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## Accounting and Information Management Course Descriptions

**AIM 2300 Principles of Accounting** (3 semester hours) This course will introduce students to accounting concepts and principles used to make decisions by business managers and investors. The course is designed to benefit all students who will be future users of accounting information. This course cannot be used to fulfill degree requirements by students in the School of Management. (3-0) Y

**AIM 2301 (ACCT 2301) Introductory Financial Accounting** (3 semester hours) An introduction to business financial reporting designed to create an awareness of the accounting concepts and principles for preparing the three basic financial statements: the income statement, balance sheet, and statement of cash flows. The course is designed to benefit all business students who will be future users of accounting information. (3-0) S

**AIM 2302 (ACCT 2302) Introductory Management Accounting** (3 semester hours) An introduction to the determination, development, and uses of internal accounting information needed by business management to satisfy customers while continuously controlling and containing costs. The course is designed to benefit all business students who will be future users of accounting information. (3-0) S

**AIM 3191 Professional Communications and Ethics I** (1 semester hour) The course is designed to develop professional communication skills. Topics covered range from the professional interview process to writing effective memoranda. Students will interact with guest speakers from industry and public accounting and consulting firms. (1-0) Y

**AIM 3192 Professional Communications and Ethics II** (1 semester hour) The course is designed to refine professional communication skills and provide an introduction to professional analysis of accounting and information management issues that impact the business world. Students will interact with guest speakers from industry and public accounting and consulting firms. Prerequisite: AIM 3191. (1-0) Y

**AIM 3320 Financial Information Management** (3 semester hours) This course is a study of the corporate financial reporting process and the use of financial statements by investors and analysts. Students use financial reports prepared by publicly-traded companies to study how financial statements and other information is prepared, communicated and used by managers, investors and other decision-makers. Prerequisite: AIM 2301. (3-0) S

**AIM 3321 Managing Financial Data** (3 semester hours) This course introduces database concepts in the context of financial information systems and the basic design and implementation of relational databases and database applications. It focuses on how relational databases can be used for managing financial data and illustrates the concepts using Access software. AIM 3321 and BA 4321 cannot both be used to satisfy degree requirements. Prerequisites: AIM 2301, AIM 2302, MATH 1325, and BA 3351. (3-0) Y

**AIM 3322 Integrated Accounting Information Systems** (3 semester hours) This course employs SAP software to illustrate the fundamental concepts of integrated information systems. Prerequisites: AIM 2301, AIM 2302, MATH 1326, and MATH 2333. (3-0) Y

**AIM 3331 Intermediate Financial Accounting I** (3 semester hours) A study of external financial reporting, including measuring 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. Prerequisites: AIM 2301, AIM 3320, MATH 1326, and MATH 2333. (3-0) S

**AIM 3332 Intermediate Financial Accounting II** (3 semester hours) A continuation of topics in external financial reporting including accounting for debt equity, investments, taxes, leases, pensions, cash flows, revenue, accounting changes and error analysis. The influence of financial reporting choices on earnings is evaluated. Prerequisites: AIM 3331, MATH 1326, and MATH 2333. (3-0) R

**AIM 3334 Auditing** (3 semester hours) Basic concepts, philosophy, standards, procedures, and practices of auditing are presented. Topics include generally accepted auditing standards, the changing role of the independent auditor in society, professional conduct and ethics, auditor's reporting responsibilities, risk assessment, internal control, fraud, evidential matter, and the computer in auditing in the global economy. Prerequisite: AIM 3331. (3-0) R

**AIM 3341 Cost Management Systems** (3 semester hours) A study of business management's internal accounting information needs as they pertain to cost control and containment. Emphasis is on the processes of business planning, controlling, and decision making. Topics include cost behavior, cost allocation, budgeting, and performance measurement. Prerequisites: AIM 2302, MATH 1326, and MATH 2333. (3-0) Y

**AIM 3351 Individual Taxation** (3 semester hours) An introduction to federal taxation principles and concepts for individual income. Prerequisites: AIM 2301, MATH 1326, and MATH 2333. (3-0) R

**AIM 4193 Professional Communications and Ethics III** (1 semester hour) This course is designed for students to develop an understanding of professional responsibilities and statutory requirements. Students will interact with guest speakers from industry

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and public accounting and consulting firms. Prerequisite: AIM 3192 (1-0) Y

**AIM 4336 Financial Statement Analysis** (3 semester hours) Financial statements are analyzed from the user's prospective. Broad concepts are illustrated with applications to different companies. Topics include comparative analysis, earnings management and ethics in financial reporting. Prerequisites: AIM 2301, AIM 2302, MATH 1326, and MATH 2333. (3-0) Y

**AIM 4337 Business Valuation** (3 semester hours) Models used to value businesses and stocks are studied and applied. Topics include income measurement and profitability assessment, analysis of discounted cash flows and accounting-based valuation models. Prerequisites: AIM 2301, AIM 2302, MATH 1326, and MATH 2333. (3-0) Y

**AIM 4342 Analysis and Design of Accounting Systems** (3 semester hours) Students are introduced to system analysis and design tools and methods. The course emphasizes business processes and enterprise resource planning systems. Prerequisites: AIM 2301, AIM 2302, MATH 1326, and MATH 2333. (3-0) S

**AIM 4343 Accounting Information for Decision Analysis** (3 semester hours) This course describes quantitative techniques used to characterize costs, benefits and risks and the use of accounting information for managerial decision making in technology settings. Advanced spreadsheet models are used to implement these techniques. Prerequisites: AIM 2301, AIM 2302, AIM 3341, MATH 1326, and MATH 2333. (3-0) Y

**AIM 4380 Internship in Accounting and Information Management** (3 semester hours) This course provides students with an opportunity to expand and apply their skills in accounting and information management in a professional setting. The accounting and information management student will be required to apply knowledge obtained at the University in an actual job situation. This class is for Track 1-Fast Track only. (3-0) Y

**AIM 4390 Seminar Series in Accounting and Information Management** (3 semester hours) Discussion of selected concepts and theories in accounting and information management. May be repeated for credit (9 hours maximum). (3-0) Y

**AIM 4399 Senior Honors in Accounting and Information Management** (3 semester hours) For students conducting independent research for honors theses or projects. (3-0) S

## Special Topics

### Accounting and Information Management

**AIM 4V00 Special Topics** (1-3 semester hours) May be lecture, readings, or individualized study. Students taking this study series may receive a letter grade with the instructor's permission. May be repeated for credit (9 hours maximum). ([1-3]-0) S

## American Studies Course Descriptions

**AMS 2341 American Studies for the Twenty-First Century** (3 semester hours) An introduction to American cultural studies, its theories, and methodologies. Topics may include: region and politics; transnationalism; gender and sexuality; class, labor and consumption; race and ethnicity. Develops students' abilities to interpret cultural texts, to make and evaluate historical and literary arguments, and to situate contemporary cultural debates in larger historical and theoretical frames. (3-0) Y

**AMS 2390 Topics in American Studies** (3 semester hours) May be repeated for credit as topics vary (9 hours maximum). (3-0) Y

**AMS 3300 American Popular Culture** (3 semester hours) Examines American culture from the colonial period to the present through some of its most popular cultural forms: fiction, film, magazines, advertising, music, sports, television and media. Considers the economics of cultural production, ways of critically reading popular texts, and how consumers make use of popular culture. Pays particular attention to the ways gender, race, and class influence how popular texts are created and consumed. (3-0) Y

**AMS 3302 American Cultures** (3 semester hours) Study of contemporary American cultures. Examines institutions, culture regions, and the interaction between mainstream American culture and various subcultures. (3-0) Y

**AMS 3313 Public Relations** (3 semester hours) Study of the techniques used by U.S. corporations, nonprofit organizations, and individuals to create and foster the public images they desire. (3-0) Y

**AMS 3314 Public Communication** (3 semester hours) Study of communication theory in relation to ways in which the U.S. government and other institutions present themselves. (3-0) Y

**AMS 3316 Interpersonal Communication** (3 semester hours) Study of theory and practice of interpersonal communication. The focus will be on learning and applying various concepts and skills needed to improve the quality and effectiveness of communication in both personal and professional aspects of life. (3-0) Y

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**AMS 3317 United States and the World Community** (3 semester hours) An examination of the relationships among the United States, its sociocultural institutions, and the world community. Topics will include globalization, foreign relations, and national security issues. (3-0) T

**AMS 3318 Contemporary American Conflicts** (3 semester hours) An investigation of the core tensions and strains in contemporary American society and culture with emphasis on individual freedoms vs. social responsibility, pluralism, social inequality, gender, and poverty and prosperity. (3-0) Y

**AMS 3321 American Ethnic Experience: Immigrants Before 1945** (3 semester hours) Study of the experiences, conditions, and contributions of the old immigrants who came to America before 1945. The course examines the making of mainstream American culture, persistence of ethnic subcultures, and changes in ethnic relations. (3-0) T

**AMS 3322 American Ethnic Experience: Immigrants After 1945** (3 semester hours) Study of the experiences, conditions, and contributions of the new immigrants who have arrived in America since 1945. Topics include the changes in immigration policies, new patterns of ethnic relations, and impact of new immigrants on American society. (3-0) T

**AMS 3326 The U.S. in the 21st Century** (3 semester hours) An exploration of 21st-century scenarios for the U.S. by studying the conditions and trends in the 1990s. The course examines the future roles of the U.S. in the world community. (3-0) T

**AMS 3370 Organized Crime in America** (3 semester hours) An examination of how the vast network of organized crime has become an ineradicable part of the nation's special fabric and how it alters the ways in which legitimate business is done. Emphasis is placed on understanding the phenomenon and its implications for American life. (3-0) Y

**AMS 3374 Entrepreneurs in America** (3 semester hours) An interdisciplinary introduction to various kinds of entrepreneurial ventures. The basic purpose of the course is to discover and understand the factors that govern the success (or failure) of entrepreneurial ventures and the role of the entrepreneur in a capitalist economy. (3-0) R

**AMS 4303 Business, Law and Culture** (3 semester hours) Study of the interactions among business, law and culture from an interdisciplinary perspective. The course examines business tangles, legal complexities, ethical dilemmas, and cultural contradictions in the capitalist system. (3-0) T

**AMS 4304 Communication in America** (3 semester hours) Examines the basic verbal and non-verbal elements affecting communication in American society. Perspectives to be addressed include communication across cultures, gender differences in communication, interpersonal communication styles, and communication in peer groups, families, and work contexts. In addition, the effects of technology on communication and its impact on individuals and society will be explored. (3-0) T

**AMS 4305 World History for Teachers** (3 semester hours) This course is a comprehensive thematic survey of world history that parallels the standards in the Texas Essential Knowledge and Skills (TEKS) as required for teachers in grades 8 through 12. (3-0) T

**AMS 4310 Terrorism and American Foreign Policy** (3 semester hours) Explores in depth the ways in which critical areas of American foreign policy have been influenced by terrorist events often led by shadowy forces difficult to defend against. (3-0) Y

**AMS 4378 Contemporary Studies of America** (3 semester hours) Subject matter will vary from semester to semester with emphasis on America in the modern era. May be repeated for credit (9 hours maximum). (3-0) Y

**AMS 4379 Topics in American Studies** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). (3-0) Y

**AMS 4381 Senior Honors in American Studies** (3 semester hours) Required for graduation magna cum laude or summa cum laude. Prerequisite: Completion of at least 39 and no more than 45 hours of work towards a degree in American Studies and consent of instructor. (3-0) S

**AMS 4382 Global Economy** (3 semester hours) Considers the changing relationships of population, resources, and the economy, the transformation of classical spatial economies, and the processes producing increasing globalization. Particular attention is paid to technological change and to the dynamics of world trade and investment. This course is also recommended for students who are not economics majors. (Same as ECO 3370 and GEOG 3370) (3-0) T

**AMS 4383 Media Issues** (3 semester hours) Investigates the impact and influence of the mass media on society today, using classical techniques of argument and evidence. Students engage in debate-styled discussions about topics, such as V-chip technology, TV talk shows, criminal trial news coverage, TV violence, and American values, among others. (3-0) T

**AMS 4384 North American Archaeology** (3 semester hours) An introduction to archaeological theories and evidence of the settlement of North America before European Contact. (3-0) T

**AMS 4385 Professional Communications in Business** (3 semester hours) Combines theory and practice in improving both the written and spoken word in business. Students learn to evaluate professional and technical audiences and how to communicate more effectively to those audiences. Principles of composition, organization, tone, format, and punctuation are reviewed. Exercises in effective speaking and group presentations are also conducted. (3-0) T

**AMS 4V80 Independent Study** (1-6 semester hours) Independent study under a faculty member's direction. May be repeated

for credit. Consent of instructor required. ([1-6]-0) S

## Art and Performance Course Descriptions

**AP 2335 The Creative Process** (3 semester hours) Through discussions, readings, and media presentations of work by contemporary artists, thinkers, makers, and doers, students will begin to discover methods and approaches to the creative experience. This course may be taken only by majors other than Art and Performance and is intended for students without formal studio experience. (3-0) S

**AP 2V71 Independent Study in Art and Performance** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Consent of instructor required. ([1-3] -0) R

**AP 3300 Elements of Art and Performance** (3 semester hours) An analysis of the elements of space, time, image, text, and gesture as they relate to art making in the various visual and performing arts. These elements will also serve as a starting point from which students will investigate notions of creativity, expression, and aesthetics in a workshop setting. Explorations into what constitutes a work of art, and ways in which a work of art can be perceived and interpreted. Prerequisite: ARTS 1301 or equivalency. This course is a requirement for all AP majors and should be taken prior to completing the first 12 hours of upper-division course work. It is normally offered only during the fall and spring semesters. (3-0) S

**AP 3344 Topics in Performance** (3 semester hours) Investigations of the changing structures and methods of performance in theatre, dance, music, film/video, and the visual arts. Students will explore the "idea of art" that resides in works which exhibit no singular stylistic attributes and which cut across the traditional boundaries among media. Consideration will be given to the changing role of contemporary criticism that includes analyses outside the formalist tradition: semiotics, Marxism, phenomenology, feminism, and post structuralism. May be repeated for credit as topics vary (9 hours maximum). Prerequisites: Upper-division standing, and completion of all lower-division requirements in AP and permission of the instructor. (3-0) T

**AP 4370 Interdisciplinary Studies in Art and Performance** (3 semester hours) Subject matter may vary from semester to semester. May be repeated for credit as topics vary (9 hours maximum). Prerequisites: Upper-division standing and completion of all lower-division requirements in AP and permission of the instructor. (3-0) R

**AP 4399 Senior Honors in Art and Performance** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Signature of instructor on proposed project outline required. (3-0) R

**AP 4V71 Independent Study in Art and Performance** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Prerequisites: Upper-division standing and completion of all lower-division requirements in AP. Consent of instructor required. ([1-3] -0) R

## Interdisciplinary Studies Courses Applicable to the Major in Art and Performance

ISAH 3330 Venus to Vampire: Women in History and Art. T

ISAH 4V88 Special Interdisciplinary Topics in the Arts and Humanities, as approved by the instructor and Associate Dean. R

## Art History Course Descriptions

**AHST 1303 Survey of Western Art History: Ancient to Medieval** (3 semester hours) An introduction to painting, sculpture, and architecture in the West from prehistory through the late Middle Ages and including the achievements of the ancient Egyptian, Greek, Roman, and Medieval cultures. Monuments will be studied within their historical, religious, and social contexts, with particular focus on the role of art in society and on the development of style. (3-0) Y

**AHST 1304 Survey of Western Art History: Renaissance to Modern** (3 semester hours) An introduction to painting, sculpture, and architecture in the West from the Renaissance to the modern period, including work by such artists as Michelangelo, Rembrandt, the Impressionists, and Picasso. Artists and monuments will be studied within their historical, religious, and social contexts, with particular focus on the role of art in society and on the development of style. (3-0) Y

**AHST 2331 Understanding Art** (3 semester hours) An investigation into the nature of the visual arts with an emphasis on the issues and ideas that artists explore through their work and how these ideas translate into the artwork. Attention will be given to the interpretation or "reading" of the artwork and how it may relate to society. (3-0) Y

**AHST 2390 Topics in Art History** (3 semester hours) Subjects will vary from semester to semester. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Three hours of lower-division AHST coursework or ARTS 1301. (3-0) R

**AHST 2V71 Independent Study in Art History** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). ([1-3]-0) R

**AHST 3315 The Art of the Renaissance** (3 semester hours) Studies in the art and architecture of Italy and Northern Europe during the 14th, 15th, and 16th centuries. Special attention is paid to the role of patronage, the developing self-consciousness of the artist, and the importance of new techniques. Prerequisite: Three hours of lower-division AHST coursework or ARTS 1301. (3-0) T

**AHST 3316 The Art of the Baroque** (3 semester hours) Studies in the art and architecture of the 17th and 18th centuries in Europe. Emphasis is on the social and religious bases of the baroque styles and on the impact of certain artistic personalities, such as Bernini, Rubens, Velazquez, and Rembrandt. Prerequisite: Three hours of lower-division AHST coursework or ARTS 1301. (3-0) T

**AHST 3317 Pioneers of Modern Art** (3 semester hours) Focus on the work of the Post-Impressionists (Seurat, Gauguin, Van Gogh, and Cézanne) and the Symbolists with special emphasis on the artist's contribution to the discourse of ideas and the crisis of meaning in the late 19th century. Prerequisite: Three hours of lower-division AHST coursework or ARTS 1301. (3-0) T

**AHST 3318 Contemporary Art** (3 semester hours) An issue-oriented class in which a selection of recent developments in art serve to introduce the ideas and aims of postmodernism. Special attention is given to those artists who are concerned with representation and the visual element in social constructs. Prerequisite: Three hours of lower-division AHST coursework or ARTS 1301. (3-0) T

**AHST 3319 Twentieth-Century European Art: Avant-Garde and Aftermath** (3 semester hours) The situation of the European avant-garde before and after its explosive center point of World War I. Special emphasis will be given to the breakthrough of abstraction and modernism's problematic relation to tradition. Prerequisite: Three hours of lower-division AHST coursework or ARTS 1301. (3-0) T

**AHST 3320 Art in Historical Context** (3 semester hours) Studies in the arts and/or architecture of such eras as ancient Greece and Rome or the 18th and 19th centuries. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Three hours of lower-division AHST coursework or ARTS 1301. (3-0) T

**AHST 3324 History of Photography** (3 semester hours) Photography, from 1825 to the present, as a study of evolving styles, stressing key turning points and contributing factors and focusing on a background of the modern art movement and the psychology and events of the times. Critical analysis of the work of various photographers will be included. Prerequisite: Three hours of lower-division AHST coursework or ARTS 1301. (3-0) T

**AHST 4342 Topics in Art History** (3 semester hours) Subjects will vary from semester to semester. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Three hours of lower-division AHST coursework or ARTS 1301, AHST 1303, or AHST 1304. (3-0) R

**AHST 4399 Senior Honors in Art History** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Signature of instructor on proposed project outline required. (3-0) R

**AHST 4V71 Independent Study in Art History** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Prerequisite: Upper-division standing, and completion of all lower-division requirements in AP and permission of the instructor. ([1-3] -0) R

## Arts Course Descriptions

**ARTS 1301 Exploration of the Arts** (3 semester hours) This course introduces students to the physical and intellectual demands required of the author, the performer, and the visual artist. This introduction includes, but is not limited to, the student's production of a creative project as well as written assessments of art and performance. (3-0) Y

**ARTS 1316 Drawing Foundations** (3 semester hours) This course provides a foundation for drawing and printmaking classes. Emphasis will be placed on the process of charcoal drawing in relationship to design concerns such as light, space, form and composition. The importance of drawing as a method both to describe reality and to conceptualize ideas will be stressed. (3-0) Y

**ARTS 2316 Painting Foundations** (3 semester hours) This course provides a foundation for painting classes. Emphasis will be placed on color theory and design as they relate to the process of painting. Lectures and discussions will address both the history of painting and current issues in contemporary art. This course will cover an introduction to the materials of painting, color mixing, and the preparation of painting surfaces. (3-0) Y

**ARTS 2380 2D Design Foundations** (3 semester hours) This course provides a foundation for most 3000-level art courses. The

course will introduce the problem of working with color and design, emphasizing either traditional studio or digital processes. Lectures and discussions will relate to both the history of visual art and current issues in contemporary art and design. (3-0) Y

**ARTS 2381 3D Design Foundations** (3 semester hours) This course provides a foundation for courses in sculpture and installation. Emphasis will be placed on working with the materials of sculpture. Concepts that are relevant to three-dimensional design, such as space, mass, and texture, will be presented in a context that relates to the history of sculpture as well as current issues in contemporary art and design. (3-0) Y

**ARTS 2V71 Independent Study in Visual Arts** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). ([1-3]-0) R

**ARTS 3311 Theory and Practice of Visual Arts** (3 semester hours) This studio art course provides a context for the creation, discussion and critique of visual art. The course aims to fuse engagement in artistic production with reflection on theoretical and socio-cultural issues relevant to contemporary art practices. Prerequisite: Three hours of lower-division studio art coursework. (3-0) T

**ARTS 3340 Topics in Studio Art** (3 semester hours) A study of fundamental principles and basic techniques of different media in the visual arts. Sections may be devoted exclusively to sculpture, photography, computer imaging, or painting. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Three hours of lower-division studio art coursework. (3-0) T

**ARTS 3363 Design** (3 semester hours) Explores concepts and techniques in design including color theory, composition, and 2D- and 3D- design. Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) T

**ARTS 3365 Drawing** (3 semester hours) An investigation of the principles and techniques involved in the drawing process. Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) Y

**ARTS 3368 Mixed Media** (3 semester hours) An investigation of the interaction and combination of several traditional visual media using techniques derived from 2D and 3D-dimensional studio arts. Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) Y

**ARTS 3369 Painting** (3 semester hours) Explores traditional and nontraditional concepts and techniques of painting and the development of style. Topics may include color theory, two-dimensional design, and the nature of representation. Prerequisite: Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) S

**ARTS 3371 Black and White Photography** (3 semester hours) Investigation of the photographic process and an examination of the various levels on which meaning is constructed, including selection of subject matter, concern for aesthetics, and socio-cultural context. Instruction in camera techniques will emphasize 35mm photography. Darkroom processes may include traditional or experimental photographic printing methods. Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) Y

**ARTS 3372 Color Photography** (3 semester hours) Investigation of the color photographic process from conceptual, aesthetic, and technical perspectives. Instruction in camera techniques will emphasize exposure of color negative or color transparency film. Darkroom techniques will include the printing of enlargements from color negative film. Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) Y

**ARTS 3373 Printmaking** (3 semester hours) Explores traditional and nontraditional techniques of printmaking through the various topics of screen printing, etching, woodcut, collagraph, or monoprint. Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) T

**ARTS 3374 Technical Photography** (3 semester hours) Introduces students to a variety of professional opportunities in photography and related fields through hands-on practice, workshops, demonstrations, and lectures. The course will emphasize technical aspects of photography such as darkroom operation, studio and location lighting techniques, and commercial photography applications. Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) S

**ARTS 3375 Sculpture** (3 semester hours) Explores the traditional and nontraditional techniques of three-dimensional work in wood, clay, metal, plastics, fiber, stone. Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) Y

**ARTS 3376 Time-Based Art** (3 semester hours) Exploration of the conceptual demands inherent in the creation of time-based visual art. Topics may include computer animation, video processes, interactive visual arts, and the potential of narrative models. Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) Y

**ARTS 3377 Digital Photography** (3 semester hours) Explores digital photographic processes, with an emphasis on contemporary issues in art and technology. Course includes instruction in camera operation, lighting, image editing software, and output to web and print. Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) T

**ARTS 3380 Intermediate Computer Imaging** (3 semester hours) Explores the application of the computer to the visual arts. The course will explore techniques necessary for still imaging, kinetic or animated imaging, and programming for interactive artworks. Topics include the history of the computer arts, questions of critical evaluation in this developing medium, and its relationship to more traditional forms of visual expression. Prerequisite: Three hours of lower-division studio art coursework. May be repeated for credit (6 hours maximum). (3-0) T

**ARTS 4308 Image/Text** (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 bookmaking, printmaking, photography, computer imaging, or related media that foster the transformation and combination of words and images. The problem of creating text for presentation in a visual environment will be examined. Prerequisite: A 3000-level studio art course in an appropriate medium or permission of the instructor. May be repeated for credit (6 hours maximum). (3-0) T

**ARTS 4368 Advanced Visual Arts** (3 semester hours) May focus on advanced explorations in a specific medium, such as printing, photography, drawing, sculpture, or video. An emphasis may be placed on particular themes, such as narrative or collaboration, or genres, such as landscape or portraiture, or advanced technical processes. Prerequisite: A 3000-level course in an appropriate medium or permission of instructor. May be repeated for credit (6 hours maximum). (3-0) T

**ARTS 4372 Advanced Photography** (3 semester hours) Explores advanced concepts relating to contemporary artistic and photographic practice, with special emphasis placed on portfolio development. Instruction in camera techniques will emphasize 35mm format or large-format (view-camera) photography. Prerequisite: A 3000-level studio art course in an appropriate medium or permission of the instructor. May be repeated for credit (6 hours maximum). (3-0) Y

**ARTS 4399 Senior Honors in Visual Arts** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Signature of instructor on proposed project outline required. (3-0) R

**ARTS 4V71 Independent Study in Visual Arts** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Prerequisite: Upper-division standing and completion of all lower-division requirements in AP and permission of the instructor required. ([1-3] -0) R

## Arts and Humanities Course Descriptions

**HUMA 1301 Exploration of the Humanities** (3 semester hours) An introduction to the concept of cultural tradition through the study of selected works of literature, philosophy, music, and visual art. Emphasis on the relations among various forms of cultural expression and developing students' ability to interpret complex artistic works in their historical, cultural, and intellectual contexts. General education core course. (3-0) S

**HUMA 3300 Reading and Writing Texts** (3 semester hours) Focuses on a significant topic or issue through which students are offered an opportunity to gain experience in various analytic and interpretive approaches. Explores connections among artistic and intellectual endeavors appropriate to a range of courses in the Arts and Humanities. Prerequisite: HUMA 1301 or equivalency. This course is a requirement for all AP majors and should be taken prior to completing first 12 hours of upper-division course work. (3-0) S

**HUMA 4399 Senior Honors in Arts and Humanities** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Signature of instructor on proposed project outline required. (3-0) R

## Arts and Technology Course Descriptions

**ATEC 2321 Writing and Research for New Media** (3 semester hours) This writing-intensive course focuses on writing for new and emergent media environments. The course will introduce digital and electronically augmented information-gathering techniques for use in emerging media and communications. Prerequisite: RHET 1302 or permission of instructor. (3-0) Y

**ATEC 2322 Introduction to Electronic and Digital Communications** (3 semester hours) The course will examine the history of electronic communications with a critical view of their effects on society. The focus will be on the role of the Internet in contemporary life, the commodification of news and information, and will introduce electronic and digital research methods for emerging media and communications. Prerequisite: RHET 1302 or permission of instructor. (3-0) Y

**ATEC 2331 Storyboard and Pre-production** (3 semester hours) Students learn pre-visualization techniques for planning out time-based media projects (film, video, animation, interactive, etc.). Students are given a survey of visual storytelling techniques, such as framing, composition, camera movements, and editing techniques. Students gain an understanding of narrative story structure and plot construction, as well as learn how to communicate their ideas clearly through the use of storyboards and concept

arts. (3-0) S

**ATEC 2382 Computer Imaging** (3 semester hours) Provides introductory experience in the use of computer software for image making. Digital graphics and photography methods are presented and applied to art and design applications. Computer images are published both in print form and as digital images on the Internet. (3-0) S

**ATEC 2383 2D Traditional Animation** (3 semester hours) Students learn techniques for traditional hand-drawn animation and fundamental principles of animation that are universally applicable to 2D, 3D, and web based animation. (3-0) S

**ATEC 3317 3D Modeling for Computer Animation** (3 semester hours) Explores computer-generated 3D modeling concepts and techniques for 3D computer animation. A conceptual understanding of the elements of surface modeling will be the main focus of this course. Prerequisite: ATEC 2382 [Computer Imaging]. (3-0) S

**ATEC 3320 Introduction to Writing and Editing for the World Wide Web** (3 semester hours) Introduction to web content writing and editing and the theory and practice of writing online, interactive multi-media text. Emphasis will be placed on editing for the web, fact-checking, and style. The course will emphasize process writing and editorial practices. Prerequisite: RHET 1302. (3-0) S

**ATEC 3325 Introduction to Computer Mediated Communication** (3 semester hours) An introduction and exploration of the impact of computer technology's influence on human communications. Emphasis will be placed on survey and study of emerging modalities of computer mediated communication activities. Additional analysis of theoretical perspectives involving linguistics and cultural studies among other approaches. Prerequisite: RHET 1302. (3-0) S

**ATEC 3326 Emergent Media and Mass Communications** (3 semester hours) The course will introduce emerging practices in new media, such as mobile, distributed, time-shifted, and personal media. It will blend theoretical studies and project-intensive practice in leading-edge applications of digital media, interactive media, and Internet communications. Prerequisite: ATEC 2321 or ATEC 2322 or permission of instructor. (3-0) Y

**ATEC 3327 Digital Lighting and Texturing for Computer Animation** (3 semester hours) This course focuses on digital lighting, texturing, camera composition, and rendering issues for 3D computer animation. Prerequisite: ATEC 3317. (3-0) Y

**ATEC 3351 Computer Game Development** (3 semester hours) Introduction to methods and techniques used in the design and creation of interactive computer games. Topics will include basic principles of animation, architecture, and deployment. May be repeated for credit (9 hours maximum). Prerequisite: CS 1337 or CS 2336. (3-0) S

**ATEC 3361 Internet Studio** (3 semester hours) Introduction to Internet based art. Explores the history and methods of web art through readings, class discussions, and creative projects. Class projects will integrate multiple disciplines, including design, animation, interactivity, audio, and writing. Students will use contemporary software tools to create personal and group web sites. Prerequisite: ATEC 2382. (3-0) Y

**ATEC 3363 Basic Interaction Design** (3 semester hours) Study of human-machine interaction for art and design applications. Students explore existing models for interaction as used in web-based publishing, game development, entertainment and artistic performances. The creation of new models of interaction using multi-modal devices (haptic devices) is pursued. Prerequisite: ATEC 2382. (3-0) Y

**ATEC 4326 Emergent Media Production** (3 semester hours) The course explores production studio and field practices in the development of emerging forms of digital media and communications. Students will work individually and in teams to produce new media projects using a variety of different methods and technologies. Areas of investigation may include weblogs, video blogs, podcasts, mobile media, and social media projects. Prerequisite: ATEC 3326 or permission of instructor. (3-0) Y

**ATEC 4337 Computer Animation** (3 semester hours) This course focuses on applications of the principles of animation. Students learn to create expressive motions through the production of 3D key-frame animations. Prerequisite: ATEC 3327. (3-0) Y

**ATEC 4340 Issues in Arts and Technology** (3 semester hours) Explores significant artistic, cultural, educational, and philosophic issues created by the emergence of the interactive arts. Topics will include the potential applications and implications of interactive media. Prerequisite: Upper-division standing. (3-0) Y

**ATEC 4346 Story-Telling for New Media** (3 semester hours) Theory, principles and practice of narratives created for distribution via digital media. Includes study of the creation of both linear and nonlinear digital content for Internet distribution. Prerequisite: ATEC 3361. (3-0) Y

**ATEC 4347 Advanced Design** (3 semester hours) Explores advanced concepts and techniques in design including the use of computer assisted creation of images. May be repeated for credit (9 hours maximum). Prerequisite: ATEC 3361 or ATEC 3363. (3-0) Y

**ATEC 4357 Advanced Digital Arts** (3 semester hours) Explores application of advanced computer imaging techniques to the creation of visual art. May be repeated for credit (9 hours maximum). Prerequisite: ATEC 3361 or ATEC 2382. (3-0) Y

**ATEC 4367 Advanced Computer Game Development** (3 semester hours) Study of advanced methods and techniques (literary, artistic, conceptual, technical) used in original game development. Students will be required to design, develop, and

deploy computer games independently and as members of a team. May be repeated for credit (9 hours maximum). Prerequisite: ATEC 3351. (3-0) Y

**ATEC 4370 Topics in Arts and Technology** (3 semester hours) Study of fundamental principles and basic techniques of arts and technology. Sections may be devoted exclusively to a single aspect of the arts and technology or to a multiplicity of subjects related to the field. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Upper division standing. (3-0) R

**ATEC 4372 Topics in Emerging Media and Communications** (3 semester hours) The course studies fundamental principles and basic techniques of emerging media and communications. Sections may be devoted exclusively to a single aspect of emerging media and communications or to a multiplicity of subjects related to the field. May be repeated for credit as topics vary (12 hours maximum). Prerequisite: Upper division standing. (3-0) R

**ATEC 4380 Capstone Project** (3 semester hours) Culminating course in Arts and Technology. Students will engage in the creation of an advanced creative and/or research project exploring the interaction of the arts with digital technology. Restricted to students majoring in Arts and Technology who are within one semester of graduation. Prerequisite: Permission of Instructor. (3-0) Y

**ATEC 4V71 Independent Study in Arts and Technology** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Prerequisite: Upper-division standing, and completion of all lower-division requirements in ATEC and permission of the instructor. ([1-3]-0) R

## Biology Course Descriptions

All Biology Core courses, which are required for the B.S. and B.A. degrees, are offered fall and spring.

Unless otherwise stated, 3000-level courses for biology and molecular biology majors may be taken by students who have completed BIOL 2311, BIOL 2312, and BIOL 2281 or their equivalents. Similarly, the minimum prerequisite for any 4000-level course is successful completion of BIOL 3301, BIOL 3302, and BIOL/CHEM 3361 or their equivalents, or the written consent of the instructor.

