of High Tech Products (3 credit hours) Building on the premise that successful product management involves getting the right product to the right customer at the right price at the right time, the course will teach techniques in product definition and requirements; product development; management of internal resources, including manufacturing, sales and management; costing and pricing decisions; product planning and winning the right design win. Prerequisites: none (3-0) Y

SYSM 6318 Marketing Management, Marketing Systems Analysis (3 credit hours) Overview of marketing management methods, principles and concepts including product, pricing, promotion and distribution decisions.

The basic objective of this course is to help executives and managers develop relevant marketing skills and philosophies and to examine the trends and applicable techniques in the area of marketing management. This course should enhance understanding of marketing problems, the setting in which marketing decisions are made, the tools available to facilitate these decisions, and the impact of the decisions for the firm and the “larger marketplace.” Prerequisites: none (3-0) Y

SYSM 6319 Business Economics (3 credit hours) This course provides foundations of the economic analysis of business problems, with special emphasis on the function and determination of market prices in production and consumption. Supply and demand, price theory, production theory, trade theory with reference to the global economy, the effects of tax and other policies in the economy, and essential elements of the banking system and monetary policy are addressed. Prerequisites: none (3-0) Y

SYSM 6320 Strategic Leadership (3 credit hours) This course addresses the challenge of leading organizations in dynamic and challenging environments. Overall goal is to not only question one’s assumptions about leadership, but also enhance skills and acquire new content knowledge. Topics include visionary and transformational leadership; post-heroic leadership; empowerment; leveraging & combining resources; designing organizations, and ethics. Prerequisites: none (3-0) Y

Engineering Course Descriptions

SYSM 6301 Systems Engineering, Architecture and Design (3 credit hours) Architecture and design of large-scale and decentralized systems from technical and management perspectives. Systems architectures, requirements analysis, design tradeoffs, and reliability through case studies and mathematical techniques. International standardization bodies, engineering frameworks, processes, notations, and tool support from both theoretical and practical perspectives. Prerequisites: none (3-0) Y

SYSM 6302 Dynamics of Complex Networks and Systems (3 credit hours) Design, development, and analysis of large, complex interconnected networks and systems. Prerequisites: none (3-0) Y

SYSM 6303 (OPRE 6301) Quantitative Introduction to Risk and Uncertainty in Business (3 credit hours). Introduction to statistical and probabilistic methods and theory applicable to situations faced by managers. Topics include: data presentation and summarization, regression analysis, fundamental probability theory and random variables, introductory decision analysis, estimation, confidence intervals, hypothesis testing, and One Way ANOVA (Some sections of this class may require a laptop computer). Prerequisite: MATH 5304 or equivalent. (3-0) S

SYSM 6304 (OPRE 6335) Risk and Decision Analysis (3 credit hours) This course provides an overview of the main concepts and methods of risk assessment, risk management, and decision analysis. The methods used in industry, such as probabilistic risk assessment, six sigma, and reliability, are discussed. Advanced methods from economics and finance (decision optimization and portfolio analysis) are presented. Prerequisite: SYSM 6303 or OPRE 6301. (3-0) T
SYSM 6305 Dynamic Systems Optimization (3 credit hours) System modeling using time-domain and frequency domain approaches. Dynamic programming, conditions for optimality. Relation to control theory and operations research. Applications to real-world engineering. Prerequisites: none (3-0) Y

SYSM 6306 (BMEN 6372/MECH 6314) Engineering Systems: Modeling & Simulation (3 credit hours) This course will present principles of computational modeling and simulation of systems. General topics covered include: parametric and non-parametric modeling; system simulation; parameter estimation, linear regression and least squares; model structure and model validation through simulation; and, numerical issues in systems theory. Techniques covered include methods from numerical linear algebra, nonlinear programming and Monte Carlo simulation, with applications to general engineering systems. Modeling and simulation software is utilized (MATLAB/SIMULINK). Prerequisites: none. (3-0) Y

SYSM 6307 (EESC 6331/MECH 6300) Linear Systems (3 semester hours) State space methods of analysis and design of linear dynamical systems. Coordinate transformations and tools from advanced linear algebra. Controllability and observability. Lyapunov stability analysis. Pole assignment, stabilizability, detectability. State estimation for deterministic models, observers. Introduction to the optimal linear quadratic regulator problem. Prerequisites: EE 4310 or MECH 4310 or equivalents (3-0) Y

SYSM 6308 (CS 6356/SE 6356) Software Maintenance, Evolution & Re-engineering (3 credit hours) Principles and techniques of software maintenance. Impact of software development process on software justifiability, maintainability, evolvability, and planning of release cycles. Use of very high-level languages and dependencies for forward engineering and reverse engineering. Achievements, pitfalls, and trends in software reuse, reverse engineering, and re-engineering. Prerequisite: CE/CS/SE 5354 or consent of instructor. (3-0) Y

SYSM 6309 (SE 6361/CS 6361) Advanced Requirements Engineering (3 credit hours) System and software requirements engineering. Identification, elicitation, modeling, analysis, specification, management, and evolution of functional and non-functional requirements. Strengths and weaknesses of different techniques, tools, and object-oriented methodologies. Interactions and trade-offs among hardware, software, and organization. System and sub-system integration with software and organization as components of complex, composite systems. Transition from requirements to design. Critical issues in requirements engineering. Prerequisite: CS/SE 5354 or consent of instructor. (3-0) S

SYSM 6310 (SE 6367/CE 6367/CS 6367) Software Testing, Validation, and Verification (3 credit hours) Fundamental concepts of software testing. Functional testing. GUI based testing tools. Control flow based test adequacy criteria. Data flow based test adequacy criteria. White box based testing tools. Mutation testing and testing tools. Relationship between test adequacy criteria. Finite state machine based testing. Static and dynamic program slicing for testing and debugging. Software reliability. Formal verification of program correctness. Prerequisites: CE/CS/SE 5354 or consent of instructor. (3-0) Y

SYSM 6V70 Research In Systems Engineering and Management (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) R

SYSM 6V80 Special Topics in Systems Engineering and Management (1–6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

SYSM 6V98 Thesis (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0)
Management Course Descriptions

SYSM 6311 (OPRE 6362) Systems Project Management (3 credit hours) Systems project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives. The course will cover critical path methods for planning and controlling projects including time and cost tradeoffs, resource utilization, organizational design, conflict resolution and stochastic considerations. Prerequisites: none (3-0) Y

SYSM 6312 (FIN 6301) Systems Financial Management (3 credit hours) Theoretical and procedural considerations in the administration of the finance function in the individual business firm; planning, fundraising, controlling of firm finances; working capital management, capital budgeting and cost of capital. Co-prerequisites: OPRE 6301 and ACCT 6201, or consent of instructor. (3-0) Y

SYSM 6313 (OB 6332) Negotiating Deals & Resolving Conflict within the Organization (3 credit hours) This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal, group, and international settings. Emphasis is placed on understanding influence and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises. Prerequisite: OB6301 or consent of instructor. (3-0) Y

SYSM 6314 Manufacturing & Service Systems Planning & Analysis (3 credit hours) Manufacturing & Service Systems Planning & Analysis is the study of management related to transforming inputs to outputs for both manufacturing and service organizations. Its fundamental purpose is the adding of value to inputs - materials, labor, capital and management - to create outputs - products or services which customers want - throughout the supply chain. Prerequisites: none (3-0) Y

SYSM 6315 (ENTP 6398) The Entrepreneurial Experience (3 credit hours) This course is designed to provide student teams with practical experience in the investigation, evaluation and recommendation of technology and/or market entry strategies for a significant new business opportunity. Projects will be defined by the faculty and will generally focus on emerging market opportunities defined by new technologies of interest to a sponsoring corporate partner. Teams will be comprised of management and engineering graduate students, mentored by faculty and representatives of the partnering company. Evaluation will be based on papers, presentations and other deliverables defined on a case-by-case basis. Prerequisites: ENTP 6370 or consent of instructor (3-0) Y

SYSM 6316 (ENTP 6388) Innovation within the Corporation (3 credit hours) Intrapreneurs are the entrepreneurs within established corporations who combine innovation, creativity and leadership to develop and launch new products, new product lines and new business units that grow revenues and profits from within. The course seeks to equip student with the skills and perspectives required to initiate new ventures and create viable businesses in dynamic and uncertain environments in the face of organizational inertia and other sources of resistance to innovation. Course topics include the elements of strategic analysis and positioning for competitive advantage in dynamic markets, and the structuring, utilization and mobilization of the internal resources of existing firms in the pursuit of growth and new market opportunities. Prerequisites: OB 6301 and ENTP 6370 or consent of instructor (3-0) Y

SYSM 6317 Management of High-Technology Products (3 credit hours) Building on the premise that successful product management involves getting the right product to the right customer at the right price at the right time, the course will teach techniques in product identification and requirements; product development; management of internal resources, including manufacturing,
sales and management; costing and pricing decisions; product planning and winning the right design win. Prerequisites: none (3-0) Y

SYSM 6318 (MKT 6301) Marketing Management and Marketing Systems Analysis (3 credit hours) Overview of marketing management methods, principles and concepts including product, pricing, promotion and distribution decisions. Prerequisites: none (3-0) Y

SYSM 6319 (MECO 6303) Business Economics (3 credit hours) Provides foundations of the economic analysis of business problems, with special emphasis on the function and determination of market prices in production and consumption. Supply and demand, price theory, production theory, trade theory with reference to the global economy, the effects of tax and other policies in the economy, and essential elements of the banking system and monetary policy are addressed. Prerequisites: Math 5304 or equivalent or consent of instructor (3-0) Y

SYSM 6320 (BPS 6332) Strategic Leadership (3 credit hours) Addresses the challenge of leading organizations in dynamic and challenging environments. Overall goal is to not only question one's assumptions about leadership, but also enhance skills and acquire new content knowledge. Topics include visionary and transformational leadership; post-heroic leadership; empowerment; leveraging & combining resources; designing organizations; and ethics.. Prerequisites: none (3-0) Y
Master of Science in Finance

Degree Requirements

At least 36 hours of management course work beyond prerequisite courses is required, including 12 hours of basic business core courses and 24 hours of graduate finance courses. The M.S. in Finance is designed for students with or without previous educational background in finance. Many students will select the Financial Management option which allows them to design a program to their needs. For students wanting a more focused program, three concentrations are available. Students who choose not to concentrate in a particular area of finance will follow the guidelines for the Financial Management option. However, students who wish to concentrate on a particular area of finance can choose one of three concentrations: Investment Management, Financial Analyst, or Financial Engineering and Risk Management. The Investment Management concentration is designed for students interested in pursuing an investment career and completing the Chartered Financial Analyst (CFA) examinations. The Financial Analyst concentration is designed for students interested in corporate finance, investment banking, venture capital, private equity, or corporate restructuring and turnarounds. The Financial Engineering and Risk Management concentration is designed for students with the quantitative ability to pursue a career applying quantitative methods to investment and risk management problems. Because these concentrations have been designed to prepare students for certain certifications, students are recommended to complete all the course work in a particular concentration in order to prepare for its associated certification.

Prerequisites

Calculus, basic statistics, and competence in personal computing are required as prerequisites. Candidates that have not taken equivalent courses will need to take MATH 5304 to meet the calculus requirement; OPRE 6301 to complete the basic statistics requirement, and BA 3351 to complete the personal computing requirement.

Basic Core Courses (12 credit hours)

All students enrolling in the Master of Science in Finance program must complete the following Basic Business Core courses, or their equivalents. Please see the catalog for further prerequisite information.

- AIM 6305 Accounting for Managers or AIM 6201 and AIM 6202
- MECO 6303 Business Economics
- FIN 6301 Financial Management
- FIN 6306 Quantitative Methods in Finance

Concentrations:

Investment Management (CFA) Concentration (24 hours):

- AIM 6344 Financial Statement Analysis
- FIN 6311 Valuation Models and Practices
- FIN 6310 Investment Management
- FIN 6314 Fixed income securities and their derivatives
- FIN 6320 Financial markets and institutions or FIN 6380 Practicum in Investment Management
- FIN 6350 Advanced Financial Management
- FIN 6360 Options and Futures Markets
- FIN 6364 Advanced Investment Management
And one of following four courses:
FIN 6320 Financial markets and institutions or
FIN 6325 Macroeconomics and the Financial System
FIN 6330 Behavioral Finance
FIN 6380 Practicum in Investment Management

Financial Analyst Concentration (24 hours):
AIM 6332: Intermediate Financial Accounting II
FIN 6311 Valuation Models and Practices
FIN 6316: Private Equity Finance or FIN 6356: Mergers and Acquisitions
FIN 6350: Advanced Financial Management
FIN 6352: Financial Modeling or FIN 6357: Corporate Restructuring and Turnarounds
FIN 6355: Corporate Finance and Policy

And three of the following four courses:
FIN 6316: Private Equity Finance or FIN 6356: Mergers and Acquisitions
FIN 6352: Financial Modeling or FIN 6357: Corporate Restructuring and Turnarounds
FIN 6356: Mergers and Acquisitions or
FIN 6357: Corporate Restructuring and Turnarounds

Financial Engineering and Risk Management Concentration (24 hours):
FIN 6310 Investment Management
FIN 6314 Fixed income securities and their derivatives
FIN 6360 Options and Futures Markets
FIN 6370 Theory of Finance or FIN 6364 Advanced Investment Management
FIN 6381 Introductory Mathematical Finance
FIN 6383: Financial Asset Pricing and Engineering
ECO 6311 Statistics for Economists or OPRE 7310 Probability and Stochastic Processes
MECO 6312 Applied Econometrics and Times Series Analysis or ECONMECO 6306 Applied Econometrics

And three of the following five courses:
FIN 6364 Advanced Investment Management
FIN 6370 Theory of Finance or FIN 6364 Advanced Investment Management
FIN 6381 Introductory Mathematical Finance
FIN 6383: Financial Asset Pricing and Engineering
ECON 6305: Mathematical Economics

Financial Management Option (24 hours):
Students must complete eight courses; of which at least one course must come from category A and at least five must come from category B. **Students may do an internship (FIN 6V98) as part of this option.**
Category A: AIM 6330, AIM 6332, AIM 6341, AIM 6342, AIM 6344, AIM 6345, AIM 6346, AIM 6351, AIM 6342, AIM 6380.

Category B: ECON 6305, ECON 6306, ECON 6311, FIN 6308, FIN 6310, FIN 6311, FIN 6314, FIN 6315, FIN 6316, FIN 6320, FIN 6321, FIN 6322, FIN 6323, FIN 6325, FIN 6330, FIN 6340, FIN 6350, FIN 6352, FIN 6355, FIN 6356, FIN 6357, FIN 6360, FIN 6364, FIN 6366, FIN 6370, FIN 6381, FIN 6383, FIN 6384, FIN 6V98, MECO 6312, OPRE 7310, REAL 6305, REAL 6310, REAL 6320.
Master of Science in Healthcare Management

Degree Requirements

The Master of Science in Healthcare Management prepares students for roles in the leadership and management of the U.S. healthcare industry. It integrates a thorough grounding in advanced business management theory and practice with an understanding of the structure, operation and financing of the U.S. healthcare system. The curriculum is customized to accommodate the needs of two different audiences:

**Professional Track** – for healthcare administrators and those desiring a management career in the healthcare industry; and

**Executive Track** – for physicians and senior healthcare executives.

**Professional Track**

The Professional Track MS in Healthcare Management is a 36 credit hour program consisting of business core, healthcare management courses and electives. Students must maintain a 3.0 grade point average in both core courses and overall to qualify for the M.S. degree.

**Required Business Core (15 hours)**
- OB 6301 Organizational Behavior
- FIN 6301 Financial Management
- AIM 6305 Accounting for Managers
- MKT 6301 Marketing Management
- OPRE 6301 Quantitative Intro to Risk and Uncertainty

**Healthcare Management Core (12 hours)**

The following four courses are required:
- HMGT 6320 The American Healthcare System
- HMGT 6321 Strategic Management of Healthcare Organizations
- HMGT 6323 Healthcare Informatics
- HMGT 6330 Healthcare Law, Policy, and Regulation

Choose at least 6 credit hours from the following:
- HMGT 6322 Healthcare Cost Management and Control
- HMGT 6324 (OB 6332) Healthcare Negotiation and Dispute Resolution
- HMGT 6325 Healthcare Operations Management
- HMGT 6327 Information and Knowledge Mgmt in Healthcare
- HMGT 6329 Seminar in Healthcare Management
- HMGT 6331 Healthcare Economics
- HMGT 6332 Quality Improvement in Healthcare-6 Sigma and Beyond
- HMGT 6333 Ethics in Healthcare Management
- HMGT 6334 (MIS 6324) Healthcare Analytics (Business Intelligence Software and Techniques)
- HMGT 6380 (AIM 6380) Internal Audit
- HMGT 6382 (AIM 6382) Advanced Auditing
- HMGT 6336 (AIM 6336) Information Technology Audit and Risk Management
- OB 6307 Strategic Human Resources Management
- OB 6331 Power and Politics in Organizations
- MKT 6309 Marketing Research
- OB 6321 Principles of Leadership
Other Electives (3 hours)
The 3 hour Business Management elective requirement may be met by additional healthcare courses as well as by advanced courses in other management disciplines.

Suggested elective concentrations:

**Healthcare Informatics**
For students desiring a strong background in the application of IT in the healthcare field.
- HMGT 6323 Healthcare Informatics (core course)
- HMGT 6327 Information and Knowledge Management in Healthcare
- HMGT 6334 Healthcare Analytics (Business Intelligence Software and Techniques)

**Healthcare Internal Auditing**
For students with a desire for an internal auditing career with a healthcare provider organization
- HMGT 6380 Internal Audit
- HMGT 6382 Advanced Auditing
- HMGT 6336 Information Technology Audit and Risk Management

**Healthcare Operations**
For students desiring a broad-based background in management of healthcare organizations
- HMGT 6325 Healthcare Operations Management
- HMGT 6332 Quality Improvement in Healthcare—Six Sigma and Beyond
- HMGT 6322 Healthcare Cost Management and Control, or HMGT 6334 Healthcare Analytics

**Executive Track**
The Executive Track for physicians and senior healthcare executives is delivered in a non-semester format. The 36 credit hour curriculum consists of nine 4-day residential classes. A different class is offered every two months and classes may be started at any time and taken in any order. The program is jointly taught by faculty from the University of Texas at Dallas School of Management and The University of Texas Southwestern Medical Center. Eight classes are eligible for up to 36 hours each of Category 1 CME credit toward the AMA Physician’s Recognition Award and CEU credit for healthcare executives.

Successful completion of any five classes is recognized by the award of a Graduate Certificate in Healthcare Management. Completion of the nine healthcare management classes OR any eight classes plus a self-directed field study is recognized by the award of a Master of Science in Healthcare Management. Students must maintain a 3.0 overall grade point average in order to qualify for the M.S. degree.

The Executive Track MS in Healthcare Management is supported entirely by participant fees and special admission requirements apply. For information, contact the program office at (972) 883-6252.

- HMGT 6401 Negotiation and Conflict Management in Healthcare
- HMGT 6402 Financial Management of Healthcare Organizations
- HMGT 6403 Medical Cost and Performance Management
- HMGT 6404 Service Quality Improvement and Patient Satisfaction
- HMGT 6405 Healthcare Information Management and Technology
- HMGT 6406 Strategic Leadership of Healthcare Organizations
- HMGT 6407 Healthcare Policy and Regulation
- HMGT 6408 Motivational Leadership in Healthcare Organizations
- HMGT 6410 Coaching as a Leadership Style
- HMGT 6V15 Self-Directed Field Study
Master of Science in International Management Studies

Degree Requirements

The University’s general degree requirements are discussed here.

The M.S. degree is obtained by completing satisfactorily a 36-hour program beyond prerequisite courses for School of Management graduate programs. The program provides students the opportunity to learn in-depth the fundamentals of (1) functional areas of management, (2) international management, and (3) cultural, sociopolitical and geographical constraints affecting international business decisions. It also provides educational opportunities for the student with non-business undergraduate training to prepare for a career in the management of international trade and industry.

The School of Management encourages all students studying for the M.S. degree to master one foreign language. However, equally important is direct experience of business practices in a foreign country. In the past, U.T. Dallas has organized study abroad opportunities in Russia, China, Hong Kong, Singapore, Vietnam, Thailand, Indonesia, and India. Foreign study courses, usually offered between semesters, vary in length from two to three weeks and are generally taken as part of an Area Studies course.

Prerequisites

Prerequisite knowledge in calculus and competence in personal computing are requirements for the program. A deficiency in calculus may be remedied by taking MATH 5304 (Applied Mathematical Analysis for Non Majors I) or MATH 1325 (with a B or better). Competence in personal computing may be demonstrated by completing BA 3351 with a grade of B or better or completing an equivalent course at another university with a grade of B or better. Deficiencies must be remedied within the first 12 hours of graduate work. Degree credit is not earned for program prerequisites.

Students must maintain a 3.0 grade point average in both core courses and in aggregate courses to qualify for the M.S. degree.

Basic Business Core (8 credit hours)
All students enrolling in MA-IMS must complete the following Basic Business Core Courses:
- AIM 6201 Financial Accounting (2)
- FIN 6301 Financial Management * (3)
- MKT 6301 Introduction to Marketing Management (3)

IMS Foundation Courses (11 credit hours)
- IMS 6204 (Formerly IMS 5200) Global Business (2)
- IMS 6310 International Marketing Management (3)
- IMS 6360 International Strategic Management (3)
- IMS 6365 Cross-Cultural Communication and Management (3)

IMS Electives (6 credit hours), select a minimum of 6 hours from the following:
- IMS 6302 International Business Transactions (3)
- IMS 6320 International Corporate Finance(3) or FIN 6366 International Financial Management (3)
- BPS 6332 Strategic Leadership (3)
- IMS 6312 International Advertising (3)
- IMS 6314 Global E-Business Marketing (3)
**Free Elective Courses (11 credit hours)**

Four hours of area study is strongly recommended. Any course from the set of IMS electives may be used as a free elective. Also, any advanced courses from other departments within the School of Management may be used as a free elective.

The following are some of the other IMS related courses offered with the School of Management:

- IMS 6302 Legal Aspects of International Business Transactions (3)
- MKT 6332 Advertising and Promotion (3)
- IMS 7vXX Area Studies: Faculty Led Study Trip (2) **
- IMS 6vXX Area Studies: Special Topics in International Business (1-2) **
- BPS 6332 Strategic Leadership (3)
- OB 6301 Organizational Behavior (3)
- OB 6303 Managing Organizations (3)
- OB 6305 Foundations of Work Behavior
- OB 6307 Strategic Human Resource Management (3)
- OB 6322 Interpersonal Dynamics (3)
- OB 6331 Power & Politics (3)
- OB 6332 Negotiation & Dispute Resolution (3)

OB 6333 Organizational Decision Making (3)

Additionally, up to 6 hours of a graduate level language courses may be applied to your degree plan as a Free Elective. The following are the list of courses available with the University:

- HUMA 6320 French Review
- HUMA 6321 Spanish Review
- HUMA 632X Italian Review
- HUMA 632X Chinese Review
- HUMA 632X German Review
- HUMA 6330 French Workshop
- HUMA 6331 Spanish Workshop
- HUMA 633X Italian Workshop
- HUMA 633X Chinese Workshop
- HUMA 633X German Workshop

**Program Notes**

Students are encouraged to complete the basic core courses before beginning the advanced core courses. International Strategic Management (IMS 6360) serves as the capstone course and should be taken during the last semester prior to graduation. The classes for this degree are largely offered in the evenings.

*FIN 6301 Financial Management requires as a co-prerequisite OPRE 6301 co-enrollment in OPRE 6301 or a substantial background in statistics leading to a waiver of the requirement by consent of the instructor. See the School of Management Advising Office for waiver procedures. Consult the catalog for complete prerequisite information.*

** Area Studies course may be repeated for credit if regions of study differ.
Master of Science in Innovation & Entrepreneurship

Objectives

The M.S. in Innovation and Entrepreneurship (MSIE) prepares students for successful business careers in entrepreneurial new ventures, entrepreneurial finance (venture capital/private equity), or innovation-related roles in mature organizations (product planning, product marketing, product development, etc.). This degree complements baccalaureate or advanced degrees in a business, scientific or engineering discipline, and is valued by employers in technology-related or consumer products industries.

The program provides students with a solid foundation in the management disciplines essential to the successful innovation of new ideas, new products and new business models, whether in the context of an entrepreneurial startup or within the more structured environment of a mature organization.

Prerequisites

Prerequisite knowledge in statistics is a requirement for the program. Candidates who have not taken equivalent courses will need to take OPRE 6301 to meet the statistics requirement. Degree credit is not earned for program prerequisites.

Prerequisite knowledge in calculus is a requirement for the program. Candidates who have not taken equivalent courses will need to take MATH 5304 to meet the calculus requirement. Degree credit is not earned for program prerequisites.

Degree Requirements

The University’s general degree requirements are discussed here.

The Master of Science in Innovation and Entrepreneurship degree has been designed for students with or without previous educational background in innovation and entrepreneurship. The M.S. degree is obtained by completing a 36-hour program, beyond prerequisite courses, consisting of: (a) basic core courses; (b) courses in a selected concentration area; and (c) electives.

The student may elect to submit a Master’s thesis, which counts as three credit hours toward the total course requirements.

The MSIE degree requires 18 hours of basic core courses, which provide a solid foundation in the management disciplines essential to the successful innovation of new ideas, new products and new business models, including foundational courses in entrepreneurship and entrepreneurial finance.

The curriculum also provides two concentration areas, the first focused on entrepreneurial startups (New Venture concentration) and the second on the challenges of managing entrepreneurial innovation within the more structured environment of a mature organization (Innovation within the Corporation concentration). The student must take a minimum of 12 hours within one or the other of the designated concentration areas.

An additional six hours of electives may be chosen from among any of the concentration area courses not already taken, the other ENTP electives offered or, with permission, from among any of the other SOM offerings in the AIM, BPS, FIN, IMS, MIS, MKT, OPRE, or OB areas.
Basic Core Courses (18 hours)

Each candidate must satisfactorily complete the 18-hour basic core consisting of the following courses:

- AIM 6305 Accounting for Managers
- OB 6301 Organizational Behavior
- MKT 6301 Introduction to Marketing
- BPS 6310 Strategic Management
- ENTP 6370 Entrepreneurship
- ENTP/FIN 6315 Entrepreneurial Finance

1 Calculus and basic statistics are required as prerequisites for the degree program. Candidates who have not taken an equivalent course will need to take OPRE 6301 to meet the statistics requirement. If required, OPRE 6301 may be included as an additional elective in completing the degree program.

2 FIN 6301 is a prerequisite for both BPS 6310 and ENTP/FIN 6315. The FIN 6301 requirement will be waived if the student has satisfactorily completed an equivalent course with a grade of B or better. If required, FIN 6301 may be included as an additional elective in completing the degree program.

Concentration Area Courses (12 hours)

Each candidate must complete a minimum of 12 credit hours within the selection of courses offered within one or the other of the two concentration areas:

**New Venture Concentration**

- ENTP 6387 Forecasting Industry and Technology Futures
- ENTP 6390 Business Model Innovation
- ENTP 6378 Managing the Emerging Enterprise
- ENTP 6380 Entrepreneurial Marketing
- ENTP 6385 Entrepreneurial Business Strategies
- ENTP 6387 Forecasting Industry and Technology Futures
- ENTP 6390 Business Model Innovation
- ENTP 6378 Managing the Emerging Enterprise

**Innovation within the Corporation Concentration**

- ENTP 6387 Forecasting Industry and Technology Futures
ENTP 6390 Business Model Innovation

ENTP 6375 Technology and New Product Development

ENTP 6387 Forecasting Industry and Technology Futures

ENTP 6388 Managing Innovation within the Corporation

ENTP 6390 Business Model Innovation

ENTP 6398 The Entrepreneurial Experience

**Elective Courses (3-6 hours)**

Students are required to complete a sufficient number of elective hours to earn a minimum of 36 hours toward the M.S. degree. These courses may be chosen from among: (a) the courses listed in the concentration areas above; or, (b) the entrepreneurship courses listed below:

- ENTP/FIN 6316 Private Equity
- ENTP 6382 Professional Selling
- ENTP 6392 Entrepreneurship in the Social Sector
- ENTP 6395 Topics in Innovation and Entrepreneurship

With faculty permission, a student may substitute up to two electives from other SOM offerings in the AIM, BPS, ENTP, FIN, IMS, MIS, MKT, OPRE, or OB areas.

**For Further Information:**

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Master of Science in Information Technology and Management

Degree Requirements

The University's general degree requirements are discussed here.

The M.S. degree in ITM requires a minimum of 36 credit hours, consisting of basic business courses, IT foundation courses, IT elective courses, and free electives. The business core courses are designed to provide incoming students with the context to better appreciate and understand the complex issues that occur at the interface between IT and business. The IT foundation courses cover the essentials of IT knowledge that any student must possess. The IT elective courses provide in-depth knowledge of the technology and technology management issues. In addition, students may choose approved electives that maximize their individual educational and professional goals. The program also offers opportunities for students to concentrate in specific tracks such as 'Enterprise Systems', 'Healthcare Systems', and 'Information Security' depending on their interests and goals. The students can contact the advising office for the recommended courses for these tracks.

Students must maintain a 3.0 grade point average in both core courses and in aggregate courses to qualify for the M.S. degree.

Basic Business Core Courses (minimum of 9 credit hours from the following)

AIM 6305 Accounting for Managers
FIN 6301 Financial Management
Meco 6303 Business Economics
MKT 6301 Marketing Management
OPRE 6301 Quantitative Introduction to Risk and Uncertainty in Business
OPRE 6302 Operations Management
OB 6301 Organizational Behavior

IT Foundation Courses (12 credit hours)

MIS 6316 Data Communications
MIS 6323 Object Oriented Systems
MIS 6326 Database Management Systems
MIS 6308 Systems Analysis and Project Management

IT Electives Choose 9 hours from the list of courses that have an MIS prefix, excluding MIS 6204.

MIS 6302 Information Technology Strategy and Management
MIS 6309 Business Data Warehousing
MIS 6314 Systems Re-Engineering
MIS 6317 Healthcare Informatics
MIS 6318 Electronic Commerce
MIS 6319 Enterprise Resource Planning

MIS 6324 Business Intelligence Software and Techniques
MIS 6325 Advanced Telecommunications
MIS 6327 Analysis and Design of Telecommunication Networks
MIS 6329 Contemporary Issues in Telecommunications
MIS 6330 Information Technology Security
MIS 6332 Advanced ERP: Sales and Distribution
MIS 6334 Advanced Business Intelligence

MIS 6344 Web Analytics
MIS 6352 Web Systems Design and Development
MIS 6355 Information Technology for E-Business

MIS 6360 Software Project Management

MIS 6362 Web Services and Service Oriented Architecture
MIS 6363 Cloud Computing

MIS 6369 Supply Chain Software

MIS 6372 Managing Outsourced IT-Enabled Services
MIS 6378 (AIM 6378) Enterprise Systems and CRM
MIS 6379 SAP ABAP Programming

**Free Electives (6 credit hours)**

Any course from the set of IT electives may be used as a free elective. Also any course from the set of business core courses, or any other graduate level business course, except MIS 6204, may be used as a free elective.
Master of Science in Management and Administrative Sciences

Degree Requirements

The University’s general degree requirements are discussed here.

The M.S. in Management and Administrative Sciences degree is a flexible degree that allows students to design a program of study that fits their specific needs. Students complete a 36-hour program, beyond prerequisite courses, consisting of 10 hours of basic core courses, and 26 credit hours of graduate level electives. Students must maintain a 3.0 grade point average in both core courses and in aggregate courses to qualify for the M.S. degree.

Students should be aware that separate Master of Science programs, with varying core and elective requirements exist in the following areas:

1. Accounting and Information Management
2. Finance
3. Healthcare Management (for Professionals)
4. Information Technology and Management
5. Innovation & Entrepreneurship
6. Supply Chain Management
7. International Management Studies (Master of Arts)

For the MS-MAS degree program, students choose their own course of study, pulling courses from the School of Management graduate catalog.

Note: The Executive Education area of the School of Management offers three additional and separate MS-MAS programs, which retain the same set of core courses but have their own set of specific topical electives. These include: the MS-MAS with an emphasis in project management, the Executive Healthcare MS-MAS, and the MS-MAS with an emphasis in Organizational Behavior and Coaching. These are described in the Executive Education section of the School of Management chapter. All three programs are supported entirely by participant fees and special admissions requirements apply.

MS-MAS Program Description

Basic Core Courses (10 hours)

Each candidate must satisfactorily complete the following 10 hour basic core:

- AIM 6201 Financial Accounting
- MECO 6303 Business Economics
- MIS 6204 Information Technology and MIS Fundamentals
- OPRE 6301 Quantitative Introduction to Risk and Uncertainty in Business

Elective Courses: (26 credit hours)

A student’s course of study beyond the core can be determined in consultation with faculty members, area coordinators, or the Advising Office. A student can continue to generalize in management courses or choose to concentrate in a given subject.
Concentrations - Students may choose to concentrate in one of the areas listed below that have historically been offered as defined specialties in the masters programs. Concentrations are informal collections of electives that address a student’s educational goals. A concentration may be aligned with functional area specialties, or may cut across functional areas. Typical concentrations have a minimum of 15 credit hours in a given area, and include:

- **Accounting and Information Management:** In today's global and technology-driven environment, managers need skills to effectively analyze accounting information and make value-enhancing decisions. Students may select accounting and information management (AIM) courses to concentrate in financial analysis, consulting, corporate governance and tax management.

- **Electronic Commerce:** Every organization will increasingly use the Internet as an integral component of their overall strategy in coming years. Students can select courses to provide a solid understanding of issues pertaining to the use of the internet as a marketing tool – focusing on both strategic and technological aspects. This includes topics such as database management systems, web design and development, and Internet business models. The Advising Office can provide a plan of study that covers topics in this area.

- **Finance:** Students can prepare for careers in corporate finance, investment management, or the management of financial institutions. Courses in this area emphasize creative solutions to business financing problems, the development of value maximizing investment and financing strategies, and the analysis and management of fixed income and equity investments. Students may choose to concentrate in either corporate financial planning or the analysis of financial securities and investment portfolios.

- **Healthcare Administration:** The primary goal of this concentration is to prepare students for leadership positions in healthcare organizations. The healthcare concentration is cross-functional and industry focused. Courses will contain cases, projects, and assignments that are centered around applying management skills to healthcare issues and organizations. Classes are taught by School of Management faculty and healthcare executives who bring special expertise and experience to the program.

- **Information Systems:** Information Technology permeates all aspects of modern business and our courses will enable you to make the most of information technology to solve business problems and gain strategic advantage. We also provide advanced courses for students who wish to be on the “supply” side of information technology in the areas of IT consulting, software management, and e-business.

- **Innovation and Entrepreneurship:** Focused on the processes of technological innovation in both large and small organizations, a set of multidisciplinary courses prepares students for successful careers either as principals or key functional managers in emerging growth firms, or as leaders of technological innovation in established firms.

- **International Management:** In this concentration, students can take a multi-disciplinary approach to the study of international management, with courses in finance, marketing, strategic management, and the legal and cross-cultural differences that effect business. This course of study will prepare students for careers in international industries.

- **Leadership in Organizations:** The leadership concentration prepares students for upper management positions through the study of the psychological, sociological, and organizational behavior disciplines. The program provides a foundation of leadership theory, building and problem solving in interpersonal work relationships, group dynamics, organizational decision making and change, and ethics.

- **Marketing:** Students learn to understand customers’ needs and purchase behaviors, how to satisfy those needs, and how to make a profit in competitive industries and markets. Topics include: developing an effective marketing strategy, developing new products, and managing different brands and product categories. Students can also acquire expertise in pricing,
advertising and promotions, market research, and retailing strategies. Courses are also available on the Internet’s effect on marketing and business.

- **Operations**: Firms can use effective and innovative operations to create and sustain competitive advantages. Students in these courses gain a deep, analytical understanding of how challenges posed by fast developing business environments can become profit-making opportunities. Integration of various parties (suppliers, factories, stores) and various functional areas (marketing, finance, procurement) is an important theme. In particular, incentives, contracts and information technologies fostering collaboration among financially independent parties are emphasized.

- **Organizations**: This concentration emphasizes organizational behavior and theory, and human resources management. Students learn how to effectively integrate and leverage human resources to create sustainable advantages in a competitive marketplace. Courses chosen in this area integrate a wide variety of disciplines, including economics, organization theory, finance, psychology, and sociology.

- **Real Estate**: this concentration, which is being launched Spring, 2011, includes courses in: real estate finance and capital markets, covering real estate loans, syndication, securitization, and regulation; investment and analysis, combining lectures and case studies to explore the sources of real estate value, project feasibility, strategies for financing, and portfolio management; and, development, covering market analysis, government approvals, financing and risk assessment.

- **Strategy**: This concentration focuses on corporate level strategic management, including: implementation of strategic designs; top management team leadership; the strategic implications of the social, governmental, technological, and international environments; organization structuring; and strategic alliances. Students will learn how to integrate accounting, finance, economics, and organization theory to create sustainable competitive advantage.
Master of Business Administration

Degree Requirements

The University’s general degree requirements are discussed here.

The MBA degree is obtained by completing a 53-hour program beyond prerequisite courses consisting of 29 hours of core courses and 24 hours of elective courses. At the option of the student, a concentration may be developed by taking a set of electives related to an area of interest. Students may obtain further information about these concentrations from the School of Management Advising Office. Students must maintain a 3.0 grade point average in both core courses and in aggregate courses to qualify for the MBA degree.

There are three different programs for students interested in the MBA. We offer a daytime, full-time, cohort MBA program, a professional evening MBA program, and an online MBA.

Note: The Executive Education area of the School of Management offers four distinctive and separate MBA programs, which retain the same set of MBA core courses but have their own set of specific topical electives. These include: the Executive MBA (EMBA), the Global Leadership Executive MBA (GLEMBA), the Executive MBA with an emphasis in project management, product lifecycle and supply chain, or organizational behavior and coaching, and the Executive Healthcare MBA. These are described in the Executive Education section of the School of Management chapter. All of these programs are supported entirely by participant fees and special admissions requirements apply.

Prerequisite

Calculus is required as a prerequisite for some of the coursework in the MBA. Candidates that have not taken calculus or an equivalent course will need to take MATH 5304, MATH 1325 or OPRE 6303 to meet this requirement;

Core Courses (29 hours)

Each candidate must satisfactorily complete the following core of 11 courses.
AIM 6201 Financial Accounting
AIM 6202 Managerial Accounting
BPS 6310 Strategic Management
FIN 6301 Financial Management
IMS 6204 Global Business
MIS 6204 Information Technology and MIS Fundamentals
MECO 6303 Business Economics
MKT 6301 Introduction to Marketing Management
OPRE 6301 Quantitative Introduction to Risk and Uncertainty in Business
OPRE 6302 Operations Management
OB 6301 Organizational Behavior

Elective Courses (24 hours)

Each candidate must also complete an additional 24 hours of elective graduate course work. Students may develop a concentration within the 24 hours of electives, but are not required to do so. Students cannot include more than 15 hours in any single functional area (demarcated by the area prefix) beyond
the required core courses. A student may elect to submit a Master’s thesis, which counts as three elective credit hours.

**Concentrations** are informal collections of electives that address a student’s educational goals. A concentration may be aligned with functional area specialties, or may cut across functional areas. Students are encouraged to develop their concentration with the help of a faculty member, area coordinator, or the Advising Office. Typical concentrations include:

- **Accounting and Information Management**: In today's global and technology-driven environment, managers need skills to effectively analyze accounting information and make value-enhancing decisions. Students may select accounting and information management (AIM) courses to concentrate in financial analysis, consulting, corporate governance and tax management.

- **Electronic Commerce**: Every organization will increasingly use the Internet as an integral component of their overall strategy in coming years. Students can select courses to provide a solid understanding of issues pertaining to the use of the internet as a marketing tool – focusing on both strategic and technological aspects. This includes topics such as database management systems, web design and development, and Internet business models. The Advising Office can provide a plan of study that covers topics in this area.

- **Finance**: Students can prepare for careers in corporate finance, investment management, or the management of financial institutions. Courses in this area emphasize creative solutions to business financing problems, the development of value maximizing investment and financing strategies, and the analysis and management of fixed income and equity investments. Students may choose to concentrate in either corporate financial planning or the analysis of financial securities and investment portfolios.

- **Healthcare Administration**: The primary goal of this concentration is to prepare students for leadership positions in healthcare organizations. The healthcare concentration is cross-functional and industry focused. Courses will contain cases, projects, and assignments that are centered around applying management skills to healthcare issues and organizations. Classes are taught by School of Management faculty and healthcare executives who bring special expertise and experience to the program.

- **Information Systems**: Information Technology permeates all aspects of modern business and our courses will enable you to make the most of information technology to solve business problems and gain strategic advantage. We also provide advanced courses for students who wish to be on the "supply" side of information technology in the areas of IT consulting, software management, and e-business.

- **Innovation and Entrepreneurship**: Focused on the processes of technological innovation in both large and small organizations, a set of multidisciplinary courses prepares students for successful careers either as principals or key functional managers in emerging growth firms, or as leaders of technological innovation in established firms.

- **International Management**: In this concentration, students can take a multi-disciplinary approach to the study of international management, with courses in finance, marketing, strategic management, and the legal and cross-cultural differences that effect business. This course of study will prepare students for careers in international industries.

- **Leadership in Organizations**: The leadership concentration prepares students for upper management positions through the study of the psychological, sociological, and organizational behavior disciplines. The program provides a foundation of leadership theory, building and problem solving in interpersonal work relationships, group dynamics, organizational decision making and change, and ethics.

- **Marketing**: Students learn to understand customers’ needs and purchase behaviors, how to satisfy those needs, and how to make a profit in competitive industries and markets. Topics include: developing an effective marketing strategy, developing new products, and managing different brands and product categories. Students can also acquire expertise in pricing, advertising and promotions, market research, and retailing strategies. Courses are also available on the Internet’s effect on marketing and business.
Operations: Firms can use effective and innovative operations to create and sustain competitive advantages. Students in these courses gain a deep, analytical understanding of how challenges posed by fast developing business environments can become profit-making opportunities. Integration of various parties (suppliers, factories, stores) and various functional areas (marketing, finance, procurement) is an important theme. In particular, incentives, contracts and information technologies fostering collaboration among financially independent parties are emphasized.

Organizations: This concentration emphasizes organizational behavior and theory, and human resources management. Students learn how to effectively integrate and leverage human resources to create sustainable advantages in a competitive marketplace. Courses chosen in this area integrate a wide variety of disciplines, including economics, organization theory, finance, psychology, and sociology.

Real Estate: this concentration, which is being launched Spring, 2011, includes courses in: real estate finance and capital markets, covering real estate loans, syndication, securitization, and regulation; investment and analysis, combining lectures and case studies to explore the sources of real estate value, project feasibility, strategies for financing, and portfolio management; and, development, covering market analysis, government approvals, financing and risk assessment.

Strategy: This concentration focuses on corporate level strategic management, including: implementation of strategic designs; top management team leadership; the strategic implications of the social, governmental, technological, and international environments; organization structuring; and strategic alliances. Students will learn how to integrate accounting, finance, economics, and organization theory to create sustainable competitive advantage.
Master of Science in Marketing

Degree Requirements

The Master of Science in Marketing program is designed to meet the needs of students in today’s data driven marketplace, where the exponential growth in data generated from store scanners and web transactions, navigation, search, and more recently, social media requires new marketing skills and knowledge.

The Master of Science in Marketing program allows students to choose from five different tracks:
1. Advertising & Brand Management
2. Business Development
3. Marketing Analytics and Market Research (optional Professional Certificate)
4. Marketing Management
5. Product Management (optional Professional Certificate)

The Master of Science in Marketing is designed for students with or without previous educational background in this area. Courses are primarily offered in the late afternoon and evenings of weekdays. Several courses are currently offered through the World Wide Web.

At least 36 hours of management course work is required for the Master of Science degree, including nine (9) hours of business core courses, nine (9) hours of marketing core courses and 18 hours of marketing focused core courses and/or electives depending on the track chosen. Students can obtain a dual MS and MBA degree by taking a total of 63 credits (assuming they meet all the degree requirements for both programs).

Prerequisites

Calculus is NOT a requirement or prerequisite for the M.S. in Marketing degree program.

Business Core Courses (9 credit hours)

MKT 6301 Marketing Management
OPRE 6301 Quantitative Introduction to Risk and Uncertainty in Business
MIS 6326 Database Management Systems

Marketing Core Courses (9 credit hours)

MKT 6309 Marketing Research
MKT 6310 Consumer Behavior
MKT 6339 Capstone Marketing Decision Making

Choose from one of the following four specialized tracks or from the Marketing Management track (18 credit hours)

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<tr>
<th>Specialized Tracks in Marketing</th>
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<tbody>
<tr>
<td>Advertising &amp; Branding (12 hrs)</td>
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<td>MKT 6321 Interactive &amp; Digital Marketing</td>
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<td>Elective options (select 6 hrs)</td>
</tr>
<tr>
<td>IMS 6365</td>
</tr>
<tr>
<td>MIS 6344</td>
</tr>
<tr>
<td>MKT 6323</td>
</tr>
<tr>
<td>MKT 6335</td>
</tr>
<tr>
<td>MKT 6340</td>
</tr>
<tr>
<td>MKT 6350</td>
</tr>
<tr>
<td>MKT 6360</td>
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<tr>
<td>MKT 6380</td>
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</tbody>
</table>

**Marketing Management Track:** For this track, there are no track core courses. Students may select any 18 hours from the offerings listed below; however, at least 9 hours must be from the marketing area courses (i.e. have a MKT prefix in the course number).

**Marketing Area Courses**
- MKT 6320 New Technology Forecasting
- MKT 6321 Interactive & Digital Marketing
- MKT 6323 Database Marketing
- MKT 6328 Product Management
- MKT 6329 New Product Development
MKT 6330 Brand Management
MKT 6331 Sales Management
MKT 6332 Advertising & Promotional Strategy
MKT 6333 Channels & Retailing
MKT 6335 Advertising Research
MKT 6336 Pricing
MKT 6337 Marketing Analytics using SAS
MKT 6338 Customer Relationship Management
MKT 6340 Marketing Project
MKT 6350 Competitive Marketing Strategy
MKT 6360 Services Marketing
MKT 6362 Marketing Engineering
MKT 6380 Entrepreneurial Marketing

Non-Marketing Area Courses
AIM 6201 Financial Accounting
AIM 6305 Accounting for Managers
ENTP 6382 Professional Salesmanship
FIN 6301 Financial Management
IMS 6310 International Marketing
IMS 6314 Global eBusiness Marketing
IMS 6365 Cross-Cultural Communications & Management
MIS 6309 Business Data Warehousing with SAP
MIS 6318 Electronic commerce
MIS 6324 Business Intelligence Software and Techniques
MIS 6334 Advanced Business Intelligence with SAS
MIS 6344 Web Analytics
OB 6301 Organizational Behavior
OPRE 6332 Spreadsheet Modeling
OPRE 6362 Project Management
Master of Science in Supply Chain Management

In the Master of Science in Supply Chain Management (MS-SCMT) students explore the key issues associated with the design and management of industrial supply chains, including methods for improving supply chain operations by lowering costs, speeding delivery, improving quality and expanding variety. The ultimate objective is to use SCM to mold traditional business operations into competitive tools for today's global economy. Students acquire not only fundamental knowledge of business management but also analytical decision-making skills (especially for complex systems) along with real-life experiences gained through projects with area companies.

The Master of Science in Supply Chain Management is designed for students with or without previous educational background in this area. Courses are primarily offered in the late afternoon and evening of weekdays. Several courses are currently offered and are planned to be offered through the World Wide Web. Students can obtain a dual MBA and MS degree by taking a total of 71 credits (assuming all prerequisites are met). This serves students who would like to get additional SCM skills at a reduced cost.

Degree Requirements

At least 36 hours of management course work beyond prerequisite courses is required, including 12 hours of basic business core courses and 21 hours of graduate courses in Supply Chain Management and other areas. The M.S. in Supply Chain Management is designed for students with or without previous educational background in this area.

Waivers and Transfer of Credit

Waivers of program requirements may be granted in recognition of previous coursework completed with grade “B” or better within the past six years in a specific business program area. Waivers are approved by the appropriate program director through a process that allows a student to skip a core course and take the next higher level course in the same academic area with no reduction in the overall program hour requirements.

Transfer of credits may be granted for equivalent graduate course work taken at other universities with a grade of “B” or better within the past six years. Up to 9 credit hours of course work from other universities may be waived from or transferred to the MS-SCMT program. Please visit the UT Dallas Graduate Catalog for further details at www.utdallas.edu/student/catalog/.

Prerequisites

Calculus is required as graduate program prerequisites. If a student has not taken an equivalent course already, he/she will need to complete MATH 5304 with a grade of "B" to meet the calculus requirement. For specific course prerequisite information, please visit the UT Dallas Graduate Catalog for further details at www.utdallas.edu/student/catalog/.

Basic Business Core Courses (15 credit hours)
All students enrolling in the MS-SCMT must complete the following Basic Business Core:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPRE 6301</td>
<td>Quantitative Introduction to Risk and Uncertainty in Business</td>
</tr>
<tr>
<td>OPRE 6302</td>
<td>Operations Management</td>
</tr>
<tr>
<td>ACCT 6305</td>
<td>Accounting for Managers</td>
</tr>
<tr>
<td>FIN 6301</td>
<td>Financial Management</td>
</tr>
</tbody>
</table>

And one of the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MECO 6303</td>
<td>Business Economics</td>
</tr>
<tr>
<td>MKT 6301</td>
<td>Introduction to Marketing Management</td>
</tr>
<tr>
<td>OB 6301</td>
<td>Organizational Behavior</td>
</tr>
</tbody>
</table>
OB 6321 Principles of Leadership

Required Supply Chain Management Core Courses (9 credit hours)
OPRE 6366 Supply Chain Management
OPRE 6370 Logistics and Distribution
OPRE 6371 Purchasing and Sourcing Management

Elective Supply Chain Management Courses - choose nine credit hours (9 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORPE 6311</td>
<td>Game Theory</td>
</tr>
<tr>
<td>OPRE 6332</td>
<td>Spreadsheet Modeling</td>
</tr>
<tr>
<td>OPRE 6335</td>
<td>Risk and Decision Analysis</td>
</tr>
<tr>
<td>OPRE 6340</td>
<td>Flexible Manufacturing Strategies</td>
</tr>
<tr>
<td>OPRE 6361</td>
<td>Production Planning and Control</td>
</tr>
<tr>
<td>OPRE 6362</td>
<td>Project Management</td>
</tr>
<tr>
<td>OPRE 6363</td>
<td>Inventory Control</td>
</tr>
<tr>
<td>OPRE 6364</td>
<td>Quality Control (LEAN SIX SIGMA)</td>
</tr>
<tr>
<td>OPRE 6367</td>
<td>Capstone Project in Supply Chain Management</td>
</tr>
<tr>
<td>OPRE 6368</td>
<td>Industrial Applications in Supply Chains</td>
</tr>
<tr>
<td>OPRE 6369</td>
<td>Supply Chain Software (SAP APO SCM)</td>
</tr>
<tr>
<td>OPRE 6377</td>
<td>Demand and Revenue Management</td>
</tr>
<tr>
<td>OPRE 6378</td>
<td>Information Enabled Supply chain</td>
</tr>
<tr>
<td>OPRE 6379</td>
<td>Product Lifecycle Management</td>
</tr>
<tr>
<td>OPRE 6385</td>
<td>Scheduling</td>
</tr>
<tr>
<td>OPRE 6388</td>
<td>Engineering Packaged Goods Distribution</td>
</tr>
<tr>
<td>OB 6332</td>
<td>Negotiation and Dispute Resolution</td>
</tr>
<tr>
<td>HMG 6325</td>
<td>Healthcare Operations Management</td>
</tr>
<tr>
<td>MIS 6326</td>
<td>Database Management Systems</td>
</tr>
<tr>
<td>MKT 6333</td>
<td>Channels and Retailing</td>
</tr>
</tbody>
</table>

Free Elective Course (3 credit hours)
Students may choose any three credit hour graduate level course in the School of Management to satisfy this portion of the degree plan.
Master of Science Degree and Certificate Programs in
Systems Engineering and Management (SEM)
Joint Degree Program
Erik Jonsson School of Engineering and Computer Science,
and, Naveen Jindal School of Management

Program Directors:
Dr. Rajiv R. Shah (Naveen Jindal School of Management), and
Dr. Stephen Yurkovich (Jonsson School of Engineering & Computer Science)

Objective:
The Graduate Program in Systems Engineering and Management provides intensive preparation for
professional practice in the design, engineering and management of complex systems involving a large
number of interconnected components.

Overview:
The Master’s in Systems Engineering and Management (MS-SEM) program is delivered through an equal
partnership between the Erik Jonsson School of Engineering and Computer Science and the Naveen
Jindal School of Management (SOM). The program focuses on educating students in the disciplines of
Systems Engineering, Systems Management, Entrepreneurship & Intrapreneurship, Product Line
Development and Management, and Strategic Business Management. Industry concentrations for the
program include: aerospace, defense and space systems; transportation systems; information and
communications technology (ICT) systems; information assurance and cyber-security systems;
healthcare systems; energy, environment and infrastructure systems; complex biological systems; and
macro-economic and financial systems. We draw our Faculty for the primary SEM core courses are
drawn from both the engineering and management schools; faculty from other schools on campus, and
industry leaders with expertise in specific fields will be invited to teach other courses as appropriate.

Faculty:
Jonsson School of Engineering & Computer Science
Lawrence Chung, Kendra Cooper, Duncan L. MacFarlane, Mark W. Spong, Janell Straach, Lakshman
Tamil, Mathukumalli Vidyasagar, Eric Wong, Stephen Yurkovich
School of Management
Alain Bensoussan, Abhi Biswas, Greg Dess, Robert Kieschnick, Padmakumar Nair, Rajiv Shah, David
Springate, Chelliah Sriskandarajah, Jim Szot, Chris White

Facilities:
UT Dallas has developed a state-of-the-art computational facility. All systems are connected via an
extensive fiber-optic, Ethernet and, through Internet2 and the Texas Higher Education Network, have
direct access to most major national and international networks. In addition, many personal computers
are available for student use. In addition to the facilities on campus, cooperative arrangements have
been established with many local industries to make their facilities available to UT Dallas graduate
students.

Admission Requirements
The University's general admission requirements are discussed here. A student lacking undergraduate
prerequisites for graduate courses must complete prerequisites or receive approval from the graduate
adviser and the course instructor. A diagnostic examination may be required. Specific admission
requirements follow.

A student entering the MS-SEM program should meet the following guidelines:
- A minimum of a BS in engineering, mathematics, physics, chemistry, economics or finance (in order
to ensure adequate fundamental skills in mathematics) from an accredited program.
- Must submit GRE and/or GMAT scores, as appropriate
Must submit three letters of recommendation from individuals who are able to judge the candidate’s probability of success in pursuing a program of study leading to the master’s degree.

Must also submit an essay outlining the candidate’s background, education and professional goals.

Degree Requirements
The University’s general degree requirements are discussed here. The MS in SEM program is designed to be flexible to accommodate different student backgrounds, allowing students to pick up areas in which they are deficient, while still guaranteeing core competency in systems engineering and systems management. This program has both a thesis and a non-thesis option. All part-time MS in SEM students will be assigned initially to the non-thesis option. Those wishing to elect the thesis option may do so by obtaining the approval of a faculty thesis supervisor. To receive a Master of Science degree in Systems Engineering and Management, a student must meet the following minimum set of requirements:

Course Requirements
The MS in SEM degree will require a total of 36 credit hours consisting of 12 courses in the non-thesis option or 10 courses plus 6 hours of thesis credit for the thesis option. All students must have an academic advisor and an approved degree plan. Courses taken without advisor approval will not count toward the 36 semester-hour requirement. Successful completion of the approved course of studies leads to the MS-in-SEM degree.

Non-thesis Option:
Completion of a minimum of 36 semester hours of graduate level lecture courses including the required core courses. With advisor approval, these may include some 5000 level courses.

Thesis Option:
An alternative to 36 credit hours required for the MS SEM degree, would be the completion of a minimum of 30 semester hours of graduate level lecture courses, including the required core courses, and 6 semester hours of a combination of Master’s research (SYSM 6V70) and thesis (SYSM 6V98), submitted to the graduate school, and a formal public defense of the thesis.

Students enrolled in the thesis option should meet with individual faculty members to discuss research opportunities and to choose a research advisor during the first or second semester that the student is enrolled. After the second semester of study, course selection should be made in consultation with the research advisor. Part-time students are encouraged to enroll in only one course during their first semester and in no more than two courses during any semester they are also working full-time.

Research and thesis hours cannot be counted in an MS in SEM degree plan unless a thesis is written and successfully defended. A supervising committee, which must be chosen in consultation with the student’s thesis advisor prior to enrolling for thesis credit, administers the defense. With advisor approval, the lecture courses may include some 5000 level courses. Full-time students at UTD who receive financial assistance are required to enroll in 9 semester credit hours during the Fall, Spring and Summer semesters.

Either Option:
In either option, students must earn a grade of B- or better in each of four core courses, two of which must be selected from the following engineering courses and two of which must be selected from the following management courses:

Required Courses: Students are required to take 4 courses (a total of 12 credit hours) from a set of 8 courses in the table below. Two of the courses must be from the Engineering 1 section and two from the Management 1 section. The 4 required courses contribute a total of 12 credit hours towards the MS degree.

Engineering Core Courses:
SYSM 6301 Systems Engineering, Architecture and Design
SYSM 6302 Dynamics of Complex Networks and Systems
SYSM 6303 Quantitative Introduction to Risk and Uncertainty in Business

ITEM #10

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Management Core Courses:
SYSM 6311 Systems Project Management
SYSM 6312 Systems Financial Management
SYSM 6313 Negotiating Deals & Resolving Conflict Within the Organization
SYSM 6314 Manufacturing & Service Systems Planning & Analysis

Students will take additional courses from those described in the following pages.

Recommended Elective Courses: Choose any 18 hours of 6000 level courses or higher with approval of the advisor.

Prescribed Elective Courses: these consist of an additional 4 courses (a total of 12 credit hours) from the set of 20 courses listed in the table, excluding the four courses already taken for the requirement above. At least two of these courses must be chosen from the two Engineering sections in the table, and two from the two Management sections.

<table>
<thead>
<tr>
<th>Section &amp; Course</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engineering 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYSM6301</td>
<td>Systems Engineering Architecture &amp; Design</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6302</td>
<td>Dynamics of Complex Networks &amp; Systems</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6303</td>
<td>Quantitative Introduction to Risk and Uncertainty in Risk, Probability, Stochastic Processes</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6304</td>
<td>Risk Assessment and Management and Decision Analysis</td>
<td>3</td>
</tr>
<tr>
<td><strong>Management 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYSM6311</td>
<td>Systems Project Management</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6312</td>
<td>Systems Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6313</td>
<td>Negotiating Deals &amp; Resolving Conflict within the Organization</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6314</td>
<td>Manufacturing and Service Systems Planning and Analysis</td>
<td>3</td>
</tr>
<tr>
<td><strong>Engineering 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYSM6305</td>
<td>Dynamic Systems Modeling &amp; Analysis Optimization</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6306</td>
<td>Engineering Systems: Modeling and Simulation of Systems</td>
<td>3</td>
</tr>
<tr>
<td>SYSM63107</td>
<td>Linear Systems and Control Theory</td>
<td>3</td>
</tr>
<tr>
<td>SYSM63108</td>
<td>Software Maintenance, Evolution and Re-engineering</td>
<td>3</td>
</tr>
<tr>
<td>SYSM63109</td>
<td>Advanced Requirements Engineering</td>
<td>3</td>
</tr>
<tr>
<td>SYSM63110</td>
<td>Software Testing, Validation, Verification</td>
<td>3</td>
</tr>
<tr>
<td><strong>Management 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYSM6315</td>
<td>The Entrepreneurial Experience</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6316</td>
<td>Innovation within the Corporation</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6317</td>
<td>The Management of High Technology Products</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6318</td>
<td>Marketing Management and Marketing Systems Analysis</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6319</td>
<td>Business Economics</td>
<td>3</td>
</tr>
<tr>
<td>SYSM6320</td>
<td>Strategic Leadership</td>
<td>3</td>
</tr>
</tbody>
</table>

Free Elective Courses: Working with a SEM program advisor, students take four additional and distinct courses from either the remaining 12 courses from the lists above that have not already
been taken as required courses or prescribed elective courses, or from other courses offered in management or engineering that form a “concentration” or “specialization” in specific industry sectors.