**BIOL 1300 Body Systems with Lab** (3 semester hours) Examines the organ systems of mammals, predominantly the human. Function in relation to structure is emphasized. The effects of one organ system on others are stressed. The overall objective of the course is an appreciation of the integration and control of all systems. There is a model-based human anatomy lab. This course is specifically designed for non-majors. (2-1) S

**BIOL 1310 Basics of Biotechnology with Lab** (3 semester hours) An introduction to basic biotechnology principles for those not majoring in the natural sciences. This course will introduce students to the general concepts and principles of the genetic revolution. The role of biotechnology in everyday life will be explored together with a discussion of the impact it presently plays (and will play) on our health, the environment, agriculture and industry. In the laboratory portion of the course students will purify and manipulate DNA and gene products, grow genetically modified organisms, and perform DNA fingerprinting. (2-1) T

**BIOL 1318 Human Genetics** (3 semester hours) Elementary course in the fundamentals of human genetics. Topics include patterns of inheritance; DNA structure and replication; gene function; mutation and its role in genetic diseases, cancer, and the immune system; matters of sex; evolution; genetic engineering and gene therapy; forensics and bioethics. This course is specifically designed for non-majors. (3-0) Y

**BIOL 1320 The Microbial World with Lab** (3 semester hours) Contributions of microorganisms to our world are explored. Topics include the involvement of microbes in many aspects of our daily lives, from helping to create the air we breathe to the production of foods (such as bread, cheese) and beverages (beer, wine). The laboratory component includes interactive experiments which complement the lecture topics. This course is specifically designed for non-majors. (2-2) Y

**BIOL 1V00 Topics in Biological Sciences** (1-6 semester hours) May be repeated as topics vary (6 hours maximum). ([1-6]-0) R

**BIOL 1V01 Topics in Biological Sciences with Lab** (1-6 semester hours) May be repeated as topics vary (6 hours maximum). ([1-5]-[1-5]) R

**BIOL 1V95 Individual Instruction in Biology** (1-6 semester hours) Individual study under a faculty member's direction. May be repeated for credit. Consent of instructor required. ([1-6]-0) S

**BIOL 2111 Introduction to Modern Biology Workshop I** (1 semester hour) Problem solving and discussion related to the subject matter in BIOL 2311. Corequisite: concurrent enrollment in BIOL 2311. (1-0) S

**BIOL 2112 Introduction to Modern Biology Workshop II** (1 semester hour) Problem solving and discussion related to the subject matter in BIOL 2312. Corequisite: concurrent enrollment in BIOL 2312. (1-0) S

**BIOL 2281 Introductory Biology Laboratory** (2 semester hours) Introductory lectures discuss the theoretical and historical aspects of the experiments carried out in the laboratory. Laboratory experiments introduce the student to bioinformatics, basic

cellular biology, and structure and function of proteins and nucleic acids. Computer exercises in bioinformatics involve multiple alignment analyses, BLAST and literature searches, and construction of phylogenetic trees. Laboratory experiments include microscopy, microbial techniques, yeast genetics, and the electrophoretic behavior of normal and mutant proteins. DNA related experiments include isolation (nuclear and mtDNA), amplification, restriction digests, electrophoresis, plasmid mapping, and transformations. Students present posters of their long-term investigations at the end of the semester. Prerequisite: BIOL 2311 (also see prerequisites for BIOL 2311). ([0-1]-[1-2]) S

**BIOL 2311 Introduction to Modern Biology I** (3 semester hours) Presentation of some of the fundamental concepts of modern biology, with an emphasis on the molecular and cellular basis of biological phenomena. Topics include the chemistry and metabolism of biological molecules, elementary classical and molecular genetics, and selected aspects of developmental biology, physiology (including hormone action), immunity, and neurophysiology. Prerequisites: General Chemistry I and II. Corequisite: concurrent enrollment in BIOL 2111. (3-0) S

**BIOL 2312 Introduction to Modern Biology II** (3 semester hours) Continuation of BIOL 2301. The overall emphasis will be on organ physiology and regulatory mechanisms involving individual organs and organ systems. Factors considered will be organ development and structure, evolutionary processes and biological diversity, and their effects on physiological mechanisms regulating the internal environment. Corequisite: concurrent enrollment in BIOL 2112. (3-0) S

**BIOL 2V00 Topics in Biological Sciences** (1-6 semester hours) May be repeated as topics vary (6 hours maximum). ([1-6]-0) R

**BIOL 2V01 Topics in Biological Sciences with Lab** (1-6 semester hours) May be repeated as topics vary (6 hours maximum). ([1-5]-[1-5]) R

**BIOL 2V95 Individual Instruction in Biology** (1-6 semester hours) Individual study under a faculty member's direction. May be repeated for credit. Consent of instructor required. ([1-6]-0) S

**BIOL 3101 Classic and Molecular Genetics Workshop** (1 semester hour) Problem solving and discussion related to the subject matter in BIOL 3301. Corequisite: Concurrent enrollment in BIOL 3301. (1-0) S

**BIOL 3102 Eukaryotic Molecular and Cell Biology Workshop** (1 semester hour) Problem solving and discussion related to the subject matter in BIOL 3302. Corequisite: Concurrent enrollment in BIOL 3302. (1-0) S

**BIOL 3161 Biochemistry Workshop I** (1 semester hour) Problem solving methodology in biochemistry; discussion of recent advances in areas related to the subject matter in BIOL/CHEM 3361. Corequisite: Concurrent enrollment in BIOL/CHEM 3361. (1-0) S

**BIOL 3162 Biochemistry Workshop II** (1 semester hour) Problem-solving methodology in biochemistry; discussion of recent advances in areas related to the subject matter in BIOL 3362. Corequisite: concurrent enrollment in BIOL/CHEM 3362. (1-0) Y

**BIOL 3301 Classical and Molecular Genetics** (3 semester hours) The phenomenon of heredity, its cytological and molecular basis; gene expression and transfer of genetic information, with major focus on bacterial and model eukaryotic systems; genetic recombination and chromosome mapping; tetrad analysis; mutations and mutagenesis; genetic interactions; application of recombinant DNA techniques to genetic analysis. Prerequisites: BIOL 2311 and Organic Chemistry I. Corequisite: concurrent enrollment in BIOL 3101. (3-0) S

**BIOL 3302 Eukaryotic Molecular and Cell Biology** (3 semester hour) Structural organization of eukaryotic cells; regulation of cellular activities; membranes and transport; cellular replication; examples of cell specialization such as blood (immunoglobulins) and muscle cells. Prerequisites: BIOL 3301 and BIOL/CHEM 3361. Corequisite: concurrent enrollment in BIOL 3102. (3-0) S

**BIOL 3305 Evolution** (3 semester hours) The developmental history of life on earth: evidence from the molecular and fossil records. Dynamics of genes in populations; speciation. Molecular mechanisms of evolution: genome organization, gene duplication, exon shuffling, transposition, horizontal transfer of genes. Prerequisite: BIOL 3301. (3-0) Y

**BIOL 3318 Forensic Biology** (3 semester hours) Role and methodology of biological testing in criminal investigation and forensic science. Analysis of the procedures and methodologies employed in the collection, preservation and screening of biological evidence, and protein and DNA testing. Population genetics employed during the statistical evaluation of data is covered. The course is structured to allow individuals with and without biological training to participate. The subject matter will be developed from the concept of "What is DNA?" through "What does a statistical estimate really mean?" (3-0) T

**BIOL 3321 Microbial Genetics Laboratory** (3 semester hours) Laboratory with introductory lecture that will focus on the genetic methods used for analysis of complex biological processes in bacteria. Includes the utilization of chemical and physical mutagens; transformation; transduction; conjugation; transposons; gene fusions; molecular cloning; polymerase chain reaction; southern, northern and western blot analyses; and post-genomic genetics. The course will also emphasize how these sophisticated techniques can be used to dissect pathogenic mechanisms and enhance environmental remediation. (1-2) T

**BIOL 3335 Microbial Physiology** (3 semester hours) Life processes of microbes: fermentations, N<sub>2</sub> assimilation, and other biochemical pathways specific to bacteria; cellular structure and differentiation, among others. Substitutes for BIOL/CHEM 3362 for Biology majors. Pre-requisites: BIOL 2311 and BIOL/CHEM 3361. (3-0) T

**BIOL 3336 Protein and Nucleic Acid Structure** (3 semester hours) Examines the different types of protein motifs, protein and DNA folding and stability, and the relation of structure to function. Circular dichroism, NMR, and crystallographic methods of structural determination are presented. Types of proteins considered include transcription factors, proteinases, membrane proteins, proteins in signal transduction, proteins of the immune system, and engineered proteins. Students also receive instruction in the viewing and manipulation of protein and DNA structures using various modeling programs and data from national web sites. Prerequisite: BIOL/CHEM 3361. (3-0) T

**BIOL 3350 Biological Basis of Health and Disease** (3 semester hours) Fundamentals of pathophysiology, focusing on the dynamic processes that cause disease, give rise to symptoms, and signal the body's attempt to overcome disease. The course covers diseases which may affect dramatically the life of an individual and society in the modern age. Topics include 1) mechanisms of infectious disease, immunity, and inflammation and 2) alterations in structure and function of the reproductive, circulatory, respiratory, and urinary systems. Special emphasis is given to preventative aspects for each disease based on non-drug, wellness-promoting approaches. This course is designed as a science elective open to all majors. (3-0) S

**BIOL 3351 Secrets of Cells** (3 semester hours) Explores the biology of cells, from bacterial to human. Topics include the basic structure of cells, structure and inheritance of DNA, evolution of eukaryotic cells, functioning of different types of cells and tissues, including those of the immune and nervous system, and the study of several genetic diseases, such as cancer and cardiovascular disease. This course is specifically designed as a science elective open to all majors. (3-0) T

**BIOL 3361 Biochemistry I** (3 semester hours) Structures and chemical properties of amino acids; protein purification and characterization; protein structure and thermodynamics of polypeptide chain folding; catalytic mechanisms, kinetics and regulation of enzymes; energetics of biochemical reactions; generation and storage of metabolic energy associated with carbohydrates; oxidative phosphorylation and electron transport mechanisms; photosynthesis. Prerequisites: Organic Chemistry I and II. Corequisite: concurrent enrollment in BIOL 3161. (Same as CHEM 3361) (3-0) S

**BIOL 3362 Biochemistry II** (3 semester hours) Breakdown and synthesis of lipids; membrane structure and function; nitrogen metabolism and fixation; nucleotide metabolism; structure and properties of nucleic acids; sequencing and genetic engineering; replication, transcription, and translation; chromosome structure; hormone action; biochemical basis of certain pathological processes. Prerequisite: BIOL/CHEM 3361 or its equivalent, or consent of instructor. Co-requisite: concurrent enrollment in BIOL 3162. (Same as CHEM 3362) (3-0) Y

**BIOL 3370 Exercise Physiology** (3 semester hours) Examines the operation and adaptation of human organ systems (cardiovascular, respiratory, renal, skeletal, and hormonal) during exercise. Clinical aspects of exercise, including the effects of training, nutrition, performance, and ergogenic aids, are also discussed. Prerequisite: BIOL 2312. Recommended: BIOL 3455 and 3456. (3-0) Y

**BIOL 3371 Biology of the Brain** (3 semester hours) Explores the structure and function of the brain. Includes discussions of the molecular and cell biology of neurons, organization of the nervous system and anatomy of the brain, basic electrophysiology of the neuron, function and action of neurotransmitters, operation of sensory and motor systems, and the molecular and cellular basis of neurodegenerative disorders. (3-0) T

**BIOL 3380 Biochemistry Laboratory** (3 semester hours) Current techniques in the purification and characterization of enzymes to demonstrate fundamental principles that are utilized in modern biochemistry and molecular biology research laboratories. Practical skills taught include micropipetting, basic solution preparation, conducting pH measurements, isolating crude enzyme extracts, and performing standard activity assays. Advanced experiments with Green Fluorescent Protein and Lactate Dehydrogenase include Ni<sup>++</sup>-NTA affinity chromatography, ion chromatography, protein detection using Bradford, Lowry, and spectrophotometric assays, SDS-PAGE separation, Western Blot analysis, and enzyme kinetics. Prerequisite: BIOL 2281. Pre- or co-requisite: BIOL/CHEM 3361. (1-2) S

**BIOL 3455 Human Anatomy and Physiology with Lab I** (4 semester hours) First of a two-course sequence providing a comprehensive study of the basic principles of human physiology in conjunction with a detailed, model-based human anatomy laboratory and computer-assisted physiology experiments. Examination of structure-function relationships includes a survey of human histology and skeletal, muscular, neural, and sensory organ systems. (3-3) S

**BIOL 3456 Human Anatomy and Physiology with Lab II** (4 semester hours) Continuation of the comprehensive study of the basic principles of human physiology in conjunction with a detailed, model-based human anatomy laboratory and computer-assisted physiology experiments. Endocrine, cardiovascular, respiratory, digestive, renal, and reproductive systems are examined. May be taken before BIOL 3455. (3-3) S

**BIOL 3V00 Topics in Biological Sciences** (1-6 semester hours) May be repeated as topics vary (9 hours maximum). ([1-6]-0) S

**BIOL 3V01 Topics in Biological Sciences with Lab** (1-6 semester hours) May be repeated as topics vary (6 hours maximum). ([1-5]-[1-5]) R

**BIOL 3V20 General Microbiology with Lab** (4-5 semester hours) Majors course in general microbiology. Lectures include

topics recommended by the Education Division of the American Society for Microbiology: microbial structure, diversity, growth and growth control, metabolism, genetics, and gene regulation. Among additional topics covered are virology, immunology and microbial diseases (plant and animal) including epidemiology, transmission, and host-microbe interactions. The laboratory focuses on developing laboratory skills in classical microbiology by the individual student. Exercises include various staining and pure culture techniques, biochemical and other in vitro testing, as well as isolation and identification of unknown organisms. (2-[2-3]) Y

**BIOL 3V40 Topics in Molecular and Cell Biology** (1-6 semester hours) May be repeated as topics vary (9 hours maximum). ([1-6]-[0-5]) S

**BIOL 3V90 Readings in Biology** (1-3 semester hours) Subject and scope to be determined on an individual basis. May be repeated for credit. Prerequisite: Consent of instructor. ([1-3]-0) S

**BIOL 3V91 Undergraduate Research in Biology** (1-3 semester hours) Subject and scope to be determined on an individual basis. May be repeated for credit. Prerequisite: Consent of instructor. ([1-3]-0) S

**BIOL 3V92 Undergraduate Research in Biochemistry** (1-3 semester hours) Subject and scope to be determined on an individual basis. May be repeated for credit. Prerequisite: Consent of instructor. (Same as CHEM 3V92) ([1-3]-0) S

**BIOL 3V94 Individual Instruction in Biology** (1-6 semester hours) Individual study under a faculty member's direction. May be repeated for credit. Consent of instructor required. ([1-6]-0) S

**BIOL 3V95 Readings in Molecular and Cell Biology** (1-3 semester hours) Subject and scope to be determined on an individual basis. May be repeated for credit. Prerequisite: Consent of instructor. ([1-3]-0) S

**BIOL 3V96 Undergraduate Research in Molecular and Cell Biology** (1-3 semester hours) Subject and scope to be determined on an individual basis. May be repeated for credit. Prerequisite: Consent of instructor. ([1-3]-0) S

**BIOL 4261 Biomolecular Modeling** (2 semester hours) Designed to provide some of the computational tools needed to study the large number of biomolecular structures now available in databanks. Molecular Simulations Insight II software will be used to visualize and manipulate protein and nucleic acid structures. Students will build examples of small 3-dimensional molecules from amino acid, nucleotide, and sugar residues. Procedures for energy minimization will be studied. Homologous protein structures will be compared, and mutated structures will be modeled. Other modeling approaches such as Monte Carlo and molecular or Brownian dynamics may be included. (1-1) T

**BIOL 4302 TA Apprenticeship** (3 semester hours) Development and practice of teaching skills in the classroom and laboratory in the biological sciences. May be repeated for credit. (3-0) S

**BIOL 4308 Developmental Biology** (3 semester hours) Molecular mechanisms controlling development in eukaryotes, with emphasis on the early stages of morphogenesis. (3-0) T

**BIOL 4316 Parasites and Symbionts** (3 semester hours) A survey of microorganisms that live in close association with other organisms. From bacteriophages to trypanosomes, this course will cover a wide range of plant and animal parasites and symbionts and their interactions at the molecular level. Prerequisites: BIOL 3301 and 3361. (3-0) T

**BIOL 4332 RNA Structure and Catalysis** (3 semester hours) A survey of the determinants of RNA secondary and tertiary structure and their role in RNA processing and catalysis. The mechanisms of posttranscriptional RNA processing including base modifications, mRNA capping and poly A addition, 5' and 3' end maturation, intron excision, and RNA editing will be covered as well as the mechanisms of RNA catalysis. The mechanisms of large ribozymes such as Group I and Group II introns and RNAase of P RNA will be contrasted to the mechanisms of small ribozymes such as hairpins and hammerheads. (3-0) T

**BIOL 4333 Replication, Recombination, and Repair** (3 semester hours) A fundamental unifying principle of molecular biology, genetics, molecular medicine, and evolution is DNA metabolism. This course will provide an extensive overview of the mechanisms that control the processes of DNA repair, replication, and recombination. The most recent publications in these fields will be discussed in order to provide the students with a strong working knowledge of these processes. The course structure will consist of a mixture of faculty lectures and student literature presentations. Student evaluations will be based upon examinations, class participation, and the written and oral presentations. (3-0) T

**BIOL 4336 Membrane Biology** (3 semester hours) A survey of the structural components of biomembranes and the forces that dictate membrane structure. General membrane functions, such as compartmentalization and membrane transport, are analyzed in view of the principles of membrane structure. The structure, function, and biogenesis of the membrane organelles in cells are covered in detail. Diseases whose pathology originates with biomembranes, such as cystic fibrosis and heart disease, are discussed as examples illustrating membrane structure and function. (3-0) T

**BIOL 4337 Seminal Papers in Biology** (3 semester hours) Theoretical and experimental papers in selected areas of biology will be discussed in a senior seminar format. The historical and biographical context of the papers and their authors will also be explored. The areas to be covered in any semester will vary with the instructor. Each student is expected to make an oral presentation and to prepare a written paper. Satisfies the Advanced Writing Requirement for Biology majors. Prerequisites: BIOL 3301, BIOL 3302, BIOL/CHEM 3361, and BIOL/CHEM 3362. (3-0) S

**BIOL 4338 Cell Signaling** (3 semester hours) How cells sense, interpret, and respond to various intra- and extracellular signals. Focus will be placed on signal transduction pathways controlling growth, development, and diseases. The course will consist of lectures and in-class discussion of research articles. (3-0) T

**BIOL 4340 Proteomics** (3 semester hours) Covers the modern techniques for analyzing the protein complement of cells, to understand cell development and physiology in healthy and diseased states. Topics include protein isolation techniques; IEF-SDS PAGE; protein structure determination by X-ray crystallography and NMR; techniques for identification of protein interactions; the use of mass spectrometry to quantitate, sequence, and identify post-translational modifications of proteins; the development of protein chips and how they can be used for protein identification and quantitation. Prerequisite: BIOL/CHEM 3361. (3-0) T

**BIOL 4341 Genomics** (3 semester hours) Fundamentals of how the human genome sequence was acquired and the impact of the human genome era on biomedical research, medical care and genetic testing. Also covered is the impact new tools such as DNA microarray, realtime PCR, mass spectrometry and bioinformatics will have on approaches to how scientific questions are investigated. The class will be a mixture of didactic lectures and paper presentations on examples of applied genomics. There will be two computer-based labs where students will perform online bioinformatics and data mining using the NCBI public database. Prerequisite: BIOL 3301 with a grade of C or better. (3-0) T

**BIOL 4342 Regulation of Gene Expression** (3 semester hours) How genetic information is regulated in prokaryotic and eukaryotic systems. Topics include mechanisms of transcription, promoter architecture, function and regulation of transcription factors, organization of chromosomes, pathways that control gene expression during growth and development, genome organization and whole-genome expression analysis, and related areas. The course emphasizes presentation and critical discussion of techniques and results from the recent scientific literature. (3-0) T

**BIOL 4345 Immunobiology** (3 semester hours) Interactions of antigens and antibodies. Fine structure of antibodies. Tissues and cells of the immune system. Response of B and T lymphocytes to antigens. Cellular interactions in humoral and cell-mediated immunity. Genetic basis of antibody diversity. Immunity and infectious diseases. Prerequisites: Organic Chemistry I and II. Suggested additional preparation: BIOL 3302. (3-0) T

**BIOL 4350 Medical Microbiology** (3 semester hours) This course will cover the methods used for identification of pathogenic organisms and the study of these organisms in relation to their disease process in humans. We will also cover at the molecular level important concepts such as microbial virulence, the control of bacterial growth, and host responses to infection. Prerequisite: BIOL 3301 or BIOL 3420. (3-0) T

**BIOL 4352 Medical Molecular and Cell Biology** (3 semester hours) Topics related to health and disease will be examined from a molecular and cellular perspective. Topics will vary but will be selected from new and developing applications of cell biology to cancer, heart disease, fat metabolism, mitochondrial disorders, aging, Alzheimer's, etc. Students are expected to participate actively in discussions and make an oral presentation. Prerequisite: BIOL 3302. (3-0) T

**BIOL 4353 Molecular Biology of HIV/AIDS** (3 semester hours) Topics include a discussion of the history and epidemiology of AIDS, the likely origins of human immunodeficiency virus (HIV), and the molecular and cell biology of HIV replication. The cell biological basis of the immunodeficiency induced by HIV infection is examined, as well as that of common accompanying pathologies such as Kaposi's sarcoma. The molecular basis of a variety of existing and potential anti-viral therapies is considered. Suggested prerequisite: BIOL 3302. (3-0) T

**BIOL 4354 Molecular Biology of Neurological and Hematological Diseases** (3 semester hours) Neurological and hematological diseases affect millions of Americans each year, often fatally. The course will bring students up to date on current knowledge of the molecular biology of neurological diseases such as Alzheimer's, Parkinson's, Amyotrophic lateral sclerosis and Huntington's disease. Hematological diseases such as hemolytic anemias including sickle cell disease and thalassemia, platelet disorders and clinical case studies will be covered, along with efforts towards gene therapy. The course comprises lectures, student presentations, and presentations by world experts in the field. (3-0) T

**BIOL 4365 Advanced Human Physiology** (3 semester hours) Function and integration of human organ systems. The role of these systems in the adaptation of humans to, and their interaction with, the environment. Maintenance and perturbation of homeostasis. Pathophysiological basis of certain diseases. Prerequisite: BIOL 3302 or consent of instructor. (3-0) T

**BIOL 4366 Molecular Biology of Cancer** (3 semester hours) Subject matter includes a discussion of representative examples of the principal categories of dominantly acting oncogenes. The role in oncogenesis of tumor suppressor genes ("recessive oncogenes") is also considered, as are anti-apoptotic oncogenes such as Bcl. The roles that the proteins encoded by these genes play in growth hormone signal transduction, gene regulation, cell cycle regulation, and programmed cell death will be examined. Students will also read and discuss the primary literature in this field. Prerequisite: BIOL 3302. (3-0) T

**BIOL 4370 Developmental Neurobiology** (3 semester hours) Examines some of the remarkable progress made in recent years towards understanding how the nervous system develops. Among topics covered are signals regulating formation of neural tissue, patterning of the brain, differentiation and migration of neurons, formation of neural connections, neuronal survival, and

elimination of superfluous cells. Course is designed to be interactive and will include lectures, student presentations, and discussion of important discoveries in the area. (3-0) T

**BIOL 4375 Bioinformatics** (3 semester hours) A practical approach to quantitative and statistical analysis of biological sequence and structural information. Classroom lectures are accompanied by practical demonstrations and computer lab exercises. Topics include genomic information content, data searches and sequence alignment, mutations and distance-based phylogenetic analysis, genomics and gene recognition, polymorphisms and forensic applications, nucleic-acid and protein array analysis, and structure prediction of biological macromolecules. Pre-requisites: BIOL 3301, BIOL 3361 and two semesters of calculus. Suggested additional preparation: one semester introductory statistics. (3-0) T

**BIOL 4380 Cell and Molecular Biology Laboratory** (3 semester hours) Current techniques that are utilized in a modern Molecular Biology research laboratory. Practical skills taught include monitoring bacterial growth, phenotype testing, plasmid isolation, restriction digest analysis, DNA cloning, and DNA fingerprinting using the polymerase chain reaction (PCR). Advanced techniques include fundamental microscopy, DNA transfection and general characterization of animal cell cultures, sub-cellular fractionation using differential centrifugation, basic immunological techniques, and chemical mutagen testing. Prerequisite: BIOL 3380. Pre- or co-requisite: BIOL 3302. (1-2) S

**BIOL 4382 Advanced Molecular Biology Laboratory** (3 semester hours) Advanced techniques for the study of biological systems: spectroscopy, ultracentrifugation, radioactive labeling, and construction and screening of cDNA expression libraries. (1-2) Y

**BIOL 4390 Senior Research and Advanced Writing** (3 semester hours) For students conducting independent research and scientific writing in Biology or Molecular and Cell Biology. Subject and scope to be determined on an individual basis. Satisfies the Advanced Writing Requirement for Biology and Molecular Biology majors. Prerequisite: Consent of instructor. (3-0) S

**BIOL 4399 Senior Honors Research and Thesis** (3 semester hours) For students conducting independent research for honors in Biology or Molecular and Cell Biology. Besides the university specifications the student should contact the undergraduate advisor in biology for program requirements. Satisfies the Advanced Writing Requirement for Biology and Molecular Biology majors. Prerequisite: Consent of instructor. (3-0) S

**BIOL 4461 Biophysical Chemistry** (4 semester hours) For students interested in the interface between biochemistry and structural biology. Provides an advanced treatment of the physical principles underlying modern molecular biology techniques. Topics include classical and statistical thermodynamics, biochemical kinetics, transport processes (e.g., diffusion, sedimentation, viscosity), chemical bonding, and spectroscopy. Prerequisites: MATH 2417 and 2419; PHYS 2325 and 2326, PHYS 3341 and 3342, or equivalent; BIOL/CHEM 3361. (Same as CHEM 4461) (4-0) Y

**BIOL 4V00 Special Topics in Biology** (1-6 semester hours) May be repeated as topics vary (9 hours maximum). ([1-6]-0) S

**BIOL 4V01 Topics in Biological Sciences with Lab** (1-6 semester hours) May be repeated as topics vary (6 hours maximum). ([1-5]-[1-5]) R

**BIOL 4V04 Biology Seminar** (1-6 semester hours) May be repeated as seminar topics vary (6 hours maximum). ([1-6]-0) R

**BIOL 4V40 Special Topics in Molecular and Cell Biology** (1-6 semester hours) May be repeated as topics vary (9 hours maximum). ([1-6]-[0-5]) S

**BIOL 4V51 Techniques in Medical Microbiology** (1-3 semester hours) This course will teach students to become proficient in laboratory techniques used in both basic and medical microbiology. The initial portion of the course will cover basic techniques such as safe handling of microorganisms, media preparation, pure culture techniques, and staining of microorganisms. The majority of the course will involve the theory and use of physical and biochemical methods to examine microbial physiology, and the use of these methods in organism identification. Microorganisms to be studied include bacterial (and their viruses), fungi, and protozoa. Students will demonstrate proficiency by identifying unknown organisms in pure and mixed cultures, and by the ability to distinguish potential pathogens from resident and normal flora in various clinical specimens. Prerequisite: BIOL 3301 or BIOL 3V20. (0-[2-6]) T

**BIOL 4V95 Individual Instruction in Biology** (1-6 semester hours) Individual study under a faculty member's direction. May be repeated for credit. Consent of instructor required. ([1-6]-0) S

## Business Administration Course Descriptions

**BA 2301 (BUSI 2301) Business and Public Law** (3 semester hours) Commercial and administrative law, focusing on the law of contracts, agency, bailments, property, and laws of partnerships and corporations. (3-0) Y

**BA 3310 Entrepreneurial Finance for Non-Business Majors** (3 semester hours) This course explores the process of raising capital and managing the capital in entrepreneurial new ventures. The course will focus on the issues of forecasting cash flows, cash flow management, capital budgeting, valuation, capital structure and the various financing methods and mechanisms available to

entrepreneurs (bootstrapping, angel investors, venture capitalists, IPOs seeking to raise capital for a new venture). Prerequisite: AIM 2301 and at least sophomore standing or consent of instructor. This course cannot be used to fulfill degree requirements by students in the School of Management. (3-0) Y

**BA 3341 Business Finance** (3 semester hours) An introduction to financial decision making and the valuation of business enterprises. The course focuses on the use of discounted cash flow techniques in the selection of capital investment projects. Additional topics include financial planning, exchange rates, risk and return trade-offs in financial markets, financing decisions and dividend policy. Co-requisite: STAT 3360. Prerequisites: AIM 2301, AIM 2302, MATH 1326, and MATH 2333. (3-0) Y

**BA 3345 Introduction to Leading and Managing** (3 semester hours) This course will deal with theories and techniques of leadership and management. The course will start with a general overview of major theories on leadership and management. The main focus of this course is on the relationship between individual action and group and organizational performance. A major highlight of the course will be discussion of how the Motives-Theory-Practice triad is shaping the business world. Prerequisite: BA 3361 and MATH 1326. (3-0) Y

**BA 3351 Introduction to Management Information Systems** (3 semester hours) Introduction to basic management information systems and computer concepts. Emphasis on the various facets of the computer, information processing including computer applications, processing data into information, computer hardware, file organization and databases, communications, and information system development. Use of word processing, spreadsheet, and database application software to develop PC skills. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. (3-0) S

**BA 3352 Production Management** (3 semester hours) Applications of operations research methods to production problems. Production processes in the business firm with emphasis on forecasting, production planning, and production control techniques. Prerequisites: MATH 1326, MATH 2333, and STAT 3360. (3-0) Y

**BA 3361 Organizational Behavior** (3 semester hours) An integrated social science approach to understanding organizational issues. This course explores theories and concepts derived from diverse fields including psychology, sociology, economics and anthropology. The topics include: learning and motivation; attitudes, values and ethics; perception; communication; leadership; group dynamics; decision making; power and politics; conflict and negotiation; and organizational structure. (3-0) S

**BA 3365 Principles of Marketing** (3 semester hours) Marketing principles including marketing planning, the decision making environment, market measurement, product decisions, promotion, pricing, and distribution. Special emphasis placed upon the determination and evaluation of market segments. (3-0) S

**BA 3372 Export Market Development** (3 semester hours) Survey of factors affecting export markets. Examination of free trade versus strategic trade; trade protectionism; role and influence of the WTO; impact of regional trade agreements (e.g. NAFTA, EU); supply chain management, logistics and distribution challenges; and trade finance. BA 3372 and BA 3374 cannot both be used to satisfy degree requirements. (3-0) Y

**BA 3374 International Marketing** (3 semester hours) Analysis of environment of international marketing. Survey of techniques of international marketing management. BA 3372 and BA 3374 cannot both be used to satisfy degree requirements. Prerequisites: BA 3365 and MATH 1326. (3-0) Y

**BA 4305 Strategic Management** (3 semester hours) Capstone-level course requiring integration of all fields of business. Students will draw on their broadened awareness of various environmental influences (social and political) to solve business problems. Management alternatives will be examined with an ethical perspective relating policy trends to the strategic planning mode. Co-requisite: BA 4371, Prerequisites: BA 3341, BA 3351, BA 3352, BA 3361 and BA 3365. (3-0) S

**BA 4307 Corporations, Politics and Society** (3 semester hours) Overview of the corporation as a political participant in the American political system. Topics include corporate political action committees, business lobbying, grassroots programs, Federal Election Campaign Act, and labor involvement. (3-0) Y

**BA 4308 Entrepreneurship** (3 semester hours) This course explores all aspects of entrepreneurship and the process of creating new ventures. Topics will include the role of entrepreneurship in the economy, opportunity recognition and evaluation, bootstrapping, entrepreneurial strategies, venture finance, writing a business plan and managing the growth process. Student teams will prepare and present business plans during the semester. Prerequisite: AIM 2300 or AIM 2301. (3-0) Y

**BA 4309 Regulation of Business** (3 semester hours) Examines the broad subject of government regulation of business, and focuses on the source of the demand for government regulation, its translation into legislation, its administration, and its impact. Emphasis is placed on high impact regulatory programs, such as antitrust, health, safety, and environmental laws. Prerequisites: ECO 2302 and MATH 1325. (3-0) Y

**BA 4310 Entrepreneurial Finance** (3 semester hours) This course explores the process of raising capital and managing the capital in entrepreneurial new ventures. The course will focus on the issues of forecasting cash flows, cash flow management, capital budgeting, valuation, capital structure and the various financing methods and mechanisms available to entrepreneurs (bootstrapping, angel investors, venture capitalists, IPOs seeking to raise capital for a new venture). Prerequisite: AIM 2301 and BA

3341. (3-0) Y

**BA 4311 Entrepreneurial Strategy** (3 semester hours) This course is designed to show students how to identify potential business opportunities, determine what constitutes a good business model, and to strategically implement a business proposal. Topics of focus include an overview of the entrepreneurial process, determinants of venture success in high tech and other business environments, and strategies for industry entry and venture growth. Prerequisite: AIM 2300 or AIM 2301 and at least sophomore standing. (3-0) Y

**BA 4318 Programming in Visual Basic** (3 semester hours) Business application development using Visual Basic. Topics include fundamental Basic programming, graphical user interface programming, ActiveX and data controls, and integration with other applications such as Access. Prerequisites: BA 3351, MATH 1326, and MATH 2333. (3-0) Y

**BA 4319 Programming in C++** (3 semester hours) This course will introduce students to concepts in object-oriented programming. Students will develop application programs using C++. Application development using Java will also be introduced. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Prerequisites: BA 4318, MATH 1326, and MATH 2333. (3-0) S

**BA 4320 Desktop Computing with Applications** (3 semester hours) Use of microcomputer applications for the development of effective business solutions. The primary thrust of this course is to provide students with a strong understanding of Web design principles in the planning, graphics development, publishing, maintaining, and publicizing of a Web site. Business Modeling and applied Business Process analysis will also be covered. Emphasis is placed on using productivity applications to increase productivity in a business environment. Software applications used by students will include a spreadsheet, HTML, presentation/web graphics, and word processing. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Prerequisite: BA 3351 and MATH 1325. (3-0) S

**BA 4321 Database Fundamentals** (3 semester hours) Database theories, conceptual data modeling techniques, database management, and database development practice with emphasis on relational database systems. Topics include entity-relationship data model, data planning, data administration, SQL, relational theories, distributed databases, database development project, and other database management issues, such as concurrency control, data security, and integrity. A database management system software package is used to implement working database systems. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. AIM 3321 and BA 4321 cannot both be used to satisfy degree requirements. Prerequisites: AIM 2301, AIM 2302, BA 3351 and MATH 1325. (3-0) Y

**BA 4322 Systems Analysis and Design** (3 semester hours) An overview of systems development methodologies will be presented. In addition to concepts in systems analysis and design, the students will be exposed to concepts in project management, and information gathering techniques. Projects focusing on the use of CASE tools will also be an integral part of the course. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Prerequisites: BA 4321, MATH 1326, and MATH 2333. (3-0) Y

**BA 4323 Business Data Communications** (3 semester hours) IS managers need to have an in-depth understanding of a gamut of issues relating to data communication and distributed processing, including technical, economic, and managerial details. The course will focus on currently observed industry trends, including the digital convergence of voice, video and data, enterprise-wide connectivity, distributed computing environments, and the massive demand for Internet-based open systems. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Prerequisites: BA 3351, MATH 1326 and MATH 2333. (3-0) Y

**BA 4324 Information Systems Management** (3 semester hours) Management of the information technology within an organization is a critical activity. Students will be introduced to issues relating to IT investment, management of IT, and using IT for competitive advantage. Prerequisites: BA 3351, MATH 1326 and MATH 2333. (3-0) Y

**BA 4326 Systems Development Project** (3 semester hours) Students will be required to perform analysis, design, and implementation of a real-life project within an organization. Students will be organized into teams and will be required to use the concepts taught in the earlier classes on systems development. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Prerequisites: BA 4318, BA 4322 and BA 4323. (3-0) Y

**BA 4328 Decision Support and Expert Systems** (3 semester hours) The course will focus on the design and development of Decision Support and Expert Systems. The development of Intelligent Systems and the role they play in the organization will also be addressed. Prerequisites: BA 4321, MATH 1326, and MATH 2333. (3-0) T

**BA 4329 Electronic Commerce** (3 semester hours) As an increasing number of business transactions take place using an electronic medium, there is a need for business managers to understand how these new technologies transform the way companies and individuals are doing business. This course offers a general background on electronic commerce and its impact on business. Topics include the evolution of information systems, economics of electronic transactions, Internet marketing, and issues related to virtual organizations. Prerequisites: BA 3351, MATH 1326, and MATH 2333. (3-0) T

**BA 4330 Information Technology Security and Audit** (3 semester hours) This course provides an overview of common security practices and introduces the concepts related to applied security technologies. Topics include cryptography (encryption and decryption, digital signatures and certificates), risk management (threat analysis, cost benefit analysis), security audit (intrusion detection and security assurance), disaster recovery (contingency planning, incident handling, security training and awareness), network security technologies (firewalls, VPN), security policy (types of policy, implementation considerations, workplace privacy), and E-Commerce security issues (security requirements, hacker techniques, online privacy). Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Prerequisite: BA 4323. (3-0) Y

**BA 4331 Programming in JAVA** (3 semester hours) Business application development using JAVA. Topics include the fundamentals of Java programming, applets programming for web-based systems, and object-oriented programming concepts. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Prerequisites: BA 4318, MATH 1326 and MATH 2333. (3-0) Y

**BA 4332 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 and group 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: BA 3361 or consent of instructor and MATH 1325. (3-0)

**BA 4335 Marketing Research** (3 semester hours) This course provides an overview of the entire marketing research process which includes problem definition, research design, use of secondary data, collecting primary data, designing surveys, sampling, fieldwork, basic data analysis, and reporting of findings. Emphasis will be on using market research to make better marketing decisions. Students are expected to know basic marketing and have an aptitude for quantitative analysis. Prerequisite: BA 3365 and MATH 1326. (3-0) Y

**BA 4336 Marketing Strategy** (3 semester hours) This course provides an overview of how strategy is developed in marketing. This course emphasizes the integration of knowledge from previous marketing courses and related disciplines. Topics include planning and development of policies, implementation and evaluation of the entire marketing strategy. Case analyses and/or simulation games are employed. Prerequisites: BA 3365, MATH 1326 and MATH 2333. (3-0) Y

**BA 4337 Product and Brand Management** (3 semester hours) This course discusses concepts and cases of planning, building, measuring and management of brands and products. It covers topics such as new product development, branding, brand equity, product and service quality, brand positioning, perceptual mapping, long term brand management, and the product life cycle. Prerequisites: BA 3365, MATH 1326 and MATH 2333. (3-0) Y

**BA 4338 Sales and Distribution Management** (3 semester hours) This course covers professional selling practices and sales management (including functions, evaluation, and compensation of sales force), as well as wholesaling and retailing (including positioning, merchandising, inventory, pricing, buying, advertising, promotion, services and customer satisfaction), and channel management (design, functions, logistics, supply chain and channel relationships). Prerequisites: BA 3365, MATH 1326 and MATH 2333. (3-0) Y

**BA 4339 Advertising** (3 semester hours) Examine the principles and practice of Advertising, PR and Promotions. Topics include: the role of the ad agency; the advertising plan based on marketing, research, and consumer behavior; Integrated Marketing Communications; communication goals and measurement, advertising, budgeting, advertising buying, media planning, media scheduling, and art, copy, creativity and production of ads in different media. We also discuss social, ethical and legal issues in advertising. Prerequisites: BA 3365, MATH 1326 and MATH 2333. (3-0) Y