For the free electives students will be able to take any 4 additional and distinct courses of the remaining 12 core courses that have not already been taken as required courses or prescribed elective courses. Students will also be able to take additional free elective courses that are already being offered in management or in engineering that will allow “concentration” or “specialization” in specific industry sectors, including the following:

<table>
<thead>
<tr>
<th>Areas for Free Electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Healthcare Services</td>
</tr>
<tr>
<td>2. Energy, Resources and Infrastructure</td>
</tr>
<tr>
<td>3. Complex Brain, Biological and Behavioral</td>
</tr>
<tr>
<td>4. Aerospace, Defense and Space</td>
</tr>
<tr>
<td>5. Telecom and IT Networks</td>
</tr>
<tr>
<td>6. Information Assurance and Cyber-security</td>
</tr>
<tr>
<td>7. Arts and Technology and Web-based</td>
</tr>
<tr>
<td>8. Transportation</td>
</tr>
<tr>
<td>9. Macro-economic and Financial Services</td>
</tr>
<tr>
<td>10. Global Supply Chain Management</td>
</tr>
</tbody>
</table>

Note: SEM includes two non-degree certificate options (listed below), one in Systems Engineering and one in Systems Management. Students who complete both certificates can go on to earn the M.S. degree by taking additional program courses, and meeting the requirements set out above.

Interdisciplinary Opportunities
In keeping with the established tradition of research at UT Dallas, the Systems Engineering and Management Program encourages students to interact with researchers in other strong programs, in the engineering, management or science disciplines.

Areas of Research
The faculty in Systems Engineering and Management conduct research in control systems, systems optimization, supply chain management, entrepreneurship and innovation, and several other areas.

Interdisciplinary Opportunities
In keeping with the established tradition of research at UT Dallas, the Systems Engineering and Management Program encourages students to interact with researchers in other strong programs, including computer science, electrical engineering, mechanical engineering, bioengineering, computer engineering, operations management, finance, marketing, innovation and entrepreneurship, and business management.

SEM Certificate Programs

Curriculum Requirements
Students have a choice of two different SEM certificates: a Certificate in Systems Engineering, or, a Certificate in Systems Management. Each certificate requires 12 credit hours. The courses are offered in an Executive Education, 4-hour module format.
(1) The **Certificate in Systems Engineering** requires students to complete over the period of one academic year two courses from the set of engineering courses listed below, and any two additional courses from the remainder of the 20 SYSM-prefix courses listed below in either group, engineering or management.

### Systems Engineering Courses

<table>
<thead>
<tr>
<th>Prefix &amp; Number</th>
<th>Engineering Course Titles</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSM 6301</td>
<td>Systems Engineering Architecture &amp; Design</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6302</td>
<td>Dynamics of Complex Networks &amp; Systems</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6304</td>
<td>Risk <em>Assessment and Management</em> and Decision Analysis</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6305</td>
<td>Dynamic Systems <em>Modeling &amp; Analysis</em> and <em>Optimization</em></td>
<td>3</td>
</tr>
<tr>
<td>SYSM 6306</td>
<td><em>Engineering Systems</em>: Modeling and Simulation of Engineering Systems</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 63107</td>
<td><em>Linear</em> Systems and Control Theory</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 63608</td>
<td>Software Maintenance, Evolution and Re-engineering</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 636109</td>
<td>Advanced Requirements Engineering</td>
<td>3</td>
</tr>
<tr>
<td>SYSM 636210</td>
<td>Software Testing, Validation, Verification</td>
<td>3</td>
</tr>
</tbody>
</table>

Engineering Course Descriptions:

**SYSM 6301 Systems Engineering, Architecture and Design (3 credit hours)** The course will consider concepts related to the architecture and design of large-scale and decentralized Systems from technical and management perspectives. An overview of Systems architectures, requirements analysis, design tradeoffs, and reliability will be discussed through case studies and mathematical techniques. Students will explore the history and current state of the art in systems architecture and design concepts, international standardization bodies, engineering processes, notations, and tool...
support from both theoretical and practical perspectives. (3-0) Y

SYSM 6302 Dynamics of Complex Networks and Systems (3 credit hours) Design, development, and analysis of the dynamics of large, complex interconnected networks and systems. (3-0) Y

SYSM 6303 Quantitative Risk, Probability, Stochastic Processes (3 credit hours). In this course, basic approaches of risk analysis in project planning and management are presented. The methodology used will be based on probability theory and statistics. Students will be expected to present a project report as a part of the course. (3-0) Y

SYSM 6304 Risk Assessment and Management (3 credit hours) This course will familiarize participants with various kinds of risk that an organization may face; methodologies for identifying these risks and classifying them into various categories, their extent and their potential for causing harm; methods for quantifying the potential impact of various kinds of risk, as well as the cost of implementing risk management techniques; and risk management and implementation strategies at an organizational level. (3-0) Y

SYSM 6305 Dynamic Systems Modeling & Analysis (3 credit hours) This course will address foundational aspects of linear systems, nonlinear systems and signal processing. Techniques such as time domain and frequency domain will be introduced. Applications to real-world engineering systems will be presented, such as target tracking, large-scale communication networks, and large-scale energy systems. (3-0) Y

SYSM 6306 Modeling & Simulation of Engineering Systems (3 credit hours) This course will present widely used concepts and techniques from systems and control theory, such as convolution integrals, transfer functions, state space, stability, controllability, observability, and feedback. Prerequisites: MECH 2300 and MECH 4310 or equivalents or consent of instructor. (3-0) Y

SYSM 6331 Systems & Control Theory (3 credit hours) This course will present widely used concepts and techniques from systems and control theory, such as convolution integrals, transfer functions, state space, stability, controllability, observability, and feedback. Prerequisites: MECH 2300 and MECH 4310 or equivalents or consent of instructor. (3-0) Y

SYSM 6356 (CS 6356, SE 6356) Software Maintenance, Evolution & Re-engineering (3 credit hours) Principles and techniques of software maintenance. Impact of software development process on software justifiability, maintainability, evolvability, and planning of release cycles. Use of very high-level languages and dependencies for forward engineering and reverse engineering. Achievements, pitfalls, and trends in software reuse, reverse engineering, and re-engineering. Prerequisite: CE/CS/SE 5354 or consent of instructor. (3-0) Y

SYSM 6361 (CS 6361, SE 6361) Advanced Requirements Engineering (3 credit hours) System and software requirements engineering. Identification, elicitation, modeling, analysis, specification, management, and evolution of functional and non-functional requirements. Strengths and weaknesses of different techniques, tools, and object-oriented methodologies. Interactions and trade-offs among hardware, software, and organization. System and sub-system integration with software and organization as components of complex, composite systems. Transition from requirements to design. Critical issues in requirements engineering. Prerequisite: CE/CS/SE 5354 or consent of instructor. (3-0) Y

SYSM 6367 (CE 6367, CS 6367, SE 6367) Software Testing, Validation, Verification (3 credit hours) Fundamental concepts of software testing. Functional testing. GUI based testing tools. Control flow based test adequacy criteria. Data flow based test adequacy criteria. White box based testing tools. Mutation testing and testing tools. Relationship between test adequacy criteria. Finite state machine based testing. Static and dynamic program slicing for testing and debugging. Software reliability. Formal verification of program correctness. Prerequisites: CE/CS/SE 5354 or consent of instructor. (3-0) Y
SYSM 6V70 Research in Systems Engineering and Management (3-9 semester hours). (May be repeated for credit.) For pass/fail credit only. (3-9;0) R
SYSM 6V80 Special Topics in Systems Engineering and Management (1-6 semester hours). For letter grade credit only. (May be repeated to a maximum of 9 hours.) (1-6;0) S
SYSM 6V98 Thesis (3-9 semester hours). (May be repeated for credit.) For pass/fail credit only. (3-9;0) S

Management Course Descriptions:

SYSM 6311 Systems Project Management (3 credit hours) Systems project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives. The course will cover critical path methods for planning and controlling projects including time and cost tradeoffs, resource utilization, organizational design, conflict resolution and stochastic considerations. Prerequisites: none. (3-0) Y

SYSM 6312 Systems Financial Management (3 credit hours) Theoretical and procedural considerations in the administration of the finance function in the individual business firm; planning, fundraising, controlling of firm finances; working capital management, capital budgeting and cost of capital. Co-prerequisites: OPRE 6301 and ACCT 6201, or consent of instructor. (3-0) Y

SYSM 6313 Negotiating Deals & Resolving Conflict Within the Organization (3 credit hours) This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal, group, and international settings. Emphasis is placed on understanding influence and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises. Prerequisite: OB6301 or consent of instructor. (3-0) Y

SYSM 6314 Manufacturing & Service Systems Planning & Analysis (3 credit hours) Manufacturing & Service Systems Planning & Analysis is the study of management related to transforming inputs to outputs for both manufacturing and service organizations. Its fundamental purpose is the adding of value to inputs - materials, labor, capital and management - to create outputs - products or services which customers want throughout the supply chain. Prerequisites: none. (3-0) Y

SYSM 6315 The Entrepreneurial Experience (3 credit hours) This course is designed to provide student teams with practical experience in the investigation, evaluation and recommendation of technology and/or market entry strategies for a significant new business opportunity. Projects will be defined by the faculty and will generally focus on emerging market opportunities defined by new technologies of interest to a sponsoring corporate partner. Teams will be comprised of management and engineering graduate students, mentored by faculty and representatives of the partnering company. Evaluation will be based on papers, presentations and other deliverables defined on a case-by-case basis. Prerequisites: ENTP 6370 or consent of instructor. (3-0) Y

SYSM 6316 Innovation within the Corporation (3 credit hours) Intrapreneurs are the entrepreneurs within established corporations who combine innovation, creativity and leadership to develop and launch new products, new product lines and new business units that grow revenues and profits from within. Course topics include the elements of strategic analysis and positioning for competitive advantage in dynamic markets, and the structuring, utilization and mobilization of the internal resources of existing firms in the pursuit of growth and new market opportunities. Prerequisites: OB 6301 and ENTP 6370 or consent of the instructor. (3-0) Y

SYSM 6317 Management of High-Tech Products (3 credit hours) This course addresses the strategic and organizational issues confronted by firms in technology-intensive environments. The course reflects five broad themes: (1) managing firms in technology-intensive industries; (2) linking technology and business strategies; (3) using technology as a source of competitive advantage; (4) organizing firms to achieve these goals; and (5) implementing new technologies in organizations. Prerequisites: AIM 6201 and OB 6301 or consent of instructor. (3-0)
**SYSM 6318 Marketing Management, Marketing Systems Analysis** (3 credit hours) Overview of marketing management methods, principles and concepts including product, pricing, promotion and distribution decisions. Prerequisites: none (3-0) Y

**SYSM 6319 Business Economics** (3 credit hours) This course provides foundations of the economic analysis of business problems, with special emphasis on the function and determination of market prices in production and consumption. Supply and demand, price theory, production theory, trade theory with reference to the global economy, the effects of tax and other policies in the economy, and essential elements of the banking system and monetary policy are addressed. Prerequisite: MATH 5304 or equivalent or consent of instructor. (3-0) Y

**SYSM 6320 Strategic Leadership** (3 semester hours) This course addresses the challenge of leading organizations in dynamic and challenging environments. Overall goal is to not only question one’s assumptions about leadership, but also enhance skills and acquire new content knowledge. Topics include visionary and transformational leadership; post-heroic leadership; empowerment; leveraging & combining resources, designing organizations, and ethics. Prerequisites: none (3-0) Y

**Engineering Course Descriptions**

**SYSM 6301 Systems Engineering, Architecture and Design** (3 credit hours) Architecture and design of large-scale and decentralized systems from technical and management perspectives. Systems architectures, requirements analysis, design tradeoffs, and reliability through case studies and mathematical techniques. International standardization bodies, engineering frameworks, processes, notations, and tool support from both theoretical and practical perspectives. Prerequisites: none (3-0) Y

**SYSM 6302 Dynamics of Complex Networks and Systems** (3 credit hours) Design, development, and analysis of large, complex interconnected networks and systems. Prerequisites: none (3-0) Y

**SYSM 6303 (OPRE 6301) Quantitative Introduction to Risk and Uncertainty in Business** (3 credit hours) Introduction to statistical and probabilistic methods and theory applicable to situations faced by managers. Topics include: data presentation and summarization, regression analysis, fundamental probability theory and random variables, introductory decision analysis, estimation, confidence intervals, hypothesis testing, and One Way ANOVA (Some sections of this class may require a laptop computer). Prerequisite: MATH 5304 or equivalent. (3-0) S

**SYSM 6304 (OPRE 6335) Risk and Decision Analysis** (3 credit hours) This course provides an overview of the main concepts and methods of risk assessment, risk management, and decision analysis. The methods used in industry, such as probabilistic risk assessment, six sigma, and reliability, are discussed. Advanced methods from economics and finance (decision optimization and portfolio analysis) are presented. Prerequisite: SYSM 6303 or OPRE 6301. (3-0) T

**SYSM 6305 Dynamic Systems Optimization** (3 credit hours) System modeling using time-domain and frequency domain approaches. Dynamic programming, conditions for optimality. Relation to control theory and operations research. Applications to real-world engineering. Prerequisites: none (3-0) Y

**SYSM 6306 (BMEN 6372/MECH 6314) Engineering Systems: Modeling & Simulation** (3 credit hours) This course will present principles of computational modeling and simulation of systems. General topics covered include: parametric and non-parametric modeling; system simulation; parameter estimation, linear regression and least squares; model structure and model validation through simulation; and, numerical issues in systems theory. Techniques covered include methods from numerical linear algebra, nonlinear programming and Monte Carlo simulation, with applications to general engineering systems. Modeling and simulation software is utilized (MATLAB/SIMULINK). Prerequisites: none. (3-0) Y

**SYSM 6307 (EESC 6331/MECH 6300) Linear Systems** (3 semester hours) State space methods of
analysis and design of linear dynamical systems. Coordinate transformations and tools from advanced linear algebra. Controllability and observability. Lyapunov stability analysis. Pole assignment, stabilizability, detectability. State estimation for deterministic models, observers. Introduction to the optimal linear quadratic regulator problem. Prerequisites: EE 4310 or MECH 4310 or equivalents (3-0) Y

SYSM 6308 (CS 6356/SE 6356) Software Maintenance, Evolution & Re-engineering (3 credit hours) Principles and techniques of software maintenance. Impact of software development process on software justifiability, maintainability, evolvability, and planning of release cycles. Use of very high-level languages and dependencies for forward engineering and reverse engineering. Achievements, pitfalls, and trends in software reuse, reverse engineering, and re-engineering. Prerequisite: CE/CS/SE 5354 or consent of instructor. (3-0) Y

SYSM 6309 (SE 6361/CS 6361) Advanced Requirements Engineering (3 credit hours) System and software requirements engineering. Identification, elicitation, modeling, analysis, specification, management, and evolution of functional and non-functional requirements. Strengths and weaknesses of different techniques, tools, and object-oriented methodologies. Interactions and trade-offs among hardware, software, and organization. System and sub-system integration with software and organization as components of complex, composite systems. Transition from requirements to design. Critical issues in requirements engineering. Prerequisite: CS/SE 5354 or consent of instructor. (3-0) S

SYSM 6310 (SE 6367/CE 6367/CS 6367) Software Testing, Validation, and Verification (3 credit hours) Fundamental concepts of software testing. Functional testing. GUI based testing tools. Control flow based test adequacy criteria. Data flow based test adequacy criteria. White box based testing tools. Mutation testing and testing tools. Relationship between test adequacy criteria. Finite state machine based testing. Static and dynamic program slicing for testing and debugging. Software reliability. Formal verification of program correctness. Prerequisites: CE/CS/SE 5354 or consent of instructor. (3-0) Y

SYSM 6V70 Research In Systems Engineering and Management (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) R

SYSM 6V80 Special Topics in Systems Engineering and Management (1–6 semester hours) For letter grade credit only. (May be repeated to a maximum of 9 hours.) ([1-6]-0) S

SYSM 6V98 Thesis (3-9 semester hours) (May be repeated for credit.) For pass/fail credit only. ([3-9]-0) S

Management Course Descriptions

SYSM 6311 (OPRE 6362) Systems Project Management (3 credit hours) Systems project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives. The course will cover critical path methods for planning and controlling projects including time and cost tradeoffs, resource utilization, organizational design, conflict resolution and stochastic considerations. Prerequisites: none (3-0) Y

SYSM 6312 (FIN 6301) Systems Financial Management (3 credit hours) Theoretical and procedural considerations in the administration of the finance function in the individual business firm; planning, fundraising, controlling of firm finances; working capital management, capital budgeting and cost of capital. Co-prerequisites: OPRE 6301 and ACCT 6201, or consent of instructor. (3-0) Y

SYSM 6313 (OB 6332) Negotiating Deals & Resolving Conflict within the Organization (3 credit hours) This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal, group, and international settings. Emphasis is placed on understanding influence
and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises. Prerequisite: OB6301 or consent of instructor. (3-0) Y

SYSM 6314 Manufacturing & Service Systems Planning & Analysis (3 credit hours) Manufacturing & Service Systems Planning & Analysis is the study of management related to transforming inputs to outputs for both manufacturing and service organizations. Its fundamental purpose is the adding of value to inputs - materials, labor, capital and management - to create outputs - products or services which customers want - throughout the supply chain. Prerequisites: none (3-0) Y

SYSM 6315 (ENTP 6398) The Entrepreneurial Experience (3 credit hours) This course is designed to provide student teams with practical experience in the investigation, evaluation and recommendation of technology and/or market entry strategies for a significant new business opportunity. Projects will be defined by the faculty and will generally focus on emerging market opportunities defined by new technologies of interest to a sponsoring corporate partner. Teams will be comprised of management and engineering graduate students, mentored by faculty and representatives of the partnering company. Evaluation will be based on papers, presentations and other deliverables defined on a case-by-case basis. Prerequisites: ENTP 6370 or consent of instructor (3-0) Y

SYSM 6316 (ENTP 6388) Innovation within the Corporation (3 credit hours) Intrapreneurs are the entrepreneurs within established corporations who combine innovation, creativity and leadership to develop and launch new products, new product lines and new business units that grow revenues and profits from within. The course seeks to equip student with the skills and perspectives required to initiate new ventures and create viable businesses in dynamic and uncertain environments in the face of organizational inertia and other sources of resistance to innovation. Course topics include the elements of strategic analysis and positioning for competitive advantage in dynamic markets, and the structuring, utilization and mobilization of the internal resources of existing firms in the pursuit of growth and new market opportunities. Prerequisites: OB 6301 and ENTP 6370 or consent of instructor (3-0) Y

SYSM 6317 Management of High-Technology Products (3 credit hours) Building on the premise that successful product management involves getting the right product to the right customer at the right price at the right time, the course will teach techniques in product identification and requirements; product development; management of internal resources, including manufacturing, sales and management; costing and pricing decisions; product planning and winning the right design win. Prerequisites: none (3-0) Y

SYSM 6318 (MKT 6301) Marketing Management and Marketing Systems Analysis (3 credit hours) Overview of marketing management methods, principles and concepts including product, pricing, promotion and distribution decisions. Prerequisites: none (3-0) Y

SYSM 6319 (MECO 6303) Business Economics (3 credit hours) Provides foundations of the economic analysis of business problems, with special emphasis on the function and determination of market prices in production and consumption. Supply and demand, price theory, production theory, trade theory with reference to the global economy, the effects of tax and other policies in the economy, and essential elements of the banking system and monetary policy are addressed. Prerequisites: Math 5304 or equivalent or consent of instructor (3-0) Y

SYSM 6320 (BPS 6332) Strategic Leadership (3 credit hours) Addresses the challenge of leading organizations in dynamic and challenging environments. Overall goal is to not only question one's assumptions about leadership, but also enhance skills and acquire new content knowledge. Topics include visionary and transformational leadership; post-heroic leadership; empowerment; leveraging & combining resources; designing organizations; and ethics.. Prerequisites: none (3-0) Y
Doctor of Philosophy

Admission Requirements

The University’s general admission requirements are discussed here.

Application for admission to the Ph.D. program should normally include (1) a GMAT test score of 600 that is advisable based on our experience with student success in the program, (2) an undergraduate degree with a good academic record from an accredited institution of higher learning, (3) letters of recommendation, and (4) a personal statement of goals in relation to seeking the degree. In the case of international students, TOEFL scores or other evidence of English proficiency are required. No student will be admitted without the approval of the concentration area to which the student applies. For additional information, contact the Office of the Director of Ph.D. programs in the School of Management. Financial support is often available to PhD students in the form of teaching assistantships and/or scholarships.

Degree Requirements

The University’s general degree requirements are discussed here.

Each doctoral candidate is required to complete a minimum of 90 semester credit hours of applicable graduate work in specific program areas beyond the baccalaureate and prerequisites. Throughout their programs of study at the university, Ph.D. students are encouraged to participate in ongoing research activities and to develop their own lines of research. Research activities include research seminars, directed reading courses and research assistantships. Research supervision is available in the areas of Accounting, Finance and Economics, Information Systems, International Management Studies (housed within the Organizations, Strategy and International Management [OSIM] area), Marketing, Operations Management, and Operations Research.

Ph.D. in International Management Studies

Students may enter the IMS doctoral program after previous graduate training or directly from undergraduate programs. Desirable educational backgrounds include graduate training in any area of business and graduate or undergraduate degrees in areas such as economics, sociology, political science, mathematics, and engineering, although students from all areas are considered.

The IMS Ph.D. curriculum includes a business foundation, core courses, advanced seminars, a methodology requirement, directed readings and independent research courses, and the dissertation. All students must take the Ph.D. courses that are offered in each of the first two years in the program.

Students must pass the comprehensive qualifying examination, which is administered at the end of the second year of study when all the relevant course requirements (*) below have been satisfied. It is intended to assess the student's mastery of the basic theories and methodologies central to the program and to evaluate the student's potential to do original research in an area of specialization. After passing the comprehensive exam, each student writes a dissertation proposal. This must be completed within six months of the comprehensive exam. The proposal is defended before a faculty committee appointed in consultation with the student, dissertation chair, and Ph.D. advisor. This committee also serves as the supervising committee for the dissertation after the proposal is approved.

Foundation Courses (minimum of 12 hours)
These courses provide a foundation in basic business topics such as economics, marketing, finance, and accounting. These courses may be waived for students with master's degrees in management or other academic backgrounds that provide an equivalent foundation.

**Core Courses (21 hours)**

- OB 7300 Organization Theory
- MAS 8v42 Organizational Behavior
- IMS 7300 International Management
- IMS 8v40 International Business
- BPS 7300 Strategic Management
- BPS 7303 Doctoral Teaching and Writing Seminar
- MAS 8v51 Advanced Strategic Management

**Advanced Seminars (9 hours)**

Advanced seminars are offered on topics in international management, organizational behavior, organization theory, and strategic management. These courses are an opportunity for students to explore areas of study in greater depth, to develop short-term research projects, and to develop working relationships with faculty members with a view towards research publications and the dissertation.

**Research Methods (15 hours)**

- OB 7303 Research Design
- OPRE 6301 Quantitative Introduction to Risk and Uncertainty in Business
  or POEC 5313 Policy Data Analysis I or STAT 5311 Applied Statistics for Management Science I**
- STAT 5312 Regression Analysis or POEC 5316 Policy Data Analysis II**
- POEC 5331 Econometrics**
- OB 7306 Macro-Organizational Empirical Investigation

Students are encouraged to take additional methods courses consistent with their research interests.

**Students desiring a methods sequence with a greater emphasis on mathematical statistics may substitute OPRE 6330 or STAT 5351, STAT 5352, and MECO 6320 for these three courses.

**Directed readings and independent research courses (21 hours)**

Students can take further courses with selected faculty members to develop more specialized knowledge in areas of research interest before and after the comprehensive exam.

**Dissertation (minimum of 15 hours)**

The Ph.D. degree is conferred when the dissertation is successfully defended.

**Ph.D. in Management Science**

The Ph.D. program in Management Science is characterized by a high ratio of research faculty to students, which fosters close working relationships. Core and elective courses provide the students with a thorough understanding of management principles. Course work incorporates a broad business outlook into the study of theory and practice. A sequence of Ph.D. seminars exposes students to traditional and emerging research issues. Students have the opportunity to be involved in ongoing research projects.
under the mentorship of experienced faculty. We emphasize involving students in research early in their
graduate careers. The close interaction with faculty members enables students to quickly learn to identify
and develop research ideas and create their own research agenda. Students also develop their teaching
competence under faculty mentorship by teaching organized classes.

The course of study for the Ph.D. in Management Science consists of three phases. First is attaining a
background in business concepts. Second are the requirements for doctoral proficiency. Third is the
dissertation. Each area of study – Accounting, Finance, Information Systems, Marketing, and Operations
Management – determines the specific requirements for the three phases. Details can be obtained from
the Director of the Ph.D. programs in the School of Management.

Students admitted into the program typically devote two years to the doctoral proficiency course work and
research projects. They then take a comprehensive qualifying exam, based on the course work. Following
passing the qualifying exam, each student develops his or her dissertation research area, which is usually
completed over the next two years.

Doctoral proficiency encompasses courses in research methods, electives or a specialization, doctoral
seminars, and a written and oral qualifying examination.

Required core courses:

OPRE 6330 Probability and Stochastic Processes
MECO 6315 Approaches to Statistical Inference
MAS 6v00 Data Analysis and Software
MECO 6320 Introduction to Econometrics
MECO 6345 Advanced Managerial Economics
OPRE 7320 Optimal Control Theory and Applications
MAS 8V00 Teaching Practicum

Secondary Core Courses (6-12 hours):

Students must take at least two of the following courses:
OPRE 6311 Game Theory
MECO 7320 Advanced Econometrics
OPRE 6331 Stochastic Models in Operations Research
OPRE 7330 Deterministic Models in Operations Research

Remaining requirements beyond the core consist of research courses, electives, independent study, and
seminars as approved by the program committee appointed to guide and evaluate each student. After
completion of the coursework to achieve doctoral proficiency, the student will sit for a written qualifying
exam which must be passed before formal admission to candidacy for the doctorate. The student must
also orally defend the dissertation proposal before starting the dissertation. Written examination in the
area of specialization may also be required.

The focal point of the Ph.D. program is the dissertation. The dissertation is written under the direction of
the candidate’s committee. Twelve to twenty-four semester hours may be granted for the dissertation
toward the minimum ninety hour requirement for the degree. At a time mutually agreeable with the
candidate and the members of the committee, the student will orally defend his or her dissertation to the
satisfaction of the committee. A student must pass in order to have the Ph.D. degree conferred.

Accounting Concentration
This program is for individuals seeking training in the most advanced issues, both theoretical and applied, in the field of Accounting. It is designed to prepare them primarily for teaching positions in research-oriented universities. Some students may be placed in senior positions in industry, government or consulting organizations. The program requires a hands-on training in accounting research, supported by work in the disciplines of economics, mathematics, psychology and statistics, culminating in a doctoral dissertation.

Finance Concentration

This program is for individuals seeking the most advanced academic degree with an emphasis in Finance. It is designed to prepare them for (1) teaching positions in research-oriented universities, (2) senior staff positions in industry or government, or (3) senior positions in consulting organizations; however, the emphasis is on (1). The program consists of coursework in financial management, investments, and money and capital markets, together with work in the supporting areas of economics, mathematics, and statistics; it culminates in a doctoral dissertation. The program is designed to be completed in three years of full-time study by a student entering with an appropriate master’s degree.

Information Systems Concentration

This program is designed for individuals who seek training in advanced theoretical and applied issues in the field of information systems. The training prepares students for conducting leading edge research in topics ranging from the design of optimized systems to the effective use of such systems in organizations. Students undergo rigorous training in research methodologies as well as in the design of information systems. The research conducted is often interdisciplinary in nature, and is characterized by strong analytical modeling of new and emerging issues in information technology creation and management. The program prepares students mainly for academic positions in research universities; some students may be placed in research positions in industry, government, or consulting organizations.

Marketing Concentration

The purpose of the PhD Program in Management Science with a marketing major is to train researchers capable of dealing with the most advanced issues, both theoretical and applied, in the field of marketing. Universities as well as major companies with marketing orientation aggressively recruit PhD’s with strong theoretical and research training in marketing. Graduates will have rigorous training in disciplinary areas and research methodology. They will have knowledge of the various research streams in marketing, will have developed a research specialization and a clear perspective on management issues.

Operations Management Concentration

Operations Management emphasizes the development of models, methods, applications, and algorithms as they apply to problems in manufacturing and services. All students will be exposed to deterministic and stochastic modeling and will have the option of applying and/or developing these and new methods to solve problems in their selected topics. There will also be an option of combining a major in Finance, Information Systems or Marketing with one in Operations Management. The goal of the doctoral program in Operations Management is to educate future practitioners and researchers in the concepts and analytical techniques needed to understand and advance scientific solutions to the problems currently faced by operations managers.

Research

The faculty of the School makes intellectual contributions in two areas: fundamental scholarship that advances theory and practice and applied scholarship focusing on practical issues. The fundamental work includes traditional basic research as well as applied research that defines new areas of practice and provides general frameworks that address a wide range of application problems. The applied
scholarship provides "how to" frameworks for skilled practitioners, uses demonstration cases to show how theories can be applied, and defines new areas of application for existing tools and techniques.
SCHOOL OF MANAGEMENT

The School of Management was established in 1975 as the academic unit responsible for (1) the Master of Science (M.S.) degree in Management and Administrative Sciences; (2) the Master of Arts (M.S.) degree in International Management Studies; (3) the Doctor of Philosophy (Ph.D.) degrees in Management Science and in International Management Studies; and (4) an upper-division program leading to a Bachelor of Science (B.S.) degree in Business Administration.

The School added a Master of Business Administration (MBA) degree in 1983, and in 1992, in conjunction with UT Dallas’s expansion, lower-division instruction was initiated. The Master of Science in Accounting started in 1994. In 1996, the School added the Cohort MBA, a full-time MBA program in which students take all of their courses together in a fixed sequence.

In 1997, the School formed a strategic alliance with The University of Texas Southwestern Medical Center at Dallas to offer a Master of Science in Medical Management for medical doctors. In 2007, the program was split into two parts and renamed the Master of Science in Healthcare Management Executive Track in 2007 (for medical doctors) and the Master of Science in Healthcare Management Professional Track for all other healthcare professionals.

To help bridge the gap between business and information technology, the School established the Master of Science in Information Technology and Management in 2003. In Fall, 2008, the school added two new masters’ degree programs, the M.S. in Finance and the M.S. in Supply Chain Management. The school then added last programs to be added include the M.S. in Innovation and Entrepreneurship, and the M.S. in Systems Engineering and Management, a joint degree with the Eric Jonsson School of Engineering and Computer Science, which both opened in 2010. The last degree to be added was the M.S. in Marketing in 2011.