**BA 4345 Money and Capital Markets** (3 semester hours) Examines the operation of financial markets and financial intermediaries, along with their role in providing financing to the corporate and public sectors of the economy. The objective of this course is to provide detailed knowledge of a variety of financial instruments and the markets in which they trade. Topics covered include the banking system, the markets for short-term securities, financial derivatives, and the market for foreign exchange. Prerequisites: BA 3341 and BA 3351. (3-0) S

**BA 4346 Investment Management** (3 semester hours) Examines a wide range of issues concerning the management risk and the measurement of investment performance. The objective of the course is to provide an understanding of the role of modern financial theory in portfolio management and to present a framework for addressing a wide range of issues in the management of financial assets. The topics covered include valuation, the measurement of risk and portfolio performance, the management of portfolios of fixed income securities, and derivative securities. Prerequisites: BA 3341 and BA 3351. (3-0) S

**BA 4347 Applied Corporate Finance** (3 semester hours) Integrates a variety of advanced topics in corporate financial decision making in examining the development of the financial strategy of the firm. Emphasis will be placed on the valuation of the firm and the impact of financial markets on corporate investment and financing decisions. Prerequisites: BA 3341 and BA 3351. (3-0) Y

**BA 4348 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 the pricing of futures contracts, swaps, and options, as well as the use of derivative instruments in hedging, portfolio insurance, and exotic options. Prerequisite: BA 4346. (3-0) Y

**BA 4349 Management of Financial Institutions** (3 semester hours) Study of the financial management of commercial banks and other financial intermediaries. Emphasis will be given to the analysis of financial performance, lending decisions, asset-liability management, and the management of institutional capital requirements. Additionally, strategic considerations such as evolving information technology, the changing regulatory environment and the impact of global competition in financial services will be examined. Prerequisite: BA 4345. (3-0) Y

**BA 4350 Individual Financial Management and Planning** (3 semester hours) Application of the principles of financial management to lifetime consumption and retirement planning. Emphasizes 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. Prerequisite: BA 4346. (3-0) Y

**BA 4355 E-Business Technologies and Web Applications** (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 and E-business applications. 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. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Prerequisites: BA 4318 and BA 4321. (3-0) Y

**BA 4356 Enterprise Resource Planning** (3 semester hours) The objective of this course is to introduce the concept of Enterprise Resource Planning and to understand the issues in the selection and implementation of ERP software. There will also be a discussion on the architectural issues involved in executing a client-server application. Students will get hands-on experience with available ERP software and learn about implementation issues that arise in real organizations. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Prerequisites: BA 3351, MATH 1326, and MATH 2333. (3-0) Y

**BA 4361 International Finance Management** (3 semester hours) Study of world financial markets and institutions, foreign exchange exposure and management, foreign direct investment, and issues involved in the financial management of multinational firms. Prerequisite: BA 3341. (3-0) Y

**BA 4366 Introduction to Supply Chain Management** (3 semester hours) This course introduces the key players and challenges in a supply chain (SC). Type of facilities, inventory and transportation options, and the role of information in running SCs are discussed. The objectives of different players in SCs are laid out and contrasted with each other. This motivates the discussion of integration/coordination of the players, a central theme in SC management. Operations and tradeoffs in service supply chains (i.e., air/sea lines, health care, hotels, and restaurants) are examined. Prerequisite: BA 3352. (3-0) Y

**BA 4367 Introduction to Project Management** (3 semester hours) Project management is concerned with the management and control of a group of interrelated tasks required to be completed in an efficient and timely manner for the successful accomplishment of the objectives of an overall project. Since each project is usually unique in terms of task structure, risk characteristics and objectives, the management of projects is significantly different from the management of repetitive processes designed to produce a series of similar products or services. Large-scale projects are characterized by a significant commitment of organizational and economic resources coupled with a high degree of uncertainty. The objective of this course is to enhance the ability of participants to respond to the challenges of large-scale projects so that they can be more effective as project managers. We study in detail up-to-date concepts, models, and techniques useful for the evaluation. Prerequisite: BA 3352. (3-0) Y

**BA 4371 International Business** (3 semester hours) Examination of worldwide patterns of trade and investment. Overview of financial, managerial, and marketing problems confronted by multinational firms. Prerequisites: BA 3365, MATH 1326 and MATH 2333. Corequisite: BA 3341. (3-0) S

**BA 4372 International Organizational Behavior and Human Resource Management** (3 semester hours) The course examines cultural complexity in the uncontrollable business environments in foreign markets. The course covers management of problems derived from cultural differences, the lack of adaptability of expatriates and their families in host countries, and recruitment, training and motivation for international assignments. Prerequisites: BA 3361, MATH 1326 and MATH 2333. (3-0) Y

**BA 4373 Global Strategy** (3 semester hours) Study of the challenges that multinational firms face, including managing across national borders, managing international strategic alliances, managing headquarters-subsidiary relationships, and developing global capabilities. Prerequisites: BA 4371, MATH 1326 and MATH 2333. (3-0) Y

**BA 4399 Senior Honors in Business Administration** (3 semester hours) For students conducting independent research for honors theses or projects. (3-0) S

**BA 4V81- 4V84 Business Administration Individual Study** (1-3 semester hours) BA 4V81 Decision Sciences, BA 4V82

Finance, BA 4V83 Marketing, and BA 4V84 Organizational Strategy and International Management. ([1-3] -0) S

**BA 4V91 Seminar Series in Decision Sciences** (1-3 semester hours) Discussion of selected topics and theories in the decision sciences. May be repeated for credit (9 hours maximum). ([1-3] -0) S

**BA 4V92 Seminar Series in Finance** (1-3 semester hours) Discussion of selected topics and theories in finance. May be repeated for credit (9 hours maximum). ([1-3]-0) S

**BA 4V93 Seminar Series in Marketing** (1-3 semester hours) Discussion of selected topics and theories in marketing. May be repeated for credit (9 hours maximum). ([1-3] -0) S

**BA 4V94 Seminar Series in Organizational Behavior, Strategy and International Management** (3 semester hours) Discussion of selected topics and theories in organizational behavior, strategy and international management. May be repeated for credit (9 hours maximum) ([1-3]-0) S

**BA 4V95 Seminar Series in Information Systems** (1-3 semester hours) Discussion of selected topics and theories in information systems. May be repeated for credit (9 hours maximum). Prerequisite: BA 4318. ([1-3] -0) S

**BA 4V96 Seminar Series in Operations Management** (3 semester hours) Discussion of selected topics and theories in operations management. May be repeated for credit (9 hours maximum) ([1-3]-0) S

## Special Topics

### Business Administration

**BA 4V00 Special Topics** (1-3 semester hours) Course is designed to further develop 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 (Goals) at the beginning of the semester. At semester end the student must prepare an oral presentation, reflecting on the knowledge gained in the work experience. Student performance is evaluated by the work supervisor. (9 hours maximum) ([1-3]-0) S

## Chemistry Course Descriptions

**CHEM 1111 General Chemistry Laboratory I** (1 semester hour) Introduction to the chemistry laboratory. Experiments are designed to demonstrate concepts covered in CHEM 1311; including properties and reactions of inorganic substances and elementary qualitative and quantitative analysis. Corequisite: CHEM 1311. (0-3) S

**CHEM 1112 General Chemistry Laboratory II** (1 semester hour) A continuation of CHEM 1111 demonstrating the concepts covered in CHEM 1312, including acid-base chemistry, reaction kinetics, electrochemistry, polymers, and organic synthesis. Prerequisite: CHEM 1111 or 1115. Corequisite: CHEM 1312. (0-3) S

**CHEM 1115 Honors Freshman Chemistry Laboratory I** (1 semester hours) This course and its follow-on (CHEM 1116) reinforce the concepts of Freshman Chemistry via experiments. Students are offered the opportunity to acquire basic laboratory skills and an appreciation for the presence of chemistry in daily living through a combination of laboratory and computer experiments and applied research modules. Corequisite: CHEM 1315. (0-6) Y

**CHEM 1116 Honors Freshman Chemistry Laboratory II** (1 semester hours) A continuation of CHEM 1115. This course reinforces concepts presented in CHEM 1316. Prerequisite: CHEM 1115. Corequisite: CHEM 1316. (0-6) Y

**CHEM 1311 General Chemistry I** (3 semester hours) Introduction to elementary concepts of chemistry theory. The course emphasizes chemical reactions, the mole concept and its applications, and molecular structure and bonding. Corequisite: CHEM 1111. (3-0) S

**CHEM 1312 General Chemistry II** (3 semester hours) A continuation of CHEM 1311 treating metals; solids, liquids, and intermolecular forces; chemical equilibrium; electrochemistry; organic chemistry; rates of reactions; and environmental, polymer, nuclear, and biochemistry. Prerequisite: CHEM 1311 or 1315. Corequisite: CHEM 1112. (3-0) S

**CHEM 1315 Honors Freshman Chemistry I** (3 semester hours) An advanced course dealing with the principles of structure and bonding and the physical laws that govern the interactions of molecules. The course is intended for students who have a solid background in chemistry at the secondary level and the desire to explore general chemistry concepts more deeply. Corequisite: CHEM 1115. (3-0) Y

**CHEM 1316 Honors Freshman Chemistry II** (3 semester hours) A continuation of the presentation of concepts begun in CHEM

1315. This course will present advanced topics including those in organic, biochemistry, and environmental chemistry. Prerequisite: CHEM 1315 or consent of instructor. Corequisite: CHEM 1116. (3-0) Y

**CHEM 2123 Introductory Organic Chemistry Laboratory I** (1 semester hour) The experimental skills associated with organic functional group reactions. Corequisite: CHEM 2323. (may be taken concurrently). (0-4) S

**CHEM 2125 Introductory Organic Chemistry Laboratory II** (1 semester hours) Continuation of Organic Chemistry Laboratory I. Prerequisites: CHEM 2323 and 2123. Corequisite: CHEM 2325. (0-4) S

**CHEM 2323 Introductory Organic Chemistry I** (3 semester hours) The covalent bond. Organic chemistry: aliphatic and aromatic compounds; covalent inorganic and organometallic compounds; a survey of the organic functional groups and their typical reactions; stereochemistry. The first course in organic chemistry. Satisfies the basic organic chemistry lecture requirements for pre-health profession students. Prerequisite: CHEM 1312 or 1316. Corequisite: CHEM 2123. (3-0) S

**CHEM 2325 Introductory Organic Chemistry II** (3 semester hours) Continuation of CHEM 2323. Methods of structure determination. Synthesis, degradation, spectroscopy. Naturally occurring compounds: carbohydrates, amino acids and proteins, lipids, alkaloids. Prerequisite: CHEM 2323. Corequisite: CHEM 2125. (3-0) S

**CHEM 2401 Introductory Quantitative Methods in Chemistry** (4 semester hours) A study of the theory, applications, and calculations involved in the methods of analysis. Theory and practice of volumetric, gravimetric, and spectrophotometric methods. Prerequisites: CHEM 1312 and 1112. (2-6) Y

**CHEM 2V01 Topics in Chemistry** (1-3 semester hours) Subject matter will vary from semester to semester. Prerequisite: Consent of instructor ([1-3] -0) R

**CHEM 2V95 Individual Instruction in Chemistry** (1-3 semester hours) Individual study under a faculty member's direction. May be repeated for credit. Consent of instructor required. ([1-3] -0) R

**CHEM 3321 Physical Chemistry I** (3 semester hours) Fundamental properties of macroscopic biophysical chemical systems are introduced and described in quantitative terms. A core of topics in thermodynamics, molecular motion, kinetics, molecular distributions and statistical thermodynamics is supplemented with topics germane to students taking physical chemistry with biophysical applications. Prerequisites: CHEM 2325 and MATH 2451, or consent of instructor (CHEM 3361 is recommended). (3-0) Y

**CHEM 3322 Physical Chemistry II** (3 semester hours) Fundamental microscopic properties of matter and radiation are discussed. A core of topics including quantum chemistry, atomic and molecular structure and spectroscopy, non-bonded interactions, and computational chemistry is supplemented with topics germane to students taking physical chemistry with biophysical applications. Prerequisites: CHEM 3321 and MATH 2451, or consent of instructor. (3-0) Y

**CHEM 3341 Inorganic Chemistry I** (3 semester hours) Survey of inorganic chemistry with emphasis on the modern concepts and theories of inorganic chemistry including electronic and geometric structure of inorganic compounds. Topics address contemporary physical and descriptive inorganic chemistry. (3-0) Y

**CHEM 3361 Biochemistry I** (3 semester hours) Structures and chemical properties of amino acids; protein purification and characterization; protein structure and thermodynamics of polypeptide chain folding; catalytic mechanisms, kinetics, and regulation of enzymes; energetics of biochemical reactions; carbohydrate structure and metabolism; the citric acid cycle, electron transport mechanisms and oxidative phosphorylation. Prerequisites: CHEM 2323 and 2325, or equivalent. (Same as BIOL 3361) (3-0) Y

**CHEM 3362 Biochemistry II** (3 semester hours) Membrane structure and function; glycogen metabolism, gluconeogenesis, and pentose pathway; lipid structure and metabolism; amino acid metabolism; photosynthesis; nucleic acid structure and metabolism; sequencing and genetic engineering; replication, transcription, and translation; chromosome structure. Prerequisite: BIOL/CHEM 3361, or consent of instructor. (Same as BIOL 3362) (3-0) Y

**CHEM 3471 Advanced Chemical Synthesis Laboratory** (4 semester hours) Careful handling practices and controlled variation of reaction parameters to obtain high yield syntheses. Use of standard separation techniques and spectrophotometric methods to identify reaction products and assess their purity. Prerequisite: CHEM 2125 and CHEM 3472 or consent of instructor. (1-7) Y

**CHEM 3472 Instrumental Analysis** (4 semester hours) Basic processes, instrumentation and applications of ultraviolet, visible, fluorescence, atomic and mass spectroscopy, electrochemistry, surface and microanalysis, and separations. Emphasis will be placed upon acquisition, treatment, and interpretation of data and report writing. Prerequisite: CHEM 2401. (2-6) Y

**CHEM 3V92 Undergraduate Research in Biochemistry** (2-6 semester hours) Students will pursue an independent project under the supervision of a member of the Chemistry, Biology or U. T. Southwestern faculty. Prerequisites: Consent of supervising faculty and filing a research plan approved by supervising faculty and the Undergraduate Advisor in Biochemistry prior to the 12th class day. This course satisfies the university advanced writing requirement. (Same as BIOL 3V92) ([2-6] -0) S

**CHEM 4335 Polymer Chemistry** (3 semester hours) Macromolecules. Synthesis, structure, and properties of polymers.

Polymer-polymer and polymer-solvent interactions. Applications in industry and biochemistry. Prerequisite: CHEM 3321 or consent of instructor (CHEM 3322 recommended). (3-0) Y

**CHEM 4355 Computational Modeling** (3 semester hours) This course will introduce students to computational modeling approaches commonly used to tackle chemical and biophysical problems. The students will learn, through lectures and projects, that the appropriate modeling tool depends on the time and length scales of the problem under study. Prerequisites: CHEM 3321 and MATH 2451, or consent of instructor. (3-0) Y

**CHEM 4381 Environmental Chemistry** (3 semester hours) This course encompasses the study of the sources, reactions, transport, effects, and fates of chemical species in water, soil, and air environments and the effects of technology thereon. Prerequisite: CHEM 2325 or consent of instructor. (3-0) T

**CHEM 4461 Biophysical Chemistry** (4 semester hours) For students interested in the interface between biochemistry and structural biology. Provides an advanced treatment of the physical principles underlying modern molecular biology techniques. Topics include classical and statistical thermodynamics, biochemical kinetics, transport processes (e.g. diffusion, sedimentation, viscosity), chemical bonding, and spectroscopy. Prerequisites: MATH 2417 and 2419; PHYS 2325 and 2326 or equivalent; BIOL/CHEM 3361, CHEM 3312, or consent of instructor. (Same as BIOL 4461) (4-0) Y

**CHEM 4473 Physical Measurements Laboratory** (4 semester hours) Modules may include topics in physical chemistry and biophysics such as bio-nanotechnology, calorimetry, centrifugation, computational methods, computer-instrument interfaces, electrochemistry, electronics, kinetics, literature skills, property of matter, spectroscopy, and statistical methods. Prerequisites: CHEM 3472 and CHEM 3321, or consent of instructor. (1-7) Y

**CHEM 4V01 Topics in Chemistry** (1-9 semester hours) Subject matter will vary from semester to semester. Examples would include, as required, bioorganic chemistry, industrial processes, applied spectroscopy, drugs and people, practical analysis, or other topics that span several subdisciplines. Prerequisites: CHEM 2325 and 3322, or consent of instructor. ([1-9] -0) R

**CHEM 4V91 Research in Chemistry** (2-6 semester hours) Students will pursue an independent project under the supervision of a member of the Chemistry faculty. Prerequisites: Consent of supervising faculty and filing a research plan approved by supervising faculty and the Undergraduate Committee in Chemistry prior to the 12th class day. This course satisfies the university advanced writing requirement. ([2-6] -0) S

## Child Learning and Development Course Descriptions

CLDP 3194 Research and Evaluation Laboratory (1 semester hour) Laboratory that accompanies CLDP 3394. Student gains hands-on experience in research design, computer data analysis, and report writing. Must co-enroll in CLDP 3394. (0-3) S

CLDP 3303 Normal Language Development (3 semester hours) The development of language and communication, including phonology, syntax, semantics, and pragmatics, with emphasis on theories and historical perspectives. (Same as SPAU 3303) (3-0) S

CLDP 3310 Child Development (3 semester hours) Introduction to psychological theory and research on physical, cognitive, social and emotional development from birth to adolescence. Credit given for only one of CLDP/PSY 3310 or CLDP/PSY 4334. (Same as PSY 3310) (3-0) Y

CLDP 3332 Social and Personality Development (3 semester hours) The study of the forces affecting the socialization of children. Emphasis is placed on children's interactions with others and how this influences their development in such areas as self-concept, identity, and morality. This course assumes an introductory background in child or lifespan development. Prerequisite: CLDP/PSY 3310, 3339, or 4334. (Same as PSY 3332) (3-0) S

CLDP 3336 Infancy (3 semester hours) Examines the period of human life between birth and the onset of language. While attention is given to evidence for the genetic endowment of humans, the main focus is the role of the environment in development and on the long-term consequences of particular patterns of development in infancy. Daycare and its effects are discussed. Prerequisite: CLDP/PSY 3310, 3339, or 4334. (Same as PSY 3336) (3-0) Y

CLDP 3338 Adolescence (3 semester hours) Social, emotional, cognitive, moral and physical development during adolescence. Specific topics covered in the course include parent-adolescent relations, self-identity, achievement, motivation, sex roles, and cultural and social class differences. (Same as PSY 3338) (3-0) Y

CLDP 3339 Educational Psychology (3 semester hours) This course introduces the psychological theories and research underlying various teaching strategies and provides a framework for understanding student cognitive and motivational development. Emphasis will be on applications in actual teaching behavior. (Same as ED/PSY 3339) (3-0) S

CLDP 3342 Exceptional Children (3 semester hours) Introduction to the characteristics of exceptional children and their education, including children with disabilities (learning, emotional/behavioral, communication and physical) as well as those who are gifted.

The causes and assessment of exceptionality are examined, along with educational and social policy considerations. This course assumes an introductory background in child development. Prerequisite: CLDP/PSY 3310, 3339, or 4334. (Same as PSY 3342) (3-0) S

CLDP 3362 Cognitive Development (3 semester hours) A contrast of Piagetian, behaviorist, and information-processing approaches to the development of cognitive processes throughout childhood. Prerequisite: CLDP/PSY 3310, 3339, or 4334. (Same as PSY 3362) (3-0) S

CLDP 3365 Child Learning (3 semester hours) Examines the nature of child learning and implications for improving the teaching and learning process. Major theories and research on conditioning paradigms, learning and remembering, attention, knowledge representation and retrieval, and problem solving. Illustrations of how these processes relate to teaching and the acquisition of expertise in content areas such as reading, mathematics, and science. Child assessment, identification of learning styles, and tests and measurements are also considered. Prerequisite: CLDP/PSY 3310, 3339, or 4334. (3-0) Y

CLDP 3394 Research and Evaluation Methods (3 semester hours) Students gain experience in all phases of behavior science research, including study design, measurement, sampling, data collection, data analysis, and report writing. The course covers the fundamental concepts of the psychometrics of measurement and testing, as well as foundations of experimental and non-experimental designs in research and evaluation. Prerequisite: PSY 2317 or STAT 1342. Must co-enroll in CLDP 3194. (3-0) S

CLDP 4308 Language Disorders in Children (3 semester hours) Language impairment in children, including etiology, characteristics, and treatment procedures with special emphasis on factors that interfere with normal development of language skills. Prerequisite: CLDP/SPAU 3303 or consent of instructor. (Same as SPAU 4308) (3-0) Y

CLDP 4334 Lifespan Development (3 semester hours) The development of personality, social skills, language, and thought throughout the human life span. Credit given for only one of CLDP/PSY 3310 or CLDP/PSY 4334. (Same as PSY 4334) (3-0) S

CLDP 4344 Child Psychopathology (3 semester hours) Present various views of clinical issues in childhood from sociological, anthropological, and psychological perspectives. Historical views of children are examined in terms of the evolution of current perspectives in childhood psychopathology. Prerequisite: CLDP/PSY 3310, 3339, or 4334. (Same as PSY 4344) (3-0) Y

CLDP 4345 Violence in the Family (3 semester hours) Explores the area of family violence with primary emphasis on the problems of spouse abuse and child abuse. Analysis of each of these areas of family violence focuses specifically on the epidemiology of the problem, characteristics of the families, etiological theories, and treatment approaches. (3-0) Y

CLDP 4375 Honors Seminar (3 semester hours) A course for students who conduct undergraduate thesis research in the School of Behavioral and Brain Sciences. The seminar explores the different types of thesis research, current research opportunities in the school, and appropriate techniques for writing the thesis proposal and final thesis report. Broader issues of professional development are also explored. Permission of Associate Dean required. This course is required for all students seeking School Honors (minimum GPA of 3.4 and 30 hours at UTD). Recommended, but not required, for students seeking University magna or summa cum laude honors. Usually offered only in spring semester. (Same as CGS 4375, NSC 4375, and SPAU 4375) (3-0) Y

## Special Topics

Topics under the following course numbers vary from semester to semester. The class schedule for the current semester will list the special topic that will be offered.

**CLDP 4V90 Special Topics in Child Learning and Development** (3 semester hours) Topics vary from semester to semester. The class schedule for the current semester will list the special topic that will be offered. May be repeated for credit provided course topics differ. ([1-6] -0) R

## Independent Study

The following independent study courses are advanced individualized learning experiences to be arranged with a supervising professor or course coordinator. Open only to qualified students by consent of instructor. Students must make appropriate arrangements with the professor or coordinator prior to the beginning of the semester (preferably at least six weeks ahead). Permission forms are available in the Associate Dean's office. Students may enroll in no more than a total of 6 semester credit hours of Independent Study courses during one semester, and may take as Independent Study a maximum of 20 percent of the total hours of course work undertaken at U.T. Dallas, or 12 semester credit hours, whichever is smaller.

**CLDP 4394 Internship** (3 semester hours) Students earn course credit for field experience in an applied setting. Requires

working at least 8 hours per week at an approved community agency or business of the student's choice. Students keep daily job diaries, attend one class meeting per month, and write brief papers relevant to their experiences. Open to all students who have reached junior or senior standing (more than 53 hours). (Same as PSY4394) (3-0) S

**CLDP 4395 Co-op Fieldwork** (3 semester hours) Students earn course credit for field experience in an approved business or government setting. Requires working at least 8 hours per week. Students will keep a journal of their workplace experience, maintain contact with the instructor, and prepare a written report that focuses on the accomplishments and insights gained through their co-op experience. Credit will not be awarded retroactively. Apply for placements through the Career Center office. May repeat for up to six hours. Credit/No Credit. (3-0) T

**CLDP 4397 Honors Thesis** (3 semester hours) An independent study in which the student writes an honors thesis under faculty supervision. Permission of instructor and Associate Dean required. (3-0) S

**CLDP 4V98 Directed Research** (1-6 semester hours) Student assists faculty with research projects or conducts a research project under weekly faculty supervision. Taken on a Credit/No Credit basis. May be repeated for credit. ([1-6] -0) S

**CLDP 4V99 Individual Study** (1-6 semester hours) Student studies advanced topics under weekly faculty direction and writes a paper. Taken for letter grade unless the Program Head approves for Credit/No Credit basis. May be repeated for credit. ([1-6] -0) S

## Cognitive Science Course Descriptions

**CGS 2301 Cognitive Science** (3 semester hours) An introduction to the study of the brain and behavior from the point of view of cognitive science, including approaches from psychology, philosophy, neuropsychology, and computational modeling. Includes phenomena involving sensory systems, memory, decision making, language, and communication. (3-0) Y

**CGS 3325 Historical Perspectives on Psychology: Mind and Machines since 1600** (3 semester hours) Basic frames of reference in 20th-century psychology and their historical development in Western thought since 1600 with an emphasis on issues involved with minds, brains, and machines. Includes behaviorism, learning theory, artificial intelligence, gestalt, structural and cognitive approaches. Prerequisite: PSY 2301 or CGS 2301. (Same as PSY 3360) (3-0) Y

**CGS 3340 Empirical Methods in Cognitive Science** (3 semester hours) Laboratory experience in designing and conducting empirical investigations in cognitive science, with a major emphasis on writing research reports. (This course fulfills the advanced writing requirement for Cognitive Science majors and 3 hours of the Communication component of the Core Curriculum). Prerequisite: PSY 3490. (3-0) R

**CGS 3342 Cognitive and Neural Modeling Laboratory** (3 semester hours) Auto-associative, associative, competitive learning, recurrent, and back-propagation artificial neural network algorithms in a "hands-on" micro-computer laboratory environment using special simulation software. Applications to perceptual, cognitive, computational, and neuroscience problems. Prerequisites: Linear Algebra and Computer Programming experience is recommended but not required. (3-0) T

**CGS 3361 Cognitive Psychology** (3 semester hours) Theory and research on perception, learning, thinking, psycholinguistics, and memory. (Offered in the spring semester.) Prerequisite: PSY 2301 or CGS 2301. (Same as PSY 3361) (3-0) Y

**CGS 4312 Computational Models of Language Understanding** (3 semester hours) Logic-based and probabilistic-based methods for natural language understanding using the MATLAB programming language. (3-0) T

**CGS 4313 Neural Net Mathematics** (3 semester hours) Vector calculus and vector calculus-based probability theory with artificial neural network modeling applications. Intended to provide mathematics preparation for CGS 4314 and CGS 4315. Prerequisites: Either (1) Linear algebra, multivariable calculus, STAT 4351, CGS 3342, or (2) consent of instructor. (3-0) T

**CGS 4314 Intelligent Systems Analysis** (3 semester hours) Mathematical tools for investigating the asymptotic behavior of both 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 the Gibbs Sampler. Prerequisite: CGS 4313 or consent of instructor (or equivalent). (Same as CS 4314) (3-0) T

**CGS 4315 Intelligent Systems Design** (3 semester hours) Mathematical tools for the design and evaluation of artificially intelligent deterministic and stochastic nonlinear dynamical systems for the purposes of building computational models in the fields of neuroscience, psychology, and artificial intelligence. Topics include: (1) Markov Random Field probability representations, and (2) asymptotic mathematical statistical theory for: parameter estimation, model selection, and hypothesis testing. Prerequisite: CGS 4314 or consent of instructor. (Same as CS 4315) (3-0) T

**CGS 4352 Human Computer Interactions I** (3 semester hours) Methods and principles of human-computer interaction (HCI), user-centered design (UCD), and usability evaluation. Provides broad overview of HCI and how HCI informs UCD processes

throughout product development lifecycle. (Same as CS 4352) (3-0) T

**CGS 4353 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. Prerequisite: CGS 4352 or consent of the instructor. (Same as CS 4353) (3-0) T

**CGS 4355 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. Pre- or corequisite: CGS 4352 or CGS 4353, or consent of instructor. (3-0) T

**CGS 4362 Perception** (3 semester hours) Considers the processes by which the individual gathers information from the external world, the physiological basis of those processes, and how they develop throughout the life span of the individual. Pre- or corequisite: CGS 4361. (3-0) Y

**CGS 4364 Attention and Memory** (3 semester hours) Factors influencing the capacity to pick up, organize, and remember complex information. Prerequisite: CGS 3361, or consent of instructor. (3-0) T

**CGS 4368 Computational Neuroscience** (3 semester hours) Introduction to state-of-the-art computer methods for simulation of biologically realistic neuronal dynamics. (Same as NSC 4368) (3-0) R

**CGS 4375 Honors Seminar** (3 semester hours) A course for students who conduct undergraduate thesis research in the School of Behavioral and Brain Sciences. The seminar explores the different types of thesis research, current research opportunities in the school, and appropriate techniques for writing the thesis proposal and final thesis report. Broader issues of professional development are also explored. Permission of Associate Dean required. This course is required for all students seeking School Honors (minimum GPA of 3.4 & 30 hours at UTD). Recommended, but not required, for students seeking University magna or summa cum laude honors. Taken on a Credit/No Credit basis. (Same as PSY 4375, NSC 4375, and SPAU 4375) (3-0) Y

## Special Topics

Topics under the following course number vary from semester to semester. The class schedule for the current semester will list the special topic that will be offered.

**CGS 4V90 Special Topics in Cognitive Science** (1-6 semester hours) May be repeated for credit (9 hours maximum). (3-0) R

## Independent Study

The following independent study courses are advanced individualized projects to be arranged with a supervising professor. Open only to qualified students by consent of instructor. Students must contact professor and design a contract for study prior to enrollment. Permission forms are available in the Associate Dean's office. Student may enroll in no more than a total of 6 semester credit hours of independent study courses during one semester and may take as Independent Study a maximum of 20 percent of the total hours of coursework undertaken at U.T. Dallas or 12 semester credit hours, whichever is smaller.

**CGS 4394 Internship in Cognitive Science** (3 semester hours) Students earn course credit for field experience in an applied setting. Requires working at least 8 hours per week at an approved community agency or business of the student's choice. Students keep daily job diaries, attend one class meeting per month, and write brief papers relevant to their experiences. Open to all students who have reached junior or senior standing (more than 53 hours). Apply for placements in the Associate Dean's office. Taken on Credit/No Credit basis. (Same as PSY 4394, NSC 4394 and SPAU 4394) (3-0) S

**CGS 4397 Honors Thesis** (3 semester hours) An independent study in which the student writes an honors thesis under faculty supervision. Permission of instructor and Associate Dean required. (3-0) S

**CGS 4V96 Teaching Internship** (1-3 semester hours) Students work individually with faculty member in preparing and presenting course materials and tutoring students. Must have completed the relevant course with a grade of at least B and a U.T. Dallas GPA of 3.0. Permission of instructor and Associate Dean required. Taken on a Credit/No Credit basis. Can be repeated for a total of 6 semester hours. ([1-3]-0) S

**CGS 4V98 Directed Research** (1-6 semester hours) Student assists faculty with research projects or conducts a research project under weekly faculty supervision. Taken on a Credit/No Credit basis. May be repeated for credit. ([1-6] -0) S

**CGS 4V99 Individual Study** (1-6 semester hours) Student studies advanced topics under weekly faculty direction and writes a paper. Taken on a Credit/No Credit basis. May be repeated for credit. ([1-6] -0) S

## Communications Course Descriptions

**COMM 2312 Principles of Oral Communications** (3 semester hours) Survey of basic factors affecting human interaction through oral communication. Study and practice in the preparation and delivery of oral presentations; practice in different types of speeches and forms of delivery; evaluation of speakers and speeches. (3-0) R

**COMM 2313 Public Speaking** (3 semester hours) Designed to introduce students to the principles of public speaking. Emphasizes preparation (including audience analysis, research, outlining, and practice) and performance. Course will focus on performance-based formal speeches, presentations, selected readings, examinations and classroom exercises. (3-0) T

**COMM 2V71 Independent Study in Communications** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). ([1-3]-0) R

**COMM 3301 Public and Professional Speaking for Business** (3 semester hours) Explores public communication strategies in professional contexts. Helps students develop skills to maximize business communication opportunities to present themselves and their ideas. Prerequisite: Upper-division standing or COMM 2312 or COMM 2313. (3-0) T

**COMM 3311 Interpersonal Communication** (3 semester hours) The course will examine elements that characterize and contribute to unhealthy relationships and examines theories and strategies to establish and maintain healthy relationships. The course will explore basic concepts involved in the communication process and will introduce related skills to aid in successful communication. Prerequisite: Upper-division standing, or RHET 1302 or equivalent. (3-0) T

**COMM 3338 Debate** (3 semester hours) By instructor approval only, this course is open to members of the UTD competitive debate team. Working as a squad, students will participate in practice debates as well as weekend competitions against other colleges and universities across the country. Prerequisite: Permission of the instructor. (3-0) S

**COMM 3342 Topics in Communication** (3 semester hours) Topics may include theory and practice of oral and verbal communication techniques with specific applications and performance demonstration. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Upper-division standing. (3-0) R

**COMM 4313 Advanced Public Speaking** (3 semester hours) Course is for students who have mastered basic public speaking skills. It will explore and fine-tune a wider range of styles and skills. The course will be performance-centered and will include presentations, selected readings, examinations and classroom exercises on a more advanced level. Prerequisite: COMM 2312, COMM 2313 or permission of instructor. (3-0) R

**COMM 4314 Persuasion** (3 semester hours) The course will emphasize the critical evaluation of persuasive messages and the design of persuasive appeals. By merging theory and practice, students will focus on an understanding of persuasive techniques as a mean for influencing attitudes, beliefs, opinions, and actions in a variety of settings, including business, politics, and interpersonal interactions. Prerequisites: RHET 1302 and either COMM 2313 or COMM 3301 or permission of instructor. (3-0) R

**COMM 4399 Senior Honors in Communications** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Signature of instructor on proposed project outline required. (3-0) R

**COMM 4V71 Independent Study in Communications** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Consent of instructor required. ([1-3] -0) R

## Computer Science Course Descriptions

**CS 1136 Computer Science Laboratory** (1 semester hour) Laboratory course to accompany CS 1336. This course teaches basic computer literacy/programming skills: disk operating system (DOS) commands (to format disks and to create, manipulate, and remove directories and files), the authoring of ASCII text files, compiler usage in converting source programs into executable form, printer commands. Corequisite: CS 1336. (0-2) S

**CS 1336 Programming Fundamentals** (3 semester hours) Introduction to computers. Primitive data types, variable declarations, variable scope, and primitive operations. Control statements. Methods/functions. Arrays, and strings using primitive data arrays. Output formatting. Debugging techniques. Designed for students with no prior computer programming experience. Corequisite: CS 1136. Note that a grade of 'C' or better is required in order to register for CS 1337. (3-0) S

**CS 1337 Computer Science I** (3 semester hours) Introduction to object-oriented software analysis, design, and development. Classes and objects. Object composition and polymorphism. Sorting, searching, recursion. Strings using core classes. Inheritance and interfaces. Graphical User Interfaces. Includes a comprehensive programming project. Prerequisite: CS 1336 with a grade of C or better or equivalent. (3-0) S

**CS 2110 Introduction to Digital Systems Laboratory** (1 semester hour) Laboratory to accompany CS 2310. The purpose of this laboratory is to give students an intuitive understanding of digital circuits and systems. Laboratory exercises include construction of simple digital logic circuits using prototyping kits and board-level assembly of a personal computer. Corequisite: CS 2310. (0-2) S

**CS 2305 (MATH 2305) Discrete Mathematics for Computing I** (3 semester hours) Principles of counting. Boolean operations. Logic and methods of proof. Sets, relations, functions, strings, and languages. Prerequisite: MATH 1326 or MATH 2417. (3-0) S

**CS 2310 Introduction to Digital Systems** (3 semester hours) Introduction to hardware structures and assembly-language concepts that form the basis of the design of modern computer systems. Internal data representation and arithmetic operations in a computer. Basic logic circuits. MIPS assembly language. Overview of PC architecture. Prerequisite: CS 1337. Corequisite: CS 2110. (3-0) S

**CS 2336 Computer Science II** (3 semester hours) Exceptions and number formatting. File input/output using Stream classes. Implementation of primitive data structures, including linked lists (all types), stacks, queues, and binary trees. Advanced data manipulation using core classes. Introduction to multithreading, multimedia, and networking. Includes a comprehensive programming project. Prerequisite: CS 1337. (3-0) S

**CS 2V95 Individual Instruction in Computer Science/Software Engineering** (1-6 semester hours) Individual study under a faculty member's direction. May be repeated for credit (6 hours maximum). Consent of instructor required. (Same as SE 2V95) ([1-6]-0) R

**CS 3195 Special Topics in Computer Science/Software Engineering** (1 semester hour) May be repeated for credit (4 hours maximum). Must be taken Credit/No Credit. Consent of instructor required. (Same as SE 3195) (1-0) R