Since its inception, the School of Management has offered a range of degree options and program formats designed to serve the diverse needs of a student population primarily composed of working adults, but also including traditional full-time graduate students and, more recently, residential undergraduate students.

The graduate programs in the School of Management stress the theory and use of applied sciences for successful management and administration of private and public institutions. Courses provide an opportunity to gain integrated and detailed knowledge of the functional areas of management as well as analytical tools for effective appraisal and decision making. Seminars and research on specific projects are designed to develop creativity and to stimulate the student toward an integrated application of the acquired knowledge.

With over 35 years of operating history and with the rapid development in the “Telecom Corridor” area surrounding the campus, UT Dallas’s School of Management has become a major provider of management education to many global corporations.

The School of Management’s mission is to meet the challenges of a rapidly changing, technology-driven, global society by partnering with the business community to:

- deliver high quality management education to a diverse group of undergraduate and graduate students and practicing executives;
- develop and continuously improve programs advancing management education and practice; and,
- conduct world-class research enhancing cutting-edge management knowledge.
The School creates enduring knowledge for a changing world. Grounded in research and experience, our educational programs provide the managerial and technical skills to address evolving business challenges.

DEGREES OFFERED

Master of Business Administration (MBA) (53 Hours)

Master of Science in Accounting (M.S.) (36 Hours)
Master of Science in Information Technology and Management (M.S.) (36 Hours)
Master of Science in Innovation and Entrepreneurship (M.S.) (36 Hours)
Master of Science in International Management Studies (M.S.) (36 Hours)
Master of Science in Management and Administrative Sciences (M.S.) (36 Hours)
Master of Science in Healthcare Management - Executive Track (M.S.) (36 Hours)
Master of Science in Healthcare Management - Professional Track (M.S.) (36 Hours)
Master of Science in Finance (M.S.) (36 Hours)
Master of Science in Supply Chain Management (M.S.) (36 Hours)
Master of Science in Systems Engineering and Management (M.S) (36 Hours)
Master of Science in Marketing (M.S) (36 Hours)

Doctor of Philosophy in International Management Studies (Ph.D.)
Doctor of Philosophy in Management Science (Ph.D.)

Supply Chain Management (Certificate)
Sourcing (Certificate)
Lean 6 Sigma (Certificate)
Healthcare Management Lean 6 Sigma Yellow Belt (Certificate)
Certificate in Systems Engineering (Certificate)
Certificate in Systems Management (Certificate)
Business Intelligence and Data Mining (Certificate)
Certificate in Enterprise Systems (certificate)
Certificate in Product Management (Certificate)
Certificate in Market Research and Market Analytics (Certificate)
Healthcare Management (Executive Certificate)
Project Management (Executive Certificate)
Organizational Behavior and Coaching (Executive Certificate)
Product Lifecycle and Supply Chain Management (Executive Certificate)
ENTP 6315 (FIN 6315) Entrepreneurial Finance (3 semester hours) The objective of this course is to build skills and knowledge in the financing of entrepreneurial ventures. Entrepreneurial Finance concerns not only the processes of financing and investing in start-up companies, but also the changes to the initial financing mix that may be required as start-up companies mature and grow. Topics include: valuation, capital structure, forecasting, the market for venture capital and private equity, the decision to go public or remain private, alternative financing arrangements, and the differential marketability and liquidity of the securities used to finance non-public firms. The course is equivalent to FIN 6315 and only one of these may be counted toward a degree. Prerequisite: FIN 6301. (3-0) Y

FIN 6315 (ENTP 6315) Entrepreneurial Finance (3 semester hours) The objective of this course is to build skills and knowledge in the financing of entrepreneurial ventures. Entrepreneurial Finance concerns not only the process of financing and investing in start-up companies, but also the changes to the initial financing mix that may be required as start-up companies mature and grow. Topics include: valuation, capital structure, forecasting, the markets for venture capital and private equity, the decision to go public or remain private, alternative financing arrangements, and the differential marketability and liquidity of the securities used to finance non-public firms. This course is equivalent to ENTP 6315 and only one of these may be counted toward a degree. Prerequisite: FIN 6301. (3-0) Y

ENTP 6380 (MKT 6380) Entrepreneurial Marketing (3 semester hours) This course addresses the marketing challenges facing the entrepreneurial firm, including the introduction and marketing of new products and services without the benefit of an established reputation, channel infrastructure or customer base. Topics include the development of marketing strategies, channel selection and design, product positioning, competitive pricing strategies, advertising and promotion, etc., all within the framework of the resource limitations inherent in an entrepreneurial startup. This course is equivalent to MKT 6380 and only one of these may be counted toward a degree. Prerequisite: MKT 6301 and ENTP 6370 or consent of the instructor. (3-0) Y

MKT 6380 (ENTP 6380) Entrepreneurial Marketing (3 semester hours) This course addresses the marketing challenges facing the entrepreneurial firm, including the introduction and marketing of new products and services without the benefit of an established channel infrastructure or customer base. Topics include the development of marketing strategies, channel selection and design, product positioning, competitive pricing strategies, advertising and promotion within the framework of the resource limitations inherent in an entrepreneurial startup. This course is equivalent to ENTP 6380 and only one of these may count toward a degree. Prerequisites: MKT 6301 and ENTP 6370 or permission of the instructor. (3-0) Y

ACCT 6337 (MIS 6326) Data Management (3 semester hours) Database theory and tools used to manage accounting data and other information are introduced. Topics include relational database theories, Structured Query Language (SQL), database design and conceptual/semantic data modeling. A client/server database environment is developed with a selected SQL server and a database application development tool. May not receive credit for both ACCT 6337 and MIS 6326. (3-0) Y
MIS 6326 (ACCT 6337) Data Management (3 semester hours) Database theory and tools used to manage accounting data and other information are introduced. Topics include relational database theories, Structured Query Language (SQL), database design and conceptual/semantic data modeling. A client/server database environment is developed with a selected SQL server and a database application development tool. May not receive credit for both ACCT 6337 and MIS 6326. (3-0) Y

ACCT 6349 (MIS 6302) Information Technology Strategy and Management (3 semester hours) This course explores the strategic management and control issues associated with information technology. It provides a framework to understand how IT strategy aligns with business strategy and focuses on developing an understanding of the key information requirements for developing an IT strategy and systems architecture. This includes conducting IT sourcing analysis, and managing IT investments effectively to maximize business value. The course will consist of a mix of real-world case studies on IT strategy development across different industries. May not receive credit for both ACCT 6349 and MIS 6302. (3-0) R

MIS 6302 (ACCT 6349) Information Technology Strategy and Management (3 semester hours) This course explores the strategic management and control issues associated with information technology. It provides a framework to understand how IT strategy aligns with business strategy and focuses on developing an understanding of the key information requirements for developing an IT strategy and systems architecture. This includes conducting IT sourcing analysis, and managing IT investments effectively to maximize business value. The course will consist of a mix of real-world case studies on IT strategy development across different industries. May not receive credit for both ACCT 6349 and MIS 6302. (3-0) R

ACCT 6379 (MIS 6379) SAP ABAP Programming (3 semester hours) This course provides a thorough understanding of the role of ABAP programming, SAP’s programming language, in the implementation and use of enterprise systems. Components of the course include: complex report development, SAP query, dialog programming, ABAP Objects, transaction development, EDI/ALE and BAPI development, Business Add-ins (BADIs) and output processing. (3-0) R

MIS 6379 (ACCT 6379) SAP ABAP Programming (3 semester hours) This course provides a thorough understanding of the role of ABAP programming, SAP’s programming language, in the implementation and use of enterprise systems. Components of the course include: complex report development, SAP query, dialog programming, ABAP Objects, transaction development, EDI/ALE and BAPI development, Business Add-ins (BADIs) and output processing. (3-0) R

BPS 6385 (ENTP 6385) Entrepreneurial Business Strategies (3 semester hours) This course is an advanced course in strategic management, with an emphasis on business strategies for entrepreneurial firms. Within this framework, the course addresses the most recent approaches and perspectives on strategies management in rapidly changing environments. Topics include the formulation and evaluation of strategy in emerging industries, strategies for market entry and competition against established incumbents, the role of technology standards, the technology adoption life cycle model, theories of disruptive innovation, and the use of creative imitation, speed and agility to prevail over established
competitors. This course is equivalent to ENTP 6385 and only one of these may be counted toward a degree. Prerequisites: ENTP 6370 and BPS 6310 or consent of instructor. (3-0) Y

ENTP 6385 (BPS 6385) Entrepreneurial Business Strategies (3 semester hours) This course is an advanced course in strategic management, with an emphasis on business strategies for entrepreneurial firms. Within this framework, the course addresses the most recent approaches and perspectives on strategic management in rapidly changing environments. Topics include the formulation and evaluation of strategy in emerging industries, strategies for market entry and competition against established incumbents, the role of technology standards, the technology adoption life cycle model, theories of disruptive innovation, and the use of creative imitation, speed and agility to prevail over established competitors. This course is equivalent to BPS 6385 and only one of these may be counted toward a degree. Prerequisites: ENTP 6370 and BPS 6310 or consent of the instructor. (3-0) Y

HMGT 6324 (OB 6332 & SYSM 6313) Healthcare Negotiation and Dispute Resolution [MJV 1](3 semester hours) This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal, group, and international settings. Emphasis is placed on understanding influence and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises. Prerequisite: OB 6301 or consent of instructor. (3-0) T

OB 6332 (HMGT 6324 and SYSM 6313) Negotiation and Dispute Resolution [MJV 2](3 semester hours) This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal, group, and international settings. Emphasis is placed on understanding influence and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises. Prerequisite: OB 6301 or consent of instructor. (3-0) T

SYSM 6313 (HMGT 6324 and OB 6332) Systems Negotiating & Dispute Resolution [MV3](3 credit hours) This course explores the theories, processes, and practical techniques of negotiation so that students can successfully negotiate and resolve disputes in a variety of situations including interpersonal, group, and international settings. Emphasis is placed on understanding influence and conflict resolution strategies; identifying interests, issues, and positions of the parties involved; analyzing co-negotiators, their negotiation styles, and the negotiation situations; and managing the dynamics associated with most negotiations. Practical skills are developed through the use of simulations and exercises. Prerequisite: OB 6301 or consent of instructor. (3-0) T

ACCT 6378 (MIS 6378 AND MKT 6338) Enterprise Systems and CRM (3 semester hours) The objective of the course is to increase practical skills and conceptual knowledge related to Customer Relationship
Management (CRM) utilizing the mySAP.com CRM application, or similar software, as the primary learning tool. Students will garner knowledge of operational, analytical, and collaborative CRM. (3-0) R

MIS 6378 (ACCT 6378 AND MKT 6338) Enterprise Systems and CRM (3 semester hours) The objective of the course is to increase practical skills and conceptual knowledge related to Customer Relationship Management (CRM) utilizing the mySAP.com CRM application, or similar software, as the primary learning tool. Students will garner knowledge of operational, analytical, and collaborative CRM. (3-0) R

MKT 6338 (ACCT 6378 AND MIS 6378) Enterprise Systems and CRM (3 semester hours) The objective of the course is to increase practical skills and conceptual knowledge related to Customer Relationship Management (CRM) utilizing the mySAP.com CRM application, or similar software, as the primary learning tool. Students will garner knowledge of operational, analytical, and collaborative CRM. (3-0) R

ENTP 6316 (FIN 6316) Private Equity Finance (3 semester hours) This course will cover the investment of capital in the equity of private companies to fund growth or in public companies to take them private. This course includes the study of a broad spectrum of private equity investments, investing in established private firms, buyouts, financial restructuring of distressed firms, and private equity financing by public firms. Prerequisite: FIN 6311 or ENTP 6311 or consent of instructor. (3-0) Y

FIN 6316 (ENTP 6316) Private Equity Finance (3 semester hours) This course will cover the investment of capital in the equity of private companies to fund growth or in public companies to take them private. This course includes the study of a broad spectrum of private equity investments, investing in established private firms, buyouts, financial restructuring of distressed firms, and private equity financing by public firms. Prerequisite: FIN 6311 or ENTP 6311 or consent of instructor. (3-0) Y

HMGT 6323 (MIS 6317) Healthcare Informatics (3 semester hours) Examines the unique challenges of clinical and patient care delivery in the healthcare industry, including the role of data management, emerging data standards and information technology in improving the quality and cost associated with healthcare. The focus of the course will be on healthcare IT including issues related to governance, data integration, and selection and management of healthcare IT. This course is equivalent to MIS 6317 and only one of these may count toward a degree. (3-0) T

MIS 6317 (HMGT 6323) Healthcare Informatics (3 semester hours) Examines the unique challenges of clinical and patient care delivery in the healthcare industry, including the role of data management, emerging data standards and information technology in improving the quality and cost associated with healthcare. The focus of the course will be on healthcare IT including issues related to governance, data integration, and selection and management of healthcare IT. This course is equivalent to HMGT 6323 and only one of these may count toward a degree. (3-0) T

ACCT 6340 (MIS 6308) System Analysis and Project Management (3 semester hours) Provides the student with an in-depth knowledge of object oriented systems analysis and design procedures. Software project management techniques will be introduced. At the end of the course, the student will be able to analyze business solutions and design computer based information systems using object-oriented methodologies. Co-/Pre-requisite: MIS 6326. (3-0) R
MIS 6308 (ACCT 6340) System Analysis and Project Management (3 semester hours) Provides the student with an in-depth knowledge of object oriented systems analysis and design procedures. Software project management techniques will be introduced. At the end of the course, the student will be able to analyze business solutions and design computer based information systems using object-oriented methodologies. Co/requisite: MIS 6326. (3-0) R

ACCT 6336 (HMGT 6336) Information Technology Audit and Risk Management (3 semester hours) Management's role in designing and controlling information technology used to process accounting data is studied. Topics include the role of internal and external auditors in systems development, information security, business continuity, information technology, operations, and the assurance of information related to on-line systems, web-based, internet, and other advanced computer systems. (3-0) Y

HMGT 6336 (ACCT 6336) Information Technology Audit and Risk Management (3 semester hours) Management's role in designing and controlling information technology used to process accounting data is studied. Topics include the role of internal and external auditors in systems development, information security, business continuity, information technology, operations, and the assurance of information related to on-line systems, web-based, internet, and other advanced computer systems. (3-0) Y

ACCT 6380 (HMGT 6380) Internal Audit (3 semester hours) The course covers internal audit from a broad perspective that includes information technology, business processes, and accounting systems. Topics include internal auditing standards, risk assessment, governance, ethics, audit techniques, and emerging issues. This is the first course leading to Endorsed Internal Audit Certificate and will prepare students to sit for the Certified Internal Auditor Exam. (3-0) Y

HMGT 6380 (ACCT 6380) Internal Audit (3 semester hours) The course covers internal audit from a broad perspective that includes information technology, business processes, and accounting systems. Topics include internal auditing standards, risk assessment, governance, ethics, audit techniques, and emerging issues. This is the first course leading to Endorsed Internal Audit Certificate and will prepare students to sit for the Certified Internal Auditor Exam. (3-0) Y

ACCT 6382 (HMGT 6382) Advanced Auditing (3 semester hours) This course examines how the role of internal and external audit can best be coordinated. Numerous case studies of audit integrated activities will be covered. Current topics and issues related to audit will be discussed as part of the class. Prerequisites: ACCT 6334 or ACCT 6380 (HMGT 6380). (3-0) R

HMGT 6382 (ACCT 6382) Advanced Auditing (3 semester hours) This course examines how the role of internal and external audit can best be coordinated. Numerous case studies of audit integrated activities will be covered. Current topics and issues related to audit will be discussed as part of the class. Prerequisites: ACCT 6334 or ACCT 6380 (HMGT 6380). (3-0) R

ENTP 6311 (FIN 6311) Valuation Models and Practices (3 semester hours) This course examines different models and practices for valuing everything from R&D investments to firms, both public and private. Prerequisite: FIN 6301, and Co/Pre-requisite: FIN 6306. (3-0) S
FIN 6311 (ENTP 6311) Valuation Models and Practices (3 semester hours) This course examines different models and practices for valuing everything from R&D investments to firms, both public and private. Prerequisite: FIN 6301 and Co/Pre-requisite: FIN 6306. (3-0) S

HMGT 6325 (OPRE 6325) Healthcare Operations Management (3 semester hours) Explores how effectively managing and continuously improving the end-to-end healthcare supply chain provides a competitive advantage. Topics include supply chain fundamentals, key players in the healthcare supply chain and their challenges, how the healthcare supply chain works, impact of technology on supply chain performance, and lean six sigma methodology. Simulations and case studies will reinforce the learning. (3-0) T

OPRE 6325 (HMGT 6325) Healthcare Operations Management (3 semester hours) Explores how effectively managing and continuously improving the end-to-end healthcare supply chain provides a competitive advantage. Topics include supply chain fundamentals, key players in the healthcare supply chain and their challenges, how the healthcare supply chain works, impact of technology on supply chain performance, and lean six sigma methodology. Simulations and case studies will reinforce the learning. (3-0) T

FIN 6301 (SYSM 6312) Financial Management (3 semester hours) Theoretical and procedural considerations in the administration of the finance function in the individual business firm; planning, fundraising, controlling of firm finances; working capital management, capital budgeting and cost of capital. Prerequisite: ACCT 6305 or Pre-/Co-prerequisites: OPRE 6301 and ACCT 6201, or consent of instructor. (3-0) S

SYSM 6312 (FIN 6301) Systems Financial Management (3 semester hours) Theoretical and procedural considerations in the administration of the finance function in the individual business firm; planning, fundraising, controlling of firm finances; working capital management, capital budgeting and cost of capital. Prerequisite: ACCT 6305 or Pre-/Co-prerequisites: OPRE 6301 and ACCT 6201, or consent of instructor. (3-0) S

BPS 6332 (SYSM 6320) Strategic Leadership (3 semester hours) Addresses the challenge of leading organizations in dynamic and challenging environments. Overall goal is to not only question one's assumptions about leadership, but also enhance skills and acquire new content knowledge. Topics include visionary and transformational leadership; post-heroic leadership; empowerment; leveraging and combining resources; designing organizations; and ethics. (3-0) Y

SYSM 6320 (BPS 6332) Strategic Leadership (3 semester hours) Addresses the challenge of leading organizations in dynamic and challenging environments. Overall goal is to not only question one's assumptions about leadership, but also enhance skills and acquire new content knowledge. Topics include visionary and transformational leadership; post-heroic leadership; empowerment; leveraging and combining resources; designing organizations; and ethics. (3-0) Y

OPRE 6362 (SYSM 6311) Project Management in Engineering and Operations (3 credit hours) Systems project management is the discipline of planning, organizing and managing resources
to bring about the successful completion of specific project goals and objectives. The course will cover critical path methods for planning and controlling projects including time and cost tradeoffs, resource utilization, and stochastic considerations. Managerial considerations include project costing, organizational design, and conflict resolution and stochastic considerations. Prerequisites: none (3-0) Y. Applications include system startup/shutdown, new product introductions, management of research, and construction projects. (3-0) T

SYSM 6311 (OPRE 6362) Systems Project Management in Engineering and Operations [MIV 5] (3 semester hours) Systems project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives. The course will cover critical path methods for planning and controlling projects including time and cost tradeoffs, resource utilization, and stochastic considerations. Managerial considerations include project costing, organizational design, and conflict resolution and stochastic considerations. Prerequisites: none. Applications include system startup/shutdown, new product introductions, management of research, and construction projects. (3-0) Y

ENTP 6398 (SYSM 6315) The Entrepreneurial Experience (3 semester hours) This course is designed to provide student teams with practical experience in the investigation, evaluation and recommendation of technology and/or market entry strategies for a significant new business opportunity. Projects will be defined by the faculty and will generally focus on emerging market opportunities defined by new technologies of interest to a sponsoring corporate partner. Teams will be comprised of management and engineering graduate students, mentored by faculty and representatives of the partnering company. Evaluation will be based on papers, presentations and other deliverables defined on a case-by-case basis. Pre-requisite: ENTP 6370 or consent of instructor. (3-0) R

SYSM 6315 (ENTP 6398) The Entrepreneurial Experience (3 semester hours) This course is designed to provide student teams with practical experience in the investigation, evaluation and recommendation of technology and/or market entry strategies for a significant new business opportunity. Projects will be defined by the faculty and will generally focus on emerging market opportunities defined by new technologies of interest to a sponsoring corporate partner. Teams will be comprised of management and engineering graduate students, mentored by faculty and representatives of the partnering company. Evaluation will be based on papers, presentations and other deliverables defined on a case-by-case basis. Pre-requisite: ENTP 6370 or consent of instructor. (3-0) R

ENTP 6388 (SYSM 6316) Managing Innovation within the Corporation (3 semester hours) Intrapreneurs are the entrepreneurs within established corporations who combine innovation, creativity and leadership to develop and launch new products, new product lines and new business units that grow revenues and profits from within. The course seeks to equip student with the skills and perspectives required to initiate new ventures and create viable businesses in dynamic and uncertain environments in the face of organizational inertia and other sources of resistance to innovation. Course topics include the elements of strategic analysis and positioning for competitive advantage in dynamic markets, and the structuring, utilization and mobilization of the internal resources of existing firms in
the pursuit of growth and new market opportunities. Prerequisite: ACCT 6201 and OB 6301 or consent of the instructor. (3-0) Y

SYSM 6316 (ENTP 6388) Managing Innovation within the Corporation (3 semester hours) Intrapreneurs are the entrepreneurs within established corporations who combine innovation, creativity and leadership to develop and launch new products, new product lines and new business units that grow revenues and profits from within. The course seeks to equip student with the skills and perspectives required to initiate new ventures and create viable businesses in dynamic and uncertain environments in the face of organizational inertia and other sources of resistance to innovation. Course topics include the elements of strategic analysis and positioning for competitive advantage in dynamic markets, and the structuring, utilization and mobilization of the internal resources of existing firms in the pursuit of growth and new market opportunities. Prerequisite: ACCT 6201 and OB 6301 or consent of the instructor. (3-0) Y

ENTP 6375 (SYSM 6317) Technology and New Product Development (3 semester hours) This course addresses the strategic and organizational issues confronted by firms in technology-intensive environments. The course reflects five broad themes: (1) managing firms in technology-intensive industries; (2) linking technology and business strategies; (3) using technology as a source of competitive advantage; (4) organizing firms to achieve these goals; and (5) implementing new technologies in organizations. Students will analyze actual situations in organizations and summarize their findings and recommendations in an in-depth term paper. Case studies and class participation are stressed. Prerequisites: ACCT 6201 and OB 6301 or consent of instructor. (3-0) Y

SYSM 6317 (ENTP 6375) Technology and New Product Development (3 semester hours) This course addresses the strategic and organizational issues confronted by firms in technology-intensive environments. The course reflects five broad themes: (1) managing firms in technology-intensive industries; (2) linking technology and business strategies; (3) using technology as a source of competitive advantage; (4) organizing firms to achieve these goals; and (5) implementing new technologies in organizations. Students will analyze actual situations in organizations and summarize their findings and recommendations in an in-depth term paper. Case studies and class participation are stressed. Prerequisites: ACCT 6201 and OB 6301 or consent of instructor. (3-0) Y

SYSM 6317 The Management of High Tech Products (3 credit hours) Building on the premise that successful product management involves getting the right product to the right customer at the right price at the right time, the course will teach techniques in product definition and requirements; product development; management of internal resources, including manufacturing, sales and management; costing and pricing decisions; product planning and winning the right design win. Prerequisites: None (3-0) Y

MKT 6301 (SYSM 6318) Marketing Management (3 semester hours) Overview of marketing management methods, principles and concepts including product, pricing, promotion and distribution decisions as well as segmentation, targeting and positioning. (3-0) S
SYSM 6301 (MKT 6318) Marketing Management (3 semester hours) Overview of marketing management methods, principles and concepts including product, pricing, promotion and distribution decisions as well as segmentation, targeting and positioning. (3-0) S

MECO 6303 (SYSM 6319) Business Economics (3 semester hours) Foundations of the economic analysis of business problems, with special emphasis on the function and determination of market prices in production and consumption. Supply and demand, price theory, production theory, trade theory with reference to the global economy, the effects of tax and other policies in the economy, and essential elements of the banking system and monetary policy are addressed. Prerequisite: MATH 5304 or equivalent. (3-0) S

SYSM 6319 (MECO 6303) Business Economics (3 semester hours) Foundations of the economic analysis of business problems, with special emphasis on the function and determination of market prices in production and consumption. Supply and demand, price theory, production theory, trade theory with reference to the global economy, the effects of tax and other policies in the economy, and essential elements of the banking system and monetary policy are addressed. Prerequisite: MATH 5304 or equivalent. (3-0) S

MIS 6338 (ACCT 6338) Accounting Systems Integration and Configuration (3 semester hours) Using SAP or similar software, this course focuses on accounting information systems as part of integrated enterprise systems and modern systems analysis and design of integrated accounting systems. Emphasis will be on integrated business processes and related financial transaction flows, system analysis and design methods in SAP with focus on configuration methods. (3-0) R

ACCT 6338 (MIS 6338) Accounting Systems Integration and Configuration (3 semester hours) Using SAP or similar software, this course focuses on accounting information systems as part of integrated enterprise systems and modern systems analysis and design of integrated accounting systems. Emphasis will be on integrated business processes and related financial transaction flows, system analysis and design methods in SAP with focus on configuration methods. (3-0) R

MIS 6369 (OPRE 6369) Supply Chain Software (3 semester hours) The course teaches planning and execution of supply chains with software such as SAP's ERP (R3) and Advanced Planning & Optimization (APO). This software is used in lab exercises that provide students with hands-on, experimental learning. The focus is on the supply planning function of supply chain management. Topics include: introduction to ERP and SAP, master and transaction data, MRP, forecasting, supply and demand matching, and integration of ERP and APO modules. This course is intended for graduate students with interests in software-based supply chain management. No SAP experience is required. Prerequisites: OPRE 6301 and OPRE 6302 or the permission of the instructor. (3-0) R

OPRE 6369 (MIS 6369) Supply Chain Software (3 semester hours) The course teaches planning and execution of supply chains with software such as SAP's ERP (R3) and Advanced Planning & Optimization (APO). This software is used in lab exercises that
provide students with hands-on, experimental learning. The focus is on the supply planning function of supply chain management. Topics include: introduction to ERP and SAP, master and transaction data, MRP, forecasting, supply and demand matching, and integration of ERP and APO modules. This course is intended for graduate students with interests in software-based supply chain management. No SAP experience is required. Prerequisites: OPRE 6301 and OPRE 6302 or the permission of the instructor. (3-0) R

REAL 6322 (FIN 6322) [MJV 12] Real Estate Finance and Investment (3 semester hours) This course covers commercial real estate investment analysis and instruments used in its finance. Topics include: real estate valuation, loan structures, syndication, securitization, and developments in capital markets affecting real estate developments. Prerequisite: FIN 6301. (3-0) S

FIN 6322 (REAL 6322) Real Estate Finance and Investment (3 semester hours) This course covers commercial real estate investment analysis and instruments used in its finance. Topics include: real estate valuation, loan structures, syndication, securitization, and developments in capital markets affecting real estate developments. Prerequisite: FIN 6301. (3-0) S
Revised

Description

ACCT 6201 Financial Accounting (2 semester hours) This course explores the role of financial accounting information in the economy and explains how accounting information found in financial statements and annual reports is used in decision-making by investors, analysts, creditors and managers. May not be substituted for, or taken for program credit in addition to, ACCT 6305 (2-0) S

ACCT 6202 Managerial Accounting (2 semester hours) This course presents a detailed study of how managerial accounting information supports the operational and strategic needs of the enterprise and how managers use accounting information for decision-making, learning, planning and controlling activities within organizations. May not be substituted for, or taken for program credit in addition to, ACCT 6305 (2-0) S

ACCT 6203 Professional Accounting Communications (2 semester hours) This course is designed to improve accounting students' language and communications skills through lectures, readings, presentations and directed individualized study. Prerequisites: none. (2-0) S

ACCT 6300 Accounting Internship (3 semester hours) This course provides students with an opportunity to expand and apply their skills in accounting in a professional setting. The accounting student will be required to apply knowledge obtained at the University in an actual job situation. This course is designed for students who are engaged in a supervised internship that meets all of the necessary requirements set forth by Texas State Board of Public Accounting. (3-0) S

ACCT 6305 Accounting for Managers (3 semester hours) Fundamental concepts in accounting and financial reporting are presented from the perspective of business managers. May not be substituted for, or taken for program credit in addition to, ACCT 6201 or ACCT 6202. (3-0) S

ACCT 6330 Intermediate Financial Accounting I (3 semester hours) A study of external financial reporting, including measurement and reporting of cash, receivables, inventories, property, plant, and equipment, and intangibles. Financial statement presentation issues are analyzed to gain an appreciation for the impact of generally accepted accounting principles on business decisions. Students who have taken ACCT 3331 or its equivalent may not take ACCT 6330 for credit. Prerequisite: ACCT 6201 or equivalent. (3-0) S

ACCT 6332 Intermediate Financial Accounting II (3 semester hours) This course is a continuation of topics in external financial reporting, including: issues related to the measurement and reporting of current liabilities and contingencies, bonds, leases, deferred taxes, pensions, stock-based compensation plans, shareholders equity, earnings per share, accounting changes, and cash flows. Current generally accepted accounting principles for financial reporting are analyzed as is their effect on the presentation of financial results by corporations and other entities. Students who have taken ACCT 3332 or its equivalent may not take ACCT 6332 for credit. Prerequisite: ACCT 6330 or equivalent. (3-0) S

ACCT 6333 Advanced Financial Reporting (3 semester hours) The application of accounting principles in complex settings is studied. Topics include accounting for business combinations, consolidated entities,
partnerships, transactions in foreign currency, and translation of financial statements reported in foreign currency. Prerequisite: ACCT 6332 or instructor consent. (3-0) S

ACCT 6334 Auditing (3 semester hours) This course introduces the basic concepts, philosophy, standards, procedures, and practices of auditing. Topics include generally accepted auditing standards, the changing role of the independent auditor, professional conduct and ethics, auditor's reporting responsibilities, risk assessment, internal control, evidential matter, and management fraud. Prerequisite: ACCT 6330 or equivalent. (3-0) S

ACCT 6335 Ethics for Professional Accountants (3 semester hours) Ethical reasoning, integrity, objectivity, independence and other core values as defined by the American Institute of Certified Public Accountants are presented. (3-0) S

ACCT 6338 (MIS 6338) Accounting Systems Integration and Configuration (3 semester hours) Using SAP or similar software, this course focuses on accounting information systems as part of integrated enterprise systems and modern systems analysis and design of integrated accounting systems. Emphasis will be on integrated business processes and related financial transaction flows, system analysis and design methods in SAP with focus on configuration methods. (3-0) R

ACCT 6339 Financial Reporting using XBRL and XML (3 semester hours) Using case studies reflecting different ways of collecting and analyzing financial and managerial information, students are introduced to enterprise software, financial reporting using XBRL, XML, and the importance of multiple views of accounting data for decision-making. Relevant e-business aspects will be covered. (3-0) R

ACCT 6341 Planning, Control and Performance Evaluation (3 semester hours) The application of management accounting for planning, control and performance evaluation is studied for various business situations. Topics include planning, budgeting, performance evaluation, centers of responsibility, modern control methods, management compensation, and transfer pricing. Extensive use of cases is used to demonstrate concepts. Prerequisite: ACCT 6202 or instructor consent. (3-0) Y

ACCT 6342 Strategic Cost Management (3 semester hours) Cost analysis is integrated with strategic analysis to understand the role of financial and non-financial information in operational and strategic decision-making. Topics include strategic value chain analysis, strategic positioning analysis, activity based management, line of business evaluation, life cycle costing, technology costing, target costing, quality cost management and balanced scorecard. Prerequisite: ACCT 6202 or equivalent. (3-0) R

ACCT 6343 Accounting Information Systems (3 semester hours) Managing the design, control and operation of accounting information systems in a computerized organizational environment is studied. The emphasis is on identifying the information needs of decision makers and developing appropriate business process control in the design of accounting information systems. Prerequisites: ACCT 6201 and 6202 or equivalent. (3-0) S

ACCT 6344 Financial Statement Analysis (3 semester hours) Analysis of financial statements for evaluating firm performance and risk. Topics include interpretation of financial statements and
footnotes, managers' incentives for earnings manipulation, comparative analysis of firms, and ethics in financial reporting. Prerequisite: ACCT 6201 or equivalent. (3-0) S

ACCT 6345 Business Valuation (3 semester hours) Financial statement based valuation models are studied. Topics include earnings management, income measurement and profitability assessment, discounted cash flow, and accounting-based valuation models. Prerequisite: ACCT 6201 or instructor consent. (3-0) Y

ACCT 6346 Financial Dimensions of Mergers and Acquisitions (3 semester hours) The application of financial statement-based information is examined for merger and acquisition activities. Topics include financial measures for identifying acquisition targets and/or leveraged buy-out targets, the impact of acquisition on performance measures, valuing the targets and structuring deals. Prerequisite: ACCT 6201 and ACCT 6202 or instructor consent. (3-0) R

ACCT 6351 Individual Taxation (3 semester hours) Taxation principles and concepts for individual income taxation are studied. (3-0) S

ACCT 6352 Corporate Taxation (3 semester hours) Income taxes on corporations and associations, reorganizations, and corporate distributions are examined. The role of taxes in business decisions and business strategy is emphasized. Prerequisite: ACCT 6351 or equivalent. (3-0) S

ACCT 6354 Partnership Taxation (3 semester hours) The tax law is studied as it relates to the formation of a partnership, the determination of the taxable income of the partnership and the distributive shares of the partners, the tax consequences of distributions by a partnership and of transfers of interests in a partnership. Prerequisite: ACCT 6351 or equivalent (3-0) S

ACCT 6356 Tax Research (3 semester hours) Identification and evaluation of legal authorities applicable to tax issues for individual and business taxpayers are studied. Application of research in tax planning and administrative procedures in a tax practice, emphasizing the structure of the Internal Revenue Service and its impact on a tax practitioner. Prerequisite: ACCT 6351 or equivalent. (3-0) Y

ACCT 6362 International Accounting (3 semester hours) Accounting and auditing functions and activities in various international environments are evaluated also in the context of international accounting and auditing harmonization. Causes of international differences and international classification efforts are examined. Comparison between International Financial Reporting Standards (IFRS) and prevailing US Accounting Principles (FASB) and contemplated convergence between the two systems are appraised. Accounting concepts, standards, methods and practices in foreign environments and their relationship to US accounting are assessed. Topics include foreign currency translation, consolidation, performance measurement of international entities, accounting for international operations, comparative accounting systems, transfer pricing and financial reporting of foreign and multinational corporations. Prerequisite: ACCT 6201 or equivalent or instructor consent. (3-0) Y

ACCT 6365 Governmental and Not-For-Profit Accounting (3 semester hours) Accounting practices for governmental and not-for-profit organizations are studied, including accounting requirements for
institutions, municipalities, and state and federal government. Topics include performance budgeting, systems analysis, and accounting implications of economic decisions. Prerequisite: ACCT 6201 and ACCT 6202 or instructor consent. (3-0) R

ACCT 6370 Business Law (3 semester hours) Laws affecting business organizations and laws influencing managerial decision-making are examined. Topics include contract law, law of agency, law of commercial transactions, and the uniform commercial code and the laws relating to the formation and operation of corporations. (3-0) Y

ACCT 6371 Securities Law (3 semester hours) This class covers the federal laws that govern the sale of securities (i.e., stocks, bonds and other financial instruments) and the markets in which they are offered and sold. The class emphasizes the key federal statutes (such as the Securities Act of 1933, the Securities Exchange Act of 1934, and Sarbanes-Oxley), the important Supreme Court decisions construing those laws, and SEC and other government regulation of products and markets. The class will discuss the various types of financial products, and the major accounting issues important to the sale and regulation of these products. The class emphasizes the historical development of the markets, including the major financial scandals and their impact on the markets and the law. (3-0) R

ACCT 6377 Corporate Governance (3 semester hours) Corporate Governance is a system of policies and processes established and maintained by a board of directors and top management to oversee an organization’s strategic activities and resulting performance. The system seeks to ensure proper accountability, probity, and openness in the conduct of an organization’s business for the long-term benefit of its shareholders by causing the right questions to be asked and by placing checks and balances in place to ascertain the answers reflect reality. Thus, Corporate Governance focuses on enhancing the relationships among a company’s board of directors, top management, investors (particularly institutional investors), and other stakeholders. Each session has two themes: issues are addressed academically by the instructor and pragmatically by prominent practitioners. Prerequisites: ACCT 6201 and ACCT 6202. COURSE OPEN TO ALL SOM MASTERS’ CANDIDATES. (3-0) S.

ACCT 6381 Accounting Theory (3 semester hours) Extensive investigations of underlying theoretical concepts of accounting; historical development of accounting theory; varying concepts of income measurement and asset valuation and current developments in accounting theory. (3-0) R

ACCT 6383 Fraud Examination (3 semester hours) This course will include a review of techniques used in solving financial crimes including: interviewing techniques, rules of evidence, sources of information, forensic accounting procedures and current issues in financial investigations. The course will include the criminal statutes related to financial crimes. Case studies will be used to discuss interviewing techniques and other indirect methods of proof in resolving financial crimes. Various financial documents and instruments will be discussed and reviewed as part of the documentary evidence to support financial investigations. (3-0) Y

ACCT 6384 Analytical Reviews Using Audit Software (3 semester hours) This course will introduce students to the theory and tools used to leverage automated auditing software, such as ACL and IDEA. It will include an analytical review of accounting and operational data for internal Auditors. The
course includes hands-on use of audit software and the development of an audit dashboard. The course will also explore ways to leverage the enterprise technology and use available technology to monitor controls and detect fraud. (3-0) R

ACCT 6385 Managerial Accounting in Enterprise Systems (3 semester hours) This course will cover the complexity and functionality of managerial accounting systems within Enterprise Systems. Cost center accounting, profitability analysis, product costing, profit center accounting and reporting related to managerial decision-making will be covered. Use of SAP or similar software will be used to demonstrate concepts. Prerequisites: ACCT 6201 and ACCT 6202. (3-0) R

ACCT 6386 Governance, Risk Management and Compliance (GRC) (3 semester hours) GRC examines, from the perspective of corporate directors, senior officers, professional service providers, and consultants the relationship between corporate governance and selected components: risk management, compliance, regulations, and regulatory reporting. In addition, these will be linked to two other aspects of corporate governance: ethics and corporate culture. Experts in the field provide insights into how systems of corporate governance are designed, developed, and implemented. GRC benefits graduates interested in pursuing careers as auditors (external and internal), consultants, forensic accountants, risk management experts, compliance officers, and ethics officers. Prerequisites: ACCT 6201 and ACCT 6202. COURSE OPEN TO ALL SOM MASTERS' CANDIDATES. (3-0) Y

ACCT 6387 Executive Compensation and Shareholder Returns (3 semester hours) Covers issues related to executive compensation and its impact on shareholder wealth. Students review the history of executive compensation and the relationship of executive pay to average employee pay, as well as data on whether there is alignment between current compensation methods and shareholder returns. This will include study of the corporate scandals which led to the Sarbanes-Oxley Act of 2002, the proliferation of golden parachutes, pending legislation and regulations such as "say on pay" and increasing federal involvement in compensation issues, e.g. the appointment of a federal "pay czar" at the Department of the Treasury to manage executive salaries at companies receiving federal bailout money. (3-0) Y

ACCT 6390 Professional Accounting (3 semester hours) This course is designed to help students prepare for careers in professional accounting and professional examinations. May be repeated for credit as topics vary. (9 hours maximum). (3-0) R

ACCT 7313 Contemporary Research in Accounting and Economics (3 semester hours) This course will introduce analytical and empirical methods appropriate for addressing accounting questions in the capital markets arena. The emphasis will be to provide a foundation for research methods in accounting. Topics will include use of accounting information for valuation, value relevance, earnings management, accounting and audit as corporate mechanisms and some anomalies. Prerequisite: Consent of the instructor. May be repeated for credit as topics vary. (3-0) T

ACCT 7314 Empirical Research in Financial Reporting (3 semester hours) Presents current areas of research in the area of financial reporting. Emphasis is ongoing and recently completed research studies, including understanding of their antecedents and research methodologies. Capital market based
empirical research topics will be covered. In particular, the role of analysts as financial information
intermediaries will be examined. Prerequisite: Consent of the instructor. May be repeated for credit as
topics vary. (3-0) T

ACCT 7323 Empirical Research in Accounting and Economics (3 semester hours) This course is designed
to further the ability of the students to critically analyze completed research efforts, to provide insight
into how a given stream of research (e.g. earnings return association studies, trading volume) develops
over time and to further the students' knowledge of academic accounting research in the area of
financial accounting / reporting. May be repeated for credit as topics vary. (3-0) T

ACCT 7324 Empirical Research in Financial Reporting (3 semester hours) Presents a detailed study of
past and current empirical research in the areas of financial accounting and other related fields.
Emphasis is on a clear understanding of hypothesis formulation, research design, sample selection and
statistical techniques used in these studies. Topics include financial reporting, valuation and analyst
forecast. May be repeated for credit as topics vary. (3-0) T

ACCT 7333 Analytical Research in Accounting and Economics (3 semester hours) Presents a detailed
study of economics based analytical research in accounting. Emphasis is on a clear understanding of
theoretical paradigms, modeling issues, interpretation of the results, and empirical applications of
analytical models. Topics will include the role of information for valuation, contracting, and performance
evaluation, and analysis of financial and non-financial performance measurement. May be repeated for
credit as topics vary. (3-0) T

ACCT 7334 Research Foundations in Accounting (3 semester hours) Presents a detailed study of
economics based research in financial accounting reporting. Emphasis is on providing an understanding
of the current research in capital market based financial accounting. This course provides a platform for
supplementing and integrating the students' knowledge of basic research methods and tools and
requires the students to identify an accounting topic that they are interested in and to write a research
paper in that topic. May be repeated for credit as topics vary. (3-0) T

ACCT 7343 Empirical Research in Managerial Accounting (3 semester hours) Presents a detailed study of
empirical research in the area of managerial accounting. Emphasis is on providing an understanding of
the current research in managerial accounting. Topics covered include managerial incentives, design of
compensation contracts, performance measurement and cost management. May be repeated for credit
as topics vary. (3-0) T

ACCT 7344 Advanced Research in Accounting (3 semester hours) This course exposes the students to a
wide range of empirical research methodologies including large sample archival research. Emphasis is
on providing a clear understanding of the research methods including the theoretical aspects that
underlie. May be repeated for credit as topics vary. (3-0) T

ACCT 6V98 Accounting Internship (1-3 semester hours) Student gains experience and improves skills
through appropriate developmental work assignments in a real business environment. Student must
identify and submit specific business learning objectives at the beginning of the semester. The student

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must demonstrate exposure to the managerial perspective via involvement or observation. At semester end, student prepares an oral or poster presentation, or a written paper reflecting on the work experience. Student performance is evaluated by the work supervisor. Consent of the School of Management's Internship Coordinator is required. ([1-3]-0) S

ACCT 6V99 Special Topics in Accounting (1-4 semester hours) May be lecture, readings or individualized study. May be repeated for credit. ([1-4]-0) S

BPS 6250 Business Transformation Project I (2 semester hours) This two hour course will immerse the student in an initial examination and/or design of a substantial project within a corporation intended to raise corporate value by transforming the business. The emphasis will be on new uses of assets and resources, not the improved management of existing activities. This is intended to develop the executive capacity of the individual student. (2-0) Y

BPS 6260 Readings in Management (2 semester hours) Examination of the development of management thought and practice as business developed into a major institution in our society. Readings in management thought assignments to accomplish this purpose. Each student is expected to develop his/her own written philosophy of management as a major objective of the course. Prerequisite: BPS 6310. May be repeated for credit as topics vary. (2-0) T

BPS 6301 The Environment of Business (3 semester hours) An examination of the relationship between the management of micro-organizational units (corporations, non-business entities, and government agencies) and the larger social environment of which they are a part. (3-0) S

BPS 6302 Strategic Business Communications (3 semester hours) The ability to communicate clearly and persuasively is the hallmark of a successful leader. Students in this course will get hands-on experience working through communication challenges in a realistic and dynamic class setting, and will learn the importance of communication for problem solving and decision-making in business. Material emphasizes both written and oral presentation skills and the use of media/technology. For students in all business areas. Prerequisites: none. (3-0) Y

BPS 6305 Ethical Issues in International Business (3 semester hours) Examines ethical concepts such as justice, equality, freedom, and responsibility as they relate to the functioning of an economic system. Specific problems facing the global business organization will be discussed from an ethical perspective. Articulation of management philosophy incorporating the ethical dimension. (3-0) S

BPS 6310 Strategic Management (3 semester hours) Strategic management consists of the analysis, decisions, and actions that organizations take to create sustainable competitive advantages. The course examines a variety of issues including environmental, competitor, and stakeholder analysis; strategy formulation; and strategy implementation and control. The central role of ethics and corporate governance as well as global issues will be addressed. Prerequisites: OB 6301, MKT 6301, ACCT 6201, ACCT 6202, FIN 6301 or consent of the instructor. (3-0) S
BPS 6311 Strategy Implementation (3 semester hours) Implementation issues of strategic planning. Topics include: planning system design, organizing for planning, situation analysis, and corporate/divisional relationships. Cases and selected readings illustrate the key planning concepts. Prerequisite: BPS 6210 or BPS 6310 or consent of instructor. (3-0) Y

BPS 6312 Advanced Multinational Business Seminar (3 semester hours) This seminar aims at the broadening of business strategy horizons to include the international dimension applied to topical business problems. It also responds to the recent findings of the US Management schools that precepts of corporate strategy for national markets are subject to many exceptions and require much supplementation when applied to multinational markets. This course also aims at providing support for the Dallas Metroplex area business organizations for designing and implementing their strategies in general, multinational strategies in particular. This course will investigate topical and sector-based implementation problems derived from the participants’ own companies or current business media (3-0) T

BPS 6320 Government Regulation of Business (3 semester hours) Impact of U.S. federal and state agencies on business as well as international legal issues. Emphasis is on a strategic approach to the principle regulatory issues facing business today. (3-0) Y

BPS 6321 Contemporary Business Issues and Strategy (3 semester hours) This course focuses on the factors that affect economic growth, contractions and cycles and how they affect specific industries, firm profitability, security of investment, job growth and individual career opportunities. Students make connections between the fundamentals of the global economy, national corporate policy and companies' strategies. These strategies should determine long-term objectives, the adoption of courses of action and the allocation of corporate resources in an evolving complex competitive environment. (3-0) Y

BPS 6340 Accountability and Ethics in Corporate Governance (3 semester hours) This course addresses the issues faced by top management teams and boards of directors, including compensation, investor relations, social responsibility, and accountability in the context of ethical strategic policy making. (3-0) S

BPS 6351 Business Transformation Project II (3 semester hours) This three-hour course will immerse the student in an initial examination and/or design of a substantial project within a corporation intended to raise corporate value by transforming the business. The emphasis will be on new uses of assets and resources, not the improved management of existing activities. This is intended to develop the executive capacity of the individual student. (3-0) Y

BPS 6360 Management and Organizational Consulting: Theory and Practice (3 semester hours) Management consulting now accounts for more than $120 billion in global annual revenues. In addition to these full-time consultants, more and more employees are also in roles of a consultative nature, as the knowledge-intensive nature of work increases. This course will begin with a review of the theoretical foundations of the client-consultant relationship, drawing from counseling psychology and other disciplines, then broaden to cover theories of Organizational Behavior, Organizational Learning and Strategy. Through various workshops and hands-on exercises, participants will apply these theories
in a number of scenarios relevant for consulting. Special attention will be given to prepare students to
become confident practitioners, by bridging the theory-practice gap in the practice of management and
organizational consulting. Prerequisite: OB 6301 (3-0) T

BPS 6379 Business Strategies for Sustainability (3 semester hours) The course introduces student to
sustainable business practices. The role of legislation and its impact on business practices as well as
proactive business strategies firms use to differentiate themselves and obtain a competitive advantage
will also be addressed. By viewing a firm through an environmental lens, managers find opportunities to
reduce risks, drive down costs, and create intangible value. Further, firms can build stronger connections
with a broad range of stakeholders. (3-0) Y

BPS 7300 Advanced Strategic Management Seminar I (3 semester hours) This is the first of a two-part
series of Ph.D. seminars in strategic management that (1) expose students to various theories and topics
in strategic management research, and (2) train students to become informed researchers who will be
able to contribute to this literature. This seminar covers the major theories in current research
addressing strategy formulation and implementation. Prerequisite: OB 7300. (3-0) T

BPS 7301 Advanced Strategic Management Seminar II (3 semester hours) This is the second of the two-
part series of Ph.D. seminars in strategic management. Together the two seminars (1) expose students
to various theories and topics in strategic management research, and (2) train students to become
informed researchers who will be able to contribute to this literature. Seminar II focuses more on the
empirical research in major topics such as strategic alliances, networks, competitive dynamics and
knowledge management. Students learn to use the different theories introduced in the previous
seminar as tools for analyzing strategic business phenomena. Prerequisite: BPS 7300 (3-0) Y

BPS 7302 Research Methodology (3 semester hours) The aim of this course is to lay the foundations for
good empirical research in the social sciences and to introduce students to the assumptions and logic
underlying social research. Students become acquainted with a variety of approaches to research
design, and are helped to develop their own research projects and to evaluate the products of empirical
research. (3-0) Y

BPS 7303 Doctoral Teaching and Writing Seminar (3 semester hours) Provides the tools necessary for
beginning academics to think critically about teaching and writing to enable them to be successful
researchers and effective teachers. Students will not only be exposed to research on effective writing
and teaching, but will also work actively with classmates - both within and across areas - to improve
their ability to write clearly and teach well. The course will require students to assess both their own
writing and the writing of others. Students will practice putting together a syllabus, creating assignments
for students, and presenting explanations of difficult concepts. (3-0) Y

BPS 6V99 Special Topics in Business Policy and Strategy (1-4 semester hours) May be lecture, readings,
or individualized study. May be repeated for credit ([1-4]-0) S

ENTP 6250 Managing Entrepreneurship (2 semester hours) Executive Education Course. The processes
of starting and developing a new business are explored within the contexts of the established
corporation and the newly-founded organization. Such topics as innovation, planning, feasibility analysis, and financing considerations are covered using readings, projects, and class discussion. (2-0) Y

ENTP 6350 SIFE Entrepreneurial Practice (3 semester hours) Students will develop entrepreneurial service and education program projects that focus on six core areas: market economics, entrepreneurship, financial literacy, success skills, environmental sustainability, and business ethics. The student teams and the target beneficiary organizations will jointly develop student project objectives and deliverables supervised by faculty. Students will then present project results to the community and will gather data on how much the target group learned from the project. The students will prepare presentations based on this data for the regional SIFE competition. (3-0) Y

ENTP 6351 International Entrepreneurship and Innovation (3 semester hours) Executive Education Course. This course is an introduction to the International Business Plan and provides an introduction to entrepreneurship with an emphasis on identifying, evaluating and developing new venture opportunities for international markets. Topics include opportunity identification and evaluation, startup strategies, business valuation, business plan development, financing the venture, managing the growing business and exit strategies. Prerequisites: IMS 5200, MKT 6301, FIN 6301, ACCT 6201, and BPS 6310. (3-0) Y

ENTP 6352 International Business Plan (3 semester hours) Executive Education Course. This course is a capstone that requires the development of a comprehensive business plan for market entry into a foreign country or region. The construct builds upon the core business and international coursework including the successful completion of key courses in accounting, finance, marketing and strategy, as well as, the international entrepreneurship and innovation. The course consists of lectures, research, and faculty coaching and guidance. Prerequisite: ENTP 6351. (3-0) Y

ENTP 6370 Entrepreneurship (3 semester hours) This course provides an introduction to entrepreneurship, with an emphasis on identifying, evaluating and developing new venture opportunities. Topics include opportunity identification and evaluation, startup strategies, business valuation, business plan development, attracting stakeholders, financing the venture, managing the growing business and exit strategies. Case studies and guest lectures by entrepreneurs and venture capital partners provide a real-world perspective. The major deliverable of this course is an early stage feasibility analysis of a venture of the student's choosing. Prerequisite: ACCT 6201 or ACCT 6305 or consent of instructor. Topics may vary. (3-0) S

ENTP 6378 Managing the Emerging Enterprise (3 semester hours) The course focuses on the challenges of growing a small company from early startup to a professionally managed business, as the entrepreneur struggles to maintain the entrepreneurial spirit of the firm while introducing the professional management disciplines essential to sustained and profitable growth. Topics include shaping and communicating the entrepreneur's vision, developing a viable business model, positioning products and services in a broader market, implementing business strategies, building an organization and infrastructure, molding the culture, developing and managing critical relationships with banks, suppliers and customers, and managing growth with limited resources. The course makes extensive use
of case studies and visiting lectures by entrepreneurs. Prerequisite: (a) ENTP 6370 or consent of instructor, or (b) ENTP 6360 \[MV2\] for students not enrolled in the School of Management. (3-0) Y

ENTP 6382 Professional Selling (3 semester hours) Theory and application of the principles of professional selling in the entrepreneurial environment, including: 1) the role of the sales function in entrepreneurial ventures; 2) customer behavior, purchase motivations and the situational, psychological and social factors affecting buyer response; 3) methods for building trust and relationships; 4) recognizing and managing personality and communication styles; 4) managing the social, ethical and legal factors involved in the selling process; 5) preparing and delivering compelling presentations, 6) managing customer concerns and earning customer commitment; 7) managing time effectively and networking productively, 8) managing existing customers and expanding the client base, and 9) recruiting, training, compensating, motivating and monitoring the entrepreneurial sales force.
Prerequisite: None  \textbf{ENTP 6370} (3-0) Y

ENTP 6387 Forecasting Industry and Technology Futures (3 semester hours) This course will focus on the challenges of analyzing social, economic and technology trends and forecasting the future performance of specific industries and technologies over time. The course will cover tools and techniques for the analysis of the historical evolution of key industry, demographic, social and technology trends (such as Moore’s law for semiconductor performance), information resources, and methodologies for extrapolating and forecasting the future state of industries and technologies. Faculty will address industry convergence, standards and network externalities, and explore through the use of case studies and projects the product/market implications of industry trends and technology futures. (3-0) Y

ENTP 6390 Business Model Innovation (3 semester hours) Business model innovation is a logical and internally consistent approach to the design and operations of a new venture, capturing the essence of how the business will be focused and providing a concise representation of how an interrelated set of decision variables will be addressed to create sustainable competitive advantage. This course will explore the range and diversity of existing business models and the analytical tools essential to their understanding, define a logical and internally consistent approach to the choice or development of an appropriate business model for a new enterprise and demonstrate the application of these tools and techniques through case studies and a semester project focused on an entrepreneurial startup.
Prerequisite: ENTP 6370 or consent of instructor. (3-0) R

ENTP 6392 Entrepreneurship in the Social Sector (3 semester hours) This course will explore the role and importance of the non-profit sector and the unique place it occupies in 21st century life. The course will develop theoretical and conceptual frameworks appropriate for understanding the processes and challenges of non-profit ventures in the social sector. Student teams will work with selected non-profits in the local community, focusing on the issues and challenges of mission definition, service delivery, business practices, fund-raising and governance. (3-0) Y

ENTP 6395 Seminar - Topics in Innovation and Entrepreneurship (3 semester hours) This course will explore special topics of interest to students of Innovation and Entrepreneurship. The content will vary, exploring such topics as opportunities for innovation in \textbf{Biotechnology}, \textbf{Information Technology},
nanotechnology and other fields. Extensive use of outside speakers, special readings, and field and library research will be involved. Prerequisite: (a) ENTP 6370 and consent of instructor, or (b) ENTP 6360 for students not enrolled in the School of Management and consent of the instructor. May be repeated for credit as topics vary. (3-0) Y

ENTP 6V97 Entrepreneurial Internship (1-3 semester hours) Student gains experience and improves skills through appropriate developmental work assignments in a real business environment. Student must identify and submit specific business learning objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective via involvement or observation. At semester end, student prepares an oral or poster presentation, or a written paper reflecting on the work experience. Student performance is evaluated by the work supervisor. Consent of the School of Management's Internship Coordinator is required. ([1-3]-0) S

ENTP 6V99 Special Topics in Entrepreneurship (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

FIN 6150 The Financial Crisis (1 semester hour) The reasons for the financial crisis of 2008-2009 will be examined. Then, the focus investigates tie-ins to the subsequent economic downturn. Finally, implications for future management strategy and corporate governance will be explored. (1-0) Y

FIN 6250 Case Studies in Finance (2 semester hours) Executive Education Course. This course builds on the Financial Management course and stresses the application of analytical tools and concepts learned there. It uses real-life case studies as the learning vehicle and stresses analysis, decision-making, and the use of managerial judgment. Prerequisites: AIM ACCT 6201 and FIN 6301. (2-0) Y

FIN 6251 Strategic Financial Management and Valuation I (2 semester hours) This is a second level finance course stressing the linkages of corporate strategy, financial strategy and market valuation. Different methodologies of valuation will be covered. (2-0) Y

FIN 6300 Personal Finance (3 semester hours) Examination of personal financial management and planning issues, with an emphasis on the integration of personal savings and investment decisions with life insurance programs and estate planning. Topics covered include the role of property, health, life insurance; tax-deferred investment vehicles, as well as fixed income and equity investment alternatives such as mutual funds. (3-0) Y

FIN 6306 Quantitative Methods in Finance (3 semester hours) The objective of this course is to develop students' ability to use quantitative methods and software (particularly spreadsheet) in financial decision-making. Prerequisite: Calculus (Math 5304 or Math 1325 or an equivalent course). FIN 6301. (2-1) S

FIN 6308 Regulation of Business and Financial Markets (3 semester hours) The objective of this course is to develop a student's understanding of the laws and regulations which govern businesses and financial markets. In addition, this course considers the ethical issues that financial analysts and financial planners face. Co/Pre-requisites: FIN 6301. (3-0) Y
FIN 6310 Investment Management (3 semester hours) The course is intended to provide an understanding of the role of modern financial theory in portfolio management and to present a framework for addressing current issues in the management of financial assets. Topics to be covered during the semester include trading, valuation, active portfolio management, asset allocation, global diversification, performance measurement, financial derivatives, and fixed income securities. **Prerequisite:** FIN 6301, and **Co/Pre-Requisite:** FIN 6306. (3-0) S

FIN 6314 Fixed Income Securities (3 semester hours) Examines fixed income securities, their derivatives, and the management of fixed income portfolios. Prerequisite: FIN 6310. (3-0) Y

FIN 6320 Financial Markets and Institutions (3 semester hours) Financial behavior in relation to production and consumption decisions. Banking, financial intermediation, flows of funds, regulation and structure of financial markets. Selected topics of current interest. Prerequisites: FIN 6301 or MECO 6303. (3-0) Y

REAL 6301/FIN 6321 Introduction to Real Estate (3 semester hours) Overview of various aspects of real estate markets, including a study of the participants, their roles, the regulation of land development, valuation techniques, and the marketing of real estate endeavors. Prerequisite: None. MECO 6303 (3-0) SY

FIN 6322 (REAL 6322) (MV4) Real Estate Finance and Investment Capital Markets (3 semester hours) This course covers commercial real estate investment analysis and a study of the instruments and methods used in its finance. Topics include: real estate valuation, loan structures, syndication, securitization, and developments in capital markets affecting the financing of real estate developments. Prerequisite: FIN 6301. (3-0) SY

REAL 6320/REAL 6322 Real Estate Market Investment and Analysis and Commercial Investment (3 semester hours) This course provides insight into market analysis and research including local and national market trends, with in-depth analysis of specific commercial investment property types. This course also applies modern technologies to assist in performing these analyses to explore the sources of real estate value, feasibility, strategies for financing, and portfolio management for real estate assets. **Co/Pre-Requisite:** REAL 6301 or consent of instructor. FIN 6322 (3-0) Y

REAL 6330/REAL 6324 Real Estate Development (3 semester hours) An in-depth course covering issues faced in the development process including market analysis, government approvals, financing and risk assessment. Prerequisite: REAL 6301 or consent of instructor. FIN 6324 (3-0) Y

FIN 6330 Behavioral Finance (3 semester hours) This course describes how individuals and firms make financial decision, how those decisions might deviate from those predicted by traditional financial or economic theory and the consequences of these deviations for financial markets. The course examines how the insights of behavioral finance complement the traditional finance paradigm. Students will gain an understanding of how individuals actually make financial decisions (descriptive) and guidance on how
to improve financial decision-making (prescriptive) in themselves and others. Prerequisite: FIN 6301 or permission of instructor. (3-0) T

FIN 6340 Management of Financial Institutions (3 semester hours) Study of the financial management of commercial banks and other financial intermediaries, with special attention to risk management issues. Prerequisites: FIN 6306 or permission of instructor. (3-0) Y