**CS 3305 Discrete Mathematics for Computing II** (3 semester hours) Topics in enumeration; principle of inclusion and exclusion. Partial orders and lattices. Algorithmic complexity; recurrence relations. Graph theory. Prerequisite: CS 2305. (3-0) S

**CS 3333 Data Structures** (3 semester hours) Programming with basic data structures (arrays, stacks, queues, lists, and trees) and their associated algorithms. Various sorting and searching techniques. Fundamental graph algorithms. This course covers much of the same material as CS 3345 without requiring the analysis of algorithms. Computer Science majors may NOT take this course. This course may not be taken for degree credit by students who have completed CS 2336. Prerequisite: CS 1337 or CS 3335 or equivalent programming experience. (3-0) Y

**CS 3335 C and C++** (3 semester hours) Numerous programming projects in both C and C++. All fundamentals of C, with special emphasis on use of pointers. Use of C++ extensions to create and extend (by inheritance) abstract data types. The use/advantages of virtual functions (dynamic polymorphism). Prerequisite: CS 2336 or equivalent. (3-0) S

**CS 3341 Probability and Statistics in Computer Science and Software Engineering** (3 semester hours) Axiomatic probability theory, independence, conditional probability. Discrete and continuous random variables, special distributions of importance to CS/SE. and expectation. Simulation of random variables and Monte Carlo methods. Central limit theorem. Basic statistical inference, parameter estimation, hypothesis testing, and linear regression. Introduction to stochastic processes. Illustrative examples and simulation exercises from queuing, reliability, and other CS/SE applications. Prerequisites: MATH 1326 or MATH 2419, and CS 2305. (Same as SE 3341) (3-0) S

**CS 3345 Data Structures and Introduction to Algorithmic Analysis** (3 semester hours) Analysis of algorithms including time complexity and Big-O notation. Analysis of stacks, queues, and trees, including B-trees. Heaps, hashing, and advanced sorting techniques. Disjoint sets and graphs. Course emphasizes design and implementation. Prerequisites: CS 2336 and one of CS 3305 or SE 3306. Prerequisite or corequisite: CS/SE 3341. (Same as SE 3345) (3-0) S

**CS 3354 Software Engineering** (3 semester hours) Introduction to software life cycle models. Software requirements engineering, formal specification and validation. Techniques for software design and testing. Cost estimation models. Issues in software quality assurance and software maintenance. Prerequisites: CS 2336 or CS 3333, and CS 2305. Corequisite: ECS 3390. (Same as SE 3354) (3-0) S

**CS 3360 Politics and Values in Business and Technology** (3 semester hours) A social and behavioral science survey of current business practices and the normative value systems by which they operate and are regulated. Topics will include the influences on business practices by culture, especially race, ethnicity, gender, religion, and by developing technology and the Information Society. (Same as ISSS 3360) (3-0) S

**CS 3375 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 2336 (C/C++) or CS 3333 or CS 3335 or equivalent programming experience, including knowledge of C. (3-0) S

**CS 3385 Ethics, Law, Society, and Computing** (3 semester hours) Issues of professional ethics; computer crime; wiretapping

and encryption; protecting software and other intellectual property; privacy and information; careers and computers; reliability and safety; constitutional issues. Broader issues on the impact and control of computers. (3-0) S

**CS 3V95 Undergraduate Topics in Computer Science/Software Engineering** (2-9 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). (Same as SE 3V95) ([2-9]-0) S

**CS 4314 Intelligent Systems Analysis** (3 semester hours) Mathematical tools for investigating the asymptomatic behavior of both deterministic and stochastic nonlinear dynamical systems. Topics include: artificial neural network architectures, Lyapunov stability theory, and stochastic approximation theory. Applications to artificial neural network models of brain and behavior. Prerequisite: CGS 4313 or consent of instructor. (Same as CGS 4314) (3-0) T

**CS 4315 Intelligent Systems Design** (3 semester hours) Mathematical tools for the design and evaluation of artificially intelligent deterministic and stochastic nonlinear dynamical systems. Topics include: nonlinear optimization theory, Markov random fields, asymptotic statistical theory. Applications to theory and model construction in the behavioral and brain sciences as well as the field of artificial intelligence. Prerequisite: CS 4314 or consent of instructor. (Same as CGS 4315) (3-0) T

**CS 4334 Numerical Analysis** (3 semester hours) Solution of linear equations, roots of polynomial equations, interpolation and approximation, numerical differentiation and integration, solution of ordinary differential equations, computer arithmetic, and error analysis. Prerequisites: CS 1337, MATH 2418, MATH 2451. (Same as MATH 4334) (3-0) Y

**CS 4336 Advanced Java** (3 semester hours) Advanced Java programming techniques integrating the technologies of advanced swing GUI components, JavaBeans, Java Servlets and Server Pages, XML, Security, Java Database Connectivity, Remote Method Invocation, and Software applications for Wireless Devices. Students will have the opportunity to work on their own E-Business Solutions. Prerequisite: CS 2336 or equivalent. (3-0) T

**CS 4337 Organization of Programming Languages** (3 semester hours) Principles of design and implementation of contemporary programming languages. Formal description including specification of syntax and semantics of programming languages. Language definition structures including binding, scoping, data types, control structures, parameter passing, abstraction mechanism, and run-time considerations. Design issues of imperative languages, object-oriented languages, functional languages and logic languages. Design, implement, and debug programs in various programming language paradigms. Prerequisites: CS 2336 or CS 3333, and CS 2305. (3-0) S

**CS 4340 Computer Architecture** (3 semester hours) Boolean algebra and logic circuits; register transfer operations; design of a small computer; input, output, and interrupt organization; powerful addressing modes, instruction formats, and their hardware structures; microprogram control. Prerequisites: CS 2305 or TE 3307, and PHYS 2326. (Same as SE 4340) (3-0) S

**CS 4347 Database Systems** (3 semester hours) This course emphasizes the concepts and structures necessary for the design and implementation of database management systems. Topics include data models, data normalization, data description languages, query facilities, file organization, index organization, file security, data integrity, and reliability. Prerequisite: CS/SE 3345. (Same as SE 4347) (3-0) Y

**CS 4348 Operating Systems Concepts** (3 semester hours) An introduction to fundamental concepts in operating systems: their design, implementation, and usage. Topics include process management, main memory management, virtual memory, I/O and device drivers, file systems, secondary storage management, and an introduction to critical sections and deadlocks. Prerequisites: CS 4340, one of CS/SE 3345 or TE 3346, and a working knowledge of C and UNIX. (Same as SE 4348 and TE 4348) (3-0) S

**CS 4349 Advanced Algorithm Design and Analysis** (3 semester hours) Asymptomatic analysis, recurrences, and graph algorithms. Algorithm design techniques such as greedy method, dynamic programming, and divide-and-conquer. Issues from computational complexity. Course emphasizes a theoretical approach. Prerequisite: CS/SE 3345. (3-0) S

**CS 4352 Human Computer Interactions I** (3 semester hours) Methods and principles of human-computer interaction (HCI), user-centered design (UCD), and usability evaluation. Provides broad overview of HCI and how HCI informs UCD processes throughout product development lifecycle. (Same as CGS 4352) (3-0) T

**CS 4353 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. Prerequisite: CS 4352 or consent of the instructor. (Same as CGS 4353) (3-0) T

**CS 4361 Computer Graphics** (3 semester hours) Review of graphic display architecture and graphic input devices. Two- and three-dimensional transformations, matrix formulations, and concatenation. Clipping and windowing. Data structures for graphics systems, segmented display files, rings, etc. Hidden line and surface elimination. Shading. Graphics packages and applications. Prerequisites: MATH 2418, CS 2336, and CS/SE 3345. (3-0) Y

**CS 4365 Artificial Intelligence** (3 semester hours) Basic concepts and techniques that enable computers to perform intelligent tasks. Examples are taken from areas such as natural language understanding, computer vision, machine learning, search strategies and control, logic, and theorem proving. Prerequisites: CS 2336 and CS/SE 3345. (3-0) Y

**CS 4375 Introduction to Machine Learning** (3 semester hours) Algorithms for creating computer programs that can improve

their performance through learning. Topics include: cross-validation, decision trees, neural nets, statistical tests, Bayesian learning, computational learning theory, instance-based learning, reinforcement learning, bagging, boosting, support vector machines, Hidden Markov Models, clustering, and semi-supervised and unsupervised learning techniques. Prerequisites: CS/SE 3341 and CS/SE 3345. (3-0) Y

**CS 4376 Object-Oriented Programming Systems** (3 semester hours) In-depth study of the features/advantages of object-oriented approach to problem solving. Special emphasis on issues of object-oriented analysis, design, implementation, and testing. Review of basic concepts of object-oriented technology (abstraction, inheritance, and polymorphism). Object-oriented programming languages, databases, and productivity tools. Prerequisite: CS 2336 or equivalent. (Same as SE 4376) (3-0) S

**CS 4384 Automata Theory** (3 semester hours) A review of the abstract notions encountered in machine computation. Topics include finite automata, regular expressions, PDAs, and context-free languages. Prerequisite: CS 3305. (3-0) S

**CS 4386 Compiler Design** (3 semester hours) Basic phases of a compiler and their design principles. Topics include lexical analysis, basic parsing techniques such as LR(K) and LL(K) grammars. Prerequisites: CS/SE 3345 and CS 4384. (3-0) T

**CS 4389 Data and Applications Security** (3 semester hours) Data as a critical resource. Threats to data and applications security including access control violations, integrity violations, unauthorized intrusions and sabotage; techniques to enforce security. Prerequisite: CS/SE 4347. (3-0) Y

**CS 4390 Computer Networks** (3 semester hours) The design and analysis of computer networks. Topics include: the ISO reference model, transmission media, medium-access protocols, LANs, data link protocols, routing, congestion control, internetworking, and connection management. Prerequisite: CS/SE 3345. (Same as TE 4390) (3-0) S

**CS 4391 Introduction to Computer Vision** (3 semester hours) Techniques for manipulating and extracting information from digital images and video. Topics include color representations, analysis and processing based on image histograms, geometric transformations, convolutions, image blurring and sharpening, extraction of edges, matching, image and video motion. Prerequisites: CS/SE 3345. (3-0) Y

**CS 4392 Computer Animation** (3 semester hours) Introduction to traditional animation. Kinematics of motion. Key framing. Coordinate systems and transformations (review), Euler angles and Quaternions, Catmull Rom and B-Splines, Advanced Key framing, articulated figures (forward kinematics), human and animal modeling (soft tissue, skin, etc.). Facial animation (parametric). Physically based modeling (rigid, collision detection). Physically based modeling (deformable). Behavioral and heuristic models. Algorithmic animation. Optimization techniques. Animation languages and systems. Motion capture and real time control. Virtual reality and animation. Rendering and temporal aliasing. 2D and 3D morphing. 3D modeling. Prerequisites: MATH 2418 and CS 2336 or CS/SE 3345. (3-0) Y

**CS 4393 Computer and Network Security** (3 semester hours) The study of security and vulnerabilities in computer and network systems. Common attacking techniques such as buffer overflow, viruses, worms, etc. Security in existing systems such as UNIX, Windows, and JVM. Fundamental access control and information flow concepts. Symmetric Ciphers such as DES and AES. Public-key encryption techniques and related number theory. Message authentication, hash functions, and digital signatures. Authentication applications, IP security and Web security. Prerequisite: CS/SE 4348. (3-0) Y

**CS 4394 Implementation of Modern Operating Systems** (3 semester hours) This course focuses on developing systems implementation skills through a set of projects. Each project will explore one fundamental component of operating systems such as process scheduling, memory management, device drivers, file systems, and network communication management. The projects are expected to involve kernel-level programming. Prerequisites: CS 4348 (OS) and CS 3335, or equivalent programming experience. (3-0) Y

**CS 4396 Networking Laboratory** (3 semester hours) This course will enable students to gain hands-on experience with real networks by building networks in a laboratory environment. Projects may include establishing an intra-domain routing infrastructure in the laboratory; establishing inter-domain network topologies with BGP used to connect the different autonomous systems; running network services/applications on top of this network, including DHCP, DNS, HTTP, configuring firewalls; and network management with SNMP. Prerequisite: CS 4390. (3-0) Y

**CS 4397 Embedded Computer Systems** (3 semester hours) Introduction to embedded computer applications and concepts. Real-time operating systems and resource management. Real-time scheduling and communication. Senior data acquisition, processing and fusion. Error handling, fault tolerance, and graceful degradation. System performance analysis and optimization techniques. Includes a project to develop and analyze a small embedded computer application. Prerequisite: CS 4348. (3-0) Y

**CS 4398 Digital Forensics** (3 semester hours) Creating and preserving digital evidence, data recovery and evidence collection algorithms, evidence construction and reconstruction, methods for certifying evidence, storing evidence, data acquisition, forensic analysis algorithms, image files, network forensics, logging methods to trace back attacks and digital trails, e-mail investigations. Prerequisites: CS/SE 4348 and CS/TE 4390. (3-0) Y

**CS 4399 Senior Honors in Computer Science/Software Engineering** (3 semester hours) For students conducting independent research for honors theses or projects. (Same as SE 4399) (3-0) R

**CS 4485 Computer Science Project** (4 semester hours) This course is intended to complement theory and to provide an in-

depth, hands-on experience in all aspects of a software development project. Students will work in teams on projects of interest to industry and will be involved in specifying the problem and its solution, designing and analyzing the solution, developing the software architecture, along with implementation and testing plans. The deliverables will include reports that document these steps as well as a final project report and a user manual of the developed system. Teams will also make presentations during the class as well as demonstrate their software. Prerequisite: CS 3345, CS 3354, at least three CS 43XX classes including at least one elective. (4-0) S

**CS 4V95 Undergraduate Topics in Computer Science/Software Engineering** (1-9 semester hours) Subject matter will vary from semester to semester. May be used as CS Guided Elective on CS degree plans. May be repeated for credit (9 hours maximum). (Same as SE 4V95) ([1-9]-0) R

## Creative Writing Course Descriptions

**CRWT 2V71 Independent Study in Creative Writing** (3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). ([1-3]-0) R

**CRWT 3307 Creating Short Stories** (3 semester hours) A creative workshop on the art of the short story which both investigates the creative techniques and processes involved in writing short stories and also concentrates on a variety of experimental and traditional forms that combine the art of words with the visual and performing arts. May be repeated for credit (9 hours maximum.) Prerequisite: Upper-division standing. (3-0) T

**CRWT 3308 Creating Nonfictions** (3 semester hours) A creative workshop built around the aesthetic techniques and aesthetic processes used to create essays, biographies, and autobiographies as works of art. Topics will vary and often will include work by visual artists, filmmakers, composers, or other writers. May be repeated for credit (9 hours maximum.) Prerequisite: Upper-division standing. (3-0) T

**CRWT 3351 Creating Poetry** (3 semester hours) A creative workshop on the art of poetry which investigates the creative techniques and processes involved in writing poems in various, often opposing, forms that combine the art of words with the visual and performing arts. May be repeated for credit (9 hours maximum. Prerequisite: Upper-division standing. (3-0) T

**CRWT 3360 Art Criticism** (3 semester hours) This seminar provides a context for practice in the writing of art criticism. Subjects selected for examination may include visual arts, film, dance, theater, music, fiction, and poetry. Prerequisite: Three hours of lower-division ARTS coursework. May be repeated for credit (6 hours maximum) T

**CRWT 4307 Creating Short Stories: Advanced** (3 semester hours) An advanced workshop on the creation and theory of the short story that will focus both on structure and on creative techniques and creative process involved in writing sophisticated, challenging, and linguistically developed short stories. May be repeated for credit (9 hours maximum.) Prerequisite: CRWT 3307. (3-0) T

**CRWT 4352 Creating Novels** (3 semester hours) An advanced creative workshop on the art of the novel which investigates the art and creation of the novel, focusing on the creative techniques and the creative process involved in writing novels in a variety of traditional and experimental forms that combine the art of words with the visual and performing arts. May be repeated for credit (6 hours maximum.) Prerequisite: Two sections of CRWT 3307. (3-0) T

**CRWT 4353 Creating Poetry: Advanced** (3 semester hours) An advanced workshop on the creation, history, and theory of poetry that will focus on the creative techniques and the creative process involved in writing formalist, lyrical, free verse, and experimental poetry. May be repeated for credit (6 hours maximum.) Prerequisite: Permission of the instructor and CRWT3351. (3-0) T

**CRWT 4354 Creating Play, Movie, and Television Scripts** (3 semester hours) An advanced workshop on the aesthetics, art, and creation of play, movie, and television scripts which will focus on the creative techniques and the creative process involved not only in the creation of film, play, and television scripts, but also in the production of plays, films, and television episodes. May be repeated for credit (9 hours maximum.) Prerequisite: CRWT 3307. (3-0) T

**CRWT 4399 Senior Honors in Creative Writing** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Signature of instructor on proposed project outline required. (3-0) R

**CRWT 4V71 Independent Study in Creative Writing** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Prerequisite: Upper-division standing, and completion of all lower-division requirements in AP and permission of the instructor. ([1-3]-0) R

## Crime and Justice Studies Course Descriptions

(Note: For description of Social Science courses, see page 243.)

**CJS 1301 Introduction to Criminal Justice** (3 semester hours) An overview and analysis of the major agencies, personnel, and decision-making points which comprise the criminal justice system. Includes problems and issues confronting legislatures, police, courts, corrections, and the community, as they respond to crime in a free society. Legal precedents guiding the decisions of criminal justice agents are also discussed. (3-0) Y

**CJS 1307 Introduction to Crime and Criminology** (3 semester hours) Survey of the nature, location, and impact of crime in America. Includes historical foundations of crime, theoretical explanations of criminality and delinquency, the recording and measurement of crime, descriptions of criminal careers, crime topologies, and an analysis of public policies concerning crime control. (3-0) Y

**CJS 3300 Crime and Civil Liberties** (3 semester hours) Examines the various components / agencies of the criminal justice "system." The functions of the police, courts, prosecution, and corrections are analyzed within a context in which constitutional rights and civil liberties affect the functioning of the criminal justice system. Major emphasis is placed on the extent to which civil liberties and procedural rights constrain or limit the system's effectiveness in delivering crime control, while at the same time ensuring "justice." (3-0) T

**CJS 3301 Theories of Justice** (3 semester hours) Survey of the basic theoretical rationales and perspectives concerning the concept of "justice" with selected readings from classical and contemporary theorists. (3-0) R

**CJS 3302 Advanced Criminology** (3 semester hours) This course provides students with an in-depth study of crime, criminals, and the reaction of the criminal justice system to both. It explores the interrelationships among law, policy, and societal conditions. The major focus of the course is theoretical explanations for crime and criminality. Prerequisite: CJS 1307. (3-0) Y

**CJS 3303 Advanced Criminal Justice** (3 semester hours) Analyzes the major agencies, personnel, and decision-making points which comprise the criminal justice system. Explores some of the major theories and research about the roles that the various agencies and actors play in the criminal justice system. Includes discussion of the problems and current issues confronting legislatures, police, courts, corrections, and the community, as they respond to crime. Prerequisite: CJS 1301. (3-0) Y

**CJS 3304 Research Methods in Crime and Justice Studies** (3 semester hours) Examines methods of crime and justice research. Topics include the nature of scientific inquiry, framing a research problem, choosing a research design, developing hypotheses, sampling designs, and measuring variables. Topics will be covered as students conduct their own study. Should be taken before SOCS 3305 or STAT 1342. (3-0) Y

**CJS 3306 Criminal Law** (3 semester hours) Examines the statutory basis of crime and the legal requirements surrounding "mens rea" and legally permissible defenses permitted under criminal due process. Emphasis is placed on both criminal statutes and case law. (3-0) T

**CJS 3307 Immigration and Crime** (3 semester hours) The course emphasizes the practices and policies of law enforcement's efforts to control illegal immigration, including the relationship between illegal immigration and counterterrorism, as well as victimization experienced by immigrants. (3-0) R

**CJS 3308 Juvenile Law** (3 semester hours) Examines the statutory bases which distinguish delinquency from adult crime and the juvenile justice system from the criminal justice systems. Emphasis is placed on the rationale for treating juveniles accused of crime differently than their adult counterparts. (3-0) R

**CJS 3309 Media and Crime** (3 semester hours) Examines the media's image of crime and the criminal justice system. An emphasis is placed on how various types of media construct or perceives criminal activities, how the media influences public policy, and shapes perceptions of crime as a social problem. Topics include crime news, films and television dramas depicting crime and criminals, the media as a cause, consequence and cure for crime and "news making" criminology. (3-0) R

**CJS 3310 Youth Crime and Justice** (3 semester hours) Examines the concept of juvenile delinquency as a distinct type of criminal activity from that committed by adults and assesses the distinct juvenile justice system that has evolved to handle children. Topics will include the historical roots of delinquency and the juvenile justice system, delinquency measurement, explanations of delinquency, and the socio-demographic correlates of delinquency status. (Same as SOC 3362) (3-0) R

**CJS 3312 Drugs and Crime** (3 semester hours) Provides students with a survey of legislation that has been attempted to combat the use of drugs, the relationship between drug use/abuse and crime, and the public policy problem surrounding the control of drugs. Topics include a historical analysis of the laws passed to control drugs, the relationship between drugs and crime, and a policy analysis of the alternative means available to deal with the drugs-crime problem. (3-0) R

**CJS 3314 Police and Society** (3 semester hours) Examines the central issues of enforcing law and promoting public safety in society with emphasis placed on both internal organizational issues of police administration and external enforcement operations.

(Same as SOC 4362) (3-0) R

**CJS 3316 Corrections** (3 semester hours) Introduces students to the history and background of American corrections and the fundamental theories of punishment and treatment. Emphasis will be placed on the policies, practices, and issues within the correctional system. The incarceration of criminal populations in jails and prisons, and the expansion of community-based corrections will also be discussed. (3-0) R

**CJS 3317 Criminal Prosecution and Court Process** (3 semester hours) Examines the decision-making, politics, and processes of bringing criminal defendants to trial and the constitutional system of criminal due process under which criminal law is practiced. (3-0) R

**CJS 3319 Comparative Justice Systems** (3 semester hours) Survey of the differing policies, practices, and procedures of crime and justice cross-nationally. Special emphasis will be devoted to U.S. / Mexico comparisons, while additional emphasis will be placed on such comparisons as U.S. / Canada and U.S. / England. (3-0) R

**CJS 3320 Homicide and Capital Punishment** (3 semester hours) Examines the policy and legal controversies surrounding the application of capital punishment (i.e., the death penalty) as a punishment for homicide. Topics include: capital punishment through history, U.S. Supreme Court decisions and contemporary problems with the application of the death penalty. The course will also analyze the nature, extent, and distribution of criminal homicide. (3-0) T

**CJS 3322 Crime Prevention** (3 semester hours) Examines the situational, social, and legislative approaches to the prevention of crime and delinquency. The emphasis is on the theories of victimization and the extent to which victim demographics play a role in crime, and the implementation and consequences of various crime prevention policies and approaches and their differential effects on victims throughout various sectors of society. (3-0) R

**CJS 3324 Gender, Crime, and Justice** (3 semester hours) Analysis of the role of gender in crime and in the justice system. The emphasis is on gender differences in the commission of crime and the types of crimes committed, criminal justice processing, and the employment of women in criminal justice professions. (3-0) T

**CJS 3325 Victimology** (3 semester hours) Analyzes the major perspectives on victimization. The emphasis is on patterns of victimization, the role of victims in the generation of crime, and the experience of victims in the criminal justice system. Special attention will be devoted to: sources of data – particularly the National Crime Victimization Survey, trends, variations by demography and offense type and ways in which those variations may affect how criminal justice officials respond to particular types of offenses. (3-0) R

**CJS 3326 Victimless Crimes** (3 semester hours) Examines public order crimes, which includes a variety of behaviors that are illegal yet generally perceived by those engaging in them to be legitimate, justified, and acceptable. Many such offenses are illegal only because the government has said so, especially public order violations where there may be no identifiable victim. The objective of this course is to develop an understanding of the complexities and controversies that swirl around these offenses. Prerequisite: CJS 1301 or CJS 1307. (3-0) R

**CJS 3327 Violent Crime** (3 semester hours) This course explores the etiology, enactment, and control of serious interpersonal violence. The analytic focus includes robbery, homicide, aggravated assault, sexual assault, state violence, and white collar violence. Prerequisite: CJS 1301 or CJS 1307. (3-0) R

**CJS 4305 Social Control and Criminal Sanctions** (3 semester hours) Examines various means by which society attempts to control the deviant and criminal conduct of its members. Social control encompasses both formal criminal sanctions and informal mechanisms and a variety of institutions and social processes that are designed to deter inappropriate conduct if possible and/or punish and reform such conduct when it does occur. Moreover, social control has evolved considerably over time and various social control philosophies and techniques have been prevalent in one time frame but not in others. Prerequisites: CJS 3302 or CJS 3303. (Same as SOC 3332) (3-0) S

**CJS 4311 Crime and Justice Policy** (3 semester hours) In-depth analysis of crime and the efforts to control crime through public policy. Although crime is most often committed by private persons against individual victims, crime is a public problem and society's reaction to crime and criminals is one of the most controversial areas of public policy. Crime control, deterrence and incapacitation, gun control, law enforcement, and court processes are just a few of the areas in which public opinion and policy are in current controversy and debate. (Same as SOC 3361) Prerequisites: CJS 3302 or CJS 3303. (3-0) R

**CJS 4314 Current Issues in Policing** (3 semester hours) Examines issues related to the accountability of the police to the electorate through the political process. Focuses on the governmental setting for police work, policies and practices, and current political issues in municipal, state, and federal police agencies. Prerequisites: CJS 3303 and CJS 3313. (3-0) R

**CJS 4315 Race, Ethnicity and Justice** (3 semester hours) Examines how race and ethnicity pose differential risks for criminal behavior in conjunction with differential justice system responses to crime and criminals in minority communities. Prerequisite: CJS 3302 or CJS 3303. (3-0) R

**CJS 4316 Advanced Issues in Corrections** (3 semester hours) The course examines selected contemporary issues and topics

in the correctional system. Significant emphasis is placed on the extent to which theory and research contribute to understanding current correctional system policies, practices, and problems. Prerequisites: CJS 3303 and CJS 3316. (3-0)

**CJS 4321 Senior Research Seminar** (3 semester hours) Major concepts and principles of Criminology will be applied to the analysis of crime. Capstone required course for senior Criminology majors. Prerequisites: Completion of all, or concurrent enrollment in, major requirements. T

**CJS 4323 Communities and Crime** (3 semester hours) Analyzes the sources, consequences, and control of crime within communities. The emphasis is on social and ecological theories of crime, and on population instability, family structure, and the concentration of poverty as causes of crime. Community crime prevention efforts are also discussed. Prerequisite: CJS 3302. (3-0) T

**CJS 4330 Qualitative Criminology** (3 semester hours) Examines the research strategies, methodological and philosophical issues, and legal and ethical issues of qualitative research. Topics include phenomenology, ethnography (participant observation and field research), case study, in-depth interviewing, ethnomethodology, conversation analysis, content analysis, and historical methods. Prerequisites: CJS 3302 and CJS 3304. (3-0) R

**CJS 4331 GIS Applications in Criminology** (3 semester hours) Examines spatial distributions of crime, criminals, and the criminal justice system. Students prepare computer-generated maps and apply software applications to analyze the locations of crime events and rates. We will investigate a variety of crime types (e.g., murder, robbery, and drugs). The course will also examine the residential patterns of offenders, police beats, judicial districts, community corrections, and juvenile justice districts and how these relate to physical and social characteristics of neighborhoods. Prerequisites: CJS 3302, CJS 3304, and SOCS 3305. (3-0)

**CJS 4396 Selected Topics in Crime and Justice Studies** (3 semester hours) Subject matter will vary from semester to semester. Examples include: "Gangs", "Organized Crime", "White Collar Crime", "Criminalistics", and "Gun Control." May be repeated for credit (9 hours maximum). (3-0) R

**CJS 4V97 Independent Study in Crime and Justice Studies** (1-6 semester hours) Independent study under a faculty member's direction. May be repeated for credit (6 hours maximum). Consent of instructor required. ([1-6] -0) S

**CJS 4V98 Internship in Crime and Justice Studies** (1-6 semester hours) May be repeated for credit (6 hours maximum). Consent of instructor required. This course can only be taken Credit/No Credit. ([1-6] -0) S

**CJS 4V99 Senior Honors in Crime and Justice Studies** (1-6 semester hours) For students conducting independent research for honors theses or projects. May be repeated for credit, but no more than 6 hours may be taken by a student under this number. ([1-6] -0) S

## Dance Course Descriptions

**DANC 1310 Understanding Dance** (3 semester hours) Lectures, discussions, and performances designed to explore artistic, philosophical, and historical dimensions of the theatrical dance experience. Areas of emphases may include differing dance traditions, the nature of dance compared to other performing arts, and relations between social and theatrical dance. (3-0) Y

**DANCE 2331 Beginning Dance and Movement** (3 semester hours) Designed for students who wish to develop skills in various forms of dance and movement. May be repeated for credit (9 hours maximum). (3-0) Y

**DANC 2332 Beginning Modern Dance** (3 semester hours) Designed for students who wish to develop skills in Modern dance. May be repeated for credit (6 hours maximum). (3-0) Y

**DANC 2333 Beginning Jazz Dance** (3 semester hours) Designed for students who wish to develop skills in Jazz dance. May be repeated for credit (6 hours maximum). (3-0) Y

**DANC 2334 Beginning Ballet** (3 semester hours) Designed for students who wish to develop skills in Ballet. May be repeated for credit (6 hours maximum). (3-0) Y

**DANC 2V71 Independent Study in Dance** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). ([1-3]-0) R

**DANC 3332 Intermediate Dance** (3 semester hours) Designed for students who wish to develop additional experiences in various forms of dance. May be repeated for credit (9 hours maximum). Prerequisite: DANC 2331 or permission of the instructor. (3-0) T

**DANC 3333 Intermediate Modern Dance** (3 semester hours) Designed for students who wish to develop additional experience and skills in Modern dance at an intermediate level. May be repeated for credit (9 hours maximum). Prerequisite: Minimum of 9 hours in lower division Ballet or Modern dance or permission of the instructor. (3-0) T

**DANC 3334 Intermediate Jazz Dance** (3 semester hours) Designed for students who wish to develop additional experience

and skills in Jazz dance at an intermediate level. May be repeated for credit (9 hours maximum). Prerequisite: Minimum of 9 hours in lower division Ballet or Jazz dance or permission of the instructor. (3-0) T

**DANC 3335 Intermediate Ballet Dance** (3 semester hours) Designed for students who wish to develop additional experience and skills in Ballet at an intermediate level. May be repeated for credit (9 hours maximum). Prerequisite: Minimum of 9 hours in lower division Ballet or permission of the instructor. (3-0) T

**DANC 3342 Topics in Dance** (3 semester hours) Topics may vary from semester to semester. May be repeated for credit (9 hours maximum). Prerequisite: ARTS 1301 or equivalent or permission of the instructor. (3-0) R

**DANC 4313 Advanced Dance** (3 semester hours) Designed for students who wish to develop additional experience in various forms of dance. May be repeated for credit (9 hours maximum). Prerequisite: DANC 3332 or permission of the instructor. (3-0) T

**DANC 4399 Senior Honors in Dance** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Signature of instructor on proposed project outline required. (3-0) R

**DANC 4V71 Independent Study in Dance** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Prerequisite: Upper-division standing, and completion of all lower-division requirements in AP, and permission of the instructor. ([1-3] -0) R

## Drama Course Descriptions

**DRAM 1310 Understanding Theater** (3 semester hours) Lectures, discussions, and performances designed to explore artistic, philosophical, and psychological dimensions of the theatrical experience. Topics may include analysis of scripts, the nature of the theatre compared to the other performing arts, and the nature of popular entertainments. (3-0) Y

**DRAM 1351 Beginning Acting** (3 semester hours) Explores acting fundamentals and techniques used in theatre/performance. Material may focus on classic or contemporary drama or original creations. May be repeated for credit as topics vary (9 hours maximum). (3-0) T

**DRAM 1360 Beginning Theatre/Performance Ensemble** (3 semester hours) Exploration of dramatic texts and/or ideas of performance. Emphasis may be placed on the conventions required for the theatrical performance of dramatic texts and/or the explorations of putting performance theory into practice. Methods may focus on the process in a way that enriches both the performers' range of expression and their powers of observation. (3-0) Y

**DRAM 2364 Musical Theater Workshop** (3 semester hours) Training in singing, dancing, and acting for the musical stage. Includes preparation of performance from the works of 20<sup>th</sup>- and 21<sup>st</sup>-century composers. (3-0) T

**DRAM 2370 Intermediate Theatre/Performance Ensemble** (3 semester hours) Exploration of dramatic texts and/or ideas of performance. Emphasis may be placed on the conventions required for the theatrical performance of dramatic texts and/or the explorations of putting performance theory into practice. Methods may focus on the process in a way that enriches both the performers' range of expression and their powers of observation. Prerequisite: ARTS 1301 or permission of the instructor. (3-0) Y

**DRAM 2371 Beginning Technical Theatre** (3 semester hours) Designed to provide an introductory overview of all aspects of technical theatre, encompassing lighting, sound, set, props, and costume procedures, construction, and design. Practical work will reference theatre history and the theoretical foundations of technical theatre. Students will be required to attend weekly lectures and production lab hours. (3-0) Y

**DRAM 2372 Improvisation** (3 semester hours) Explores the fundamental concerns of the performer's art: relaxation, concentration, movement, voice production, space and expression. Fulfills the public speaking requirement for Teacher Certification. Available to majors in Art and Performance only as a general elective. (3-0) T

**DRAM 2373 Languages of the Body** (3 semester hours) Explores the fundamental principles and techniques of movement and/or vocal systems and their relationship to diverse forms of theater, performance, media, and alternative stagings. Presented in a participatory workshop setting. Prerequisite: ARTS 1301 or equivalent. May be repeated for credit (9 hours maximum). (3-0) Y

**DRAM 2V71 Independent Study in Drama** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). ([1-3]-0) R

**DRAM 3310 Theatre/Performance Ensemble** (3 semester hours) Exploration of dramatic texts and/or ideas of performance. Emphasis may be placed on the conventions required for the theatrical performance of dramatic texts and/or the explorations of putting performance theory into practice. Methods may focus on process in a way that enriches both the performers' range of expression and their powers of observation. Prerequisite: DRAM 23XX or permission of the instructor. (3-0) Y

**DRAM 3323 Performance in Historical Context** (3 semester hours) Studies in theatre and performance art. The course may consider eras such as Classical, Medieval, Renaissance, Realist, Contemporary, or Experimental Avant-Garde in the Western

tradition or the performance expressions of Africa, African-Americans, Oceania, Indigenous peoples, Asia, Latino or Native America. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: ARTS 1301 or equivalent. (3-0) T

**DRAM 3324 Advanced Technical Theatre** (3 semester hours) Designed to provide advanced instruction of all aspects of technical theatre, encompassing lighting, sound, set, props, and costume procedures, construction, and design. Practical work will reference theatre history and the theoretical foundations of technical theatre. Students will be required to attend weekly lectures and production lab hours. Prerequisite: DRAM 2371 or permission of the instructor. (3-0) Y

**DRAM 3325 Directing, and Producing** (3 semester hours) The course presents the principles and working methods of directing and producing theatre, performance, and inter-media expressions. Emphasis will be on the development of skills required to bring a text or idea to presentation. Areas of focus will include imagination and conception, image and metaphor, analysis, planning, development-rehearsal process, and production. Will require out of class lab hours. Prerequisite: DRAM 3356 or permission of the instructor. (3-0) Y

**DRAM 3342 Topics in Theatre** (3 semester hours) Topics may include the religious origins of theatre, the adaptation of classical themes in modern theatre, the influence of German expressionism, and the philosophical and technological innovations of modern theatre. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: ARTS 1301 or equivalent or permission of the instructor. (3-0) T

**DRAM 3356 Advanced Acting/Performance** (3 semester hours) Material may focus on classic or contemporary drama or on original creations. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: DRAM 1351 or permission of the instructor. (3-0) T

**DRAM 3357 Advanced Acting/Performance** (3 semester hours) Material may focus on classic or contemporary drama or on original creations. May be repeated for credit (9 hours maximum). Prerequisite: DRAM 1XXX or permission of the instructor. (3-0) T

**DRAM 4399 Senior Honors in Drama** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Signature of instructor on proposed project outline required. (3-0) R

**DRAM 4V71 Independent Study in Drama** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Prerequisite: Upper-division standing, and completion of all lower-division requirements in AP, and permission of the instructor. ([1-3] -0) R

## Economics Course Descriptions

(Note: For description of Social Science courses, see page 243.)

**ECO 2301 (ECON 2301) Principles of Macroeconomics** (3 semester hours) An introduction to theories of the determination of national production and income, interest rates, inflation, and unemployment. Other topics include the banking system, the balance of payments, economic growth and development. (3-0) S

**ECO 2302 (ECON 2302) Principles of Microeconomics** (3 semester hours) An introduction to theories of the behavior of markets. Topics include the theory of demand and supply, market structure, resource markets, international interdependence in commodity markets, the role of government policy and regulation. (3-0) S

**ECO 2303 Economic Concepts for Engineers and CS** (3 semester hours) An introductory course designed for students in engineering and computer science programs. Topics include: technology and economic efficiency; the role of R&D in economic growth; the theory of production; prices as an information system; demand and supply as determinants of aggregate production; money and efficient exchange; government and private sector financial institutions; global interdependence, trade and technology transfer. (3-0) Y

**ECO 3304 Basic Techniques for Economic Research** (3 semester hours) An introduction to the primary methods used in economic research. Topics include information technology, computer software, mathematics and statistics for economists. This course is designed to provide a foundation for all other upper-level economics and finance courses. Prerequisites: College level algebra and college level statistics (MATH 1314 and STAT 1342 or MATH 1314 and SOCS 3305). This course does not apply toward the Bachelor of Science in Economics. (3-0) Y

**ECO 3310 Intermediate Microeconomic Theory** (3 semester hours) The study of theories of demand, production, competition, markets, and welfare. Implications of theory for purposes of public policy prescriptions are given particular emphasis. Prerequisite: ECO 2302 and either ECO 3304, MATH 2417 or MATH 1325, or permission of instructor. (3-0) S

**ECO 3311 Intermediate Macroeconomic Theory** (3 semester hours) A study of the determinants of national income, employment, interest rates, and the price level, including theories and evidence regarding the influence of monetary and fiscal

policies on the economy. Prerequisites: ECO 2302 and ECO 2301 and either ECO 3304, MATH 2417 or MATH 1325, or permission of instructor. (3-0) S

**ECO 3312 Money and Banking** (3 semester hours) The development, structure, and regulation of financial institutions and the roles of these institutions in determining the money supply and level of economic activity. (3-0) T

**ECO 3315 Economics of Sports** (3 semester hours) Applies principles of economic analysis to look at the nature and characteristics of professional and amateur sports industries. Examines franchising and profit-maximization, monopoly and anti-trust, public financing of sports facilities, labor markets for players, team competitive balance, discrimination and other themes. Prerequisite: ECO 2302. (3-0) T

**ECO 3330 Economics of Health** (3 semester hours) A study of personal and public expenditures on health care, the markets for medical personnel, the medical industry, the health insurance market, and present and proposed health-care policies. Prerequisite: ECO 3310. (3-0) R

**ECO 3331 Urban Growth and Structure** (3 semester hours) Deals with the economic and spatial processes underlying urban growth and regional development, and with the structural and demographic characteristics of urban areas as well as the social and psychological dynamics of urban life. This course is also recommended for students who are not Economics majors. (Same as GEOG 3331) (3-0) T

**ECO 3333 Real Estate Economics and Finance** (3 semester hours) Economic, legal and institutional factors involved in real estate markets. Environmental and economic trade-offs necessary for effective management are considered in the context of selected models of land use. Special attention is given to issues of urban development. This course is also recommended for students who are not economics majors. (3-0) R

**ECO 3370 The Global Economy** (3 semester hours) Considers the changing relationships of population, resources, and the economy, the transformation of classical spatial economies, and the processes producing increasing globalization. Particular attention is paid to technological change and to the dynamics of world trade and investment. This course is also recommended for students who are not economics majors. (Same as GEOG 3370) (3-0) T

**ECO 3372 Population and Development** (3 semester hours) Examines the relations between population, development, and the environment. Essential components of demographic analysis lay the foundation for a critical evaluation of demographic transition theory. Other topics include public health, population structure and life chances, cultural differences and women's status, aging, environmental impacts, and population policy. (Same as GEOG 3371 and SOC 3371) (3-0) T

**ECO 3373 Transportation and Logistics** (3 semester hours) Focuses on concepts and methods for decision making in transportation based on both geographic and economic factors. Considers the relationships between location and cost in the context of the classic transportation problem and other location models in transportation. Examines project cost/benefit evaluation, urban travel demand modeling, transportation pricing, and issues of accessibility and economic opportunity. Prerequisite: ECO 2302 or equivalent. (Same as GEOG 3373) (3-0) Y

**ECO 3375 Transportation and Cities** (3 semester hours) Explores the relationship between urban areas and transportation systems. Examines economics of transportation in cities, transportation and urban form, highway congestion, environmental impacts of transportation, public transit, transportation and labor markets, and political influences on transportation planning. (Same as GEOG 3375) (3-0) Y

**ECO 3381 Economic History** (3 semester hours) A review of the history of Western civilization, with particular emphasis on the economic influences of money, resources, production, and trade on political and social events. This course is also recommended for students who are not economics majors. (3-0) R

**ECO 3385 Benefit-Cost Analysis** (3 semester hours) Application of the principles of welfare economics to analysis of the efficiency and distributional impacts of government action. Theoretical foundations and related techniques for measuring and assessing the impacts of different policies and programs. Prerequisite: ECO 3310. (3-0) T

**ECO 4301 Game Theory** (3 semester hours) Rational decision-making in strategic situations where the optimal decision for one player depends upon the strategies of others. The emphasis is on non-zero sum, noncooperative games in various frameworks: Single-period, repeated, and dynamic games with either symmetric or asymmetric information available to the players are considered. Equilibrium concepts include Nash equilibrium in pure strategies and mixed strategies, Bayesian Nash equilibrium, and refinements of Nash equilibrium such as Subgame Perfect equilibrium are considered. Games are illustrated through the use of economic examples, such as pricing and output decisions of firms, common property usage, bargaining, international trade games, and games of market entry. Prerequisite: ECO 3310. (3-0) Y

**ECO 4310 Managerial Economics** (3 semester hours) The development of tools based on economic principles for managerial decisions about pricing, costing, production organization and capital budgeting. Prerequisites: ECO 3304 and ECO 3310. (3-0) T

**ECO 4320 Public Sector Economics** (3 semester hours) A study of the economics of the public sector, including taxation, public expenditures, and fiscal policy. Examines the theoretical foundation for government intervention in the economy, and the incentive

effects of government policies on work, investment, and the spending of income. Prerequisite: ECO 3310. (Same as PA 4313) (3-0) R

**ECO 4330 Law and Economics** (3 semester hours) Contracts, torts, and property rights, integrating economic theory concerning efficiency and equity with actual legal cases. Topics include medical malpractice, habitability laws, zoning, crime deterrence, environmental laws, and discrimination. This course is also recommended for students who are not economics majors. (3-0) T

**ECO 4333 Environmental Economics** (3 semester hours) A study of people and their environment, emphasizing the social and economic consequences of development and pollution. Alternative public policies for dealing with environmental impacts are explored. Prerequisite: ECO 2302. (3-0) T

**ECO 4334 Experimental Economics** (3 semester hours) This is a course in the use of laboratory methods to study behavior in economics and the social sciences. Students will study state-of-the-art methodology in experimental economics, including experimental design, laboratory technique, financial incentives, and analysis of data. Students will participate in, design, and conduct experiments in bargaining, auctions, asset markets, public goods and commons situations, and risky decision-making. Prerequisite: ECO 3310. (3-0) Y

**ECO 4340 Labor Economics and Human Resources** (3 semester hours) Analyses of wage and employment determination, the role of unions and government in labor market outcomes; discussion of such issues as human capital, discrimination, occupational safety and health, and labor-market segmentation. Prerequisite: ECO 3310. (3-0) T

**ECO 4342 Public Policies Toward Business** (3 semester hours) Analysis of the economic rationale for government intervention in markets. The course considers direct intervention in the form of price, entry, and/or product quality directives, the economic welfare foundations of public utility economics, and the theory of regulation and deregulation, including indirect regulation through antitrust laws. Topics include collusion, price discrimination, vertical restraints, and other attempts to monopolize a market. Prerequisite: ECO 3310. (3-0) T

**ECO 4345 Industrial Organization** (3 semester hours) Market structure, firm conduct, and social performance of industries with emphasis on firms' strategic behavior in price and nonprice competition. Topics include oligopoly pricing, strategic entry deterrence, location strategies, product differentiation, advertising, research and development, and the effect of firms' conduct on economic welfare and market structure. Prerequisite: ECO 3310. (3-0) T

**ECO 4346 Technology, Economy, and Society** (3 semester hours) This course explores the ways technology and society shape one another in an economic context. Drawing on theoretical and research contributions from several social sciences, the course devotes primary attention to the economic impacts of so-called information and communication technologies (ICT) on employment and earnings, job creation and destruction, new firm formation and failure, as well as profit and productivity. (3-0) R

**ECO 4348 Business and Technology** (3 semester hours) This course explores the role of technological innovation in macroeconomic performance and firm-level business activity. It highlights theoretical and research contributions from across the several social sciences, engineering, and management. Topics included all reflect on how technical advances emerge from – and have their impacts shaped within – markets and broader societal organization. The roles of domestic political institutions and public policy, as well as geo-political contexts, will be used to illustrate the broader implications of the technology-business relationship. (Same as SOC 4348) (3-0) Y

**ECO 4351 Mathematical Economics** (3 semester hours) Mathematical formulation of economic theories such as static and dynamic analysis of market behavior and macroeconomic models. Introduction to optimization techniques and linear algebra. Prerequisite: ECO 3304 or MATH 2333 or MATH 2418. (3-0) Y

**ECO 4355 Econometrics** (3 semester hours) The application of statistical methods to economic analysis; particular attention is given to regression analysis and hypothesis testing. Prerequisite: ECO 3304 or MATH 2333 or MATH 2418. (3-0) Y

**ECO 4360 International Trade** (3 semester hours) Studies international relationships among national economies with a principal focus on trade relationships. Examines theories of trade, rationale for protectionism, and the foundation of exchange markets. Prerequisite: ECO 3310. (3-0) Y

**ECO 4362 Development Economics** (3 semester hours) A study of development and economic growth, with a principal focus on less-developed countries. Includes theories and patterns of development, the role of human resources, capital resources, agriculture, and international markets. Prerequisites: ECO 2302 and ECO 3311. (3-0) Y

**ECO 4363 Economics of Latin America** (3 semester hours) A study of Latin America, with particular emphasis on the economic role of money, resources, production, and trade in the light of economic, political and social events. (3-0) R

**ECO 4370 Economics of Crime** (3 semester hours) The decisions of criminals, potential criminals, law enforcement agencies, and the public are examined from an economic viewpoint. Applications of utility analysis, production theory, theories of risk-taking, and principles of public finance are considered. (3-0) R

**ECO 4381 History of Economic Ideas** (3 semester hours) An investigation into the writings and ideas of economists past and present. Beginning with the ancient Greeks and ending with contemporary radical economic thought, the course places current

economic issues into historical perspective. Works by Smith, Malthus, Mill, Marx, Veblen, Schumpeter, Galbraith, and others are covered. This course is also recommended for students who are not economics majors. (3-0) R

**ECO 4382 International Finance** (3 semester hours) Studies the international financial system, including the foreign exchange markets and the balance of payment accounts and a discussion of international monetary theory. This course fulfills the University's writing requirement. Prerequisite: ECO 3311. (3-0) T

**ECO 4384 Corporate Finance** (3 semester hours) The theory and techniques of finance in business, including budgeting, cost of capital, and capital markets. Prerequisite: ECO 3304. (3-0) Y

**ECO 4385 Business and Economic Forecasting** (3 semester hours) Techniques, statistical and otherwise, for forecasting events relevant to business and economic activities. Prerequisite: ECO 3304. (3-0) T

**ECO 4396 Selected Topics in Economics** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). (3-0) R

**ECO 4V97 Independent Study in Economics** (1-6 semester hours) Independent study under a faculty member's direction. May be repeated for credit (6 hours maximum). Consent of instructor required. ([1-6] -0) S

**ECO 4V98 Internship** (1-6 semester hours) May repeat for credit up to a total of six semester credit hours. Consent of instructor required. This course can only be taken Credit/No Credit. ([1-6] -0) S

**ECO 4V99 Senior Honors in Economics** (1-6 semester hours) For students conducting independent research for honors theses or projects. May be repeated for credit, but no more than 6 hours may be taken by a student under this number. ([1-6] -0) S

## Interdisciplinary Studies Courses Applicable to the Major in Economics

ISSS 3347 The World's Advanced Economies

ISSS 3349 World Resources and Development

## Education Courses

**ED 3314 The American Public School** (3 semester hours) A study of the nature, scope, and purposes of the public school, with emphasis on meeting the needs of the multicultural society of Texas. Successful completion of 20 clock hours of field experience is required and a prerequisite for a grade in this course. Completion of 45 hours of course work and a cumulative GPA of 2.5 is a prerequisite for this course. (3-0) S

**ED 3315 Children's Literature** (3 semester hours) Examining literature that is age appropriate for elementary students. Literature from many cultures and writers will be included. Students will explore ways to incorporate a variety of literature in their classes and the national and state standards will be incorporated into the class. Prerequisite: Three hours of lower-division literature or HUMA 1301. (Same as LIT 3315) (3-0) Y

**ED 3317 Critical Thinking Skills** (3 semester hours) A course designed to develop and promote problem-solving skills/activities relevant to teaching. Collection/design of proactive, interesting, and humorous materials to promote critical thinking will be encouraged. (3-0) R

**ED 3339 Educational Psychology** (3 semester hours) This course will introduce the theoretical foundation underlying various teaching strategies and provide a framework for understanding student development. Emphasis will be on application of theories in actual teacher behavior. (Same as CLDP/PSY 3339) (3-0) S

**ED 3342 Classroom Management Grades EC - 4** (3 semester hours) Principles of teaching, classroom management and organization, and designing instruction and assessment for elementary/middle schools. Emphasis will be given to understanding the teaching environment, understanding learners, and enhancing student achievement. The domains and competencies for the Professional Development TExES are examined. A minimum of 20 clock hours of field experience is required and a prerequisite for a grade in this course. (3-0) S

**ED 3345 Art, Music, And Physical Development Methods Pre-K – 4th Grade** (3 semester hours) Principles and foundations for developing critical thinking and motor skills through art, music, and organized movement. (3-0) S

**ED 3370 Curriculum and Instruction in Mathematics and Computer Information Systems** (3 semester hours) Curriculum design and methods of instruction in the mathematical sciences. A minimum of 20 clock hours of field experience is required and a prerequisite for a grade in this course. (3-0) S

**ED 3371 Curriculum and Instruction in the Natural Sciences** (3 semester hours) Curriculum design and methods of instruction in the natural sciences. A minimum of 20 clock hours of field experience is required and a prerequisite for a grade in this

course. (3-0) S

**ED 3380 Curriculum and Instruction in English** (3 semester hours) Curriculum design and methods of instruction in English. A minimum of 20 clock hours of field experience is required and a prerequisite for a grade in this course. (3-0) S

**ED 3382 Curriculum and Instruction in Social Studies** (3 semester hours) Curriculum design and methods of instruction in history. A minimum of 20 clock hours of field experience is required and a prerequisite for a grade in this course. (3-0) S

**ED 4320 Education Practicum: Structured Tutoring** (3 semester hours) Students learn about reading instruction, the special difficulties encountered by children from low-income and second language households, and school functioning by tutoring at-risk students in reading in an area school. Tutors are instructed in best practices from the Reading One-to-One tutor's manual. Data on student progress form the basis for an extensive term paper. (3-0) S

**ED 4343 Science Methods For Grades EC - 4** (3 semester hours) Subject matter and scope and sequence organization for an integrated science program in the elementary/middle school based on national and Texas curricula and assessment standards. Hands-on activities are included. (3-0) S

**ED 4344 Mathematics Methods For Elementary Teachers** (3 semester hours) Subject matter and scope and sequence organization for teaching mathematics in the elementary/middle school, based on national and Texas curricula and assessment standards. Manipulatives and visuals are used to help students master basic mathematics principles and develop critical thinking skills. (3-0) S

**ED 4345 Language Arts/Social Studies Methods For Grades EC - 4** (3 semester hours) Subject matter and scope and sequence organization for teaching language arts and social studies in the elementary/middle school, based on national and Texas curricula and assessment standards. (3-0) S

**ED 4352 Reading I: Learning to Read** (3 semester hours) A study of the reading process and theories about teaching reading, understanding the sequential development of reading programs and methods for grouping students and subject matter. Supervised field-based assignments will be required. This course is required for all students seeking EC – 4 and 4 -8 certification. (3-0) S

**ED 4353 Reading in Secondary Content** (3 semester hours) Focuses on using reading and writing in non-language related courses for teachers – Grades 4-8 and Grades 8-12. Required for all content teaching areas. (3-0) S

**ED 4355 Reading II: Reading to Learn** (3 semester hours) Focuses on developing and using reading, writing, listening, speaking and thinking as tools. Instructional strategies, thematic teaching, study skills, and effective uses for text, media, and other resources will be utilized. Prerequisite: ED 4352. (3-0) S

**ED 4357 Diagnostic Reading** (3 semester hours) Examines a variety of assessment and evaluation strategies that are appropriate for the classroom teacher – both formal and informal procedures are introduced. Prerequisite: ED 4355 or ED 4353. (3-0) S

**ED 4358 Chess I: Using Chess in Elementary Schools** (3 semester hours) Using chess to teach critical thinking, math, and reading skills in the elementary classroom. This course is also appropriate for chess instructors who wish to incorporate additional academic and humanistic goals into their programs. This course is offered exclusively via distant learning through the UT TeleCampus. (3-0) R

**ED 4359 Chess II: Institutional And Cultural Contexts Of Chess** (3 semester hours) The role of chess as a combination of game, art and sport in various cultural and institutional environments; resources for teachers from local and national chess organizations, foundations and associations. Some knowledge of the rules and strategies of chess are necessary. This course is offered exclusively via distant learning through the UT TeleCampus. (3-0) R

**ED 4361 Classroom Management Grades 8 - 12** (3 semester hours) A systematic approach to managing the total classroom environment. Emphasis will be given to practical applications of the research in instructional design, instructional management, and strategies in behavioral management. The domains and competencies for the Pedagogy and Professional Development TExES are examined. A minimum of 20 clock hours of field experience is required and a prerequisite for a grade in this course. (3-0) S

**ED 4362 Classroom Management GR 4-8** (3 semester hours) A systematic approach to managing the total classroom environment in the middle school. Emphasis will be given to practical applications of the research in instructional design, instructional management, and strategies in behavioral management for pre- and early teens. The domains and competencies for the Pedagogy and Professional Development TExES are examined. (3-0) S

**ED 4370 Multicultural Perspectives in Learning** (3 semester hours) Focuses on identifying and effectively meeting the needs of a diverse population. Emphasis is placed on tools for planning, collaborative decision making, and implementation of new ideas in the development of programs for minority and non-minority students in academic achievement. (3-0) S

**ED 4372 Educational Technology** (3 semester hours) Emphasis is placed on the use of technology to support the teaching and learning process. This class is only available on the web. Information about specific instructional applications is presented to provide concrete examples of principles and procedures. Focuses on electronic instructional media, multimedia, telecommunications, multi-user networks, and their real-world applications to the secondary classroom. (3-0) S

**ED 4693 Student Teaching – Grades EC - 4** (6 semester hours) Observation and supervised teaching in the elementary school.

Requires full-time attendance in schools for 12 weeks. Prerequisite: Admission to student teaching. (6-0) S

**ED 4694 Student Teaching Grades 8 - 12** (6 semester hours) Observation and supervised teaching in a single teaching field. Requires full-time attendance in schools for 12 weeks. Prerequisite: Admission to student teaching. (6-0) S

**ED 4696 Student Teaching – Grades 4-8** (6 semester hours) Observation and supervised teaching in a classroom for Grades 4-8. Requires full-time attendance in school for 12 weeks. Prerequisite: Admission to student teaching. (6-0) S

**ED 4V90 Independent Study in Education** (1-6 semester hours) Independent study under a faculty member's direction. May be repeated for credit. Consent of instructor required. ([1-6]-0) R

**ED 4V95 Special Topics in Education** (1-6 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-6] -0) R

## Electrical Engineering Course Descriptions

**EE 1102 Introduction to Experimental Techniques** (1 semester hour) EE fundamentals laboratory that stresses laboratory procedures; learning use of common laboratory equipment such as power supplies, multimeters, signal generators, and oscilloscopes; making measurements; familiarization with simple DC resistor circuits; Ohm's law; analyzing AC signals, including frequency, period, amplitude, and rms value; inductors, capacitors and DC transients; measuring phase shift in an AC circuit due to an inductor or capacitor; and basics of laboratory report writing. (Same as TE 1102) (0-1) S

**EE 2110 Introduction to Digital Systems Laboratory** (1 semester hour) Laboratory to accompany EE 2310. The purpose of this laboratory is to give students an intuitive understanding of digital circuits and systems. Laboratory exercises include construction of simple digital logic circuits using prototyping kits and board-level assembly of a personal computer. Corequisite: EE 2310. (0-1) S

**EE 2300 Linear Algebra for Engineers** (3 semester hours) Matrices, vectors, linear systems of equations, Gauss-Jordan elimination, LU factorization and rank. Determinants and solutions of linear systems. Vector spaces, linear dependence/independence, basis, and change of basis. Linear transformations and matrix representation; similarity. Scalar products, orthogonality, Gram-Schmidt process, and QR factorization. Eigenvalues, eigenvectors, and diagonalization; singular-value decomposition. Problem solving using MATLAB. Prerequisite: MATH 2419. (3-0) S

**EE 2310 Introduction to Digital Systems** (3 semester hours) Introduction to hardware structures and assembly-language concepts that form the basis of the design of modern computer systems. Internal data representation and arithmetic operations in a computer. Basic logic circuits. MIPS assembly language. Overview of computer architecture. Prerequisite: CS 1337 or equivalent. Corequisite: EE 2110. (3-0) S

**EE 2V99 Topics in Electrical Engineering** (1-4 semester hours) May be repeated as topics vary (9 hours maximum). ([1-4]-0) R

**EE 3101 Electrical Network Analysis Laboratory** (1 semester hour) Laboratory to accompany EE 3301. Design, assembly and testing of linear electrical networks and systems. Use of computers to control electrical equipment and acquire data. Prerequisite: EE/TE 1102. Corequisite: EE/TE 3301. (Same as TE 3101) (0-1) S

**EE 3102 Signals and Systems Laboratory** (1 semester hour) Laboratory based on MATLAB to accompany EE 3302. Fourier series and Fourier transform analysis, implementation of discrete-time linear time-invariant systems, applications of Fast Fourier Transform, design of digital filters, applications of digital filters. Corequisite: EE/TE 3302. (Same as TE 3102) (0-1) S

**EE 3110 Electronic Devices Laboratory** (1 semester hour) Laboratory to accompany EE 3310. Experimental determination and illustration of properties of carriers in semiconductors including carrier drift, photoconductivity, carrier diffusion; p-n junctions including forward and reverse bias effects, transient effects, photodiodes, and light emitting diodes; bipolar transistors including the Ebers-Moll model and secondary effects; field effect transistors including biasing effects, MOS capacitance and threshold voltage. Corequisite: EE 3310. (0-1) S

**EE 3111 Electronic Circuits Laboratory** (1 semester hour) Laboratory to accompany EE 3311. Design, assembly and testing of electronic circuits that use diodes, transistors and operational amplifiers in configurations typically encountered in practical applications. Corequisite: EE 3311. (0-1) S

**EE 3120 Digital Circuits Laboratory** (1 semester hour) Laboratory to accompany EE 3320. Design, assembly, and testing of logic circuits. Corequisite: EE 3320. (0-1) S

**EE 3150 Communications Systems Laboratory** (1 semester hour) Laboratory to accompany EE 3350. Fundamental elements of communications systems hardware; use of spectrum analyzers and other measurement instruments typically encountered in communication systems; design of active filters in communications systems; analog frequency and amplitude modulators and

demodulators; data communication systems. Corequisite: EE 3350. (0-1) S

**EE 3300 Advanced Engineering Mathematics** (3 semester hours) Survey of advanced mathematics topics needed in the study of engineering. Topics include vector differential calculus, vector integral calculus, integral theorems, complex variables, complex integration, series, residues and numerical methods. Examples are provided from microelectronics and communications. Prerequisite: MATH 2420. (3-0) S

**EE 3301 Electrical Network Analysis** (3 semester hours) Analysis and design of RC, RL, and RLC electrical networks. Sinusoidal steady state analysis of passive networks using phasor representation; mesh and nodal analyses. Introduction to the concept of impulse response and frequency analysis using the Laplace transform. Prerequisites: MATH 2420, PHYS 2326. Corequisite: EE/TE 3101. (Same as TE 3301) (3-0) S

**EE 3302 Signals and Systems** (3 semester hours) Introduces the fundamentals of continuous and discrete-time signal processing. Linear system analysis including convolution and impulse response, Fourier series, Fourier transform and applications, discrete-time signal analysis, sampling and z-transform. Prerequisites: EE/TE 3301. Corequisite: EE/TE 3102. (Same as TE 3302) (3-0) S

**EE 3310 Electronic Devices** (3 semester hours) Theory and application of solid state electronic devices. Physical principles of carrier motion in semiconductors leading to operating principles and circuit models for diodes, bipolar transistors, and field effect transistors. Introduction to integrated circuits. Prerequisites EE/TE 3301. Corequisite: EE 3110. (3-0) S

**EE 3311 Electronic Circuits** (3 semester hours) Analysis and design of electronic circuits using diodes, transistors and operational amplifiers with feedback. Gain and stability of basic amplifier circuits using BJT's, JFET's and MOSFET's; classes of amplifiers; performance of ideal and non-ideal operational amplifiers. Prerequisite: EE 3310. Corequisite: EE 3111. (3-0) S

**EE 3320 Digital Circuits** (3 semester hours) Boolean logic. Design and analysis of combinational logic circuits using SSI and MSI. Design and analysis of synchronous state machines. State minimization and assignment. Design of arithmetic circuits: adders, multipliers and shifters. Use of programmable logic devices and simple CAD tools. Prerequisite: EE 2310. Corequisite: EE 3120. (3-0) S

**EE 3341 Probability Theory and Statistics** (3 semester hours) Axioms of probability, conditional probability, Bayes theorem, random variables, probability density/mass function (pdf/pmf), cumulative distribution function, expected value, functions of random variables, joint, conditional and marginal pdfs/pmfs for multiple random variables, moments, central limit theorem, elementary statistics, empirical distribution. Prerequisite: MATH 2419. (Same as TE 3341) (3-0) S

**EE 3350 Communications Systems** (3 semester hours) Fundamentals of communications systems. Review of probability theory and Fourier transforms. Filtering and noise. Modulation and demodulation techniques, including amplitude, phase and pulse code. Time division multiplexing. Prerequisites: EE 3300, EE/TE 3302, and EE/TE 3341. Corequisite: EE 3150. (3-0) S

**EE 4301 Electromagnetic Engineering I** (3 semester hours) Introduction to the general characteristics of wave propagation. Physical interpretation of Maxwell's equations. Propagation of plane electromagnetic waves and energy. Transmission lines. Antenna fundamentals. Prerequisites: EE 3300, EE 3301 and PHYS 2326. (3-0) S

**EE 4302 Electromagnetic Engineering II** (3 semester hours) Continuation of the study of electromagnetic wave propagation. Metallic and dielectrically guided waves including microwave waveguides and optical fibers. Dipole antennas and arrays. Radiating and receiving systems. Propagation of electromagnetic waves in materials and material properties. Prerequisite: EE 4301. (3-0) S

**EE 4304 Computer Architecture** (3 semester hours) Introduction to computer organization and design, including the following topics: CPU performance analysis. Instruction set design, illustrated by the MIPS instruction set architecture. Systems-level view of computer arithmetic. Design of the datapath and control for a simple processor. Pipelining. Hierarchical memory. I/O systems. I/O performance analysis. Multiprocessing. Prerequisite: EE 3320. (3-0) S

**EE 4310 Systems and Controls** (3 semester hours) Introduction to linear control theory. General structure of control systems. Mathematical models including differential equations, transfer functions, and state space. Control system characteristics. Sensitivity, transient response, external disturbance, and steady-state error. Control system analysis. Performance, stability, root-locus method, Bode diagram, log diagram, and Nichol's diagram. Control system design. Compensation design using phase-lead and phase-lag networks. Prerequisites: EE 2300, EE/TE 3302. (3-0) Y

**EE 4325 Introduction to VLSI Design** (3 semester hours) Introduction to CMOS digital IC design using semi-custom and full-custom design techniques with an emphasis on techniques for rapid prototyping and use of various VLSI design tools. FPGA's, standard cell and full-custom design styles. Introduction to a wide variety of CAD tools. Prerequisite: EE 3320 (or, for CS majors, CS/SE 4340). (3-0) T

**EE 4330 Integrated Circuit Technology** (3 semester hours) Principles of design and fabrication of integrated circuits. Bipolar and MOS technologies. Passive and active component performance, fabrication techniques including epitaxial growth, photolithography, oxidation, diffusion, ion-implantation, thin and thick film components. Design and layout of integrated devices. Relations between layout and fabrication technique. Prerequisites: EE 3310 and EE 3300. (3-0) T

**EE 4334 Numerical Methods in Engineering** (3 semester hours) Computer arithmetic and error analysis. Solution of linear

equations, roots of polynomial equations, interpolation and approximation, numerical differentiation and integration, solution of ordinary differential equations. Emphasis on engineering applications and numerical software. Prerequisites: EE 2300, EE 3300, and knowledge of a high level programming language. (Same as TE 4334) (3-0) Y

**EE 4340 Analog Integrated Circuit Analysis and Design** (3 semester hours) Analog integrated circuits and systems. Analysis and design of linear amplifiers, including operational, high-frequency, broad-band and feedback amplifiers. Use of monolithic silicon systems. Prerequisite: EE 3311. (3-0) T

**EE 4341 Digital Integrated Circuit Analysis and Design** (3 semester hours) Digital integrated circuits. Large signal model for bipolar and MOS transistors. MOS inverters and gates. Propagation delay and noise margin. Dynamic logic concepts. Bipolar transistor inverters and gates, regenerative logic circuits, memories. Prerequisites: EE 3311, EE 3320. (3-0) T

**EE 4360 Digital Communications** (3 semester hours) Information, digital transmission, channel capacity, delta modulation, and differential pulse code modulation are discussed. Principles of coding and digital modulation techniques such as Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Continuous Phase Frequency Shift Keying (CPFSK) are introduced. M-ary signaling such as Quadrature amplitude and phase shift keying, and M-ary PSK and FSK are also discussed. Prerequisite: EE 3350. (3-0) T

**EE 4361 Introduction to Digital Signal Processing** (3 semester hours) An introduction to the analysis and design of discrete linear systems, and to the processing of digital signals. Topics include time and frequency domain approaches to discrete signals and systems, the Discrete Fourier Transform and its computation, and the design of digital filters. Prerequisite: EE 3302. (3-0) T

**EE 4365 Introduction to Wireless Communication** (3 semester hours) Introduction to the basic system concepts of cellular telephony. Mobile standards, mobile system architecture, design, performance and operation. Voice digitization and modulation techniques; PCS technologies. Prerequisite: EE 3350. (Same as TE 4365) (3-0) Y

**EE 4367 Telecommunications Switching and Transmission** (3 semester hours) Trunking and queuing, switching technologies: voice, data, video, circuit switching and packet switching, transmission technologies and protocols, transmission media - copper, fiber, microwave, satellite, protocols - bipolar formats, digital hierarchy, optical hierarchy, synchronization, advanced switching protocols and architectures; frame relay, ATM, HDTV, SONET. Prerequisite or Corequisite: EE 3350. (Same as TE 4367) (3-0) Y

**EE 4368 RF Circuit Design Principles** (3 semester hours) Transmission lines, the Smith chart, impedance matching, simple amplifier design, power coupling, waveguides and lossy transmission lines. Prerequisite: EE4301. Pre- or Corequisite: EE 3311. (3-0) Y

**EE 4380 Microprocessor Design Project I** (3 semester hours) Detailed design, architecture and interfacing of a microprocessor-based system. A balanced view of hardware techniques (e.g. using development board) and software strategies (e.g. using assembler, simulator) for developing an embedded system. All students must do laboratory experiments, propose and implement a limited microprocessor-based project, submit a written report and make an oral presentation at the culmination of the project. Prerequisites: EE 3300, EE 3302, EE 3311, and EE 3320. (3-0) Y

**EE 4381 Mobile Communications System Design Project I** (3 semester hours) Fundamental topics in network design including graph theory, internal and external routing protocols, reliability, availability, capacity, security, and quality of service for networks comprised of SONET, Ethernet, cable, DSL, and wireless infrastructures. All students will design and configure multi-node, multi-topology networks, complete with cost analysis, then will submit a written report and make an oral presentation of their project. Prerequisites: EE 3300, EE 3302, EE 3311, and EE 3320. Pre- or Corequisite: EE/TE 4365. (Same as TE 4381) (3-0) Y

**EE 4382 Individually Supervised Senior Design Project I (Microelectronics)** (3 semester hours) Detailed design assembly and testing of a system or component under the guidance of a faculty member. Specific technical requirements will be set by the faculty member. All students must submit a written report and make an oral presentation of the culmination of the project. Prerequisites: EE 3300, EE 3302, EE 3311, and EE 3320.. (Same as TE 4382) (3-0) R

**EE 4383 Microprocessor Design Project II** (3 semester hours) Advanced topics in microprocessor design, architecture, I/O, memory and interfacing. Specification and design of embedded systems. Advanced hardware and software techniques (e.g. using simulator, emulator, compiler and other sophisticated test equipment) for developing microprocessor-based system. All students must do a market survey, propose and implement a complete microprocessor-based project, submit a written report and make an oral presentation at the culmination of the project. Prerequisite: EE 4380. (3-0) Y

**EE 4384 Mobile Communications System Design Project II** (3 semester hours) Radio frequency system design, propagation, antennas, traffic and trunking, technology issues, channel modeling, link budget, cell design principles, demographics and capacity analysis, project management, and regulatory issues. All students must submit a written report and make an oral presentation at the culmination of the project. Prerequisite: EE 4381 or EE 3300, EE 3302, EE 3311, and EE 3320. Pre- or Corequisite: EE 4390 or CS/TE 4390. (Same as TE 4384) (3-0) Y

**EE 4385 DSP-Based Design Project I** (3 semester hours) Basic discrete-time signal processing concepts, hands-on experience

in real-time digital communications systems, digital signal processor architectures, programming, and interfacing with external systems. All students must finish laboratory experiments, submit a written report, and make an oral presentation at the culmination of the project. Prerequisites: EE 3300, EE 3302, EE 3311, EE 3320 and EE 3350 (or EE/TE 4361). (Same as TE 4385) (3-0)Y

**EE 4386 DSP-Based Design Project II** (3 semester hours) Graphical programming of DSP systems, real-time signal processing, analog to digital signal conversion, digital filtering systems, frequency domain processing, DSP chip architecture, DSP software development tools, design projects. Prerequisites: EE4385 or EE 3300, EE 3302, EE 3311, EE 3320 and EE 3350 or EE 4361, and knowledge of C. (2-3) Y

**EE 4387 Individually Supervised Senior Design Project II** (3 semester hours) Detailed design assembly and testing of a system or component under the guidance of a faculty member. Specific technical requirements will be set by the faculty member. All students must submit a written report and make an oral presentation of the culmination of the project. Prerequisite: EE 4382 or EE 3300, EE 3302, EE 3311 and EE 3320. (Same as TE 4387) (3-0) R

**EE 4390 Introduction to Telecommunication Networks** (3 semester hours) An introduction to packet-switched communication networks, including the OSI model, Internet, TCP/IP, ATM, Ethernet, Frame Relay, and Local Area Networks. Pre- or Corequisite: EE 3350. (3-0) S

**EE 4391 Technology of Plasma Class and Laboratory** (3 semester hours) Plasmas are critical to making the best electronic devices. This class and laboratory will be an introduction to the technology required to make and use these plasmas. Topics include: high-vacuum technology (gas properties, pumps, pressure gauges, flow-meters, gas composition analysis) and plasma technology (etch, deposition, and lamps). Students will make hands-on measurements in the laboratory that reinforce the theory presented in class. Prerequisites: EE 3300 and EE 3310. Recommended: EE 3341. (2-1) Y

**EE 4392 Introduction to Optical Systems** (3 semester hours) Operating principles of optical communications systems and fiber optic communication technology. Lightwave fundamentals, characteristics of integrated optic waveguides and optical fibers, attenuation and dispersion, operating principles of optical sources, detectors and optical amplifiers, optical transmitters and receivers, modulation techniques, effect of noise in optical systems, system design fundamentals, network topologies. Prerequisites: EE 3302 and PHYS 2326. (3-0) T

**EE 4399 Senior Honors in Electrical Engineering** (3 semester hours) For students conducting independent research for honors theses or projects. (0-3) R

**EE 4V95 Undergraduate Topics in Electrical Engineering** (1-9 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-9]-0) R

**EE 4V97 Independent Study in Electrical Engineering** (1-9 semester hours) Independent study under a faculty member's direction. May be repeated for credit (9 hours maximum). Consent of instructor required. ([1-9]-0) R

## Engineering and Computer Science Course Descriptions

**ECS 3390 Professional and Technical Communication** (3 semester hours) Expands students' professional and team communication skills and strategies in technical contexts. Integrates writing, speaking and group communication by developing and presenting technical information to different audiences. Written assignments focus on creating professional technical documents, such as proposals, memos, abstracts, reports and letters. Presentation assignments emphasize planning, preparing and delivering dynamic, informative and persuasive presentations. Attendance at first class mandatory. Prerequisite: RHET 1302 and junior standing. (3-0) S.