FIN 6350 Advanced Financial Management (3 semester hours) Advanced analysis of topics in financial management. Capital structure, dividend policy, incentives, and risk management. Co/Pre-requisites: FIN 6306. Topics may vary. (3-0) T

FIN 6351 Strategic Financial Management and Valuation II (3 semester hours) This is a second level finance course stressing the linkages of corporate strategy, financial strategy and market valuation. Different methodologies of valuation will be covered. (3-0) Y

FIN 6352 Financial Modeling (3 semester hours) This course focuses on financial modeling and its uses. is an introduction to corporate financial modeling. The course is designed for students planning careers in areas such as corporate finance, private equity, venture capital, mergers and acquisitions, or corporate restructuring. The primary focus of the course is to relate the theory of finance to practical and usable spreadsheet models that will assist a financial manager with firm's investment and financing decisions. Students will be introduced to both simulation and optimization models as well as various forecasting techniques. Prerequisites: FIN 6306 or consent of instructor. (3-0) T

FIN 6355 Corporate Finance and Policy (3 semester hours) Cases involving financial situations encountered by managers that require the application of financial management skills. Special emphasis is placed on strategy. Co/Pre-requisites: FIN 6350 or consent of instructor. (3-0) Y

FIN 6356 Mergers and Acquisitions (3 semester hours) Examines mergers and acquisitions paying particular attention to how they are structured, valued, and financed. Prerequisite: FIN 6311 or consent of instructor. (3-0) T

FIN 6357 Corporate Restructuring and Turnarounds (3 semester hours) Examines the issues and strategies associated with restructuring a corporation to turn it around, either when in distress or in bankruptcy. Prerequisite: FIN 6311 or consent of instructor. (3-0) T

FIN 6360 Options and Futures Markets (3 semester hours) Examines the valuation of derivative securities such as options and futures contracts, as well as the use of these instruments in managing business and financial risks. The topics to be covered include pricing of futures contracts, swaps, and options, the use of derivative instruments in hedging, portfolio insurance, exotic options, and the valuation of options on debt instruments. Prerequisites: FIN 6310. (3-0) T

FIN 6364 Advanced Investment Management (3 semester hours) This course builds on the basic ideas underlying portfolio optimization covered in FIN 6301 and FIN 6310. It emphasizes the application of modern portfolio theory using quantitative methods. At the completion of this course, students will be
able to analyze market data using the latest investment management tools, to formulate theoretical models, and to implement appropriate investment strategies. Prerequisite: FIN 6310. (3-0) T

FIN 6366 International Financial Management (3 semester hours) Study of world financial markets and institutions, foreign exchange exposure and management, foreign direct investment, and a variety of issues involved in the financial management of multinational firms. Masters in Finance students must use this course for degree credit and not IMS 6320. Students who take this course may not also receive credit for IMS 6320. Prerequisite: FIN 6301. (3-0) T

FIN 6370 The Theory of Finance and Its Applications (3 semester hours) A survey of financial theories and their application to various financial decisions and issues. Topics will include the theory of portfolio choices, asset pricing, derivative pricing, asymmetric information theories, and firm financing issues. Prerequisite: FIN 6310 or FIN 6311, or permission of instructor. Topics may vary. (3-0) T

FIN 6375 Finance Workshop (3 semester hours) Forum for faculty and students to present recent developments in the finance literature. Presentation and discussion of published and unpublished papers of researchers with various affiliations. Prerequisite: Consent of instructor. May be repeated for credit. (3-0) T

FIN 6380 Practicum in Investment Management (3 semester hours) Requires permission of the area coordinator. For students involved in the practice of investment management. May be repeated for credit (9 hours maximum). Prerequisites: FIN 6310 and consent of instructor. (3-0) Y

FIN 6381 Introductory Mathematical Finance (3 semester hours) Introduction to the mathematical methods of continuous time finance (Ito calculus, stochastic dynamic optimization, etc.). Prerequisite: FIN 6310 and permission of the instructor. (3-0) T

FIN 6383 Financial Asset Pricing and Engineering & Risk Management (3 semester hours) Study of theoretical models of financial asset pricing and financial engineering and its applications to risk management. Prerequisite: FIN 6360 or FIN 6381, and permission of instructor. (3-0) T

FIN 7310 Seminar in Contemporary Finance (3 semester hours) Issues in current financial research. Prerequisite: consent of instructor. (May be repeated for credit.) (3-0) T

FIN 7330 Topics in Theoretical Asset Pricing (3 semester hours) Advanced studies in the theory of asset pricing. Provides a foundation for advanced research in financial theory and empirical tests of asset pricing models. Topics include utility theory, mean-variance portfolio analysis, state preference models, continuous time portfolio selection, and the term structure of interest rates. May be repeated for credit with the permission of the instructor. Prerequisites: MECO 6345 or its equivalents. (3-0) T

FIN 7335 Topics in Empirical Asset Pricing (3 semester hours) Study of the methods used to empirically test asset pricing theories and/or models. Co-Prerequisite: FIN 7330. May be repeated for credit with permission of instructor. (3-0) T
FIN 7340 Topics in Theoretical Corporate Finance (3 semester hours) Empirical and theoretical analysis of corporate financial decision-making. Topics include the theory of the firm, initial public offerings, ownership and control, managerial incentives, risk management, and financing and investment decisions. Prerequisites: MECO 6345 or its equivalents. May be repeated for credit with permission of instructor. (3-0) T

FIN 7345 Topics in Empirical Corporate Finance (3 semester hours) Study of the methods used to empirically test corporate finance theories and/or models. Co-prerequisite: FIN 7340. May be repeated for credit with the permission of the instructor. (3-0) T

FIN 6V98 Finance Internship (1-3 semester hours) Student gains experience and improves skills through appropriate developmental work assignments in a real business environment. Student must identify and submit specific business learning objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective via involvement or observation. At semester end, student prepares an oral or poster presentation, or a written paper reflecting on the work experience. Student performance is evaluated by the work supervisor. Consent of the School of Management's Internship Coordinator is required. ([1-3]-0) S

FIN 6V99 Special Topics in Finance (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

HMGT 6320 The American Healthcare System (3 semester hours) Examines the structure, financing and operation of the US healthcare industry. It analyzes how priorities are established, how services are organized and delivered, factors that influence the cost, quality and availability of healthcare, and opposing positions on the future of healthcare reform. This course serves as an introduction for healthcare majors. (3-0) T

HMGT 6321 Strategic Management of Healthcare Organizations (3 semester hours) Explores how healthcare organizations can create sustainable competitive advantage in a volatile, reimbursement driven industry. Topics include external and internal environmental analysis, strategy formulation, organizational design and control and the impact of mergers and alliances on industry performance. Healthcare case studies are used to illustrate key concepts. (3-0) T

HMGT 6322 Healthcare Cost Management and Control (3 semester hours) Examines how healthcare organizations allocate and report costs and use that information for managerial decision-making. Additional topics include how activity based costing can be used to more accurately determine the true cost of medical services and the use of the balanced scorecard to manage the conflicting imperatives of controlling costs and improving care. Prerequisite: either ACCT 6201 or ACCT 6202. (3-0) T

HMGT 6327 Information and Knowledge Management in Healthcare (3 semester hours) An interactive, experiential course in which students will utilize hands-on, practice-oriented opportunities to learn the core components of clinical information systems used by major health care systems in the United States. The course will include a substantial a lab-based component in which
students will follow guided exercises and assignments using a leading EMR software. The semester-long course will include a mix of classroom lectures, lab-based software exercises, and case analyses. A pre-requisite for this class is HMGT 6323: Healthcare Informatics, a core course required for all MS in HMGT students. (3-0) Y

HMGT 6327 Information and Knowledge Management in Healthcare (3 credit hours) Explores how effective information and knowledge management can leverage the intellectual capital in healthcare organizations and help them achieve technical superiority. It covers the key areas of knowledge management, from identifying knowledge in an organization to promoting and facilitating knowledge sharing and innovation. Using numerous case studies, the course surveys the technology, the strategies and the practice of knowledge management. (3-0) Y

HMGT 6329 Seminar in Healthcare Management (3 semester hours) This course examines several important structural, political and regulatory issues in healthcare. Facilitated by outside industry experts, topics might include: healthcare reform, consumer directed healthcare, the future of Medicare and Medicaid, medical ethics, health plan economics, the impact of hospital and MCO consolidation, HIPPA regulation, and measuring quality in healthcare. May be repeated for credit as topics vary. Prerequisite: HMGT 6320. (3-0) R

HMGT 6330 Healthcare Law, Policy and Regulation (3 semester hours) This course examines how healthcare laws and regulations are enacted, and their impact on providers, payers, and patients. Topics include: Stark prohibitions on provider self-referral, federal regulation of fraud and abuse, the Emergency Treatment and Active Labor Act (EMTALA), and the Health Insurance Portability and Accountability Act (HIPPA). It also examines the process by which Congressional legislation is transformed into day-to-day industry regulation. (3-0) Y

HMGT 6331 Healthcare Economics (3 semester hours) This course applies the tools of economic analysis to the challenges and opportunities faced by managers and policy makers in the health sector. Topics covered include: measuring the benefits of healthcare, the role of insurance in spreading risk and altering incentives, the production of healthcare, price and non-price competition among providers, international comparisons of healthcare systems, and proposed policies that are intended to expand access and contain cost. (3-0) Y

HMGT 6332 Quality Improvement in Healthcare: Six Sigma and Beyond (3 Semester Hours) The course will explore applications of quality improvement measures to the healthcare environment. Applications including the Demming method, QI, and CQI will be studied. Application of other industrial quality improvement methodology including Six Sigma and Toyota Lean will be covered. Prerequisites: HMGT 6320. (3-0) Y

HMGT 6333 Ethics in Healthcare Management (3 semester hours) This course explores ethical issues specific to the healthcare industry including: fraud and abuse, rationing, uninsured treatment, the role of government, and end of life decisions. (3-0) Y
HMGT 6334 Healthcare Analytics (3 semester hours) This course covers theories and applications of business intelligence. The focus is on extracting business intelligence from firm's business data for various applications, including (but not limited to) customer segmentation, customer relationship management (CRM), personalization, online recommendation systems, web mining and product assortment. The emphasis will be placed on the 'know-how' -- knowing how to extract and apply business intelligence to improve business decision-making. Students will also acquire hands-on experience with several business intelligence software such as XL miner, SAS enterprise Miner and SQL Server2008 (depending on availability). This class is required for the SAS certificate in data mining. Students may not get credit for both HMGT 6334 and MIS 6324. Prerequisite: MIS 6326. (3-0) Y

HMGT 6401 Negotiation and Conflict Management in Healthcare (4 semester hours) Develops critical negotiating and conflict management skills to significantly improve the quality of life within a medical organization. Topics include recognizing the difference between constructive and disruptive conflict, developing systems that handle conflict at the least disruptive level, mediating disagreements among colleagues, negotiating against a stronger opponent and dealing with disruptive or impaired colleagues. (4-0) T

HMGT 6402 Financial Management of Healthcare Organizations (4 semester hours) Develops the critical skills needed to make financial decisions that reduce risk and increase the economic value of a healthcare organization. Topics include how to read and interpret healthcare financial statements, how to manage financial risk, determining an medical organization's cost of capital, using net present value to make value creating investment decisions; and evaluating the ability to attract and retain capital. (4-0) T

HMGT 6403 Medical Cost and Performance Management (4 semester hours) Develops powerful tools to measure and control healthcare costs and improve operating performance. Topics include identifying and controlling important medical cost drivers, using flexible budgeting to improve operating performance, measuring the profitability of individual medical services and developing both financial and non-financial measures of organizational performance. (4-0) T

HMGT 6404 Service Quality Improvement and Patient Satisfaction (4 semester hours) Provides the tools physicians need to grow their practices by improving the quality of their patient service processes. Topics include how to identify and improve key service processes, redesigning critical service processes to improve operating efficiency, and developing products and services that add patient value. (4-0) T

HMGT 6405 Healthcare Information, Management and Technology (4 semester hours) Examines the critical success facts for the specification, selection and implementation of a healthcare IT system. Topics include analyzing healthcare IT architectures, developing an IT implementation plan and budget, and developing the governance and oversight requirements of a major IT project. (4-0) T

HMGT 6406 Strategic Management Leadership of Healthcare Organizations (4 semester hours) Develops the strategic thinking skills required to create sustainable competitive advantage in a healthcare organization. Topics include critically assessing a medical organization's competitive strengths and
weaknesses, analyzing competitive threats to long-term survival, strategy formulation and the identification of potential strategic partners. (4-0) T

HMGT 6407 Healthcare Policy and Regulation (4 semester hours) Examines the social and economic forces that are shaping US healthcare policy. Analyzes the federal government's role in the financing and regulation of healthcare, discusses the government's enforcement role with CMS and the OIG and analyzes the prospects for healthcare reform. This class is held in Washington, DC. (4-0) T

HMGT 6408 Motivational Leadership in Healthcare Organizations (4 semester hours) Analyzes the types of behaviors which lead to high performance within healthcare organizations. Topics include individual behavior and motivation, behavioral job requirements and job/person matching, the differences between leadership and managerial behavior; and how to establish and maintain a high performance work climate. (4-0) T

HMGT 6409 Self-directed Field Study (4 semester hours) A self-directed, faculty supervised field study of the participant's practice or medical organization using the knowledge and skills acquired in the residential program. This course is non-residential. (4-0) T

HMGT 6410 The Science and Practice of Influencing Behavior (4 semester hours) Develops highly effective coaching skills for fostering positive change in both individuals and teams. Topics include developing an effective coaching relationship through intelligent listening and authentic feedback, assessing an individual's readiness for change and helping to increase colleagues' personal and professional effectiveness. (4-0) T

HMGT 6V10 Special Topics in Healthcare Management (1-3 semester hours) Issues in current Healthcare Management. Topics vary from semester to semester. May be repeated for credit to a maximum of six hours. ([1-3]-0) Y

HMGT 6V15 Self-Directed Field Study (1-4 semester hours) A self-directed, faculty supervised field study of the participant's practice or medical organization using the knowledge and skills acquired in the residential program. This course is non-residential. ([1-4]-0) S

HMGT 6V98 Healthcare Internship (1-3 semester hours) Student gains experience and improves skills through appropriate developmental work assignments in a real business environment. Student must identify and submit specific business learning objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective via involvement or observation. At semester end, student prepares an oral or poster presentation, or a written paper reflecting on the work experience. Student performance is evaluated by the work supervisor. Consent of the School of Management's Internship Coordinator is required. ([1-3]-0) S

HMGT 6V99 Special Topics in Healthcare Management (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

IMS 6150 International Business Management - EMBA (1 semester hour) Considers the role of general managers (CEO and country/regional managers) in multi-national companies and the working
relationship of subsidiary and home offices in such companies. Topics include business strategies, control/cooperative systems, the dynamics of addressing local and global concerns, and corporate learning. Changes brought about by modern information technology are also considered. Executive Education Course. (1-0) Y

IMS 6151 Global Business Ethics (1 semester hour) This course examines practical issues in global business ethics, including compliance requirements and their application, effective reactions to global ethical dilemmas and best practices in global and multicultural environments. (1-0) Y

IMS 6204 Global Business (2 semester hours) Provides an introduction to the fundamental concepts of international business, covering macro-level environmental factors that affect international business today. Topics include globalization, country environments, culture, international trade and investment, regional economic integration, and the global monetary system. Students may not receive credit for both IMS 5200 and IMS 6204. (2-0) S

IMS 6250 Executive Study Trip - Mexico (2 semester hours) This course focuses on NAFTA and the business, political, and cultural issues related to conducting business in Mexico. It involves a trip to an important business center where students visit companies, participate in classes at Mexican universities, and have cultural experiences pertinent to business decision-making and management in Mexico. Executive Education Course. (2-0) Y

IMS 6251 Globalization and Sustainability (2 semester hours) Executive Education Course. This course examines various historical and contemporary theories of globalization from an interdisciplinary perspective. Course content centers on key readings that address the globalization debate with a focus on regionalization versus globalization trends and global sustainability as a strategy. (2-0) Y

IMS 6300 The Multinational Firm (3 semester hours) Examines how multinational firms adapt to the international environment. Topics include the management of human resources, finance and the supply chain within the multinational firm. Special attention is given to the strategy and structure of multinational operations. Prerequisite: IMS 6204. (2-0) Y

IMS 6302 Legal Aspects of International Business (3 semester hours) The legal environment and framework of international business, legal aspects and implications of international trade and the establishment and operation of business abroad, moving goods across national borders, immigration, joint ventures, licensing, setting up and financing operations abroad, negotiating an international deal, resolving disputes, international corruption, bribery and crime. Prerequisite: IMS 6204. (3-0) T

IMS 6310 International Marketing (3 semester hours) This course aims at preparing students to appreciate the international marketing by understanding both theoretical and practical issues involved. This course covers the fundamentals and evolution of international marketing, the environment of international marketing, foreign entry methods, evaluation of market potential, management of international marketing mix, consumer behavior and international strategic marketing planning. Students will also learn the reasons why international marketing is important for success in international
business and for finding personal career opportunities. Prerequisite: MKT 6301 or consent of instructor. (3-0) Y

IMS 6312 International Advertising (3 semester hours) This course will aim at preparing the students to understand theoretical and practical aspects of international advertising within the context of global marketing communications. The basic principles of the course will include global versus local creative strategies and executions, international media opportunities, and global research methods. It will aim to equip the students with an understanding of the basic principles of advertising, including the various and differing cultural, economic and political factors that impact international marketing communications with a view to get employment in international advertising. Prerequisite: MKT 6301 or consent of instructor. (3-0) T

IMS 6314 Global E-Business Marketing (3 semester hours) This course aims at preparing the students for managing global e-business activities within the framework of accelerated trends for globalization. International aspects of E-business have become more important due to the variables in legal and regulatory regimes, the state of the communications infrastructure and differences in culture; including language and perception of the benefits of the Internet. Students will be prepared to understand the worldwide unevenness in the adoption and use of E-business globally and develop ability to customize and personalize the Internet experience to use at their employment in the field. Prerequisites: MKT 6301 or consent of instructor. (3-0) T

IMS 6320 International Corporate Finance (3 semester hours) Financial policies and practices of companies involved in multinational operations. The course considers management of working capital and permanent assets. Investment practices and capital budgeting for the global firm. May not also receive credit for FIN 6366. Prerequisite: FIN 6301. (3-0) Y

IMS 6350 Management Consulting and Research (3 semester hours) Executive Education Course. This is a course taken under the supervision of an assigned faculty member. The student conducts a field consulting or research project on a topic that is approved and supervised by the faculty sponsor. The course is intended to develop deep knowledge and skill in an area that the student believes will enhance his or her job performance and that is academically rigorous. (3-0) Y

IMS 6351 Executive International Studies Trip - EMBA (3 semester hours) This course consists of a class trip to Europe, Asia or South America. The destinations are chosen to relate to the EMBA program's international emphasis and its themes of managing for change, the strategic perspective, and leadership effectiveness. While abroad, participants visit and hear presentations from local university faculty, local business executives, and expert panels. Participants are also expected to identify important cultural variables that impact business decision making and management in the countries visited. Executive Education Course. (3-0) Y

IMS 6352 International Business Implementation (3 semester hours) This course explores current theories and issues concerning the development of various theories and issues concerning the development of various types of international business entities with a focus on organizational design and execution of strategy and operational delivery. Course content centers on key readings about
international business implementation issues and case examples in emerging and developed economies. Executive Education Course. Prerequisite: IMS 6204. (3-0) Y

IMS 6353 - International Study Tour - GLEmbA (3 semester hours) This course investigates the political, economic, social and cultural forces in countries that attract foreign business investment, as well as, the experiences of local and foreign enterprises doing business in that country. Executive Education Course. Prerequisite: IMS 6204. (3-0) Y

IMS 6354 Global Marketing (3 semester hours) This course promotes an appreciation and understanding of theoretical and practical issues involved in marketing products and services in the international context. This course covers the fundamentals and evolution of international marketing, the environment of international marketing, foreign entry methods, evaluation of market potential, management of international marketing mix, consumer behavior and international strategic marketing planning. Prerequisite: MKT 6301 or consent of instructor. Executive Education Course. (3-0) Y

IMS 6355 Global Communications and Negotiations (3 semester hours) This course focuses on understanding national culture and cultural issues in international business. It emphasizes the importance of managing cultural differences to enhance communication, negotiation, leadership, and group dynamics in an international work environment. Executive Education Course. (3-0) Y

IMS 6360 International Strategic Management (3 semester hours) This course examines the strategic challenges that multinational firms face. Issues such as managing across national boundaries, responding to environmental challenges, managing international joint ventures and strategic alliances, managing headquarters-subsidiary relationships, and developing global capabilities will be discussed. Prerequisite: IMS 6204. (3-0) Y

IMS 6365 Cross-Culture Communication and Management (3 semester hours) This course focuses on understanding national culture and cultural issues in international business. It emphasizes the importance of managing cultural differences to enhance communication, negotiation, leadership, and group dynamics in an international work environment. Further, the course describes methods to develop effective selection and training programs for international assignments. (3-0) Y

IMS 6370 Seminar in International Operations Management (3 semester hours) One of two capstone courses designed around a study tour to an international location where students attend courses at a local university with local students, interact with managers from local companies regarding business practices, and study the culture of the country they are visiting. Special department registration required. Prerequisite: completion of Project Management Core and Business Core course in Statistics, Financial Accounting, Managerial Accounting and Business Economics. (3-0) Y

IMS 6371 Seminar in International Strategic Management (3 semester hours) One of two capstone courses designed around a study tour to an international location where students attend courses at a local university with local students, interact with managers from local companies regarding business practices, and study the culture of the country they are visiting. Special department registration
required. Prerequisite: completion of Project Management Core and Business Core course in Statistics, Financial Accounting, Managerial Accounting and Business Economics. (3-0) Y

IMS 7300 International Management (3 semester hours) Current theory and research on international management, multinational corporations, and government policies affecting international business. Prerequisite: admission to OSIM Ph.D. program or consent of instructor. (3-0) Y

IMS 7301 International Business (3 semester hours) Current theories in international business, and the formal and informal institutions affecting international business. (3-0) Y

IMS 8399 Dissertation (3 semester hours) May be repeated for credit. Topics may vary. (3-0) S

IMS 6V98 International Management Internship (1-3 semester hours) Student gains experience and improves skills through appropriate developmental work assignments in a real business environment. Student must identify and submit specific business learning objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective via involvement or observation. At semester end, student prepares an oral or poster presentation, or a written paper reflecting on the work experience. Student performance is evaluated by the work supervisor. Consent of the School of Management’s Internship Coordinator is required. ([1-3]-0) S

IMS 7V50 Area Studies-Far East (2-3 semester hours) History of economic development and overview of current participation in the world economy. Prerequisite: IMS 6204 or consent of instructor. May be repeated for credit as topics vary. ([2-3]-0) T

IMS 7V52 Area Studies-Russia (2-3 semester hours) History of economic development and overview of current participation in the global economy. Prerequisite: IMS 6204 or consent of instructor. May be repeated for credit as topics vary. ([2-3]-0) T

IMS 7V53 Area Studies-Eastern Europe (2-3 semester hours) History of economic development and overview of current participation in the global economy. Prerequisite: IMS 6204 or consent of instructor. May be repeated for credit as topics vary. ([2-3]-0) T

IMS 7V54 Area Studies-Western Europe (2-3 semester hours) History of economic development and overview of current participation in the world economy. Prerequisite: IMS 6204 or consent of instructor. May be repeated for credit as topics vary. ([2-3]-0) T

IMS 7V55 Area Studies-Latin America (2-3 semester hours) History of economic development and overview of current participation in the world economy. Prerequisite: IMS 6204 or consent of instructor. May be repeated for credit as topics vary. ([2-3]-0) T

IMS 7V59 Area Studies-Special Topics (2-3 semester hours) History of economic development and overview of current participation in the global economy of regions of the world of timely interest to international management but outside the scope of other Area Studies courses. Prerequisite: IMS 6204 or consent of instructor. May be repeated for credit as topics vary. ([2-3]-0) T
IMS 8V40 Seminar in International Business (2, 3 or 6 semester hours) Discussion of selected concepts and theories in international business. (May be repeated for credit.) ([2, 3, or 6]-0) T

IMS 8V60 Readings in International Business (2, 3, or 6 semester hours) Investigation into the literature of topical areas in international business. May be repeated for credit as topics vary. ([2, 3, or 6]-0) T

IMS 8V80 Research Series in International Business (2, 3, or 6 semester hours) (May be repeated for credit.) ([2, 3, or 6]-0) T

IMS 8V99 Dissertation (1-9 semester hours) May be repeated for credit. Topics may vary. [(1-9)-0) S

MAS 6101 Legal Considerations in Project Management (1 credit hour) This course provides an overview of legal issues encountered during the life of a project. Includes discussion of civil and criminal law; OSHA, safety, environmental and real estate law. Special department registration required. (1-0) Y

MAS 7200 [MV V]Coaching Practice Lab (2 semester hours) Small group practice sessions for the purpose of applying and deepening the principles and techniques learned throughout the coaching classes. The purpose of this class is to engage in applied learning through peer-to-peer interaction with instructor feedback. (2-0) Y

MAS 8113 Practicum in Management (1 semester hour) Course develops a student's business knowledge through appropriate developmental work experiences in a real business environment. Student is required to identify and submit specific Business Learning Objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective, via involvement or observation. At semester end, student prepares an oral presentation, reflecting on the work experience. Student performance is evaluated by the work supervisor. Consent of instructor required. May be repeated for credit. Topics may vary. (1-0) S

MAS 8399 Dissertation (3 semester hours) May be repeated for credit. Topics may vary. (3-0) S

MAS 6V00 Special Topics in Management Science (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MAS 6V01 Special Topics in Management (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MAS 6V02 Special Topics in Organizational Behavior (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MAS 6V03 Special Topics in Business Policy and Strategy (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MAS 6V04 Special Topics in International Management (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S
MAS 6V05 Special Topics in Marketing Management (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MAS 6V06 Special Topics in Finance (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MAS 6V07 Special Topics in Managerial Economics (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MAS 6V08 Special Topics in Operations Research (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MAS 6V09 Special Topics in Accounting and Information Management (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MAS 6V10 Special Topics in Management Information Systems (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MAS 8V00 Special Topics in Management Science (1-3 semester hours) May be lecture, seminar, readings or individualized study. May be repeated for credit. ([1-3]-0) S

MAS 8V01 Management Internship (1-3 semester hours) Course develops a student's business knowledge through appropriate developmental work experiences in a real business environment. Student is required to identify and submit specific Business Learning Objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective, via involvement or observation. At semester end, student prepares an oral presentation, reflecting on the work experience. Student performance is evaluated by the work supervisor. Consent of instructor required. Topics may vary. ([1-3]-0) S

MAS 8V02 Special Topics in Organizational Behavior (1-3 semester hours) May be lecture, seminar, readings or individualized study. May be repeated for credit. ([1-3]-0) S

MAS 8V03 Special Topics in Business Policy & Strategy (1-3 semester hours) May be lecture, seminar, readings or individualized study. May be repeated for credit. ([1-3]-0) S

MAS 8V04 Special Topics in International Management (1-3 semester hours) May be lecture, seminar, readings or individualized study. May be repeated for credit. ([1-3]-0) S

MAS 8V05 Special Topics in Marketing Management (1-3 semester hours) May be lecture, seminar, readings or individualized study. May be repeated for credit. ([1-3]-0) S

MAS 8V06 Special Topics in Finance (1-3 semester hours) May be lecture, seminar, readings or individualized study. May be repeated for credit. ([1-3]-0) S

MAS 8V07 Special Topics in Managerial Economics (1-3 semester hours) May be lecture, seminar, readings or individualized study. May be repeated for credit. ([1-3]-0) S
MAS 8V08 Special Topics in Operations Research (1-3 semester hours) May be lecture, seminar, readings or individualized study. May be repeated for credit. ([1-3]-0) S

MAS 8V09 Special Topics in Accounting and Information Management (1-3 semester hours) May be lecture, seminar, readings or individualized study. May be repeated for credit. ([1-3]-0) S

MAS 8V10 Special Topics in Management Information Systems (1, 2, or 3 semester hours) May be lecture, seminar, readings or individualized study. May be repeated for credit. ([1, 2, or 3]-0) S

MAS 8V20 Readings Series in Management Science - Operations Research (2, 3, 6 or 9 semester hours) Investigation into the literature of topical areas of management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V21 Readings Series in Management Science - Management Information Systems (2, 3, 6 or 9 semester hours) Investigation into the literature of topical areas of management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V22 Readings Series in Management Science - Organizational Behavior (2, 3, 6 or 9 semester hours) Investigation into the literature of topical areas of management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V23 Readings Series in Management Science - Business Systems: Marketing (2, 3, 6 or 9 semester hours) Investigation into the literature of topical areas of management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V24 Readings Series in Management Science - Business Systems: Financial (2, 3, 6 or 9 semester hours) Investigation into the literature of topical areas of management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V25 Readings Series in Management Science - Operations Management (2, 3, 6 or 9 semester hours) Investigation into the literature of topical areas of management. May be repeated for credit. Topics may vary. ([2, 3, 6 or 9]-0) S

MAS 8V30 Readings Series in Management Science - Accounting and Information Management (2, 3, 6 or 9 semester hours) Investigation into the literature of topical areas of management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V31 Readings Series in Management Science - Strategic Management (2, 3, 6 or 9 semester hours) Investigation into the literature of topical areas of management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V32 Readings Series in Management Science - Business Economics (2, 3, 6 or 9 semester hours) Investigation into the literature of topical areas of management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S
MAS 8V40 Seminar Series in Management Science - Operations Research (2, 3, 6 or 9 semester hours) Discussion of selected concepts and theories in management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V41 Seminar Series in Management Science - Management Information Systems (2, 3, 6 or 9 semester hours) Discussion of selected concepts and theories in management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V42 Seminar Series in Management Science - Organizational Behavior (2, 3, 6 or 9 semester hours) Discussion of selected concepts and theories in management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V43 Seminar Series in Management Science - Business Systems: Marketing (2, 3, 6 or 9 semester hours) Discussion of selected concepts and theories in management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V44 Seminar Series in Management Science - Business Systems: Financial (2, 3, 6 or 9 semester hours) Discussion of selected concepts and theories in management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V45 Seminar Series in Management Science - Operations Management (2, 3, 6 or 9 semester hours) Discussion of selected concepts and theories in management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V50 Seminar Series in Management Science - Accounting and Information Management (2, 3, 6 or 9 semester hours) Discussion of selected concepts and theories in management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V51 Seminar Series in Management Science - Strategic Management (2, 3, 6 or 9 semester hours) Discussion of selected concepts and theories in management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V52 Seminar Series in Management Science - Business Economics (2, 3, 6 or 9 semester hours) Discussion of selected concepts and theories in management. May be repeated for credit. Topics may vary. ([2,3,6 or 9]-0) S