## Film Studies Course Descriptions

**FILM 2332 Understanding Film** (3 semester hours) Explores artistic, philosophical, political, and psychological dimensions of the motion-picture experience. This course analyzes visual language, cinematic codes, and the ways that films can embody or criticize popular ideas and attitudes. Emphasis may be on film analysis, film compared to the other arts, the functions of art, films as artifacts, the relationship between the filmmakers and the film, the filmmakers and society, or theories of film production and reception. (3-0) Y

**FILM 2V71 Independent Study in Film** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). ([1-3] -0) R

**FILM 3321 Film in Historical Context** (3 semester hours) Films in history and as history. Historical studies of major films,

genres, and movements from the silent era to the present. Topics may include the history of documentary, fiction, or experimental film and video; film genres such as the western, the horror film, or the melodrama viewed in a historical context. Courses on film movements focus on a national cinema at a specific time (such as German Expressionism, Soviet Socialist Realism, Italian Neo-Realism, or French New Wave). May be repeated for credit as topics vary (9 hours maximum). Prerequisite: FILM 2332 or equivalent. (3-0) Y

**FILM 3325 Film Authorship** (3 semester hours) Film history focused through one to two directors per course, from the directors' early efforts through the final films they directed. Lectures, discussions, and film screenings are designed to explore films as part of cultural history, cinema history, and the history of criticism, including various theories about the nature of film authorship. May be repeated for credit as directors vary (6 hours maximum). Prerequisite: FILM 2332 or equivalent. (3-0) T

**FILM 3326 Imagined Worlds: Science Fiction and Horror Films** (3 semester hours) A study of science fiction and horror films in their historical contexts. The course will trace the formal and aesthetic development of these films within particular national schools of cinema and will evaluate the effect of these films on their national audiences. Prerequisite: FILM 2332 or equivalent. (3-0) T

**FILM 3342 Topics in Film** (3 semester hours) Explores the changing nature, practices, and principles of film. Topics may focus on the varied nature of the collaborative filmmaking process, the rise of cinema as a public entertainment, thematic issues, or relationships between film and social change. Sections may be devoted to independent cinema, contemporary international cinema, or aspects of filmmaking such as scriptwriting. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: FILM 2332 or equivalent. (3-0) R

**FILM 4399 Senior Honors in Film** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Signature of instructor on proposed project outline required. (3-0) R

**FILM 4V71 Independent Study in Film** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Prerequisite: Upper-division standing, and completion of all lower-division requirements in AP and permission of the instructor. ([1-3] -0) R

## Foreign Language Course Descriptions

**ARAB 1312 Beginning Arabic** (3 semester hours) This course will integrate acquisition of the four language skills (listening, speaking, reading and writing) with study of Arab culture and civilization. It will combine classroom instruction with the use of interactive multimedia language lab that will enable the students to have access to sound and images from Arabic-language videos, videodiscs, CD-ROMs, and audiotapes. Use of the multimedia language lab is required. (3-0) Y

**ARAB 2312 Intermediate Arabic** (3 semester hours) This course is a continuation of Beginning Arabic. May be repeated for credit (6 hours maximum). Prerequisite: ARAB 1312 or permission of the instructor. (3-0) Y

**CHIN 1312 Beginning Chinese** (3 semester hours) This course will integrate acquisition of the four language skills (listening, speaking, reading and writing) with study of Chinese culture and civilization. It will combine classroom instruction with the use of interactive multimedia language lab that will enable the students to have access to sound and images from Chinese-language videos, videodiscs, CD-ROMs, and audiotapes. Use of the multimedia language lab is required. (3-0) Y

**CHIN 2312 Intermediate Chinese** (3 semester hours) This course is a continuation of Beginning Chinese. May be repeated for credit (6 hours maximum). Prerequisite: CHIN 1312 or permission of the instructor. (3-0) Y

**FREN 1312 Beginning French** (3 semester hours) This course will integrate acquisition of the four language skills (listening, speaking, reading and writing) with study of French culture and civilization. It will combine classroom instruction with the use of interactive multimedia language lab that will enable the students to have access to sound and images from French-language videos, videodiscs, CD-ROMs, and audiotapes. Use of the multimedia language lab is required. (3-0) Y

**FREN 2312 Intermediate French** (3 semester hours) This course is a continuation of Beginning French. May be repeated for credit (6 hours maximum). Prerequisite: FREN 1312 or permission of the instructor. (3-0) Y

**GREK 1312 Beginning Greek** (6 semester hours) The grammar and syntax of ancient Greek. Discussion of the Greek sensibility, which is inseparable from the Greek language. Some readings of short poems of Archilochus, Sappho, and Anacreon. Graduated readings from Aesop and Herodotus. (6-0) T

**GREK 2312 Intermediate Greek** (3 semester hours) Readings in selected Greek poetry and prose. Prerequisite: GREK 1312 or permission of instructor. (3-0) T

**LANG 1312 Beginning Language Instruction** (3 semester hours) This course offers beginning instruction in foreign languages not taught on a regular basis. The course integrates acquisition of language skills (listening, speaking, reading, and writing) with

study of culture and civilization. Languages will vary but may include German, Italian, Hindi, or Russian. (3-0) R

**LANG 2312 Intermediate Language Instruction** (3 semester hours) This course is a continuation of beginning instruction in foreign languages not taught on a regular basis. Languages will vary but may include German, Italian, Hindi, or Russian. (3-0) R

**LANG 2342 Topics in Language** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (6 hours maximum). (3-0) R

**LANG 3342 Advanced Language Instruction** (3 semester hours) This course is a continuation of instruction in foreign languages not taught on a regular basis. Languages will vary. (3-0) R

**LANG 3348 Topics in Language** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (6 hours maximum). (3-0) R

**LANG 4348 Advanced Topics in Language** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (6 hours maximum). (3-0) R

**SPAN 1312 (SPAN 1311) Beginning Spanish** (3 semester hours) This course will integrate acquisition of the four language skills (listening, speaking, reading, and writing) with study of Spanish culture and civilization. It will combine classroom instruction with the use of an interactive multimedia language lab that will enable the students to have access to sound and images from authentic Spanish language videos, videodiscs, CD-ROMs, and audiotapes. Use of the multimedia language lab is required. (3-0) Y

**SPAN 2312 Intermediate Spanish** (3 semester hours) This course is a continuation of beginning Spanish. May be repeated for credit (6 hours maximum). (3-0) Y

**SPAN 3360 Functional Spanish for Cultural Awareness I** (3 semester hours) The development of spoken and written Spanish through the use of diverse cultural materials from Spain and Latin America, such as selections from print and broadcast media, literature, music, and the visual arts. Prerequisite: 12 hours of college-level Spanish, four years of high school Spanish, or permission of the instructor. (3-0) T

**SPAN 3361 Functional Spanish for Cultural Awareness II** (3 semester hours) Continuation of LIT 3360. Prerequisite: Successful completion of SPAN 3360, 15 hours of college-level Spanish, or permission of the instructor. (3-0) T

**SPAN 3363 Spanish Composition and Style** (3 semester hours) Designed to offer students the opportunity to perfect linguistic skills and to comprehend selected works of Peninsular and Spanish-American writers. Prerequisite: SPAN 2312 or the equivalent, or permission of the instructor. (3-0) T

**SPAN 3364 Spanish Culture** (3 semester hours) This course is designed to offer students of Spanish the opportunity to perfect the four language skills (listening, speaking, reading, and writing). In addition to reviewing the most intricate aspects of Spanish grammar, students will be introduced to selected works by Peninsular and Spanish American writers, literary analysis, discussion, and translation of some of their works. This class will be conducted largely in Spanish. Prerequisite: SPAN 3365 or equivalent, or permission of the instructor. (3-0) Y

**SPAN 3365 Advanced Spanish** (3 semester hours) The course is designed to help students to build continuous vocabulary, increase the understanding of the Hispanic culture, and augment speaking fluency. The course will cover reading comprehension, discussion of literature, composition, conversation, and Total Physical Response Storytelling (TPRS) activities. Prerequisite: SPAN 2312 or equivalent or permission of instructor. (3-0) Y

**SPAN 3441 Medical Spanish** (4 semester hours) This course is designed to introduce students to the utilization of the Spanish language in the Health Care arena. A combination of written and oral exercises will be employed in a workshop atmosphere. Prerequisite: Introductory Spanish or the equivalent. (4-0) Y

**SPAN 4364 Advanced Spanish Culture** (3 semester hours) This course will provide students with a basic knowledge of and appreciation for the Spanish language, culture and civilization as found in Spain, Latin America, and the Hispanic communities in the U.S.A. The traditional elements and new trends of the culture as revealed in the arts, music, film and literature will be covered. Classes will be conducted in Spanish with occasional use of English for clarification of difficult concepts only. Prerequisite: SPAN 3364 or equivalent or permission of instructor. (3-0) Y

**VIET 1312 Beginning Vietnamese** (3 semester hours) This course will integrate acquisition of the four language skills (listening, speaking, reading and writing) with study of Vietnamese culture and civilization. It will combine classroom instruction with the use of interactive multimedia language lab that will enable the students to have access to sound and images from Vietnamese-language videos, videodiscs, CD-ROMs, and audiotapes. Use of the multimedia language lab is required. (3-0) Y

**VIET 2312 Intermediate Vietnamese** (3 semester hours) This course is a continuation of Beginning Vietnamese. May be repeated for credit (6 hours maximum). Prerequisite: VIET 1312 or permission of the instructor. (3-0) Y

## Gender Studies Course Descriptions

**GST 2300 Introduction to Gender Studies** (3 semester hours) An introduction to the way gender shapes individuals, social institutions and culture. Examines gender, class, sexuality, race/ethnicity, and nationality as interactive systems. Topics include biological arguments about gender and sexuality; the cultural construction of gender; the psychology of sex roles; the ways gender shapes families, workplaces and other social institutions. (Same as SOC 2300) (3-0) Y

**GST 3301 Psychology of Gender** (3 semester hours) An overview of individualistic and interactional perspectives in biology, personality, and social relations. With a focus on the individual, gender in thought, emotion, personal relationships, and self-concept is explored. (Same as PSY 3324) (3-0) Y

**GST 3302 Gender in Western Thought** (3 semester hours) Identifies gendered approaches within the history of ideas, including philosophy, theology, and literature. Universal truths about human nature, particularly with regard to sex and gender, are located within the intellectual milieu of various writers and within the larger body of Western thought. (Same as HIST 4380 when topic is Women in Western Thought) (3-0) T

**GST 3303 Gender, Society and Politics** (3 semester hours) Addresses the influence of gender on the distribution of public goods and the way gender, interacting with race and class, shapes social, political, and economic institutions. Introduces students to traditional notions of rights and citizenship as conceptual underpinnings for contemporary political and legal debates (on welfare, reproductive rights, childcare, job segregation, women in the military, prostitution). (Same as SOC 3354 and GOVT 3354) (3-0) Y

**GST 4379 Topics in Gender Studies** (3 semester hours) May be repeated for credit up to a nine hour maximum. (3-0) R

**GST 4381 Senior Honors Research** (3 semester hours) Designed for students conducting original research. Consent of instructor is required. (3-0) S

**GST 4382 Senior Honors in Gender Studies** (3 semester hours) To qualify for magna or summa cum laude if the required number of hours are taken at UTD. A suitable ranking of this paper/project is required to qualify for honors. Consent of instructor is required. (3-0) S

**GST 4V80 Independent Study** (1-6 semester hours) May be repeated for credit. Consent of instructor required. ([1-6]-0) R

## Geography Course Descriptions

(Note: For a description of Social Science courses, see page 243.)

**GEOG 2301 Social Relations and Spatial Organization** (3 semester hours) An introduction to concepts and types of spatial organization, and to relationships between environment and behavior. An examination of ideas of space and place is followed by discussion of the relationships between social relations and spatial arrangement, and of the nature, functions, and types of territoriality. Systems concerns of spatial analysts are contrasted with behavioral concerns of environmental psychologists to permit a focused assessment of designers' concepts of territory, image and milieu, public and private spaces, etc. Among the related ideas reviewed are those of proxemics, mental maps, topophilia, and time-space budgets. The course concludes by classifying and exemplifying various modes of spatial organization: space-contingent, space-forming and space-transforming. (3-0) T

**GEOG 2302 The Global Environment** (3 semester hours) An introduction to the physical aspects of the world's geography emphasizing the interrelationships between the earth and its climate, vegetations, soils, and landforms. Provides a global perspective on the physical environment and the interactions between global systems to produce regional differences. (Same as GEOS 2302) (3-0) T

**GEOG 2303 People and Place: An Introduction to World Geographic Regions** (3 semester hours) Considers how the key concepts of place and space can be used to understand the spatial character and interactions of history, culture, economics and the environment in major regions of the world including Southwest Asia, Southeast Asia, Western Europe, Eastern Europe, the Middle East, Middle America, the Caribbean, the Pacific World, North America, South America, and Sub-Saharan Africa. (3-0) Y

**GEOG 2304 The Human Mosaic: Culture and Space** (3 semester hours) Provides an introduction to human geography by examining human diversity and the spatial variations among cultural groups. It analyzes the ways ethnicity, language, religion, economy, government and social phenomena vary or remain constant from one place to another and the consequent spatial patterns of demography, agriculture, industry, urbanism, politics, folklife, and popular culture. (3-0) Y

**GEOG 3301 Cultural Ecology** (3 semester hours) Human communities adapt to their environments by means of their technologies and organizations, which in turn reshape the environment, in on going cycles. Cultural ecology, closely related to human ecology and cultural geography, is the study of such relationships. This course provides an introduction to the basic concepts of cultural ecology, with particular emphasis on the relations between land and the human population it sustains and the differentiation of urban and rural society. (3-0) T

**GEOG 3304 Tools for Spatial Analysis** (3 semester hours) An introduction to the primary methods used in geographic analysis. Topics include spatial statistics, cartography, and geographic information systems (GIS). This course is designed to provide a foundation for all other upper-level Geography courses. Prerequisite: SOCS 3305 or STAT 1342. (3-0) T

**GEOG 3323 Geographic Information Systems** (3 semester hours) Provides an introduction to Geographic Information Systems, a software technology for the storage, analysis and display of spatial information. Specific GIS methods are covered for use in a variety of different applications areas and disciplines, including demographic, economic and marketing analysis, transportation studies, land use for cadastral, zoning and engineering applications, spatial statistics in the context of criminology, and environmental/geological applications. Industry standard GIS software tools are used to apply these methods. (Same as SOCS 3323 and ISSS 3323) (3-0) Y

**GEOG 3331 Urban Growth and Structure** (3 semester hours) Deals with the economic and spatial processes underlying urban growth and regional development, and with the structural and demographic characteristics of urban areas as well as the social and psychological dynamics of urban life. (Same as ECO 3331) (3-0) T

**GEOG 3341 Politics, Place and Space** (3 semester hours) Provides an introduction to political geography by asking the question: does location matter in this era of increasing globalization? Examines political institutions and behavior in a spatial context through a wide range of themes, from international affairs, international law and peace building, geopolitics, and the development of territorial states to the geography of elections to local political struggles of non-governmental organizations. (Same as GOVT 3341) (3-0) T

**GEOG 3357 Spatial Dimensions of Health and Disease** (3 semester hours) Examines the spatial dimensions of health, disease and the public health and health care systems. Provides an introduction to spatial epidemiology and a bridge to the terminology of medical and health care professionals. (Same as SOC 3357) (3-0) Y

**GEOG 3358 Population: Concepts and Issues** (3 semester hours) Introduces the key measures, data sources, concepts and theories to document and understand the variation of fertility and mortality, interregional migration, population distributions and their compositions in space and time. Historic, present and future population trends are discussed and analyzed in relation to biological principles and environmental challenges as well as diverging societal organizations and economic constraints. (Same as SOC 3358) (3-0) Y

**GEOG 3370 The Global Economy** (3 semester hours) Considers the changing relationships of population, resources, and the economy; the transformation of classical spatial economics; and the processes producing increasing globalization. Particular attention is paid to technological change and to the dynamics of world trade and investment. (Same as ECO 3370) (3-0) T

**GEOG 3372 Population and Development** (3 semester hours) Examines the relations between population, development, and the environment. Essential components of demographic analysis lay the foundation for a critical evaluation of demographic transition theory. Other topics include public health, population structure and life chances, cultural differences and women's status, aging, environmental impacts, and population policy. (Same as ECO 3372 and SOC 3372) (3-0) T

**GEOG 3373 Transportation and Logistics** (3 semester hours) Focuses on concepts and methods for decision making in transportation based on both geographic and economic factors. Considers the relationships between location and cost in the context of the classic transportation problem and other location models in transportation. Examines project cost/benefit evaluation, urban travel demand modeling, transportation pricing, and issues of accessibility and economic opportunity. Prerequisite: ECO 2302 or equivalent. (Same as ECO 3373)

**GEOG 3375 Transportation and Cities** (3 semester hours) Explores the relationship between urban areas and transportation systems. Examines economics of transportation in cities, transportation and urban form, highway congestion, environmental impacts of transportation, public transit, transportation and labor markets, and political influences on transportation planning. (Same as ECO 3375) (3-0) Y

**GEOG 3377 Urban Planning and Policy** (3 semester hours) Explores important substantive areas and concepts in the field of urban and regional planning and current urban planning and policy issues and debates. Topics include: forces that have historically guided and are currently guiding U.S. urbanization; land use, growth management, transportation and traffic congestion, economic development, housing and community development, environmental planning; legal, environmental, governmental contexts. (Same as PA 3377 and SOC 3377) (3-0) Y

**GEOG 3381 Africa, South of the Sahara** (3 semester hours) Africa is a complex, cosmopolitan continent with a long history of politics, conflict, products and people. This course provides a broad survey of Africa, focusing especially on current political, economic and social conflicts. Topics to be covered include: historical patterns of trade, migration, and regional integration; the impact of colonialism; nationalism and revolution; the impact of the "Development Decades"; contemporary patterns of agrarian change, urbanization, and industrialization; changing gender relations; contemporary environmental challenges; political struggles and democratization; regional conflicts and cooperation; and the impact of HIV/AIDS as a social-economic crisis. (3-0) Y

**GEOG 4396 Selected Topics in Geography** (3 semester hours) Subject matter will vary from semester to semester. May be

repeated for credit (9 hours maximum). (3-0) R

**GEOG 4V97 Independent Study in Geography** (1-6 semester hours) Independent study under a faculty member's direction. May be repeated for credit (6 hours maximum). Consent of instructor required. ([1-6] -0) S

**GEOG 4V98 Internship** (1-6 semester hours) May repeat for credit up to a total of six semester credit hours. Consent of instructor required. This course can only be taken Credit/No Credit. ([1-6] -0) S

**GEOG 4V99 Senior Honors in Geography** (3 semester hours) For students conducting independent research for honors theses or projects. May be repeated for credit, but no more than 6 hours may be taken by a student under this number. ([1-6] -0) S

## Geosciences Course Descriptions

**GEOS 1103 (GEOL 1103) Physical Geology Laboratory** (1 semester hour) A laboratory to accompany GEOS 1303. The exercises include mineral and rock identification. Topographic maps, geologic maps, and aerial photographs are used to study surface landforms, geologic phenomena and tectonic processes. GEOS 1303 is a corequisite or prerequisite. (0-3) S

**GEOS 1104 (GEOL 1104) History of Earth and Life Laboratory** (1 semester hour) A laboratory to accompany GEOS 1304. Exercises include: fossil identification, stratigraphy and correlation, the geologic time scale, age-determination techniques, and maps. (0-3) Y

**GEOS 1303 (GEOL 1303) Physical Geology** (3 semester hours) Introduction to the Earth as a unique planet. The course investigates minerals and rocks which make up the Earth. The structure of the Earth and dynamics of its internal mechanisms are explored. Plate tectonics and surface processes which sculpt the Earth are the topics of the second half of the course. Other planets and celestial bodies within the solar system are contrasted with Earth. Field trip. (3-0) S

**GEOS 1304 (GEOL 1304) History of Earth and Life** (3 semester hours) Introduction to the history of the Earth. The history of life and an introduction to the principles of paleontology, stratigraphy and global change will be discussed. All topics will be discussed in the context of the tectonic evolution of North America. Field trip. Prerequisites: GEOS 1303 and GEOS 1103. (3-0) Y

**GEOS 2302 The Global Environment** (3 semester hours) An introduction to the physical aspects of the world's geography, emphasizing the interrelationships between the Earth and its climate, vegetation, soils, and landforms. Provides a global perspective on the physical environment and the interactions between global systems to produce regional differences. (Same as GEOG 2302) (3-0) Y

**GEOS 2406 Geospatial Science and Methods** (4 semester hours) Remote sensing and Geographic Information System (GIS) science and methods as applied to geospatial aspects of geosciences. Introduction to geospatial software in geosciences. Field trips. Prerequisites: GEOS 1303 and 1103; GEOS 2409 recommended. (4-0) Y

**GEOS 2409 Rocks and Minerals** (4 semester hours) Introduction to crystallography, mineralogy, and petrography. Laboratory course. Prerequisites: GEOS 1303 and 1103 (may be taken concurrently). (3-3) Y

**GEOS 2410 Gemstones** (4 semester hours) Minerals and rocks used as gemstones; their characteristics, physical properties; geological settings and extraction from the earth; and lore and history of use. Laboratory component involves gemstone identification and analysis. (3-3) Y

**GEOS 2V08 Special Topics in Geology or Geophysics** (1-4 semester hours) Subject matter will vary from semester to semester. Consent of instructor required. May be repeated for credit (9 hour maximum). ([1-4]-0) R

**GEOS 3101** One hour courses designed to provide an introduction to scientific topics of general interest. Each course will last approximately 1 month during a semester. There are no pre-requisites. Students may enroll in each course individually. Up to 3 courses may be taken in one semester. Current topics include (other courses may be introduced): Y

**The Biosphere: Origin, Evolution and Mass Extinctions** (1 semester hour) This course presents an overview of the significant events in the history of life on Earth, how the presence of life has modified the Earth's environment, and the catastrophic events that have caused mass extinctions of organisms. May not be taken for credit with or after taking GEOS 3350. (1-0)

**Coral Reefs** (1 semester hour) This course examines the biology, chemistry, and geology associated with modern and ancient reef building corals. Human impact on this fragile ecosystem and the role that coral reefs play in global warming are explored. (1-0)

**Deserts, Dunes, and Dust** (1 semester hour) A study of the climatology, location, and formation of the deserts of the world. The unique landforms found in the desert are described with special emphasis on sand dunes and the role of dust in the geologic record. (1-0)

**Diamonds** (1 semester hour) An overview of the nature, properties, origin, occurrence, history, exploration, mining,

economics, politics, and uses of diamonds in society and technology. May not be taken for credit with or after taking GEOS 2410. (1-0)

**Glaciers** (1 semester hour) An introduction to the formation and development of glaciers from the high mountains to Poles. A review of past glaciations through geologic time to the present, ending with a discussion of the causes of glaciation. (1-0)

**Global Climate Change** (1 semester hour) This course focuses on the present climate system of Earth, glacial cycles of the past and potential problems such as ozone depletion and greenhouse warming. May not be taken for credit with or after taking GEOS 3350. (1-0)

**Gems of the World** (1 semester hour) This course focuses on some minerals used as gemstones and discusses their characteristics, lore, history, intrigue, and geological settings. May not be taken for credit with or after taking GEOS 2410. (1-0)

**The Evolution Debate** (1 semester hour) The theory of evolution and the origin of life problem. Supporting evidence from the fossil record, molecular biology and DNA. Creationism, intelligent design and pseudoscience. (1-0)

**GEOS 3110 Environmental Geology Lab** (1 semester hour) Field observation and measurement of processes and phenomena in environmental geology. Activities include stream and groundwater flow and chemistry measurements, hydrogeologic mapping, and environmental site assessment. Most class meetings are outdoors. GEOS 3310 is a pre- or co-requisite. (0-3) Y

**GEOS 3132 Age of Dinosaurs Lab** (1 semester hour) Hands-on activities that include biological classification, form and analyses of bones, calculations of dinosaur mass, calculations of speed from fossil trackways, assembling a horse or a cow, and building your own sauropod dinosaur from chicken bones. GEOS 3332 is a pre- or co-requisite. (0-3) Y

**GEOS 3310 Environmental Geology** (3 semester hours) A self-paced course examining the interactions of people and our physical environment. Natural hazards, including landslides, flooding, tsunamis, volcanoes, earthquakes, erosion and sea-level change. Air, soil, fresh and ocean water pollution problems and solutions including greenhouse gases, ozone depletion, acid rain, aquifer depletion, toxic wastes and contamination. Energy supplies and the environment, including radioactive waste problems, and human impacts on climate. Self-paced course. No prerequisites. (3-0) Y

**GEOS 3317 Water Resources of the Southwest** (3 semester hours) Examination of the water cycle and the role that fresh water has played in the environment and development of the southwest USA and northern Mexico. Topics include water sources, groundwater and surface water systems, evaporation, pollution, and the role of governments and the private sector in managing water resources. (3-0) R

**GEOS 3320 Geology, Resources, and Environment of Africa** (3 semester hours) An overview of the natural environment of Africa and how this is being impacted by human activity. Topics include the formation of African crust and continent; location and formation of major physiographic features such as rivers and mountains, nature and origin of mineral resources; and environmental challenges facing Africans. (3-0) R

**GEOS 3321 Geology, Resources, and Environment of Latin America** (3 semester hours) An overview of the physical environment of Mexico, Central America, and South America. Topics include evolution of Latin American crust and continent; location and formation of major geologic resources and physiographic features; resource exploitation and present environmental problems with an historic perspective. (3-0) R

**GEOS 3332 Age of Dinosaurs** (3 semester hours) Introductory survey of the anatomy, physiology, life-styles, population, and evolution of dinosaurs and swimming and flying reptiles, as well as Mesozoic climates and basic Earth history of the "Age of Dinosaurs". One three- or four- day field trip to dig dinosaurs in the Big Bend area of Texas. No prerequisites. (3-0) Y

**GEOS 3350 Global Change** (3 semester hours) An examination of the Earth as a system of interacting spheres - water, air, land and life - and the energy that drives these systems; global changes that have occurred on Earth in the past (e.g., ice ages, mass extinctions) and are happening now and in the future (e.g., greenhouse warming, ozone depletion); how the presence of life has modified the planet. (3-0) Y

**GEOS 3401 Oceanography** (4 semester hours) Fundamentals of oceanography, with discussions on the effects of the oceans and people on the Earth's climate and biological communities. Topics include the formation of ocean currents, waves and tides, the greenhouse effect, El Niño, marine pollution, the exploitation of marine resources, wetlands preservation, coral reefs, life in the deep sea, and other marine ecological systems. Laboratory course. Enrollment in GEOS 3401 precludes enrollment in ISNS 3367 The Oceans. (3-3) R

**GEOS 3421 Stratigraphy and Sedimentology** (4 semester hours) Principles and evolution of modern stratigraphic nomenclature; concepts of space and time in the rock record and methods of stratigraphic correlation; factors controlling stratigraphic architecture of sedimentary basins; integrated stratigraphic techniques. Origin, transportation, and deposition of carbonate and siliclastic sediments; weathering, textural analysis, and depositional environments. Laboratory course. Field trips. Prerequisites: GEOS 1304, 1104, and 2409. (3-3) Y

**GEOS 3434 Paleobiology** (4 semester hours) History of life as documented by the fossil record. Basic concepts of Paleontology and Biostratigraphy followed by a review of major fossil groups and major events in the evolution of life, speciation, mass extinction, evolution of communities and ecosystems through geologic time. Paleontological methods to paleoenvironmental reconstruction. Field trip. GEOS 1304 and 1104 recommended. (3-3) Y

**GEOS 3432 Introduction to Fossils** (4 semester hours) Introduction to the study of invertebrate fossils occurring in Cretaceous sedimentary strata in North Texas. "Hands on" approach to the study of invertebrate macrofossils and microfossils includes learning how to (1) collect fossils at selected outcrops in the field; (2) process samples for fossils in the laboratory; (3) illustrate microfossils using the scanning electron microscope; and (4) identify fossils using the available paleontological literature. Both lectures and laboratory exercises will focus on the invertebrate phyla occurring in selected North Texas Cretaceous outcrops. Laboratory and field trip course. Not available to students who have taken, or are taking, GEOS 3430. (3-3) Y

**GEOS 3464 Mineralogy and Petrography** (4 semester hours) Description of crystal morphology, symmetry, atomic structure and chemistry. Structure and classification of silicate minerals. Identification of minerals under the polarizing microscope. Crystallization of magma and classification of igneous rocks and their identification in thin section. Metamorphic reactions, facies and tectures. Examination of metamorphic rocks in thin section. (3-3) Y

**GEOS 3470 Structural Geology** (4 semester hours) Modern tectonic concepts, survey of major structural provinces, examination of material behavior, stress-strain concepts, failure criteria, soil mechanics, fault analysis, rheology, fold analysis and applications of structural concepts to neotectonics and environmental problems. Training in graphical techniques, use of stereographic projections, and geological map interpretation. Laboratory course. Field trip. PHYS 2325 and 2125 strongly recommended. (3-3) Y

**GEOS 4320 The Physics and Chemistry of the Solid Earth** (3 semester hours) The study of the structure and evolution of the Earth through petrology, geochemistry and geophysics. Plate tectonics will be emphasized as a framework for crust and mantle dynamics. The roles of gravity, thermal processes and the mechanical behavior of rocks are investigated. Tectonic settings of igneous and metamorphic rocks will be explored. (3-0) Y

**GEOS 4322 The Earth System** (3 semester hours) Planet Earth comprises a system of interacting spheres: atmosphere, hydrosphere, lithosphere and biosphere, all of which have played an important role in Earth processes and Earth history. This course examines these Earth systems and how their interactions over time have effected their evolving compositions, the evolution of life and Earth's climate. The short-term and long-term parts of the Carbon cycle provide the underlying theme for the study of the Earth System. (3-0) Y

**GEOS 4430 Hydrogeology and Aqueous Geochemistry** (4 semester hours) An introduction to the principles of physical and chemical hydrogeology. Physical topics include the nature and quantification of the components of the hydrologic cycle, fundamentals of water supply and quality, overview of aquifer testing and environmental assessment. Chemical topics include behavior of low-temperature aqueous solutions, water-rock interaction and applications of chemistry to understand the Earth and its geochemical cycles. (4-0) Y

**GEOS 4399 Senior Honors in Geosciences** (3 semester hours) For students conducting independent research for honors theses or projects. (3-0) R

**GEOS 4606 Field Geology** (Summer Field Camp) (6 semester hours) A four-week summer camp designed to provide both practical geological and geophysical experience. Geology students emphasize mapping in sedimentary, igneous, and metamorphic terrains. Geophysics students utilize seismic, potential field, and electrical methods to analyze a field area. Reports in professional form are required. Prerequisites: GEOS 2407, 3421, 3470. NOTE: A field-trip fee is charged for this course. Students are responsible for all personal expenses related to camp. (6-0) Y

**GEOS 4V08 Special Topics in Geology or Geophysics** (1-4 semester hours) Subject matter will vary from semester to semester. Consent of instructor required. May be repeated for credit (9 hours maximum). ([1-4]-0) R

**GEOS 4V09 Senior Research in Geology** (1-9 semester hours) May be repeated for credit. No more than 3 hours of senior research may be used to satisfy the upper-division course work requirement in the major unless approved in advance by the undergraduate advisor. ([1-9]-0) S

**GEOS 4V80 Senior Research in Geophysics** (1-9 semester hours) May be repeated for credit. No more than 3 hours of senior research may be used to satisfy the upper-division course work requirement in the major unless approved in advance by the undergraduate advisor. ([1-9]-0) S

## Interdisciplinary Studies Courses Applicable to the B.A. in Geosciences

Students electing the B.A. program in Geosciences may take one of the following university-wide Interdisciplinary Studies courses as a Geosciences elective.

ISNS 3367 The Oceans

ISNS 4359 Earthquakes and Volcanoes

## Government and Politics Course Descriptions

(Note: For description of Social Science courses, see page 243.)

**GOVT 2301 Constitutional Foundations and Political Behavior in the U.S. and Texas** (3 semester hours) This course examines the evolution and current state of political behavior and public policy making in the U.S. and Texas. Topics discussed will include the constitutions, federalism, intergovernmental relations, voting, elections, political parties, public opinion, and interest groups. (3-0) S

**GOVT 2302 Political Institutions in the U.S. and Texas** (3 semester hours) This course explores the primary institutions of U.S. and Texas government. It examines the bureaucracy as well as the executive, legislative, and judicial branches of government at the state and federal level. (3-0) S

**GOVT 3301 Political Theory** (3 semester hours) An examination of perennial issues in political thought through a study of the work and research methods of selected theorists in the history of political thought. (3-0) Y

**GOVT 3303 Civil Liberties** (3 semester hours) An examination of the development of constitutional law in the area of civil liberties. (3-0) T

**GOVT 3306 Political Economy** (3 semester hours) Investigates various conceptual perspectives for understanding the relationship between economic processes and political institutions. Focuses particular attention on the normative and policy debates separating conservative, liberal, and radical schools of thought. (3-0) R

**GOVT 3310 Public Administration** (3 semester hours) Overview of management responsibilities, functions, and activities in government agencies within the framework of political values and organizational dynamics. (Same as PA 3310) (3-0) Y

**GOVT 3322 Constitutional Law** (3 semester hours) Students will examine the methods used in legal research, the evolution of the Constitution of the United States, and the role of the Supreme Court of the United States in the development of the American constitutional system. Prerequisite: GOVT 2301 and GOVT 2302 or permission of instructor. (3-0) Y

**GOVT 3323 American Federalism** (3 semester hours) An examination of how local, state, and national governments share power in such important areas as education, environmental regulation, public finance, welfare, housing and community development, and criminal justice. There will also be discussions of recent innovations, such as judicial supervision and deregulation. (3-0) R

**GOVT 3325 American Public Policy** (3 semester hours) This course examines the making of public policy in the U.S. political system. Students will examine the various public policy models and case studies related to specific policy areas. All students are required to write a policy related term paper to fulfill the University's writing requirement. Prerequisite: GOVT 2301 and GOVT 2302 or permission of instructor. (3-0) Y

**GOVT 3326 Politics and Business** (3 semester hours) An investigation of the role played by business in American politics. Particular attention will be focused on the regulatory process and the changing relationship between business and government in it. (3-0) T

**GOVT 3327 American Foreign Policy** (3 semester hours) Examines the way in which the policy-making process structures the premises, concepts, and objectives of U.S. policy and the U.S. role in international politics. (3-0) R

**GOVT 3328 International Relations** (3 semester hours) This course explores the power relationships among national actors and organizations. Topics may include origins of the state system, international security, globalization, north-south relations, ecological security, and the implications of world demographic patterns. (3-0) R

**GOVT 3333 Political Behavior** (3 semester hours) This course addresses the questions of why some people vote but others do not, how individuals make political choices, and how people participate in other ways. It examines the behavioral approach to the study of government and politics, the major theories of political behavior, and the effects of long-term changes, socialization processes, media use and political attitudes and institutions. (3-0) Y

**GOVT 3340 Film and Politics** (3 semester hours) This course examines the role of one form of media in shaping political discourse. It examines the role of documentaries, drama, and comedy in shaping, exposing, and reflecting public political sentiments of the day. (Same as SOC 3340) (3-0) R

**GOVT 3350 Comparative Politics** (3 semester hours) An analysis of political life in different cultural and national settings. Considers different theoretical approaches to comparative politics, and differences and similarities in types of political culture, political participation, political institutions, and citizen well-being and government effectiveness. (3-0) R

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**GOVT 3351 Comparative Courts and Law** (3 semester hours) Examines the roles of constitutions and law across a wide range of countries. Relatedly considers theoretical approaches and research methodologies used to advance understanding of the courts. (3-0) R

**GOVT 3353 Law and Gender** (3 semester hours) Examines how laws and legal institutions reflect and reproduce cultural notions of gender. Focuses on how legal equality and sex discrimination have been defined and challenged. Topics include rape law, reproductive issues, marriage and divorce, pornography, workplace regulations, and, generally, how gender and race ideologies interact in legal decision making. (Same as SOC 3353) (3-0) R

**GOVT 3354 Gender, Society, and Politics** (3 semester hours) Addresses the influence of gender on the distribution of public goods and the way gender, interacting with race and class, shapes social, political, and economic institutions. Introduces students to traditional notions of rights and citizenship as conceptual underpinnings for contemporary political and legal debates (on welfare, reproductive rights, childcare, job segregation, women in the military, prostitution). (Same as GST 3303 and SOC 3354) (3-0) Y

**GOVT 3362 American Political Institutions** (3 semester hours) This course examines the constitutional foundations and historical development of the congress, the presidency, the executive, and the courts. Attention will be paid to both the interactions of these institutions, research methodologies employed in examining these institutions, and the internal workings of each. Prerequisite: GOVT 2301 and GOVT 2302 or permission of instructor. (3-0) Y

**GOVT 3364 Campaigns and Elections** (3 semester hours) An examination of the electoral process and the changing role that political parties have played in the development of American political institutions and public policy. (3-0) T

**GOVT 4305 Introduction to Research Methodology** (3 semester hours) Introduces students to the fundamentals of research methodology in the political and social sciences. Specifically discusses the design of research projects, the development of models, the testing of hypotheses, and the making of inferences. Students work on a faculty-directed research project or develop their own project. Recommended for those considering professional careers that require conducting and interpreting research. (3-0) Y

**GOVT 4326 Political Parties and Interest Groups** (3 semester hours) Studies the development and organization of political parties and interest groups, and their activities in campaigns and policy making and implementation, in the United States. Political and legal issues in the regulation of nominating processes, campaign finance, lobbying, redistricting, and related areas are addressed. (3-0) R

**GOVT 4329 Global Politics** (3 semester hours) This course will introduce students to the study of global politics. It will explore the teachings from comparative politics and international relations in examining changing global relationships and power structures, and the research methodologies used in this analysis. (3-0) Y

**GOVT 4330 The Bible and Politics** (3 semester hours) An investigation of the Bible as a political text. Includes discussion of the political context and themes of the Bible and analysis of political theories based upon biblical perspectives. (3-0) R

**GOVT 4331 Mexican Politics** (3 semester hours) This course explores the changing face of the Mexican political economy. Topics will include the evolution and decline of the PRI, the revolt in Chiapas, NAFTA, Mexico's role in Latin America, and the changing nature of its relations with the U.S. (3-0) T

**GOVT 4332 Latin American Politics** (3 semester hours) After a brief review of the region's history from conquest and independence up to the 20th century, the course will include discussions of current issues confronting the region. These issues may include U.S./Latin American relations including NAFTA, demographic changes, religion, guerilla groups, revolution, and the transition from authoritarianism to democracy. (3-0) T

**GOVT 4334 Gay and Lesbian Politics** (3 semester hours) This course examines the rise of the Gay Movement in the United States. It examines the origins of the movement, the shift towards militancy and the current issues facing gays and lesbians in the United States. Specific topics include Stonewall, gays in the military, AIDS, and the Gay Rights struggle in litigation. (Same as SOC 4334) (3-0) R

**GOVT 4341 Politics of the Judicial Process** (3 semester hours) The study of judicial decision making, the political impact of court decisions, and the role of lawyers and judges at the local, regional, and national levels. (3-0) T

**GOVT 4342 Legislative Decision Making** (3 semester hours) This course examines the politics of the Texas Legislature in detail. It is offered only during legislative sessions and uses the session as a backdrop to examine policy making and politics in this branch of state government. (3-0) T

**GOVT 4343 Congress and Public Policy** (3 semester hours) This course explores the history and development of both the place of Congress in the Constitutional order and the internal structures and behaviors of the legislative process. Topics include congressional-presidential relations, elections, representation, committees, parties and leadership, collective action and coalition building, and Congress's capacity to deliberate and make public policy in "the public interest." (3-0) T

**GOVT 4344 Race and Redistricting** (3 semester hours) Examines the politics and process of redrawing congressional and state legislative district lines, notably how this process is influenced by politics as well as by important principles and laws. Reviews the

history of redistricting in the U.S. House of Representatives and considers recent redistricting and the role of race in this process. (3-0) R

**GOVT 4345 Negotiation and Conflict Resolution** (3 semester hours) This course will introduce students to the theory and practice of negotiations in the public sector. Students will learn to analyze the parties, issues, and strategies in negotiations and will take part in many negotiation simulations to develop their skills in issues identification and problem resolution. The course will begin with the study of two-party negotiations and progress to multi-party, multi-issue negotiations. (Same as PA 4345) (3-0) T

**GOVT 4346 War and Peace** (3 semester hours) This course examines the processes of conflict resolution and peacemaking in the modern world by analyzing emerging trends and patterns in global conflict, and the prospects for peace in an evolving world order. The course will consider the roles of the individual; social movements and institutions; culture and values; and state, regional and international institutions in making war and peace. In addition, it will examine the causes and prevention of war, ethnic conflict, terrorism, and security issues. (3-0) T

**GOVT 4347 The War on Drugs** (3 semester hours) This course examines the war on drugs within the context of democratic stability. Alternative state responses to the drug trade will be covered, with attention to the consequences of those policies on democratic stability. Substantively, we will deal with these questions within the context of individual democracies in Latin America and in other regions. (3-0) T

**GOVT 4348 Terrorism** (3 semester hours) This course, focusing on cases of domestic terrorism, examines terrorism within the context of democratic stability. Alternative state responses to these crises will also be covered, with attention to the consequences of those policies on democratic stability. Substantively, we will deal with these questions within the context of individual democracies in Latin America and in other regions of the world. (3-0) T

**GOVT 4349 The Politics of the Bureaucratic Process** (3 semester hours) This course analyzes the role of administrative agencies in democratic policy making. Discusses the internal, procedural determinants of policy decision making as well as the interactions between administrative agencies and other branches of government. Topics may include the development of the contemporary administrative state, administrative rule making, and control of administrative processes by Congress, the president, and the Judiciary. (3-0) R

**GOVT 4354 Contemporary Political Thought** (3 semester hours) Investigates the moral and political controversies shaping contemporary political thought. Considers such issues as legitimacy, justice, distribution, and representation. (3-0) R

**GOVT 4355 National and International Security** (3 semester hours) Investigates problems associated with national and international security in the post-cold war world. Includes analysis of the use of military force, nuclear arms, terrorism, international treaties, and the economic dimensions to national security. (Same as ISSS 4358) (3-0) R

**GOVT 4356 International Political Economy** (3 semester hours) Focuses on the interaction of global politics and economics, including international trade, the underpinnings of international currency exchange, multinational corporations, globalization, and other topics. Prerequisite: GOVT 3328 or GOVT 4329 or undergraduate coursework in international economics. (3-0) R

**GOVT 4357 Human Rights and The Rule of Law** (3 semester hours) This course focuses on the development of norms involving international human rights and law as well as major and competing theories that sometimes weigh against the development of universal human rights. Also examines the effectiveness of the courts and law, including international courts and truth commissions, in the area of human rights. (3-0) R

**GOVT 4358 Social Movements** (3 semester hours) The structure, causes and consequences of change-oriented social movements. Historical and contemporary case studies, including the American labor movement, the civil rights movement, and the feminist movement. (Same as SOC 4355) (3-0) R

**GOVT 4361 Law and Society** (3 semester hours) Analyzes laws and legal institutions as forms of regulation and social control. Explores the links between legal decision making, social structure, and cultural knowledge systems. Theoretical perspectives on law and society, law and ideology, the relation of law to public policy, and legal change as a strategy of social reform are explored. (Same as SOC 4361) (3-0) R

**GOVT 4364 Civil Rights Law and Society** (3 semester hours) Examines the development of civil rights law, and how social ideologies are reflected and reproduced in race and sex discrimination law. Explores how power is exercised through law, and how legal change is pursued as a strategy for social reform. Topics include antislavery and the judicial process, the Reconstruction Amendments, the role of the Supreme Court in U.S. society, school segregation cases, and hate speech. (Same as SOC 4364) (3-0) Y

**GOVT 4365 Law and Medicine** (3 semester hours) Examines the relationship between law and medical ethics. Emphasis is placed on court cases involving reproductive privacy, wrongful life, informed consent, the right to treatment, and the right to refuse treatment. (3-0) T

**GOVT 4367 Moot Court** (3 semester hours) Course examines a hypothetical case which contains two constitutional issues. Based on approximately 20 actual precedents, students are expected to prepare arguments supporting both the petitioner and

respondents on each constitutional issue. Students compete in tournaments against advocates from other universities. May be repeated for credit (6 hours maximum). Consent of instructor required. ([1-6]-0) S

**GOVT 4368 Leadership** (3 semester hours over 2 semesters) This course examines the topic of political leadership. Students examine traditional and contemporary theories of political leadership and interact with current political leaders through seminar discussions. Consent of instructor required. ([1-6]-0) S

**GOVT 4370 The Politics of the Policymaking Process** (3 semester hours) A multidisciplinary exploration of the history, ideas, and institutions that set the stage for politics. This course is part of the Archer Program and is restricted to Archer Fellows. Prerequisite: Consent of Director of Archer Program required. (3-0) R

**GOVT 4372 Advocacy in Applied Settings** (3 semester hours) This is a course on communication and advocacy. Students examine how people make cases for their needs in organizations, especially governmental and political ones. This course is part of the Archer Program and is restricted to Archer Fellows. Prerequisite: Consent of Director of Archer Program required. (3-0) R

**GOVT 4373 Beyond Congress and The White House** (3 semester hours) This course explores the sources and use of power in Washington. It focuses attention upon such issues as the constitutional and technological limits to power, power and the media, and the struggle for control over national memory and language. This course is part of the Archer Program and is restricted to Archer Fellows. Prerequisite: Consent of Director of Archer Program required. (3-0) R

**GOVT 4V76 Archer Center Washington Internship** (3 semester hours) This course is part of the Archer Program and is restricted to Archer Fellows. Prerequisite: Consent of Director of Archer Program required. (3-0) R

**GOVT 4V96 Selected Topics in Government and Politics** (3 semester hours) Subject will vary from semester to semester. May be repeated for credit (9 hours maximum). (3-0) R

**GOVT 4V97 Independent Study in Government and Politics** (1-6 semester hours) Independent study under a faculty member's direction. May be repeated for credit (6 hours maximum). Consent of instructor required. ([1-6] -0) S

**GOVT 4V98 Internship** (1-6 semester hours) May be repeated for credit (6 hours maximum). Consent of instructor required. This course can only be taken Credit/No Credit. ([1-6] -0) S

**GOVT 4V99 Senior Honors in Government and Politics** (1-6 semester hours) For students conducting independent research for honors theses or projects. May be repeated for credit (6 hours maximum) ([1-6] -0) S

## Historical Studies Course Descriptions

**HIST 1301 Survey of American History** (3 semester hours) An introduction to the methods of historical inquiry focusing on the study of American history from the beginnings through the American Civil War. (3-0) R

**HIST 1302 Survey of American History** (3 semester hours) An introduction to the methods of historical inquiry focusing on the study of American history from the American Civil War through the present. (3-0) R

**HIST 2301 History of Texas** (3 semester hours) The political, social, economic, and cultural development of Texas. (3-0) Y

**HIST 2330 Themes and Ideas in American History** (3 semester hours) An introduction to the methods of historical inquiry through the study of selected main themes in American history. A course designed to offer students an understanding of the historical and cultural context of America in the contemporary world. (3-0) T

**HIST 2331 Issues in American History** (3 semester hours) Readings, commentary, and discussion aimed at varying aspects of history and culture. (3-0) T

**HIST 2V71 Independent Study in Historical Studies** (1-3 semester hours) Independent study under a faculty member's direction. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor. ([1-3]-0) R

**HIST 3301 Historical Inquiry** (3 semester hours) Readings, commentary, and discussion aimed at introducing a variety of texts and sources with an emphasis on the major methods appropriate to their use. This course should be taken prior to completing the first 12 hours of upper-division course work in the program. It is normally offered only during the fall and spring semesters. Prerequisite: Three hours of lower-division history. (3-0) S

**HIST 3304 Conceptions of Human Nature** (3 semester hours) Emphasis on contemporary conceptions of human nature and the human condition, stressing the cultural and historical settings. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3317 The Crusades** (3 semester hours) A survey of Medieval European crusading activities in the Iberian Peninsula, the Baltic region, the Near East, and the Balkans. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3318 Medieval Europe** (3 semester hours) The history of Europe from the fall of the Roman Empire to the late medieval period, including feudalism, the investiture controversy, the conflicts of papacy and empire, and the rise of national monarchies. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3319 Early Modern Europe** (3 semester hours) An analysis of the general themes and issues in late medieval and early modern European history from about 1400 to the French Revolution; emphasis on new methods and approaches, especially recent attempts to refine social analysis and to study both popular and elite culture. Prerequisite: Three hours of lower-division history. (3-0)T

**HIST 3320 Modern Europe** (3 semester hours) A study of selected aspects of political, diplomatic, economic, and social history of Europe from the French Revolution to the Second World War. Geographical emphasis on England, France, and Germany. Topical focus on industrialization, modernization, and democratization in the 19th century, and on the emergence of mass society, war, and totalitarianism in the 20th century. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3324 Women in European Society** (3 semester hours) An 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 (6 hours maximum). Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3328 History and Philosophy of Science and Medicine** (3 semester hours) An exploration of the development of philosophical ideas in science and medicine. Topics may include comparison of Eastern and Western philosophies of natural knowledge and medicine and scientific and medical concepts in philosophical and ethical contexts. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3331 European Social History** (3 semester hours) A review of the major problems studied, methods used, and findings reached by the new social historians of Europe. The principal focus of their work and of this course is on the pre-industrial era. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3333 European Social and Political Thought** (3 semester hours) A study of such concepts in social and political theory as authority, justice, equality, law, revolution, natural rights, state, and nation. May include texts by Locke, Burke, Bentham, Mill, Marx, and Nietzsche. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3334 Nineteenth-Century European Culture and Society** (3 semester hours) An exploration of the interplay between social change and cultural developments in various European societies during the 19<sup>th</sup> century. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3336 Twentieth-Century European Culture and Society** (3 semester hours) An exploration of the interplay between social change and cultural developments in various European societies during the 20<sup>th</sup> century. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3337 Technology and Western Civilization** (3 semester hours) A survey of the role played by technology in shaping Western culture from antiquity through the industrial revolution. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3338 Anglo-Saxon Origins** (3 semester hours) A study of the formation of England from the Roman occupation to the Norman conquest. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3339 Medieval England 1066 to 1485** (3 semester hours) English history from the Norman Conquest to the Tudors. Topics will include the medieval institutional framework of monarchy, nobility, parliament, church, the law, and the universities. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3344 History of Science in Europe** (3 semester hours) Surveys the development of the mathematical and natural sciences in European culture. Subject matter will vary from semester to semester, but topics may include astronomy, physics, chemistry, biology, medicine, natural history, geology, evolution, and genetics. Time periods may range from human pre-history to the Scientific Revolution and from the Scientific Revolution to the present. Course content will not overlap with HIST 3337. No technical background required. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3345 The Making of Russia, 988 to 1796** (3 semester hours) A study of medieval and early modern Russia to the death of Catherine the Great. Prerequisite: Three hours of lower-division history (3-0) T

**HIST 3348 The Ancient, Near and Middle East, from Abraham to Muhammad** (3 semester hours) A survey from the Bronze Age, through the ancient empires of Biblical times and the Hellenistic, Parthian, and Sasanid kingdoms, to the lifetime of the Prophet Muhammad. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3349 Ancient Egypt** (3 semester hours) Aspects of the history and culture of ancient Egypt, with emphasis upon the New Kingdom period. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3351 The Ottoman Empire and Europe** (3 semester hours) A survey of Ottoman history from 1360 to 1922. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3353 Ancient and Medieval India** (3 semester hours) A survey of the Hindu, Buddhist, and Islamic civilizations of the Indian subcontinent, with emphasis on the period of Muslim hegemony (11th to 17th centuries). Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3354 India from 1526 - 1857** (3 semester hours) The history of the Indian subcontinent under Mughal, Maratha and British

hegemony. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3355 Persians, Turks, and Mongols** (3 semester hours) Topics in the history of the Near and Middle East, and Central Asia. May be repeated for credit (6 hours maximum). Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3357 African History to 1880** (3 semester hours) A survey of African history to 1880, with emphasis on sub-Saharan Africa. Topics may include Africa before Europe, slave trade, new world blacks in Africa, and colonialism. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3358 Latin American History** (3 semester hours) A survey of Latin America from its pre-Columbian past to the present, with emphasis on the process of change from a traditional to a modern society. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3359 The African Diaspora: Blacks in the Atlantic World** (3 semester hours) This course will explore themes linking people of Africa and of African heritage. Topics may include pre-colonial Africa, slave trade and slavery, Blacks in Europe and the New World, matronage, slave resistance, and Pan-Africanism. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3361 History of American Education** (3 semester hours) An inquiry into the history of schooling in America from colonial times to the present. The course will examine how educational institutions have shaped and been shaped by major shifts in the relations of production, knowledge, and the definitions of citizenship. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3362 Rise of the Helping Professions in America** (3 semester hours) A course on the history of medicine, psychiatry, social work, and education in the United States since the late nineteenth century. Examines the social dynamics and consequences of professional politics, public policies, specialized knowledge, and therapeutic relationships. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3364 History of American Religion** (3 semester hours) An examination of the development of American religious institutions and their relation to the nation's social, political, and cultural history. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3366 Themes in the Social History of the United States** (3 semester hours) A survey of social history, focusing upon the American experience. The course explores changes in the family, work, sex roles, mobility, migration, urbanization, and industrialization. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3367 Continental Expansionism in American History** (3 semester hours) An exploration of the processes that saw the Anglo-American colonial settlements transform themselves into a vast continental power. The course covers the period from 1607 to 1890. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3368 Slavery and Race Relations in the United States** (3 semester hours) An analysis of the evolution of slavery and race relations in the U.S. from the colonial period to the present. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3369 United States Foreign Relations** (3 semester hours) A survey of American diplomatic history since the 1890s. The course analyzes the United States' relations with Africa, Asia, Europe, Latin America, the Middle East, and Soviet Russia. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3370 The American Experience in Vietnam** (3 semester hours) An analysis of the political, diplomatic, economic, and cultural impact the Vietnam War had on American society. Students will analyze monographs, memoirs, novels, documentaries, and feature films. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3371 Twentieth-Century American Culture and Society** (3 semester hours) An exploration of the interplay between social change and cultural developments during the 20th century. Topics include urban life, mass marketing and media, gender roles, ethnic identity, and the relation between "high" and "low" culture. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3374 American Technological Development** (3 semester hours) A survey of the role played by technology in shaping American culture from colonial times to the present. Fulfills one-half of the Texas legislative requirement for six hours in American history. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3375 Ethics in 20th-Century America** (3 semester hours) An examination of various ethical problems which have been a part of 20th-century American consciousness, against the backdrop of social and political events. Issues may include abortion, capital punishment, sexual morality, world hunger, and war. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3376 American Intellectual History, Colonial to the Civil War** (3 semester hours) A survey of some of the principal developments in American thought from the colonial era to the civil war. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3377 American Intellectual History, Civil War to the Present** (3 semester hours) An exploration of the origins of contemporary American intellectual life through the study of changing ideas about society, politics, science, religion, and art from the civil war to the present. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3379 United States Relations with Latin America** (3 semester hours) An analysis of the United States' political,

economic, military, and cultural relations with Latin America, with emphasis on the period since the 1890s. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3380 The Nuclear Age in America** (3 semester hours) An examination of the historical roots of the modern nuclear age. Topics will include the development of the atomic bomb and the role of nuclear weapons in postwar diplomacy. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3382 The United States Since 1945** (3 semester hours) An analysis of the key political, diplomatic, socioeconomic, technological, and cultural changes that have shaped contemporary U.S. society. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3384 U.S. Women from Settlement to Present** (3 semester hours) A survey of the changing social, political, and economic roles of American women. Particular attention will be paid to the diversity of women's roles, focusing on how women of different races, classes, and sexualities interpreted their "American experience." Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3385 Early African-American History** (3 semester hours) A study of themes and issues in the history of African-Americans in the United States. These may include slavery, Blacks in the ante-bellum United States, free Blacks in the ante-bellum era, and Reconstruction. Emphasis will be on African-American perspectives. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3389 History of Science in the U.S.** (3 semester hours) Surveys the development of the mathematical and natural sciences in American culture. Subject matter will vary from semester to semester, but topics may include astronomy, physics, chemistry, biology, medicine, natural history, geology, evolution, and genetics. Course content will not overlap with HIST 3337. No technical background required. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3390 Twentieth-Century African-American History** (3 semester hours) A study of themes in the history of African-Americans in the twentieth century. The course will focus on the civil rights movement, though other themes will also be explored. Emphasis will be on African-American perspectives and the ongoing struggle for self-determination by African-Americans. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3394 Native American History from the Pre-Columbian Period through 1795** (3 semester hours) Examines the arrival of Native Americans in the New World and the cultures that emerged and declined there in the pre-Columbian period. Will also discuss the intellectual framework within which Europeans envisioned Native Americans. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3395 Native American History in the Nineteenth Century** (3 semester hours) Examines the interaction of Native Americans and "whites" during the nineteenth century, primarily in the region west of the Appalachians to the Pacific. Will focus on the cultures of the desert Southwest in the Spanish colonial period. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3396 Native Americans in the Twentieth Century** (3 semester hours) Discusses the allotment or destruction of the reservation system in much of the United States at the turn of the century and will also focus on government attempts to force Native Americans to discard their indigenous identity. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 3397 Other Americans** (3 semester hours) A course on the cultural politics of difference in America. Will explore how and why Americans have used distinctions based on race, gender, class, region, and religion to define themselves and others and to shape the meanings of their lives and their society. Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 4344 Topics in European History** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). Prerequisite: Upper-division standing or permission of the instructor. (3-0) R

**HIST 4345 Origins of the Jim Crow South** (3 semester hours) An examination of the origins of segregation and disfranchisement in the American South following Reconstruction through World War II. Attention will be paid to both the legal and extralegal edifices upholding white supremacy and the evolution of a racist consumer culture. The course will also explore African-American resistance to Jim Crow. Prerequisite: Three hours of lower-division history. (3-0) R

**HIST 4346 American Culture 1877 - 1919** (3 semester hours) A survey of the Gilded Age or Progressive Era, 1877 – 1919. Themes will include expansion of industrial capitalism, the influx of "new immigrants" and patterns of "Americanization," middle-class social reform, emergence of the U.S. as an imperial power, explosion of nativist and racist sentiments, and the political mobilization of labor. Prerequisite: Three hours of lower-division history. (3-0) R

**HIST 4357 Topics in African and African-American History** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Upper-division standing or permission of the instructor. (3-0) R

**HIST 4359 Topics in Asian and Latin American History** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). Prerequisite: Upper-division standing or permission of the instructor. (3-0) R

**HIST 4360 Topics in American Women's History** (3 semester hours) Subject matter will vary from semester to semester and may include Women and the American Frontier, Popular Culture and Mass Media, and American Religious Societies. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Upper-division standing or permission of the instructor. (3-0) T

**HIST 4376 Topics in History** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Upper-division standing or permission of the instructor. (3-0) R

**HIST 4377 Topics in Early American History** (3 semester hours) Focuses on the formative era of the American nation. Social, cultural, political, and economic issues are examined within the context of important transformations over time. Topics will vary and may include British Colonial America (1609-1763), The Era of the American Revolution, and The Early American Republic (1785-1828). May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Three hours of lower-division history. (3-0) T

**HIST 4378 Topics in American History** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Three hours of lower-division history. (3-0) R

**HIST 4380 Topics in Intellectual History** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (6 hours maximum). (3-0) R

**HIST 4399 Senior Honors in Historical Studies** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Prerequisite: Signature of the instructor on proposed project outline required. (3-0) R

**HIST 4V71 Independent Study in Historical Studies** (1-3 semester hours) Independent study under a faculty member's direction. May be repeated for credit (9 hours maximum). Permission of the instructor required. ([1-3] -0) R

### **Interdisciplinary Studies Courses Applicable to the Major in Historical Studies**

ISAH 3330 Venus to Vampire: Women in History and Art T

ISAH 3394 Women and Western Thought T

ISAH 4V88 Special Interdisciplinary Topics in Arts and Humanities, as approved by the instructor and Associate Dean. R

### **Literature and Language Course Descriptions**

**LIT 2331 Masterpieces of World Literature** (3 semester hours) A study of selected themes in world literature. This course will serve as a prerequisite for all upper-division literature courses. (3-0) Y

**LIT 2332 Studies in Mythology** (3 semester hours) An introduction to mythology, with emphasis on the adaptability of mythic themes and characters as reflected in literature from antiquity through the contemporary period. (3-0) T

**LIT 2341 Literary Analysis** (3 semester hours) A close reading of fiction, poetry, and drama. Emphasis will be placed on the development of critical skills through the writing of interpretive essays. This course is required of all Literary Studies majors. (3-0) S

**LIT 2V71 Independent Study in Literary Studies** (1-3 semester hours) Independent study under a faculty member's direction. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor. ([1-3]-0) R

**LIT 3300 Western Literary Tradition** (3 semester hours) Study of major themes of the classical tradition in Western literature and their subsequent transformation. Readings will include works by both classical authors and their literary heirs. This course is required of all Literary Studies majors. Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) S

**LIT 3304 Advanced Composition** (3 semester hours) Rhetorical strategies for analytical, descriptive, and research writing, with emphasis on grammar and style. Prerequisite: RHET 1302. (3-0) Y

**LIT 3308 Electronic Expression** (3 semester hours) An introduction to forms of expression in and about electronic environments (both textual and visual). Examines topics ranging from writing for the WWW to e-mail, real-time technologies (Lingua MOO), electronic journals, hypertext, and other digital forms of expression. Prerequisite: RHET 1302 or equivalent). (3-0) T

**LIT 3310 Studies in Epic and Romance** (3 semester hours) A comparative study of the two related genres, or a study of one of them, with emphasis on their approaches to themes such as heroism, love, or virtue. Readings may be drawn from classical, medieval, and modern literature, and works may include The Iliad, Song of Roland, and Don Quixote. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3311 The Literature of Fantasy and Science Fiction** (3 semester hours) The tradition of the fantastic narrative from classical through modern literature. Consideration of fantasy and/or science fiction as genres melding entertainment and speculation. Works of fantasy may include The Golden Ass, Dracula, and One Hundred Years of Solitude. Writers of science fiction may include Mary Shelley, Poe, Hawthorne, Wells, Clarke, Heinlein, and LeGuin. May be repeated for credit (6 hours maximum).

Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3312 Studies in Prose Narrative** (3 semester hours) Studies in fiction, biography and autobiography, essays, and travel-ogues. May examine such topics as the history of the novel, spiritual autobiography, scientific biography, literary movements, and the new journalism. May be repeated for credit (6 hours maximum). Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) Y

**LIT 3313 Studies in Dramatic Literature** (3 semester hours) Studies in drama as a literary form. May include such topics as Jacobean and Restoration drama, modern or contemporary European drama, and 20th-century American drama. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3314 Studies in Poetry** (3 semester hours) Examines representative selections of poetry with particular reference to techniques of diction, syntax, sound, and organization. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) Y

**LIT 3315 Children's Literature** (3 semester hours) An examination of the kinds of literature produced for children and those concerning children as subjects. Works may include fiction, nonfiction, fairy tales, and films from a variety of historical periods as well as works of major authors. May be repeated for credit as topics vary (6 hours maximum). Same as ED 3315. (3-0) T

**LIT 3319 Periods in English Literature** (3 semester hours) Examines representative selections of literature written during such periods as the Middle Ages, Renaissance, the 17th century, the 18th century, or the early 19th century, or topics such as the literature of the scientific revolution. May be repeated for credit when literary periods vary (9 hours maximum). Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) Y

**LIT 3320 Shakespeare** (3 semester hours) A study of selected works of Shakespeare including his sonnets, comedies, poems, tragedies, and historical plays. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3321 Modern British Literature** (3 semester hours) A study of major British authors since the mid-19th century. Authors may include Browning, Tennyson, Conrad, Joyce, Woolf, Yeats, and Eliot. Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3322 Early American Literature** (3 semester hours) A consideration of the beginnings of American literature from Native American myths of origin and writings of Spanish, French and English explorers through Washington Irving. We will read authors such as Cabeza de Vaca, William Bradford, Cotton Mather, Jonathan Edwards, Phillis Wheatley, Mary Rowlandson, Franklin, Olaudah Equiano, Paine, Jefferson, Madison, and Charles Brockden Brown. Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) Y

**LIT 3323 The American Renaissance 1820-1865** (3 semester hours) A consideration of the development of American literature particularly in New England. We will read authors such as Cooper, Emerson, Fuller, Thoreau, William Apess, Douglass, Harriet Jacobs, Longfellow, Poe, Hawthorne, Melville, Whitman, and Stowe, and works such as the Cherokee Memorials and the political writings of figures such as Lincoln. Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3324 American Realism and Naturalism** (3 semester hours) Considers the development of late 19th- and early 20th-century writers in a society increasingly urban, cosmopolitan, and pluralistic. Writers may include Twain, Howells, James, Crane, Dreiser, and Anderson. Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3325 American Modernism** (3 semester hours) Surveys the turbulent swings in American literature about 1910 to 1945. Considers such literary styles as imagism and social realism and samples a diverse array of writers which may include Pound, Fitzgerald, Hemingway, Faulkner, O'Neill, Dos Passos, and Wright. Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3326 The Literature of the American South** (3 semester hours) An examination of the major writers of this region and their sometimes gothic vision of a decaying society. Authors may include Warren, Welty, O'Connor, McCullers, Williams, Faulkner, and Dickey. Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3327 Mid-Twentieth Century American Literature** (3 semester hours) Surveys American literature from about 1945 to about 1980. Samples such writers as the confessional poets, the Beats, Updike, Oates, Pynchon, Bellow, Mailer, and Morrison, and considers such topics as black humor, feminism, the new journalism, and the self-reflexive novel. Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3328 Ethics in Literature** (3 semester hours) Considers the perspective offered by literature on various ethical questions, and the relation between literature and moral philosophy. Topics may include existentialism, the environment, and religion and literature. May be repeated for credit as topics vary (6 hours maximum). (3-0) Y

**LIT 3329 Ethnic American Literature** (3 semester hours) Surveys the literature of American ethnic or minority cultures, considering both their specific cultural features and their relation to the wider American canon. Traditions to be considered may include African-American literature (slave narratives, Harlem Renaissance, contemporary fiction), Chicano literature, or

Jewish-American literature. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3330 Linguistics** (3 semester hours) The nature of language; general survey of the contributions of linguistics to the fields of phonetics, phonemics, morphology, lexicology, syntax, and semantics. Other topics of general interest in the field will be covered, such as language change, dialects, writing systems and their history, use and misuse of language, and the language of media, advertising, and politics. Prerequisite: LIT 2331, 2332, 2341 or equivalency, or HUMA 1301. (3-0) Y

**LIT 3331 Contemporary American Literature** (3 semester hours) Surveys American writers, styles, and movements from the past few decades. Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3334 Literature of Science** (3 semester hours) Explores the interrelations between authors such as Donne, Swift, Mary Shelly, Hardy, and Pynchon, and science, such as astronomy, evolution, medicine, and chaos theory. May be repeated for credit as topics vary (6 hours maximum). (3-0) T

**LIT 3342 Literature of the Bible** (3 semester hours) A study of the various types of literature found in selected books of the Old and New Testaments. Genres may include epic, tragedy, lyric poetry, satire, biography, and parable. The course may also include works which stem from biblical sources such as Milton's *Paradise Lost*, Byron's *Cain*, and Macleish's *J.B.* Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3343 European Romanticism** (3 semester hours) Readings in literary theory, fiction, drama, and lyric poetry by the mid-18th-century to mid-19th-century romantic writers of Italy, Germany, France, England, or Spain. Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3344 European Realism and Naturalism** (3 semester hours) A study of the naturalist movement of the late 19th century in Europe. Consideration will be given to the philosophical, social, and scientific backgrounds. Readings will include dramas and novels. Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3380 Studies in Women's Literature** (3 semester hours) An introduction to literature by women. Examines selections of literature written from antiquity through the contemporary period. Considers such literary forms as autobiography, journals, letters, fiction, poetry, and drama. Samples a diverse array of women writers and their relation to the wider Western canon. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) T

**LIT 3381 Topics in Western Literature** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) R

**LIT 3382 Topics in Non-Western Literature** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Three hours of lower-division literature or HUMA 1301. (3-0) R

**LIT 4329 Major Authors** (3 semester hours) Study of one or more major literary figures such as Chaucer, Dante, Milton, Goethe, Blake, Balzac, Mann, Eliot, Austen, Dostoevsky, and Tolstoy. May be repeated for credit as subjects vary (9 hours maximum). Prerequisite: Upper-division standing or permission of the instructor. (3-0) T

**LIT 4330 Dante** (3 semester hours) A close reading of *The Divine Comedy* (*Inferno*, *Purgatorio*, *Paradiso*) in its historical, philosophical, religious, and poetic contexts, along with related works by Dante and his contemporaries. Prerequisite: Upper-division standing or permission of the instructor. (3-0) T

**LIT 4344 The Modern Novel** (3 semester hours) A study of several landmark, late 19th- and 20th-century novels, with attention to their literary, intellectual, and historical qualities. Authors may include Joyce, Proust, Mann, García Marquez, or others. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Upper-division standing or permission of the instructor. (3-0) T

**LIT 4346 Contemporary Literature** (3 semester hours) Major trends in contemporary world literature with particular emphasis on the last ten years. Prerequisite: Upper-division standing or permission of the instructor. (3-0) T

**LIT 4348 Topics in Literary Studies** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). Prerequisite: Upper-division standing or permission of the instructor. (3-0) R

**LIT 4399 Senior Honors in Literary Studies** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Prerequisite: Signature of instructor on the proposed project outline. (3-0) R

**LIT 4V71 Independent Study in Literary Studies** (1-3 semester hours) Independent study under a faculty member's direction. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor required. ([1-3] -0) R

### **Interdisciplinary Studies Course Applicable to the Major in Literary Studies**

ISAH 4V88 Special Interdisciplinary Topics in Arts and Humanities, as approved by the instructor and Associate Dean. R

## Mathematical Sciences Course Descriptions

**MATH 1306 College Algebra for the Non-Scientist** (3 semester hours) This course is intended for students NOT continuing on to precalculus or calculus. The course is designed to develop both abstract thinking and a practical approach to problem solving. The emphasis is on understanding rather than purely computational skills. Topics include logic, sets, the real numbers, linear equations and their applications, functions, and graphs. Cannot be used to satisfy major requirements for majors in the Schools of Natural Sciences and Mathematics or Management, or degree requirements for the School of Engineering and Computer Science. Credit given for only one of MATH 1306 or 1314. Prerequisite: High School Algebra II. (3-0) Y

**MATH 1314 College Algebra** (3 semester hours) Topics chosen from areas such as equations and inequalities, rational expressions, exponents, radicals and logarithms, functions, and graphs. Cannot be used to satisfy major requirements for majors in the Schools of Natural Sciences and Mathematics or Management, or degree requirements for the School of Engineering and Computer Science. Credit given for only one of MATH 1306, or 1314. Prerequisite: High School Algebra II. (3-0) S

**MATH 1325 Applied Calculus I** (3 semester hours) Functions and graphs, differentiation, maxima and minima, exponential and logarithmic functions, integration, applications of integrals. Cannot be used to satisfy degree requirements or majors in the School of Engineering and Computer Science or major requirements in the School of Natural Sciences and Mathematics. Credit given for only one of MATH 1325 or 2417. Prerequisite: A SAT II Mathematics Level IC Test score of at least 480 or a grade of at least C- in MATH 1314 or an equivalent course. (3-0) S

**MATH 1326 Applied Calculus II** (3 semester hours) Applications of differential equations, functions of several variables, least squares modeling, multiple integrals, infinite series. Cannot be used to satisfy degree requirements for B.S. majors in Schools of Engineering and Computer Science or Natural Sciences and Mathematics. Credit given for only one of MATH 1326 or 2419. Prerequisite: A score of at least 4 on the Advanced Placement Calculus AB exam, a score of at least 3 on the Advanced Placement Calculus BC exam, or MATH 1325. (3-0) S

**MATH 2312 Precalculus** (3 semester hours) Trigonometric functions, rational functions, exponential and logarithmic functions and their graphs, analytic geometry, polynomial equations, and linear system of equations will be covered. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science, or major requirements for the Schools of Management or Natural Sciences and Mathematics. Prerequisite: A SAT II Mathematics Level IC Test score of 480 or a grade of at least a C- in MATH 1314 or an equivalent course. (3-0) S

**MATH 2333 Matrices, Vectors, and Their Application** (3 semester hours) Matrices, vectors, determinants, inverses, systems of linear equations, and applications. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science, or major requirements in the School of Natural Sciences and Mathematics. Credit given for only one of MATH 2333 or 2418. Prerequisite: MATH 1314 or equivalent. (3-0) S