MAS 8V80 Research Series in Management Science - Operations Research (2, 3, 6 or 9 semester hours) (May be repeated for credit.) ([2,3,6 or 9]-0) S

MAS 8V81 Research Series in Management Science - Management Information Systems (2, 3, 6 or 9 semester hours) (May be repeated for credit.) ([2,3,6 or 9]-0) S

MAS 8V82 Research Series in Management Science - Organizational Behavior (2, 3, 6 or 9 semester hours) (May be repeated for credit.) ([2,3,6 or 9]-0) S
MAS 8V83 Research Series in Management Science - Business Systems: Marketing (2, 3, 6 or 9 semester hours) (May be repeated for credit.) ([2,3,6 or 9]-0) S

MAS 8V84 Research Series in Management Science - Business Systems: Financial (2, 3, 6 or 9 semester hours) (May be repeated for credit.) ([2,3,6 or 9]-0) S

MAS 8V85 Research Series in Management Science - Operations Management (2, 3, 6 or 9 semester hours) (May be repeated for credit.) ([2,3,6 or 9]-0) S

MAS 8V90 Research Series in Management Science - Accounting and Information Management (2, 3, 6 or 9 semester hours) (May be repeated for credit.) ([2,3,6 or 9]-0) S

MAS 8V91 Research Series in Management Science - Strategic Management (2, 3, 6 or 9 semester hours) (May be repeated for credit.) ([2,3,6 or 9]-0) S

MAS 8V92 Research Series in Management Science - Business Economics (2, 3, 6 or 9 semester hours) (May be repeated for credit.) ([2,3,6 or 9]-0) S

MAS 8V99 Dissertation (1-9 semester hours) May be repeated for credit. Topics may vary. ([1-9]-0) S

MECO 6215 The Economic and Legal Environment of Business (2 semester hours) This course examines the regulatory and legal environment of business. Antitrust laws and cases are examined, with particular attention to their impact on high technology industries. Comparison between the impact of these laws and their original intent are emphasized. Additional topics include cost/benefit analysis of government regulations concerning safety, the environment, and anti-discrimination. Prerequisite: MECO 6201 or MECO 6303. (2-0) T

MECO 6311 Economics of Information Goods (3 semester hours) Analysis of the creation, production, pricing and distribution of products that are mainly informational in nature such as software, television, and web pages. Network effects, path dependence, the choice of standards, and the problems of public goods will be analyzed. Includes examination of the roles of patent and copyright laws in the creation of these goods and the impacts of unauthorized copying. Several case studies will be examined in detail. Prerequisite: MECO 6201 or MECO 6303 or consent of the instructor. (3-0) T

MECO 6312 Applied Econometrics and Time Series Analysis (3 semester hours) A survey of techniques used in making short-term, intermediate-term, and long-run forecasts of business activity with special emphasis on time series methods. Prerequisites: MECO 6201 or MECO 6303 or consent of the instructor. (3-0) T

MECO 6313 The Business of Entertainment (3 semester hours) This course examines the economic factors at work in the entertainment industry. The revenue generation models used by the producers of motion pictures, programming for television, radio, and cable TV, as well as videogames and book publishing will be studied in detail. The impact of digitization on costs, the role of copying and copyright, network effects, peer-to-peer file sharing, the labyrinth of property rights, and digital rights management will be examined through the lens of economics. (3-0) T
MECO 6315 Approaches to Statistical Inference (3 semester hours) Theory and methods of statistical inference. Classical estimation theory, classical hypothesis testing, Bayesian and alternative approaches to statistical inference, general linear model with applications, and computational methods. Prerequisite: OPRE 6330. Topics may vary. (3-0) Y

MECO 6320 Econometrics (3 semester hours) Estimation and testing of multivariate econometric models; sets of regression relationships; simultaneous equation systems; applications of methods and models in the analysis of business and economic data. (3-0) Y

MECO 6345 Advanced Managerial Economics (3 semester hours) Advanced economic analysis of consumer theory, production theory, exchange, and market interactions. Managerial topics such as: comparable worth, product standardization, environmental spillover effects, and imperfect competition. Prerequisite: MECO 6201 or MECO 6303 and consent of instructor. (3-0) T

MECO 6360 Topics in Industrial Organization (3 semester hours) Issues in current research on the operation of firms and markets. Prerequisite: consent of instructor. (May be repeated for credit.) (3-0) T

MECO 6360 [MJV 6]Topics in Industrial Organization (3 semester hours) Issues in current research on the operation of firms and markets. Prerequisite: consent of instructor. (May be repeated for credit.) (3-0) T

MECO 6320 Econometrics (3 semester hours) Rigorous treatment of traditional econometrics methods, and introduction to both modern time-series econometrics and advanced non-linear models. Prerequisite: MECO 6320. (3-0) T

MECO 7360 Topics in Econometrics (3 semester hours) Issues in current econometric research and practice. Prerequisite: consent of instructor. (May be repeated for credit.) (3-0) T

MECO 6V99 Special Topics in Managerial Economics (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MIS 6204 Information Technology and MIS Fundamentals (2 semester hours) Necessary background to understand the role of information technology and Management Information Systems in today's business environment. Topics include: strategic role of information, organization of information, information decision making requirements, telecommunications and networking, managing information resources, distributed processing, and current information systems/technology issues. (2-0) S

MIS 6309 Business Data Warehousing (3 semester hours) The course will discuss data warehousing principles and techniques, and introductory business intelligence. It includes topics such as data warehouse design, Extract-Transform-Load (ETL) framework, data cubes, and data marts. Reporting and business intelligence using data warehouses will also be covered. The course currently uses SAP as a tool for business warehousing and reporting. Students will learn how to illustrate these concepts, develop and implement queries that mine existing data which reside in the SAP Business Warehouse. (3-0) Y

MIS 6314 System ReEngineering (3 semester hours) This course utilizes Information Engineering Methodology to plan, analyze, design, and construct a working system. Students are members of a
project team which will complete an advanced application execution of a real world development problem. Prerequisite: MIS 6308. (3-0) Y

MIS 6316 Data Communications (3 semester hours) This course covers the fundamentals of telecommunications, including: transmission, switching, throughput and capacity, error rates and checking, and security and policy issues. State of the art technologies and their applications to business are covered in depth. (3-0) Y

MIS 6318 Electronic Commerce (3 semester hours) Technical, economic, and managerial issues leading to prudent decision making for the implementation of electronic commerce applications and data communications networks including: overview of current technologies for enterprise-wide connectivity; the Internet and the Information Superhighway; current trends in Internet-based open systems; digital convergence of voice, video, and data; and World Wide Web programming techniques for interactive web document creation. Prerequisite: MIS 6204 or MIS 6350 or consent of instructor. (3-0) Y

MIS 6319 Enterprise Resource Planning (3 semester hours) Examines the role of enterprise systems in organizations. It will focus on business processes, business process integration, and information technology for enabling the integration. The course also covers selection and implementation of ERP systems. A part of the course will be set aside for demonstration and 'hands on' exercises with one of the available ERP software. (3-0) Y

MIS 6323 Object Oriented Programming (3 semester hours) This course includes the fundamentals of Java programming, writing applets for web-based systems, and business application programming using Java. (3-0) Y

MIS 6324 Business Intelligence Software and Techniques (3 semester hours) This course covers theories and applications of business intelligence. The focus is on extracting business intelligence from firm’s business data for various applications, including (but not limited to) customer segmentation, customer relationship management (CRM), personalization, online recommendation systems, web mining and product assortment. The emphasis will be placed on the 'know-how' -- knowing how to extract and apply business intelligence to improve business decision-making. Students will also acquire hands-on experience with several business intelligence software such as XL miner, SAS Enterprise Miner and SQL Server2008 (depending on availability). This class is required for the SAS certificate in data mining. Students may not receive credit for both HMGT 6334 and MIS 6324. Prerequisite: MIS 6326. (3-0) Y

MIS 6325 Advanced Telecommunications (3 semester hours) This course will focus on advanced technologies in wireless and wire line telecommunication systems. Topics to be covered will include: wireless voice networks, wide area wireless data networks, wireless local area networks, third generation wireless systems and broadband local access technologies and systems with a focus towards delivery of services via traditional as well as IP. Prerequisite: MIS 6316. (3-0) Y

MIS 6327 Analysis and Design of Telecommunication Networks (3 semester hours) The focus of this course will be how to perform a financial analysis of telecommunication projects, schedule and manage...
a telecommunication project and understand mathematical modeling and design tools for voice and
data networks. Prerequisite: MIS 6316, 6325. (3-0) Y

MIS 6329 Contemporary Issues in Telecommunications (3 semester hours) This course covers topics that
relate to legal and regulatory issues faced by telecommunication service providers and users in the US as
well as around the world. The telecommunications Act of 1996 as well as changes in the regulations for
broadband services and expected trends in international markets will be discussed. Prerequisite: MIS
6316. Topics may vary. (3-0) Y

MIS 6330 Information Technology Security (3 semester hours) With the advances in information
technology, security of information assets has become a keenly debated issue for organizations. While
much focus has been paid to technical aspects of the problem, managing information security requires
more than technology. Effective information security management demands a clear understanding of
technical as well as socio-organizational aspects of the problem. The purpose of this course is to prepare
business decision makers to recognize the threats and vulnerabilities present in current information
systems and who know how to design and develop secure systems. This course (i) uses lectures to
cover the different elements of information security, (ii) utilizes business cases and academic research
studies to discuss information security issues faced by today’s businesses, (iii) keeps in touch with the
security market and practices through webcasts, and (iv) presents strategies and tools to develop an
information security program within the organization. (3-0) Y

MIS 6329 Advanced ERP: Sales and Distribution (3 semester hours) The class focuses on advanced
process and configuration issues related to ERP implementation. The functional side of sales,
distribution, delivery and billing as well as integration with materials management and financial
accounting is emphasized. SAP is currently used to discuss and provide hands-on experience with key
ideas. Prerequisite: MIS 6319 or consent of the instructor. (3-0) Y

MIS 6334 Advanced Business Intelligence (3 semester hours) This course is SAS based and is part of the
4-course curriculum for the SAS data mining certificate program. It will cover the topics as required by
the SAS certificate program including data manipulation, imputation, variable selection, SAS/STA,
SAS/ETS, SAS/QC (DOE) and various SAS stat modules. Students will also learn various advanced business
intelligence topics including business data analytics, model analytics, customer analytics, web
intelligence analytics, business performance analytics and decision-making analytics. Tool to be used
include SAS, Weka and spreadsheet modeling. Prerequisites: OPRE 6301 and MIS 6324. (3-0) Y

MIS 6344 Web Analytics (3 semester hours) The course examines the technologies, tools, and
techniques to maximize return from web sites. The course includes topics related to web site design
issues, web data collection tools and techniques, measurement and analysis of web traffic, visitor
tracking, search engine optimization, visitor acquisition, conversion and retention, key performance
indicators for web sites, and measurement of online marketing campaigns. The use of web analytics
tools such as Google Analytics will be an integral part of the course. (3-0) Y

MIS 6352 Web Systems Design and Development (3 semester hours) Provides an in depth examination
of web application design evaluation practices and web application development techniques. A Rich
Internet Application (RIA) is developed using an agile, team based, software development methodology leveraging a combination of CSS, HTML, JavaScript, XHR, DOM, PHP, and MySQL. Emphasis is given to hands on application of course material through development of a web application prototype under conditions simulating a business environment. (3-0) Y

MIS 6355 Information Technology for E-Business (3 semester hours) The objective of this class will be to gain an understanding of the Information Technologies (IT) that support and drive E-business. The emphasis in the class will be on the IT architecture of an E-business. Specifically we will study technologies that underlie the Internet and Web, together with client-side and server-side computing. Issues pertaining to the design of optimal E-business systems, including web capacity planning, and optimal web server design will be briefly discussed. Prerequisite: MIS 6323 and MIS 6326. (3-0) Y

MIS 6360 Software Project Management (3 semester hours) Provides an in depth examination of project management principles and modern software project management practices. The five process groups and nine knowledge areas of the Project Management Institute Body of Knowledge (PMI BOK) are examined in the context of the systems. (3-0) Y

MIS 6362 Web Services and Service Oriented Architecture (3 semester hours) Examines the service orientation of technology to serve business. The course will explore Service Oriented Architecture (SOA) fundamentals from an application as well as infrastructure perspective and study its impact to business. The course will examine the evolution of service orientation over computing eras leading up to current practices and cutting edge trends in global industry. (3-0) Y

MIS 6363 Cloud Computing (3 semester hours) This course is designed as a primer for cloud computing which many believe is the third major wave of computing, after mainframe and client-server computing. The course examines this technology from a business perspective. The course is designed to deliver a holistic and balanced view of business model, technological infrastructure, and security issues of cloud computing useful for the technology student to understand the business challenges and the business student to understand the technology challenges. Prerequisites: None. (3-0) R

MIS 6369 (OPRE 6369) Supply Chain Software (3 semester hours) The course teaches planning and execution of supply chains with software such as SAP’s ERP (R3) and Advanced Planning & Optimization (APO). This software is used in lab exercises that provide students with hands-on, experimental learning. The focus is on the supply planning function of supply chain management. Topics include: introduction to ERP and SAP, master and transaction data, MRP, forecasting, supply and demand matching, and integration of ERP and APO modules. This course is intended for graduate students with interests in software-based supply chain management. No SAP experience is required. Prerequisites: OPRE 6301 and OPRE 6302 or the permission of the instructor. (3-0) R

MIS 6372 Managing Outsourced IT-Enabled Services Management (3 semester hours) The purpose of this course is to examine and explain how organizations engage and manage their global sourcing of business and IT services throughout the IT services outsourcing lifecycle. The course covers topics related to service strategy, service design, service transition, service operation and continuous improvement, the sourcing strategies and models, due diligence and supplier selection processes,
configuration fit and operational effectiveness concepts and different ITO delivery models. It also includes managing outsourced IT services and the focuses on organizational, technological and economical aspects associated with the outsourcing of IT services and functions. The course uses ITIL framework to illustrate various concepts. Students will learn how to manage outsourcing initiatives and globally dispersed teams effectively. (3-0) Y

MIS 7220 Colloquium in Management Information Systems (3 semester hours) Issues in current information systems research. Prerequisite: Permission of instructor. May be repeated for credit as topics vary. (2-0) R

MIS 7310 Advanced Topics in Knowledge Management (3 semester hours) The course will discuss knowledge representations and reasoning techniques. It will focus on (i) conceptual models of knowledge in IT-based systems, (ii) automated reasoning mechanisms that are enabled by such representations, and (iii) automated discovery of knowledge from data. Applications in decision support systems, expert systems, and personalization and recommendation systems will be discussed. Necessary background in data models and information theory will be provided. (3-0) T

MIS 7330 MIS Teaching Practicum (3 semester hours) Individual sessions with a supervising coach. The student will have responsibility for handling all of the instructional duties for a course, including designing the syllabus, and all assessment. Feedback and guidance will help the student develop their teaching skills. Prerequisite: Permission of department. May be repeated for credit as topics vary. (3-0) S

MIS 7340 Independent Study in MIS (3 semester hours) The student studies in depth a topic of interest to them in MIS under the guidance of an instructor. Prerequisite: Permission of the instructor. May be repeated for credit as topics vary. (3-0) S

MIS 7420 Seminar in Management Information Systems (4 semester hours) Survey of theoretical issues and research in information systems. Prerequisite: Permission of instructor. May be repeated for credit as topics vary. (4-0) R

MIS 6V98 Information Systems Internship (1-3 semester hours) Student gains experience and improves skills through appropriate developmental work assignments in a real business environment. Student must identify and submit specific business learning objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective via involvement or observation. At semester end, student prepares an oral or poster presentation, or a written paper reflecting on the work experience. Student performance is evaluated by the work supervisor. Consent of the School of Management's Internship Coordinator is required. ([1-3]-0) S

MIS 6V99 Special Topics in Management Information Systems (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

MKT 6309 Marketing Research (3 semester hours) Methods employed in market research to understand consumer behavior to enable better marketing decision-making. Topics include focus groups,
understanding different sources of secondary data, questionnaire design, design of experiments, sampling plans, and data analysis using statistical techniques. In addition, the course will cover attitude measurement, and market research on the Internet. **This class is required for the Academic Certificate in Marketing Analytics and Market Research.** Prerequisites: MKT 6301 and OPRE 6301, or consent of instructor. (3-0) Y

MKT 6310 Consumer Behavior (3 semester hours) An exposition of the theoretical perspectives of consumer behavior along with practical marketing implication. Study of psychological, sociological and behavioral findings and frameworks with reference to consumer decision-making. Topics will include the consumer decision-making model, individual determinants of consumer behavior and environmental influences on consumer behavior and their impact on marketing. Prerequisite: MKT 6301 or consent of instructor. (3-0) Y

MKT 6320 New Technology Forecasting (3 semester hours) Market analysis and demand forecasting of new technologies. Diffusion theory including Bass Model and extensions: multiple generations of technologies, effects of decision variables, and learning. Applications to new and developing high technology products and services. Use of software and computer programs. (3-0) T

MKT 6321 Interactive & Digital Marketing (3 semester hours) Introduction to the theory and practice of interactive and digital marketing. Topics covered include: online market research, consumer behavior and segmentation considerations; privacy issues and technology overview; interactive kiosks, websites, search advertising, search engine marketing, email, mobile, video and social networks. **This class is required for the Academic Certificate in Marketing Analytics and Market Research.** Prerequisite: MKT 6301 or consent of instructor. (3-0) T

MKT 6322 Internet Business Models (3 semester hours) Topics to be covered are: consumer behavior on the Internet, advertising on the Internet, competitive strategies, market research using the Internet, brand management, managing distribution and supply chains, pricing strategies, electronic payment systems, and developing virtual organizations. Further, students learn auction theory, web content design, and clickstream analysis. Prerequisites: MKT 6301 or consent of instructor. (3-0) Y

MKT 6323 Database Marketing (3 semester hours) Techniques to analyze, interpret, and utilize marketing databases of customers to identify a firm's best customers, understanding their needs, and targeting communications and promotions to retain such customers. **Topics include: handling, creating and reading datasets, LifeTime Value, RFM and response analysis.** In addition, students will learn to use SAS software. **This class is required for the Academic Certificate in Marketing Analytics and Market Research.** Prerequisites: MKT 6301 and OPRE 6301 or consent of instructor. (3-0) Y

MKT 6328 Product Management (3 semester hours) Introduction to the theory and practice of product management. The course covers the management and marketing of new or existing products. Topics include: considerations and managing of the product, pricing, promotions and placement throughout a products lifecycle; competitive analysis and strategies; budgeting and forecasting; product line
extensions and portfolio management. **This class is required for the Academic Certificate in Product Management.** Prerequisite: MKT 6301 or consent of instructor. (3-0) T

MKT 6329 New Product Development (3 semester hours) Development and introduction of new products. Topics include product positioning, screening, concept development, test marketing, and branding strategies. Further students will learn to use conjoint analysis for new product development, measurement of brand equity, product line extensions, and management of services. **This class is required for the Academic Certificate in Product Management.** Prerequisite: MKT 6301 or consent of instructor. (3-0) Y

MKT 6330 Brand Management (3 semester hours) To study the role and philosophy of brand management in the strategic marketing process and the resulting effects on strategic and marketing decisions. Topics will include the strategic brand building process, segmentation and positioning for building brands, consumer behavior, brand information systems, building brand equity and the application of brand management using marketing principles. **This class is required for the Academic Certificate in Product Management.** Prerequisite: MKT 6301 or consent of instructor. (3-0) Y

MKT 6331 Sales Management (3 semester hours) Techniques of sales management with emphasis upon selection, training and evaluating sales performance. Prerequisite: MKT 6301 or consent of instructor. (3-0) T

MKT 6332 Advertising and Promotional Strategy (3 semester hours) The process of formulating promotional strategy with particular emphasis on advertising and sales promotions. Topics include behavioral theories of communication, budgeting, media selection, scheduling of advertisements, measurement of advertising effectiveness, and management different types of sales promotions. Students analyze grocery scanner data to evaluate the effectiveness of promotions. Prerequisite: MKT 6301 or consent of instructor. (32-0) Y

MKT 6333 Channels of Distribution and Retailing (3 semester hours) This course will study the design and implementation of channels of distribution, with particular emphasis on retailing, including electronic retailing. Topics covered will include channel coverage strategies, pricing and promotion in channels, retail services, location decisions, franchising and legal issues in channels. Prerequisites: MKT 6301. and OPRE 6301. (3-0) T

MKT 6335 Advertising Research (3 semester hours) An introduction to advertising research designs and procedures. Topics include the acquisition, evaluation, and analysis of information needed for informed advertising decision making and planning. Also covered are methods used in developmental advertising research, pretesting advertising messages, post campaign (tracking studies) testing, concept testing, surveys, focus groups, attitude change studies and sources of secondary data. Prerequisite: MKT 6301 or consent of the instructor. (3-0) T
MKT 6336 Pricing (3 semester hours) Techniques to price durable goods, packaged goods and services. Topics include: perceived value pricing, bundling, price discrimination, product-line pricing, dynamic pricing over the products' life-cycle, pricing through the marketing channel, and competitive pricing. In addition to microeconomic approaches to pricing, behavioral approaches to pricing will also be covered. Pricing decisions will be analyzed using spreadsheet analysis. This class is required for the Academic Certificate in Product Management. Prerequisites: MKT 6301 or consent of instructor. (3-0) T

MKT 6337 Marketing Analytics using SAS (3 semester hours) This course is designed for a career in marketing analytics in which students analyze data from large databases to make important marketing decisions. These methods are commonly employed in online marketing, in grocery stores, and in financial markets. Students will acquire knowledge about the tools and software that are used to understand issues such as who the profitable customers are, how to acquire them, and how to retain them. The tools can also be used to manage brand prices and promotions using scanner data as is done in supermarkets. This class is required for the Academic Certificate in Marketing Analytics and Market Research. Prerequisites: MKT 6301 and OPRE 6301 or consent of instructor. Prerequisite: MKT 6301. (3-0) Y

MKT 6339 Capstone Marketing Decision Making (3 semester hours) This is a simulation based course where students form groups and compete for market share, profits, and stock price in a competitive fictional market. Teams make tactical decisions about production quantity, price, advertising, sales force allocation and develop new product specifications to compete with other teams for different segments in the market place. The course provides a hands-on experience in marketing decision making and allows students to integrate the knowledge they learned to make more effective decisions. Prerequisite: MKT 6301. (3-0) Y

MKT 6340 Marketing Projects (3 semester hours) Sponsored by local industries, these projects provide the students an opportunity to apply the skills and knowledge gained to solve real world challenging problems in the area of marketing. Students work in a team environment, interact with industry leaders and gain some industry specific knowledge. Subject to availability, check with Marketing Area before enrolling. Prerequisites: MKT 6301, 6309, 6310 or consent of instructor. (3-0) T

MKT 6350 Competitive Marketing Strategy (3 semester hours) Students learn how firms develop their marketing strategy to compete effectively in different situations. Using game theory principles, they will be exposed to competitive strategies in new emerging markets, mature markets, and on the Internet. Prerequisites: MKT 6301 or consent of instructor. (3-0) T

MKT 6351 Capstone Business Game (3 semester hours) Students work in teams and compete against each other in a computer simulation business game in which each team manages a company. The team makes decisions on a new product development, pricing, advertising, sales force management, and production planning to generate superior performance. The course is designed to further develop the executive perspective and to integrate the knowledge and skills gained in the core curriculum. Executive Education Course. (3-0) Y
MKT 6360 Services Marketing (3 semester hours) To study the growing field of services marketing as a separate and distinct area of marketing thought and practice and its influence in competitive markets. The focus will be on three main services marketing areas, the service customer, the service company and the integration of marketing, human resources and operations within the service system. The course is intended to help analyze and judge the merits of services marketing strategies and assist in making strategic decisions in both business and consumer services industries. Topics will include: relationship marketing and the customer mix, understanding the service customer, external service quality: service design and delivery, the service brand, service strategy; technology and innovation, international services marketing, pricing and promotion of services. Prerequisite: MKT 6301 or consent of instructor. (3-0) Y

MKT 6362 Marketing Engineering (3 semester hours) To study the field of marketing engineering from the perspective of quantitatively-based marketing models, with an emphasis upon those related to marketing mix variables and new product forecasting. This course will also examine the historical development of quantitatively-based marketing models and their use and application in marketing decision-support systems. Companies are increasingly using and applying the modeling approach to marketing decision-making. This course will examine the practical and theoretical foundations of Marketing engineering. Topics will include: introduction of marketing models, product diffusion models, advertising and communication models, sales force allocations and sizing models, stochastic models of brand choice, etc. Prerequisite: MKT 6301 or consent of instructor. (3-0) Y

MKT 6363 Advanced Marketing Research with SAS (3 semester hours) An overview of marketing research with an emphasis on statistical analysis of marketing data sets using the SAS statistical package. This course will provide fundamental grounding in the interface between the SAS data step, which is the environment for accessing, structuring, formatting and manipulating data, and SAS procedures, including: summarize, analyze, and display. Special attention will be given to marketing data collection and analysis with an emphasis on demand forecasting and customer segmentation. (3-0) Y

MKT 7314 Marketing Models I (3 semester hours). Study of mathematical models used in solving marketing problems including brand switching, new product adoption, and competitive strategy models. Prerequisites: OPRE 6302 and MKT 6301, or consent of instructor. (3-0) Y

MKT 7315 Marketing Models II (3 semester hours). Advanced study of mathematical models used in solving marketing problems including brand switching, new product adoption, and competitive strategy models. Prerequisites: OPRE 6302 and MKT 6301, or consent of instructor. (3-0) Y

MKT 7316 Marketing Models III (3 semester hours) Study of mathematical and statistical models used in the analysis of markets and marketing problems including dynamic models of marketing mix, applications of econometric methods in marketing. Prerequisites: OPRE 6301 and MKT 6301, or consent of instructor. (3-0) T

MKT 7317 Marketing Models IV (3 semester hours) Advanced study of mathematical models used in the analysis of markets and marketing problems including use of game theory and modeling uncertainty. Prerequisites: OPRE 6301 and MKT 6301, or consent of instructor. (3-0) T
MKT 7318 Marketing Models V (3 semester hours) Study of models relating to strategic issues in marketing including first mover advantages, interface of technology and marketing and management of novel technologies. Prerequisite: Consent of instructor. (3-0) T

MKT 6V98 Marketing Internship (1-3 semester hours) Student gains experience and improves skills through appropriate developmental work assignments in a real business environment. Student must identify and submit specific business learning objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective via involvement or observation. At semester end, student prepares an oral or poster presentation, or a written paper reflecting on the work experience. Student performance is evaluated by the work supervisor. Consent of the School of Management’s Internship Coordinator is required. ([1-3]-0) S

MKT 6V99 Special Topics in Marketing (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0)

MKT 7V12 Research Applications in Marketing (3-4 semester hours) Application of multivariate methods in statistics to marketing problems including discriminant analysis, logit/probit analysis, and other multivariate applications. Prerequisites: OPRE 6301 and MKT 6301, or consent of instructor. May be repeated for credit as topics vary. ([3-4]-0) T

OB 6150 Functions of the Executive (1 semester hour) Executive Education Course. This course is based primarily on the work of Harvard’s legendary Professor Chester Barnard and utilizes case studies. It seeks to help students identify, understand and apply the various mindsets, decisions and actions that effective executives employ. (1-0) Y

OB 6151 Intercultural Savvy (1 semester hour) This course addresses the behavioral and skill competencies required to effectively communicate and develop business relations in multicultural and diverse work environments. Course is highly interactive with assessments and role plays. Prerequisite: IMS 6204. Executive Education Course. (1-0) Y

OB 6347 Performance Management Systems (32 semester hours) A systematic approach is taken to show how performance management adds value to the organization. Emphasis is on the manager-employee communication process involved in establishing clear expectations and understanding about the job. Job functions, the role of the job in reaching organizational goals, performance appraisal techniques and uses, and performance improvement issues are addressed. Prerequisite: OB 6301 or consent of instructor. (32-0) T

OB 6253 [MJV 8] Coaching Practicum (2 semester hours) Individual sessions with a supervising coach and small-group supervised sessions. For the individual sessions, students will be required to submit recordings for review or provide for real-time attendance by the supervising coach so that an evaluation of their coaching competence can occur. Feedback and guidance will help students develop their coaching skills. A comprehensive exam will be used to evaluate coaching competency. The exam will test for their knowledge, skills, and abilities as an executive and professional coach. (2-0) T
OB 6260 Executive Coaching (2 semester hours) This is a one-on-one, developmental experience with a professional, executive coach. The goals of the coaching experience are: to help the student learn as much as possible from the EMBA program and from working in student teams; to identify the student's strengths and weaknesses and to develop the person in relevant areas; to focus on career development issues unique to the individual; and to instruct the student on the principles and practices of coaching as a leadership style. Executive Education Course. (2-0) Y

OB 6261 Executive Workshop (2 semester hours) Executive Education Course. New students begin the Executive MBA program by attending this workshop and completing the follow-up assignments. The course focuses primarily on lectures and experiential learning exercises conducted by the Leadership Center at UTD and other Centers of Excellence from our School of Management. (2-0) Y

OB 6301 Organization Behavior (3 semester hours) The study of human behavior in organizations. Emphasizes theoretical concepts and practical methods for understanding, analyzing, and predicting individual, group, and organizational behavior. Topics include work motivation, group dynamics, decision making, conflict and negotiation, leadership, power, and organizational culture. Ethical and international considerations are also addressed. (3-0) S

OB 6303 Managing Organizations (3 semester hours) Macro-management: managing internal organizational processes such as restructuring, and external network relationships such as strategic alliances. Applications to current management issues. Prerequisite: OB 6301 or consent of instructor. (3-0) Y

OB 6305 Foundations of Work Behavior (3 semester hours) Individual work behaviors such as organizational choice, motivation, performance, turnover, and absenteeism. Motivational processes which support such behaviors and the personal reactions of persons to them. Prerequisite: OB 6301. (3-0) Y

OB 6307 Strategic Human Resource Management (3 semester hours) Theories, concepts, and procedures involved in managing human resources. Examination of the correspondence between organizational strategies and human resources needed to carry out those strategies. Topics include job analysis, compensation and benefits, performance management, succession planning, career development issues, legal considerations, and international issues. Prerequisite: OB 6301 or consent of instructor. (3-0) T

OB 6321 Principles of Leadership (3 semester hours) Theories and techniques of leadership, emphasizing the complementary roles of management and leadership in organizations. The course will address emotional intelligence, leadership styles, communications and leadership processes, focusing on how leaders turn challenging opportunities into successes and get extraordinary things done in organizations. Self-assessment exercises will focus on the development of individual leadership skills. Prerequisite: OB 6301 or consent of instructor. (3-0) Y

OB 6322 Interpersonal Dynamics (3 semester hours) Structures and processes governing interactions among persons in small groups, linking individuals into social units. Structures of power, leadership,
norms, roles and status. Processes of intimacy, influence, communication, decision making, cooperation/conflict and change. Prerequisite: OB 6301. (3-0) T

**OB 6325 Social Psychology of Organizations (3 semester hours)** Current social psychological theories, organizational roles, organizational stress, leadership, power, decision making, structure, quality of working life, cross-cultural issues, organizational effectiveness and change. Prerequisite: OB 6305 or consent of instructor. (3-0) R

OB 6326 Organizations and Organizing (3 semester hours) Means by which people create, maintain, and change organized work structures. Resulting alternative organizational forms are examined. Prerequisites: OB 6301, or consent of instructor. (3-0) T

OB 6331 Power and Politics in Organizations (3 semester hours) Political processes and the development and use of power in organizations including the role of power in decision-making, sources of power, conditions for the use of power, assessing power in organizations; political strategies and tactics; political language and symbols, and applications to budgeting, careers and organizational structure. (3-0) T

OB 6333 Managerial Decision Making (3 semester hours) Normative and descriptive examination of managerial decision making at the individual, group, and organizational levels. Exploration of cognitive heuristics, rational and non-rational decision making, temporal decision processes, and strategic decision processes under the influence of uncertainty and ambiguity of organizational contexts. Prerequisite: OB 6301 or consent of instructor. (3-0) T

OB 6334 Foundations of Organizational Development (3 semester hours) Explores the foundations and role of organizational development. Topics include: emergence and development of the field and its role in 21st Century organizations; major macro-level organizational concepts such as organizational strategy, structure, culture, innovation, and globalization; and the role of OD in change management, intervention strategies, and group process. (3-0) R

OB 6335 Organizational Development Process and Practice (3 semester hours) Explores the functions and practices of organizational development. Topics include: establishing vision and mission and strategic alignment; conducting inquiry and addressing resistance; engaging leaders and supporting participants; and, small scale change - individuals and groups. Pre-requisite: OB 6334 or consent of instructor. (3-0) R

OB 6336 Individual Difference, Self-Motivation and Employee Development (3 semester hours) This course starts with a survey of personality theories with a special emphasis on cognitive models of learning and motivation at work. Relevant topics of personality psychology and social psychology will be introduced to clarify the applied concepts which are useful in employee and organizational development. This will prepare students and practicing managers to be more effective in areas such as general management, consulting, self-development, coaching & mentoring, team building and organizational development. This course will take students one level above what is covered under OB 6301 and also gives them a deep grounding in social and cognitive psychology of organizational
behavior. Special attention will be given to Humanistic/Existential theories and Cognitive Social Learning theories and will relate this to our current understanding of organizational neuroscience. Prerequisite: OB 6301. (3-0) Y

OB 6337 Motivational Leadership in Organizations (3 semester hours) Analyzes the types of behaviors which lead to high performance within healthcare organizations. Topics include individual behavior and motivation, behavioral job requirements and job/person matching, the differences between leadership and managerial behavior; and how to establish and maintain a high performance work climate. (3-0) Y

OB 6338 Coaching as a Leadership Style (3 semester hours) Develops highly effective coaching skills for fostering positive change in both individuals and teams. Topics include developing an effective coaching relationship through intelligent listening and authentic feedback, assessing an individual's readiness for change and helping to increase colleagues' personal and professional effectiveness. (3-0) Y

OB 6340 Leading Strategic Change Processes in an International Environment (3 semester hours) This course emphasizes practical skills required to be an effective change agent. Topics include entry in change projects, negotiating role expectations, contracting, diagnostic interviewing, motivating system change and overcoming resistance, group dynamics and large group interventions, and intercultural differences in leadership expectations. All participants will be involved in a change project as part of the course. Prerequisite: OB 6301 or consent of instructor. (3-0) T

OB 6350 Introduction to Executive and Professional Coaching (3 semester hours) The class provides students with a study of the origins and structure of coaching. Topics include the current status of coaching, the history of coaching as a profession, basic coaching principles, ethics and standards, the core competencies of coaching, and basic coaching techniques and practices. It also addresses the role of personal style in coaching and how to adjust coaching behavior to fit the coaching requirements of clients. (3-0) T

OB 6351 Coaching in the Business or Organizational Setting (3 semester hours) This class prepares coaches to work with individuals and teams in a corporate or business environment. Topics include: 1) coaching and organizational behavior theories and models that facilitate client change within an organizational setting; 2) coaching executives with an emphasis on achieving business results; 3) coaching methods for teams and groups; and 4) coaching clients through career transitions. (3-0) T

OB 6352 Advanced Coaching Models and Methods (3 semester hours) The course provides students with advanced principles and practices for coaching individuals within the corporate setting. Topics include appreciative inquiry models and techniques, a survey of evidence-based coaching models, the use of language to promote change, research practices, the basics of clinical diagnosis and how to respond as a coach when clients display clinical symptoms. (3-0) T

OB 6354 Organizations and Environments (3 semester hours) Analysis of organization-environment relations, with special emphasis on managing the organization for strategic advantage. Theories and concepts will be drawn from the fields of organizational sociology, industrial organization economics, and strategic management. Topics include mergers, acquisitions, and divestitures; regulation and
deregulation; the role of boards of directors; the diffusion of organizational innovations; collective organizational actions such as joint ventures, the formation of trade associations, and industry evolution. (3-0) R

OB 6360 Information Processing and Interpersonal Skills (3 semester hours) Communication theory and application including decoding/listening, processing/analyzing, and encoding/speaking and writing. Prerequisite: OB 6301. (3-0) R

OB 7300 Organization Theory (3 semester hours) Survey of major theoretical perspectives and current research in organization theory. Prerequisite: admissions to OSIM Ph.D. program or consent of instructor. (3-0) Y

OB 7302 Organization Behavior (3 semester hours) This course is designed to expose students to a variety of Organizational Behavior/Human Resource Management (OB/HRM) topics and data gathering techniques. Different procedures for gathering research data, usually within the context of the papers will be critiqued and a term paper is mandatory. (3-0) Y

OB 7303 Research Methodology in Behavioral Sciences (3 semester hours) Advantages and disadvantages of research based on field experiments, field studies, survey analyses, laboratory experiments, participant observation, content analyses, interviewing, cross-cultural studies, simulations, demographic and data archive methods. Integration of research designs and multimethod techniques. Topics may vary. (3-0) T

OB 7306 Macro-Organizational Empirical Investigation (3 semester hours) Ph.D. seminar in the process of empirical research on organizations including formulation of a research question; the development and application of theory leading to the construction of models and the formulation of hypotheses; the design of a study; identification of data sources and the collection of data; computer analysis of data to test hypotheses; and the presentation of the study in a research paper. Emphasis will be given to linear models, archival data, and regression analysis, but other approaches will be discussed. Prerequisite: OB 7300 or equivalent, or consent of instructor. Topics may vary. (3-0) R

OB 7310 Theory and Research in Group and Intergroup Processes (3 semester hours) Current theories of group processes and group development in different social contexts. Work and non-work, intergroup relationships, group task and process issues, stages of group development, group norms, group roles, group structure, leadership, group cohesion, intergroup conflict and cooperation, intergroup interdependencies and organizational structure, boundary roles, intergroup communication, power, organizational politics, and managing intergroup differences. Prerequisites: OB 6301, OB 6303, and OB 6322, or consent of instructor. (3-0) R

OB 7312 Social Network Theory (3 semester hours) Social network theory focuses on structural relations among people and organizations. As one of the fastest growing paradigms originated from anthropology and sociology, it has gained enormous popularity within the broad field of organizational management. This Ph.D. level course intends to provide a systematic introduction to social network theory by reviewing its basic history, philosophy, theories, and methodologies. We will
also explore how social network theory can be applied to addressing various management issues such as knowledge diffusion, social capital, strategic alliance, and network dynamics. (3-0) R

OB 7313 Seminar on Organizational Decision Making (3 Semester Hours) This seminar on decision-making in organizations provides a systematic and up-to-date literature background for academic research in this area. The course covers normative, descriptive, and non-rational aspects of decision-making at the individual, group, and organizational/strategic levels. It also examines the impact of contextual factors such as uncertainty, ambiguity, environment, structure, process, information technology, international culture, and ethics on organizational decision making. (3-0) R

OB 6V99 Special Topics in Organizational Behavior (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0] S

OPRE 6271 Project Overview, Strategic and Process Management (2 semester hours) Introduces the project lifecycle, typical project management processes, leadership and teaming in project management, the relevance of business process analysis, strategic alignment of projects, and financial considerations in project selection. (2-0) R

OPRE 6301 Quantitative Introduction to Risk and Uncertainty in Business (3 semester hours) Introduction to statistical and probabilistic methods and theory applicable to situations faced by managers. Topics include: data presentation and summarization, regression analysis, fundamental probability theory and random variables, introductory decision analysis, estimation, confidence intervals, hypothesis testing, and One Way ANOVA (Some sections of this class may require a laptop computer). Prerequisite: None MATH 5304 or equivalent. (3-0) S

OPRE 6302 Operations Management (3 semester hours) Operations Management integrates all of the activities and processes that are necessary to provide products and services. This course overviews methods and models that help managers make better operating decisions over time. How these methods will allow firms to operate both manufacturing and service facilities in order to compete in a global environment will also be discussed. Prerequisite: OPRE 6301 (3-0) S

OPRE 6311 Game Theory (3 semester hours) Two person zero-sum and nonzero-sum games; Nash equilibrium; use of LP and Complementarity, N-person games; core, nucleolus, stable sets, etc. Applications to market equilibrium problems. (3-0) R

OPRE 6332 Spreadsheet Modeling (3 semester hours) This course introduces the basic concepts of model building and encourages students to take an analytic view of business decision making. The electronic spreadsheet is used as the principal device for building models, and the course covers the concepts of effective spreadsheet design and use. With that background, students acquire knowledge about specific decision making techniques for business, such as optimization and simulation, and build spreadsheet models to identify choices, formalize trade-offs, specify constraints, perform sensitivity analyses, and analyze the impact of uncertainty. Applications in finance, economics, marketing, and operations are examined in depth. Prerequisite: OPRE 6301 or OPRE 6302 or with the consent of instructor. (3-0) R
OPRE 6335 Risk and Decision Analysis (3 semester hours). This course provides an overview of the main concepts and methods of risk assessment, risk management, and decision analysis. The methods used in industry, such as probabilistic risk assessment, six sigma, and reliability, are discussed. Advanced methods from economics and finance (decision optimization and portfolio analysis) are presented. Prerequisite: OPRE 6301. (3-0) T

OPRE 6340 Flexible Manufacturing Strategies (3 semester hours) The use of automation in manufacturing is continuously increasing. This course covers the variety of types of flexible automation, including flexible manufacturing systems, integrated circuit fabrication and assembly, and robotics. Examples of international systems are discussed to show the wide variety of systems designs and problems. Strategic as well as economic justification issues are covered. (3-0) R

OPRE 6350 Global Supply Chain Management (3 semester hours) Executive Education Course. This course addresses the design and management of global supply chain including international sourcing, integration of suppliers and distribution channels. Prerequisite: OPRE 6201 or OPRE 6302 or consent of instructor. (3-0) Y

OPRE 6360 Operations Strategy (3 semester hours) This course provides an overview of the key concepts that comprise manufacturing and service strategy. It assumes, in broad terms, overall corporate or business unit strategy as an input and focuses on building distinctive competencies within manufacturing and services. It deals specifically with resource allocation and reallocation - relating and combining corporate strategy, manufacturing strategy and service strategy. (3-0) T

OPRE 6361 Production Planning and Control (3 semester hours) Analysis of the production system of a manufacturing organization. Classical modeling and decision methods including simulation methods for stochastic models and exact and heuristic solutions of deterministic models. Material Requirement Planning systems and Flexible Manufacturing systems. Prerequisite: OPRE 6302 or consent of instructor. (3-0) Y

OPRE 6363 Inventory Control (3 semester hours) Analysis of deterministic and simple stochastic inventory models. Stochastic periodic reorder models with simple deterministic and simulation solutions. Lot size models and their extensions, reorder point determination, price break, Wagner-Whitin, Modigliani-Holm models. Prerequisite: OPRE 6302 or consent of instructor. (3-0) R

OPRE 6364 Quality Control (Lean Six Sigma) (3 semester hours) Concepts and theory of quality control in manufacturing and service operations. Analysis of product design, process capability studies, statistical process control, and acceptance sampling. Prerequisite: OPRE 6301. (3-0) R

OPRE 6365 Managing Inventory (3 semester hours) This course teaches students to view inventory control as a competitive strategy. The emphasis is on analysis and application of deterministic and simple stochastic inventory models. Students learn concepts through a combination of theory, problem solving, and case discussion. Prerequisite: OPRE 6302 or consent of instructor. (3-0) R
OPRE 6366 Supply Chain Management (3 semester hours) Key issues associated with the design and management of industrial supply chains. The efficient integration of suppliers, factories, warehouses, and stores so that products are distributed to customers in the right quantity and at the right time. Prerequisite: OPRE 6302 or consent of instructor (3-0) Y

OPRE 6367 Capstone Projects in Supply Chain Management (3 semester hours) Capstone projects are sponsored by local industries and provide the students an opportunity to apply the skills and knowledge gained to solve real-world challenging problems in the area of supply chain management. Students work in a team environment, interact with industry leaders and gain some industry specific knowledge. (3-0) R

OPRE 6368 Industrial Applications in Supply Chains (3 semester hours) The course discusses and reviews major supply chain challenges and relevant decision making tools used in the industry. The course proceeds with the analysis of real-life cases during which the students obtain industry specific knowledge. Some of the industries of interest are Telecommunications, High-tech Electronics, Semiconductors, Consumer Goods and Retail. Prerequisite: OPRE 6366 or consent of instructor. Topics may vary. (3-0) T

OPRE 6369 (MIS 6369) Supply Chain Software (3 semester hours) The course teaches planning and execution of supply chains with software such as SAP's ERP (R3) and Advanced Planning & Optimization (APO). This software is used in lab exercises that provide students with hands-on, experimental learning. The focus is on the supply planning function of supply chain management. Topics include: introduction to ERP and SAP, master and transaction data, MRP, forecasting, supply and demand matching, and integration of ERP and APO modules. This course is intended for graduate students with interests in software-based supply chain management. No SAP experience is required. Prerequisites: OPRE 6301 and OPRE 6302 or the permission of the instructor. (3-0) R

OPRE 6370 Logistics and Distribution (3 semester hours) This course focuses on the study of logistics systems, with emphasis on the design and analysis of transportation and supply chain systems, including the components of transportation and supply chain systems, such as suppliers, warehouse, material handling, customers, production, inventory, orders, transportation, and information systems; the interactions between these components; models and techniques for the analysis of logistics systems. Prerequisites: OPRE 6302 or consent of instructor. (3-0) T

OPRE 6371 Purchasing and Sourcing Management (3 semester hours) Basic concepts and processes in purchasing and sourcing management are introduced in this course. It teaches global sourcing techniques and the application of various management tools and quality tools in purchasing. Focus is on the proactive and planned analysis of supply markets and the selection of suppliers, with the objective of delivering solutions to meet pre-determined and agreed organizational needs. (3-0) Y

OPRE 6372 Project Initiation (3 semester hours) Explores project management in a global environment, then bridges from strategy to project definition with a discussion of project selection and a focus on determining project requirements and managing changes. Course delivery is integrated with relevant modules from OB 6301 Organizational Behavior. Prerequisite: OPRE 6271. (3-0) R
OPRE 6373 Project Planning (3 semester hours) Covers initial stages in planning a project, including organizational and interpersonal considerations, scope management; quality planning; project team building; dealing with conflict; and negotiation. Course delivery is integrated with relevant modules from OB 6301 Organizational Behavior. **Prerequisite: OPRE 6372.** (3-0) R

OPRE 6374 Project Planning and Execution (3 semester hours) Continues the discussion of planning techniques from OPRE 6373 and introduces execution phase processes. Topics include scheduling, resource planning, budgeting, cost management, negotiation skills development, and risk management. **Prerequisite: OPRE 6373.** (3-0) R

OPRE 6375 Project Execution and Closeout (3 semester hours) Continues the discussion of planning and execution techniques from OPRE 6374 and discusses project closeout. Topics include quantitative decision making, project information databases, balanced scorecards, project procurement management, earned value management, quality measurement and control, and influence and persuasion. **Prerequisite: OPRE 6374.** (3-0) R

OPRE 6376 Advanced Project Management and Simulation (3 semester hours) Explores project organizational competence, maturity models, project portfolio management, program management, PM offices, alternate project management methodologies, and simulates a project lifecycle. **Prerequisite: OPRE 6375.** (3-0) R

OPRE 6377 Demand and Revenue Management (3 semester hours) This course focuses on the expense involved in managing conventional and idiosyncratic demand through the supply process. Demand for a single unit or an assembly (network) of units requires forecasting that incorporates prices and macroeconomic factors. Perishable supplies are optimally priced by considering their amount (inflated in overbooking), location, vintage, and customer classes. This approach is relevant for airlines, hotels, parks, rental cars, broadcasters, art/sport events, and retailers. (3-0) T

OPRE 6378 Information Enable Supply Chain (3 semester hours) The success of a product in today's global marketplace depends, to a large extent, on activities of firms in the product's supply chain and their processing of information. This course will focus on the value of information and technology, and effective ways to use that information in optimizing global operations and information. The course will cover some analytical methods to quantify the costs and benefits of information and the technology used to obtain information in supply chain improvement initiatives or supply-chain restructuring opportunities. Case studies will be used to discuss the role of information technology (e.g. RFID) and innovative process, (e.g. CPFR), in functional areas such as new product development, manufacturing outsourcing, and distribution operations. **Prerequisite: Permission of instructor.** (3-0) R

OPRE 6379 Product Lifecycle Management (3 semester hours) This course provides a management approach to new product development, product lifecycle management and its impact on supply chain management. Topics include the management of product portfolio transitions, resources, schema and modeling for bills of materials, change management, and product cost management. (3-0) Y
OPRE 6385 Scheduling (3 semester hours) Concepts and theory of scheduling problems with business applications. Combinatorial approaches for simple systems, and queuing/simulation methods for large and/or complex systems. Prerequisite: 6302 or consent of instructor. (3-0) T

OPRE 6386 Applied Programming Languages (3 semester hours) An introduction to various mathematical, simulation and statistical software such as Mathematica, Gauss, SAS, and CPLEX. Students will use these package programs to solve problems in various business disciplines. Prerequisites: OPRE 6302, STAT 5352, or consent of instructor. Topics may vary. (3-0) Y

OPRE 7310 Probability and Stochastic Processes (3 semester hours) Basic concepts and methods from probability theory that are useful in the modeling of complex systems. Topics include Poisson and renewal processes, discrete and continuous-time Markov chains, semi-Markov processes, and various concepts of stochastic ordering. Permission of Instructor required. (3-0) Y

OPRE 7311 Stochastic Models in Operations Research (3 semester hours) This course is a systematic study of important classes of stochastic models in operation research. Topics include renewal theory, Markov chains, semi-Markov processes, queuing models, stochastic ordering concepts, and Brownian motion. Permission of instructor required. (3-0) R

OPRE 7313 Network Flow (3 semester hours) Network flow models and solution algorithms. Matrix representations and properties, max-flow algorithms, min-cost flow algorithms, circulation and feasibility theorems, sensitivity analysis, integrality property of solutions, shortest route methods. Problems with special structure. CPT-PERT, multicommodity flows, matching, traveling salesperson problem. (3-0) T

OPRE 7314 Optimization in Combinatorial Structures (3 semester hours) Optimization methods for combinatorial problems, e.g., for independent systems, blocking/antiblocking systems, matroids, graphs and hypergraphs. Polyhedral representation of convex hull of solutions and related optimization algorithms. Graph theoretic and algebraic characterizations of problems involving (totally, locally) unimodular, balanced, perfect matrices. Prerequisites: OPRE 7313, or consent of instructor. (3-0) R

OPRE 7315 Dynamic Programming (3 semester hours) This course is an introduction to both deterministic and stochastic dynamic programming. The basic ideas of recursion and functional equation will be introduced. A wide variety of applications will be used to illustrate these concepts. Specific topics include: Markov and Semi-Markov decision processes, principle of optimality, structure of optimal policies under various cost criteria, LP formulations, and policy-improvement techniques. Prerequisites: OPRE 6331 or consent of instructor. (3-0) R

OPRE 7320 Optimal Control Theory and Applications (3 semester hours) This course is an introduction to Optimal Control Theory and a survey of its selected applications in finance, production, marketing and economics. Relationships to dynamic programming and Kuhn-Tucker conditions are also pointed out. Emphasis is on modeling and not on mathematical rigor. Students should have two semesters of calculus including some knowledge of differential equations and linear algebra or consent of instructor.
OPRE 7330 Deterministic Models in Operations Research. (3 semester hours) Deterministic models in operations research. Topics include linear programming, sensitivity analysis and duality, assignment problems, network models, integer programming, nonlinear programming, sequencing and scheduling models. (3-0) Y

OPRE 7346 Differential Games and Applications (3 semester hours). Concepts and methods of game theory and differential games are presented, including both deterministic and stochastic models. The theory of necessary conditions, dynamic programming, and Nash equilibrium are discussed. Applications to economics and management are presented. Prerequisite: OPRE 7320 or consent of instructor. (3-0) T

OPRE 7351 Seminar in Operations Management (3 semester hours) This seminar covers topics of current research in the area of operations management. Research papers are presented on a variety of topics including: supply chain management, inventory models, production planning and control, design and scheduling of cellular manufacturing systems, and decision and risk analysis. (3-0) Y

OPRE 7352 Teaching Practicum in Operations Management (3 semester hours) Under the supervision of a faculty member, student assumes all instructional responsibilities for a course, including: developing the syllabus, delivering the lectures, and grading. Pass/Fail only. (3-0) Y

OPRE 7372 Advanced Topics in Supply Networks - Advanced Risk Analysis (3 semester hours) This course will focus on probabilistic, statistical and optimization techniques needed in risk analysis and decision-making. The domain is in full development and appropriate for active research. The methods are generic and applicable in finance as well as in operations management. Prerequisites: OPRE 6302, OPRE 6330 and OPRE 6366 or consent of the instructor. (3-0) R

OPRE 6V98 Supply Chain Management Internship (1-3 semester hours) Student gains experience and improves skills through appropriate developmental work assignments in a real business environment. Student must identify and submit specific business learning objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective via involvement or observation. At semester end, student prepares an oral or poster presentation, or a written paper reflecting on the work experience. Student performance is evaluated by the work supervisor. Consent of the School of Management's Internship Coordinator is required. ([1-3]-0) S

OPRE 6V99 Special Topics in Operations Research (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit. ([1-4]-0) S

SYSM 6314 Manufacturing & Service Systems Planning & Analysis (3 credit hours) Manufacturing & Service Systems Planning & Analysis is the study of management related to transforming inputs to outputs for both manufacturing and service organizations. Its fundamental purpose is the adding of value to inputs - materials, labor, capital and management - to create outputs - products or services.
which customers want - throughout the supply chain. Prerequisites: Special Registration required with department (3-0) Y

SYSM 6V98 Systems Management Internship (1-3 semester hours) Student gains experience and improves skills through appropriate developmental work assignments in a real business environment. Student must identify and submit specific business learning objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective via involvement or observation. At semester end, student prepares an oral or poster presentation, or a written paper reflecting on the work experience. Student performance is evaluated by the work supervisor. Consent of the School of Management's Internship Coordinator is required. ([1-3]-0) S

MAS 7200 [MIV 10] Coaching Practice Lab (2 semester hours) Small group practice sessions for the purpose of applying and deepening the principles and techniques learned throughout the coaching classes. The purpose of this class is to engage in applied learning through peer-to-peer interaction with instructor feedback.

This is supposed to be a new OB #; this temporary # has already been used for 3 semesters.

(2 semester hours) Small group practice sessions for the purpose of applying and deepening the principles and techniques learned throughout the coaching classes. The purpose of this class is to engage in applied learning through peer-to-peer interaction with instructor feedback.

OB 6355 - Capstone in Organizational Behavior and Coaching (3 semester hours) The capstone course is the culmination of the program. Students are required through research to integrate the major theories and principles of the entire curriculum. Students further develop their knowledge of organizational behavior and executive coaching through application of field experiences. (3-0) S.

ACCT 6291 Professional Accounting - Financial (2 semester hours) This course is designed to help students prepare for careers in professional accounting and professional examinations. Prerequisites: ACCT 3331/6330, ACCT 3332/6332, and either ACCT 6333 or ACCT 6365. (2-0) R

ACCT 6292 Professional Accounting - Audit (2 semester hours) This course is designed to help students prepare for careers in professional accounting and professional examinations. Prerequisites: ACCT 3334/6334, and ACCT 6335. (2-0) R

ACCT 6193 Professional Accounting - Regulation (1 semester hour) This course is designed to help students prepare for careers in professional accounting and professional examinations. Prerequisites: ACCT 3351/6351, and ACCT 6352. (1-0) R

ACCT 6194 Professional Accounting - Business (1 semester hour) This course is designed to help students prepare for careers in professional accounting and professional examinations. Prerequisites: ACCT 4336/6344, ACCT 4342/6343, and ACCT 3341/6341. (1-0) R

IMS 6V99 Special Topics in International Management Studies (1-4 semester hours) May be lecture, readings, or individualized study. May be repeated for credit ([1-4]-0) S
REAL 6340 Real Estate Law (3 semester hours) An overview of legal concepts specific to the real estate industry including: contracts, closing procedures, tax law, and leases. Prerequisite: REAL 6301 or consent of instructor. (3-0) Y

MIS 6364 Enterprise IT Architecture (3 semester hours) Enterprise IT Architecture (EA) provides a roadmap for the analysis and design of an enterprise in its current and future states from a strategy, business and technology perspective. The emphasis is on the alignment between IT and organizational objectives through the integration of business architectures, data and information architecture, application architecture, technology architecture, interfaces and infrastructure. While the course introduces many EA frameworks, it uses TOGAF extensively. Prerequisites: MIS 6308

MIS 6373 Social Media and Business (3 semester hours) Social media represents one of the most significant changes on the Internet. This course is to familiarize students with the newly emerging social media and Web 2.0 landscape and its underlying concepts. The course covers essential skills to analyze, evaluate, and develop the Web 2.0 business models as well as marketing strategies. Different social media and Web 2.0 applications (e.g., Flickr, YouTube, Facebook, Groupon, and Blogs) and their multi-disciplinary implications will be discussed. (3-0) R

MIS 6338 Enterprise Systems and Accounting (3 semester hours) Using SAP or similar software, this course focuses on accounting information systems as part of integrated enterprise systems. Emphasis will be on integrated business processes and related financial transaction flows. The course will examine how financial accounting and controlling modules integrate with various other modules within an enterprise system. (3-0) R

REAL 6322 (FIN 6322) Real Estate Finance and Investment (3 semester hours) This course covers commercial real estate investment analysis and instruments used in its finance. Topics include: real estate valuation, loan structures, syndication, securitization, and developments in capital markets affecting real estate developments. Prerequisite: FIN 6301. (3-0) S

FIN 6325 Macroeconomics and Financial Markets (3 semester hours) This course examines the relationship between macroeconomics and financial markets, and how they influence one another. Prerequisite: FIN 6301 or permission of instructor. (3-0) Y

OPRE 6303 Quantitative Foundations of Business (3 credit hours) This course discusses the applications of some basic mathematical concepts necessary for the business environment. Students are introduced to selected topics, including those in college algebra, matrix algebra, calculus, and
optimization, and their usage in the context of managerial decision-making. MS Excel is used to illustrate and understand the core concepts. Prerequisite: None. (3-0) S

IMS 6205 Export Market Planning (2 credit hours) A combination of lectures on the foundations of export marketing, combined with classroom presentations by experts from the North Texas District Export Council on their work in the global marketplace. Covers choosing an exportable product and market, and adapting marketing mix variables in the context of export marketing. Students prepare and present a market entry report, and are awarded a certificate from the U.S. Department of Commerce upon completion. Prerequisite: None (2-0) R

MKT 6365 Marketing Digital Lab (3 semester hours). This course provides hands on training with different applications frequently used by marketing/advertising companies and agencies. The lab covers the use of social media listening platforms (i.e. NetBase), data visualization, blogging (i.e. WordPress), YouTube, Mobile QR codes & apps and Paid Search campaigns (i.e. Google AdWords). Prerequisite: MKT 6301, 6321 or consent of instructor (3-0) T

OPRE 6388 Engineering Packaged Goods Distribution (3 credit hours) This course covers both warehouse and DSD models of distribution common in CPG industry, in which network engineering design, distribution & replenishment planning and transportation planning / execution are performed. Students will also learn about unique distribution engineering aspects of returns, recycling, variety and display products and push/pull/hybrid delivery. In addition, this class focuses heavily on the practical operational aspects of distribution management through discussion and case studies. Prerequisite: None (3-0) Y

BPS 6252 Capstone: Integration/Transformation (2 semester hours). This 2-hour course will immerse the student in an initial examination and/or design of a substantial project within a corporation intended to raise corporate value by transforming the business. The emphasis will be on new uses of assets and resources, not the improved management of existing activities. This is intended to develop the executive capacity of the individual student. (2-0) Y

BPS 6251 Executive Study Trip – Washington DC (2 semester hours) This course focuses on economic and policy strategy and management as it related to governmental processes nationally and internationally. Considering business, political, and cultural issues related to conducting business in the United States and around the world, this course goes behind the scenes to learn the processes needed to effectively identify, understand and capture policy and regulatory efforts at early stages. All this is pertinent to business decision making and management anywhere in the world. (2-0) Y

ACCT 6286 Governance, Risk Management and Compliance (2 semester hours) Examines how corporate directors, senior officers, professional service providers, and consultants design, develop, and implement systems of corporate governance. Various experts in the field speak to the class on the relationship between corporate governance and risk management, compliance, regulations, regulatory reporting, ethics and corporate culture. Prerequisites: ACCT6201 and ACCT6202. (2-0) Y