**MATH 2417 Calculus I** (4 semester hours) Functions, limits, continuity, differentiation; integration of function of one variable; logarithmic, exponential, and inverse trigonometric functions; techniques of integration, and applications. Three lecture hours and two discussion hours (MATH 2017) a week. Prerequisite: A SAT II Mathematics Level IC Test score of 630, a Level II Test score of 630, or a grade of at least C- in MATH 2312 or an equivalent course. (4-0) S

**MATH 2418 Linear Algebra** (4 semester hours) Systems of linear equations, determinants, vectors and vector spaces, linear transformations, eigenvalues and eigenvectors, quadratic forms. Three lecture hours and two discussion hours (MATH 2018) per week. Credit given for only one of MATH 2333 or 2418. Prerequisite: MATH 2419 or consent of instructor. (4-0) S

**MATH 2419 Calculus II** (4 semester hours) Continuation of MATH 2417. Improper integrals, sequences, infinite series, power series, parametric equations and polar coordinates, vectors, vector-valued functions, functions of several variables, partial derivatives and applications, multiple integration. Three lecture hours and two discussion hours (MATH 2019) a week. Prerequisite: A score of at least 4 on the Advanced Placement Calculus BC exam or MATH 2417. (4-0) S

**MATH 2420 Differential Equations with Applications** (4 semester hours) Topics covered will be drawn from the following list: First order differential equations, ordinary differential equations, system of linear differential equations, stability, series solutions, special functions, Sturm-Liouville problem, Laplace transforms and linear differential equations and applications in physical sciences and engineering using computers. Three lecture hours and two discussion hours (MATH 2020) per week. Prerequisite: MATH 2419. (4-0) S

**MATH 2451 Multivariable Calculus with Applications** (4 semester hours) Vectors, matrices, vector functions, partial derivatives, divergence, curl, Laplacian, multiple integrals, line and surface integrals, Green's, Stoke's, and Gauss's theorems, and applications in physical sciences and engineering. Three lecture hours and two discussion hours (MATH 2051) per week. Prerequisite: MATH 2419. (4-0) S

**MATH 2V90 Topics in Mathematics** (1-6 semester hours) Special topics in mathematics outside the normal course of offerings. May be repeated for credit as topics vary (9 hours maximum). Consent of instructor required. ([1-6] -0) S

**MATH 3301 Mathematics for Elementary and Middle School Teachers** (3 semester hours) This course is intended to develop future teacher's depth of mathematical understanding by examining concepts in school mathematics from an advanced perspective. Topics include: numeration systems; arithmetic algorithms, prime factorization and other properties of the integers; proportional reasoning involving fractions and decimals; counting methods; and basic ideas of geometry and measurement. Problem solving is stressed. Cannot be used to satisfy: [1] undergraduate mathematics core requirement, [2] degree requirements by students in Mathematical Sciences, [3] the advanced electives, or [4] certification requirements in 8-12 mathematics. Prerequisite: MATH 1306 or MATH 1314 or equivalent course. (3-0) S

**MATH 3303 Introduction to Mathematical Modeling** (3 semester hours) An introduction to construction, use, and analysis of empirical and analytical mathematical models. Emphasis on using appropriate technology with tools such as curve fitting, probability and simulation, difference and differential equations, and dimensional analysis. Cannot be used to satisfy mathematics requirements by students in Mathematical Sciences and cannot be used to satisfy the advanced electives. Prerequisites: MATH 2419 and 2418. (3-0) Y

**MATH 3305 Foundations of Measurement and Informal Geometry** (3 semester hours) An analysis, from an advanced perspective, of the basic concepts and methods of geometry and measurement. Topics include visualization, geometric figures and their properties; transformations and symmetry; congruence and similarity; coordinate systems; measurement [especially length, area, and volume]; and geometry as an axiomatic system. Emphasis on problem solving and logical reasoning. Cannot be used to satisfy: [1] undergraduate mathematics core requirement, [2] degree requirements by students in Mathematical Sciences, [3] the advanced electives, or [4] certification requirements in 8-12 mathematics. Prerequisite: MATH 1312, MATH 3301 or equivalent course. (3-0) Y

**MATH 3307 Mathematical Problem Solving for Teachers** (3 semester hours) Development of the ability to solve mathematical problems and communicate their solutions through the study of strategies and heuristics. Practice in solving problems involving ideas from number theory, algebra, combinatorics and probability, etc. Communicating mathematics, logical reasoning, and connections between mathematical topics will be emphasized. Cannot be used to satisfy degree requirements by students in Mathematical Sciences or the advanced electives. Prerequisites: MATH 2312 and MATH 3305 or MATH 3321. (3-0) Y

**MATH 3310 Theoretical Concepts of Calculus** (3 semester hours) Mathematical theory of calculus. Limits, types of convergence, power series, differentiation, and Riemann integration. Prerequisite: MATH 2419. (3-0) Y

**MATH 3311 Abstract Algebra I** (3 semester hours) Groups, rings, fields, vector spaces modules, linear transformations, and Galois theory. Prerequisite: MATH 2419. (3-0) Y

**MATH 3312 Abstract Algebra II** (3 semester hours) Continuation of Math 3311. Prerequisite: MATH 3311. (3-0) Y

**MATH 3321 Geometry** (3 semester hours) Elements of Euclidean, non-Euclidean, and projective geometry. Topics covered will be drawn from the following list: triangles and their distinguishing points, Euler line, nine point circle, extremum problems, circles and spheres, inversions, the circles of Apollonius, projective geometry, axioms of the projective plane, Desargues's theorem, conics, elementary facts of the non-Euclidean geometries. Prerequisite: MATH 2419. (3-0) Y

**MATH 3379 Complex Variables** (3 semester hours) Geometry and algebra of complex numbers, functions of a complex variable, power series, integration, calculus of residues, conformal mapping. Prerequisites: MATH 2451 and 3310. (3-0) Y

**MATH 4301 Mathematical Analysis I** (3 semester hours) Sets, real number system, metric spaces, real functions of several variables. Riemann-Stieltjes integration and other selected topics. Prerequisites: MATH 2451 and 3310. (3-0) Y

**MATH 4302 Mathematical Analysis II** (3 semester hours) Continuation of Math 4301. Prerequisite: MATH 4301. (3-0) Y

**MATH 4332 Scientific Math Computing** (3 semester hours) Topics covered include introduction to Unix shells, basic and advanced use of Matlab for mathematical and scientific problem solving. Course is conducted in a computer classroom and assignments include applications in numerical and statistical analysis, image processing, and signal processing. Prerequisites: MATH 2418 and MATH 2419 or equivalent. (3-0) S

**MATH 4334 Numerical Analysis** (3 semester hours) Solution of linear equations, roots of polynomial equations, interpolation and approximation, numerical differentiation and integration, solution of ordinary differential equations; computer arithmetic and error analysis. Prerequisites: MATH 2418, 2451, and CS 1337 or equivalent knowledge of a high-level programming language. (Same as CS 4334) (3-0) Y

**MATH 4341 Topology** (3 semester hours) Elements of general topology, topological spaces, continuous functions, connectedness, compactness, completeness, separation axioms, and metric spaces. Prerequisites: MATH 2451 and 3310. (3-0) Y

**MATH 4355 Methods of Applied Mathematics** (3 semester hours) Topics include some frequently used tools in applied mathematics: Laplace and Fourier transforms, special functions, systems, signals, and their applications in physical sciences and engineering. Prerequisites: MATH 2418 and 2420. (3-0) T

**MATH 4362 Partial Differential Equations** (3 semester hours) This course presents a survey of classical and numerical methods for the solution of linear and nonlinear boundary value problems governed by partial differential equations. Modeling and

application-related issues are included throughout. Prerequisites: MATH 2420, 2451, and knowledge of a high-level programming language. (3-0) T

**MATH 4398 Senior Honors in Mathematical Sciences** (3 semester hours) For students conducting independent research for honors theses or projects. (3-0) S

**MATH 4V03 Independent Study in Mathematics** (1-6 semester hours) Independent study under a faculty member's direction. Student must obtain approval from participating math sciences faculty member and the undergraduate advisor. Can satisfy Communication elective (3 hours) if it has a major writing/report component. ([1-6] -0) S

**MATH 4V91 Undergraduate Topics in Mathematics** (1-9 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-9] -0) S

## Music Course Descriptions

**MUSI 1306 Understanding Music** (3 semester hours) An introduction to the appreciation of music, its elements and basic forms, with particular emphasis on the composer's creative process and the listener's participation. Methods of analytical and aesthetic appreciation will be applied to musical examples, with corollaries in literature, history, theatre, and the visual arts. (3-0) Y

**MUSI 1313 Fundamentals of Music** (3 semester hours) Introduction to the basics of musical structure – pitch, rhythm, and their combinations – in a variety of musical settings, including analysis and discussion of related works. Focuses on developing practical musical skills through oral, aural, and written experiences with rhythms, melodies, intervals, scales, chords, and music notation. (3-0) Y

**MUSI 2322 Music in Western Civilization** (3 semester hours) A broad review of Western music from the Middle Ages to the twenty-first century, with emphasis on the Middle Ages, Renaissance, Baroque, Classical, Romantic, and Modern styles. Develops listening skills and an understanding of diverse genres and places works in their social and cultural contexts. (3-0) Y

**MUSI 2324 Instrumental Instruction** (3 semester hours) Beginning-level instrumental instruction. May include guitar, piano, strings, winds, etc. May be repeated for credit (9 hours maximum). (3-0) S

**MUSI 2325 Vocal Instruction** (3 semester hours) A course in basic singing techniques and interpretive skills, suitable for both beginning singers and for students with singing experience but little formal training. May be repeated for credit (9 hours maximum). (3-0) S

**MUSI 2326 Jazz Ensemble** (3 semester hours) A performing ensemble of approximately 24 players. Repertoire is selected from a broad range of jazz music. May be repeated for credit (9 hours maximum). (3-0) Y

**MUSI 2327 Vocal Ensemble** (3 semester hours) A community chorus with repertoire selected from a broad range of choral literature, including sacred and secular music from the Renaissance to the contemporary period. May be repeated for credit (9 hours maximum). (3-0) Y

**MUSI 2328 Music Theory** (3 semester hours) Basic writing skills in music. Work includes written assignments leading to the composition of short pieces, analyzing representative works from the literature, keyboard harmony, and ear training and sight-singing. Prerequisite: Fundamentals of Music (MUSI 1313) or permission of the instructor. (3-0) Y

**MUSI 2V71 Independent Study in Music** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). ([1-3] -0) R

**MUSI 3322 Music in Historical Context** (3 semester hours) Studies in the development of music from ancient Greece to the 20th century. Topics may include specific periods or musical styles. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: ARTS 1301 or MUSI 2322. (3-0) T

**MUSI 3342 Topics in Music** (3 semester hours) Topics may include theory and composition, a specific composer, or a genre such as guitar literature, "new music" or jazz. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Three hours of lower-division music coursework or ARTS 1301 or permission of instructor. (3-0) T

**MUSI 3381 Intermediate Instrumental and Vocal Instruction** (3 semester hours) May include guitar, piano, winds, strings, etc. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor. (3-0) S

**MUSI 3385 Chamber Singers** (3 semester hours) Chamber Singers is a performing ensemble of approximately 24 singers performing on a regular basis at the University and in the community. The repertoire for the ensemble will be selected from a broad range of chamber vocal literature, sacred and secular music from the Renaissance to the contemporary period. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor. (3-0) S

**MUSI 3386 Intermediate Jazz** (3 semester hours) A performing ensemble of approximately 24 players. Repertoire is selected from a broad range of jazz music. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor. (3-0) Y

**MUSI 3387 Commercial and Jazz Piano** (3 semester hours) The course will provide an introduction to jazz and commercial piano styles for pianists and non-pianists. Students will obtain a solid foundation in chord terminology and vocal voicings used in jazz and pop music. Also covered will be composing, arranging, and music sequencing in a computer MIDI studio, as well as an introduction to jazz theory and improvisation for all instrumentalists. Students should have a basic knowledge of the keyboard. Prerequisite: ARTS 1301 or permission of instructor. (3-0) Y

**MUSI 3388 Keyboards** (3 semester hours) Theory, history, and practice of keyboard-related art. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Permission of the instructor. (3-0) T

**MUSI 3389 Digital Music** (3 semester hours) Theory, principles, and practice of electronic music, including use of computers, MIDI, recording devices, sound synthesis and other media. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Lower-division music course or permission of the instructor. (3-0) T

**MUSI 4312 Chamber Music Ensemble** (3 semester hours) Provides performance opportunities for undergraduate instrumentalists and singers. Repertoire will range from duos and trios to larger ensembles in musical styles from medieval to contemporary. Consent of instructor required. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor. (3-0) S

**MUSI 4345 Advanced Music Performance** (3 semester hours) Technique and repertoire of a particular musical medium. May include Piano, Voice, Guitar, Strings, Winds, or other instruments. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor. (3-0) T

**MUSI 4346 Advanced Music Ensemble** (3 semester hours) May include Chamber Music Ensemble, Orchestra, Guitar Ensemble, Chamber Singers, Jazz Ensemble or Vocal Ensemble. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor. (3-0) T

**MUSI 4399 Senior Honors in Music** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Signature of instructor on proposed project outline required. (3-0) R

**MUSI 4V61 Individual Instruction in Vocal Performance** (1 to 3 semester hours) Intermediate and advanced-level instruction in singing techniques and interpretive skills. Students must also be enrolled in a 3000 or 4000-level performance ensemble. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor. ([1-3]-0) R

**MUSI 4V71 Independent Study in Music** (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Prerequisite: Upper-division standing, and completion of all lower-division requirements in AP, and permission of the instructor. ([1-3] -0) R

## Natural Sciences Core Curriculum Courses

**NATS 1111 From the Cosmos to Earth Laboratory** (1 semester hour) A laboratory to accompany NATS 1311. Corequisite: NATS 1311. (0-3) Y

**NATS 1311 From the Cosmos to Earth** (3 semester hours) A multidisciplinary study of nature expressly designed for those who have chosen not to major in the natural sciences or engineering. Early models of the solar system and the transformation to current models are examined, as are order in the universe, the nature of matter and the planets, sun, and life cycle of stars. The course will be enhanced by frequent demonstrations of the principles underlying the origin and evolution of the universe. Corequisite: NATS 1111. (3-0) Y

**NATS 3130 Evolution Field Laboratory** (1 semester hour) Field laboratory to accompany NATS 3330. Laboratory is primarily conducted in the Caribbean. Compare present flora and fauna to the archeological and paleontological records. Special focus will be directed at evaluating the impacts of introduced species and human colonization. May be repeated for credit if taken at different locations. This course may not be used for credit by Natural Science and Mathematics students. Co- or prerequisite: NATS 3330. (0-3) S

**NATS 3330 The Basis of Evolution** (3 semester hours) Wide-ranging discussions of the unifying theory of the origin and modification through time of all organisms. Pertinent history, the fossil record, evolution as concerns the human experience, processes and mechanisms and a look at the future are major topics. An optional field laboratory is offered. This course is specifically designed for non-majors. This course may not be used for credit by Natural Science and Mathematics students. (3-0) S

**NATS 3331 The Clash of Cosmologies** (3 semester hours) Science and Revelation in the Nineteenth Century. A study of the 19<sup>th</sup>-century rise of scientific inquiry into the origins of life, and the reaction and response to its discoveries by the Victorian culture that both maintained Biblical authority and celebrated man's achievements. A study abroad component supplements this course. (3-0) Y

**NATS 4310 Advanced Writing in the Natural Sciences and Mathematics** (3 semester hours) A writing-intensive course on questions or problems in natural sciences and mathematics; satisfies the advanced writing requirement for graduation. (3-0) S

**NATS 4V90 Special Topics in Natural Sciences** (1-6 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (6 hours maximum). Prerequisite: consent of instructor. ([1-6]-0) S

## Neuroscience Course Descriptions

**NSC 3344 Anatomy and Physiology of Speech and Hearing** (3 semester hours) Study of anatomic and physiologic mechanisms underlying speech respiration; phonation; articulation. Overview of the peripheral auditory system. (Same as SPAU 3344) (3-0) Y

**NSC 3345 Neural Basis of Communication** (3 semester hours) Cortical and subcortical mechanisms underlying sensory, motor, and cognitive aspects of communication. (Same as SPAU 3345) (3-0) Y

**NSC 3361 Behavioral Neuroscience** (3 semester hours) Explores the nature of the brain processes underlying behavior, including consideration of basic neurophysiology and the physiology of sensation, learning, and emotion. (3-0) S

**NSC 4166 Neuroanatomy Workshop** (1 semester hour) Problem solving and discussion related to the subject matter in NSC 4366. Corequisite: concurrent enrollment in NSC 4366. (1-0) Y

**NSC 4352 Cellular Neuroscience** (3 semester hours) The cell biology and cellular physiology of the neuron. Growth and maintenance of dendrites, axons and synapses, and the underlying processes of macromolecule synthesis, packaging, and transport are the central biological issues. Electrical signaling, ion channel functions, and synaptic transmission are covered. Pre- or corequisite: NSC 3361. (3-0) Y

**NSC 4353 Neuroscience Laboratory Methods** (3 semester hours) This laboratory course provides hands-on experience with the use of electrophysiological techniques for the analysis of living neural preparations. Pre- or corequisite: NSC 3361. (This course fulfills the advanced writing requirement for Neuroscience majors and 3 hours of the Communication component of the Core Curriculum). (0-6) S

**NSC 4354 Integrative Neuroscience** (3 semester hours) Examines the collective behavior of neuronal systems with respect to sensory processing, motor control, and the plasticity regulating more advanced behavioral, motivational, and cognitive functions. Prerequisite: NSC 3361. (3-0) Y

**NSC 4355 Advanced Neuroscience Laboratory** (3 semester hours) This laboratory course exposes students to a structured research project, with topics selected from the range of neuroscience faculty interests. It requires students to develop the rationale for experiments and to interpret their results. Each student writes a publication-style paper with reference to the scientific literature. Prerequisite: NSC 4353. (0-6) R

**NSC 4356 Neurophysiology** (3 semester hours) This course focuses on the elements of neural functions ranging from the kinetics of channels in excitable membranes to the collective behavior of real neural networks. Prerequisite: NSC 4353. (3-0) Y

**NSC 4357 Brain and Memory** (3 semester hours) Current research and theory on modifications in the central nervous system that may underlie memory. Includes an overview of synaptic physiology and pharmacology, and development of the concept of neural plasticity from foundations in anatomy and physiology on the basis of electrical stimulation and pharmacological evidence. Includes discussion of applications such as amnesia. Pre- or corequisite: NSC 3361. (3-0) T

**NSC 4358 Neuroscience of Sensation and Perception** (3 semester hours) Explores how our experience of the world around us is shaped by the neurobiology of our sensory systems, with particular emphasis on vision and hearing. Our sensory systems play a critical role in the execution of coordinated movement, navigation, and interaction with the environment. Prerequisite: NSC 3361. (3-0) Y

**NSC 4360 Learning** (3 semester hours) The theoretical basis of learning is presented with emphasis on results from animal research. Introduces the student to the scientific analysis of behavior and the application of experiments in the development of a psychology of learning. Includes classical and instrumental conditioning, non-associative learning, and behavior modification. Prerequisite: PSY 2301. (Same as PSY 4360) (3-0) T

**NSC 4363 Neuropharmacology** (3 semester hours) A survey of neurotransmitter functions with special emphasis on effects in the central nervous system. Emphasis is on receptor theory and neurochemistry, but neurotransmitter metabolism and release are also considered. Correlations between neurotransmitter activity and behavior and pathological states are discussed where appropriate. Prerequisite: NSC 4352 or NSC 4354. (3-0) Y

**NSC 4366 Neuroanatomy** (3 semester hours) Introduction to the anatomical organization and basic functional principles of the major sensory, motor, associational, and modulatory systems of the human brain. Students learn to identify visually specific

structures on slides, magnetic resonance images (MRI), and dissected brain specimens in relation to neural pathways and system interconnections. This course provides a basis for a general understanding of the human brain and its functions in relation to disease and behavior. Prerequisite: NSC 3361 or BIO 2311. Corequisite NSC 4166. (3-0) Y

**NSC 4367 Developmental Neurobiology** (3 semester hours) Examines the processes guiding the proliferation, differentiation and migration of neurons as they form transient or long-lasting connections and circuits. Prerequisite: NSC 4352 or NSC 4354. (3-0) Y

**NSC 4368 Computational Neuroscience** (3 semester hours) Students learn to make and run simulations of neurons and small networks of neurons. Exploration and testing of different network topologies encouraged. Prerequisite: NSC 4356. (3-0) T

**NSC 4370 Neuroendocrinology** (3 semester hours) A detailed examination of central nervous system regulation of the endocrine system, primarily via the hypothalamic-pituitary-adrenal axis. Examines feedback effects of hormonal actions on neuronal function. Prerequisite: NSC 4366. (3-0) T

**NSC 4372 Neuroimmunology** (3 semester hours) Studies of the effects of the brain and the mind on the immune system, and subsequent effects on health and disease. Immune effects on neural and endocrine actions are also considered. Prerequisites: BIO 2312 and NSC 3361. (3-0) T

**NSC 4373 Sensory Neurophysiology** (3 semester hours) An emphasis on similarities and differences between the physiology of our five "classical" senses, non-classical (non-lemniscal) ascending pathways, the role of descending pathways, and the anatomical and physiological basis for pain. Prerequisite: NSC 4354. (3-0) T

**NSC 4374 Neural Plasticity in Neuropathologies** (3 semester hours) The symptoms and signs of multiple disorders are caused by reorganization or plasticity of the central nervous system. This course examines the neural plasticity underlying the pathophysiology of disorders such as chronic pain, tinnitus, balance disorders, spasticity, etc., a "dark side" of plasticity not widely recognized. Prerequisite: NSC 4352. (3-0) T

**NSC 4375 Honors Seminar** (3 semester hours) A course for students who conduct undergraduate thesis research in the School of Behavioral and Brain Sciences. The seminar explores the different types of thesis research, current research opportunities in the school, and appropriate techniques for writing the thesis proposal and final thesis report. Broader issues of professional development are also explored. Permission of Associate Dean required. This course is required for all students seeking School Honors (minimum GPA of 3.4 & 30 hours at UTD). Recommended, but not required, for students seeking University magna or summa cum laude honors. (Same as CGS 4375, PSY 4375, and SPAU 4375) (3-0) R

**NSC 4376 Stress and the Nervous System** (3 semester hours) Studies of the basic effects of stressors (specific and nonspecific) on bodily systems, with respect to health and disease and maintenance of homeostatic equilibria. Neural, endocrine, and immune interactions will be assessed. Prerequisite: NSC 4370. (3-0) T

## Special Topics

Topics under the following course number vary from semester to semester. The class schedule for the current semester will list the special topic that will be offered.

**NSC 4V90 Special Topics in Neuroscience** (1-6 semester hours) May be repeated for credit (9 hours maximum). ([1-6]-0) R

## Independent Study

The following independent study courses are advanced individualized projects to be arranged with a supervising professor. Open only to qualified students by consent of instructor. Students must contact professor and design a contract for study prior to enrollment. Permission forms are available in the Office of the Associate Dean. Students may enroll in no more than a total of 6 semester credit hours of the independent study courses during one semester, and may take a maximum of 20 percent of the total hours of course work undertaken at U.T. Dallas or 12 semester hours, whichever is smaller.

**NSC 4394 Internship in Neuroscience** (3 semester hours) Students earn course credit for field experience in an applied setting. Requires working at least 8 hours per week at an approved community agency or business of the student's choice. Students keep daily job diaries, attend one class meeting per month, and write brief papers relevant to their experiences. Open to all students who have reached junior or senior standing (more than 53 hours). Apply for placements in the Dean's office. Must be taken on Credit/No Credit basis. (Same as CGS 4394, PSY 4394 and SPAU 4396) (3-0) S

**NSC 4397 Honors Thesis** (3 semester hours) An independent study in which the student writes an honors thesis under faculty

supervision. Permission of instructor and Associate Dean required. (3-0) S

**NSC 4V96 Teaching Internship** (1-3 semester hours) Students work individually with faculty member in preparing and presenting course materials and tutoring students. Must have completed the relevant course with a grade of at least B. Permission of the instructor and Associate Dean required. Taken on a Credit/No Credit basis. Can be repeated for a total of 6 semester hours. ([1-3]-0) S

**NSC 4V98 Directed Research** (1-6 semester hours) Student assists faculty with research projects or conducts a research project under weekly faculty supervision. Taken on a Credit/No Credit basis. May be repeated for credit, up to 9 hours total. (3-0) S

**NSC 4V99 Individual Study** (1-6 semester hours) Student studies advanced topics under weekly faculty direction and writes a paper. Taken on Credit/No Credit basis unless the Associate Dean approves for a letter grade. May be repeated for credit, up to 6 hours total. ([1-6]-0) S

## Philosophy Course Descriptions

**PHIL 1301 Introduction to Philosophy** (3 semester hours) An introduction to philosophy through the consideration of topics such as human nature, good and evil, and the mind/body problem. (3-0) Y

**PHIL 2316 History of Philosophy I** (3 semester hours) Intensive study of texts significant in the history of philosophy from antiquity through the Renaissance. (3-0) T

**PHIL 2317 History of Philosophy II** (3 semester hours) Intensive study of texts significant in the history of philosophy from the early modern period to the present. (3-0) T

**PHIL 2V71 Independent Study in Philosophy** (1-3 semester hours) Independent study under a faculty member's direction. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor. ([1-3]-0) R

**PHIL 3304 Conceptions of Human Nature** (3 semester hours) Emphasis on contemporary conceptions of human nature and the human condition, stressing the cultural and historical settings. Prerequisite: Three hours of lower-division philosophy. (3-0) T

**PHIL 3373 Philosophy of Mind** (3 semester hours) An examination of the historical roots of the mind/body problem and efforts to resolve it. May also examine the nature of consciousness, the problem of other minds, the nature of sensation and personhood, and the emotions. Prerequisite: Three hours of lower-division philosophy. (3-0) T

**PHIL 3375 Ethics in Contemporary America** (3 semester hours) An examination of various ethical problems which have been a part of 20th-century American consciousness, against the backdrop of social and political events. Issues may include abortion, capital punishment, sexual morality, world hunger, and war. Prerequisite: Three hours of lower-division philosophy. (3-0) T

**PHIL 3392 Reason, Reasoning, and Logic** (3 semester hours) An examination of the nature of rationality and a discussion of some of the various types of reasoning systems. Techniques designed to improve skills in presenting and evaluating arguments. Prerequisite: Three hours of lower-division philosophy. (3-0) T

**PHIL 4305 Ideas and Their History** (3 semester hours) A study of the origin, continuity, and diffusion of major philosophical ideas, viewed primarily in historical context. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Upper-division standing or permission of the instructor. (3-0) T

**PHIL 4308 Theories of Knowledge** (3 semester hours) A study of central topics in the theory of knowledge, including skepticism and the limits of knowledge, relativism and objectivity, and the role of perception, memory, introspection and reason as sources of knowledge. Prerequisite: Upper-division standing or permission of the instructor. (3-0) T

**PHIL 4380 Topics in Philosophy** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Upper-division standing or permission of the instructor. (3-0) R

**PHIL 4399 Senior Honors in Philosophy** (3 semester hours) Intended for students conducting independent research for honors theses or projects. Prerequisite: Signature of the instructor on proposed project outline. (3-0) R

**PHIL 4V71 Independent Study in Philosophy** (1-3 semester hours) Independent study under a faculty member's direction. May be repeated for credit (9 hours maximum). Prerequisite: Permission of the instructor. ([1-3]-0) R

## Physics Course Descriptions

**PHYS 1100 The Fun of Physics** (1 semester hour) An introductory course in physics in the modern world. Focuses on the work of a physicist. What does a physicist do? What are some of the exciting topics on which physicists are working today? The faculty discusses their favorite concepts and the opportunities for student participation in research. Must be taken on a Credit/No Credit

basis only. (1-0) Y

**PHYS 1101 College Physics Laboratory I** (1 semester hour) A laboratory course to accompany PHYS 1301. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Corequisite: PHYS 1301. (0-3) Y

**PHYS 1102 College Physics Laboratory II** (1 semester hour) A laboratory course to accompany PHYS 1302. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Corequisite: PHYS 1302. (0-3) Y

**PHYS 1301 College Physics I** (3 semester hours) Algebra and trigonometry based basic physics. Topics include mechanics, heat and thermodynamics. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Check with your program advisor. Prerequisite: MATH 1314. (3-0) Y

**PHYS 1302 College Physics II** (3 semester hours) Continuation of PHYS 1301. Topics include electricity and magnetism and optics. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science. Check with your program advisor. Prerequisite: PHYS 1301. (3-0) Y

**PHYS 2125 Physics Laboratory I** (1 semester hour) Laboratory course to accompany PHYS 2325. Personal computer-based data presentation and curve fitting. Basic measurement concepts such as experimental uncertainty, mean, standard deviation, standard error, and error propagation will be covered. Corequisite: PHYS 2325. (0-3) Y

**PHYS 2126 Physics Laboratory II** (1 semester hour) Laboratory course to accompany PHYS 2326. Experiments investigate Coulomb's Law, electric fields, Ohm's and Kirchoff's laws, RC circuits, magnetic forces between conductors, motors and transformers. Corequisite: PHYS 2326. (0-3) Y

**PHYS 2127 Engineering Electromagnetics Laboratory I** (1 semester hour) Laboratory exercises designed to provide hands-on experiences that will reinforce the concepts presented in PHYS 2327. Weekly laboratory assignments will also provide an introduction to the correct use of basic laboratory test and measurement equipment, including power supplied, multimeters, oscilloscopes, and signal generators. Corequisite: PHYS 2327. (0-3) Y

**PHYS 2303 Contemporary Physics** (3 semester hours) Topics include the fundamentals of geometric optics, interference, diffraction, special relativity and preliminary quantum concepts. (3-0) Y

**PHYS 2325 Mechanics** (3 semester hours) Calculus based. Basic physics including a study of space and time, kinematics, forces, energy and momentum, conservation laws, rotational motion, torques, and harmonic oscillation.. Two lectures and one recitation session per week. Prerequisite: MATH 2417. Corequisite: PHYS 2125. (3-0) Y

**PHYS 2326 Electromagnetism and Waves** (3 semester hours) Continuation of PHYS 2325. Topics include electrostatics and electromagnetics, electric field and potential, electric currents, magnetic fields, laws of Coulomb, Ampere, and Faraday, Maxwell's theory of wave propagation. Two lectures and one recitation session per week. Prerequisites: PHYS 2325 and MATH 2419. Corequisite: PHYS 2126. (3-0) Y

**PHYS 2327 Engineering Electromagnetics** (3 semester hours) An introduction to electromagnetism with emphasis on engineering applications, including the relationship between Maxwell's equations and the rules of AC and DC planar circuit analysis. Application of Maxwell's equations to passive circuit elements, RL, RC, and RLC circuits, and propagation effects relevant to signal transmission in free space and on integrated circuit boards. Prerequisites: PHYS 2325 and MATH 2419. Corequisite: PHYS 2127. (3-0) Y

**PHYS 2421 Honors Physics I – Mechanics and Heat** (4 semester hours) Calculus-based physics. This class is a more rigorous version of PHYS 2325 with additional topics in thermal physics. Derivations are more general and rely more heavily on calculus and use of vectors. More challenging problems and applications. Two lectures plus a required recitation session per week. Prerequisite: MATH 2417. Corequisite: PHYS 2125. (4-0) Y

**PHYS 2422 Honors Physics II – Electromagnetism and Waves** (4 semester hours) Calculus-based basic physics. This class is a more rigorous version of PHYS 2326. Derivations are more general and rely more heavily on multi-dimensional calculus concepts such as divergence, gradient, curl, and the theorems of Green, Stokes and Gauss. More challenging problems and applications. Two lectures plus a required recitation session per week. Prerequisites: PHYS 2325 or PHYS 2421, and MATH 2419. Corequisites: MATH 2451 and PHYS 2126 or PHYS 2127. (3-0) Y

**PHYS 3125 Electronics Laboratory** (1 semester hour) Laboratory course to accompany PHYS 3325. Students will learn to use common laboratory equipment to diagnose and troubleshoot breadboard circuits they build in lab. The lab exercises are closely tied to the topics covered weekly in PHYS 3325 lectures. Corequisite: PHYS 3325. (0-3) Y

**PHYS 3311 Theoretical Physics** (3 semester hours) Review of: Complex numbers, vector spaces, linear operators, and vector integral systems. Study of Fourier series; product solutions of PDEs; and special functions. Co-requisite: Differential Equations (MATH 2420 or equivalent). Prerequisites: Multivariable Calculus with Applications (MATH 2451 or equivalent), and PHYS 2326. (3-0) Y

**PHYS 3312 Classical Mechanics** (3 semester hours) Newton's laws; collisions; two body problems and trajectories; Lagrangian formulation; rotational dynamics and the inertia tensor; rotating coordinate systems; gravitation. Prerequisite: PHYS 3311 or

equivalent. (3-0) Y

**PHYS 3324 Scientific Computing** (3 semester hours) Introduction to modern programming languages like C++ and Fortran. Applications of programming for scientific analysis, manipulation, and graphical display. (3-0) R

**PHYS 3325 Electronics** (3 semester hours) Topics include direct and alternating current circuits, diodes and transistors, feedback, passive and active filters, simple amplifiers, and combinatorial and sequential digital electronics. Prerequisite: PHYS 2326, PHYS 2327 or PHYS 2422. Corequisite: PHYS 3125. (3-0) Y

**PHYS 3330 Numerical Methods in Physics and Computational Techniques** (3 semester hours) The course covers concepts and computational techniques in numerical methods for solving physics problems. Topics typically include probability, statistics, data analysis, fits, numerical solutions, and interpretation of the experimental data. Prerequisite: CS 1337 or equivalent experience with a computer programming language. (3-0) Y

**PHYS 3341 Physics for Bio Science I** (3 semester hours) Calculus based. Basic physics for pre-health science students. Topics include mechanics, heat and thermodynamics. Some discussions on biological applications. Two lectures and one recitation session per week. Prerequisite: MATH 2417. Must register for Physics Laboratory I (PHYS 2125). (3-0) Y

**PHYS 3342 Physics for Bio Science II** (3 semester hours) Continuation of PHYS 3341. Topics include electricity, magnetism and optics. Some discussions on biological applications. Two lectures and one recitation session per week. Prerequisites: PHYS 3341 and MATH 2419. Must register for Physics Laboratory II (PHYS 2126). (3-0) Y

**PHYS 3352 Modern Physics I** (3 semester hours) Wave-particle duality, atomic structure, one- and three- dimensional elementary quantum mechanics, and energy levels of single- and multi-electron atoms. Fine structure splitting and momentum coupling. Prerequisite PHYS 2303; co-requisite: PHYS 3311. (3-0) Y

**PHYS 3380 Astronomy** (3 semester hours) An essentially descriptive course outlining the current views of the universe and the sources of data supporting those views. The solar system and its origin, stars, galaxies, pulsars, quasars, black holes, nebulae and the evolution of the universe. Opportunity to use a U.T. Dallas telescope is provided. Prerequisite: PHYS 2326. (3-0) Y

**PHYS 3416 Electricity and Magnetism** (4 semester hours) Coulomb's and Gauss's laws; potentials, methods for solving electric field distributions near conductors; potentials due to clusters of charges; polarization of dielectric materials; electric displacement. Magnetic fields in a vacuum and in matter; time varying electric and magnetic fields; Maxwell's equations; electromagnetic waves. Prerequisite: PHYS 3311 or equivalent. (4-0) Y

**PHYS 4301 Quantum Mechanics I** (3 semester hours) Fundamental concepts: the Stern Gerlach experiment; the Dirac formalism; kets; bras and operators; base kets and matrix representations. Measurements, observables and the uncertainty relations. Position, momentum, and translation. Wave functions in position and momentum space. Time evolution and Schrödinger's equation, Heisenberg picture. Applications include simple harmonic oscillator and the Hydrogen atom. Prerequisites: PHYS 3311, PHYS 3352 and either MATH 2333 or MATH 2418. (3-0) Y

**PHYS 4302 Quantum Mechanics II** (3 semester hours) Fermions and bosons, perturbation theory, WKB approximation, scattering. Prerequisite: PHYS 4301. (3-0) T

**PHYS 4311 Thermodynamics and Statistical Mechanics** (3 semester hours) Study of the elements of thermodynamics, kinetic theory, and statistical mechanics; the concepts of temperature, entropy, phase transitions, transport phenomena, partition functions, statistical ensembles; the Maxwell-Boltzmann, Fermi-Dirac, and Bose-Einstein distributions; and the equipartition theorem. Applications of the theories will be considered. Prerequisites: PHYS 2325, PHYS 2326, and PHYS 3311. (3-0) Y

**PHYS 4324 Computer Interfacing and Data Acquisition** (3 semester hours) Hardware and software techniques to utilize computers in data acquisition and control of physics experiments. Operation of digital input and output devices, analog to digital converters, digital to analog converters, and intercomputer communication. Hands-on operation of several devices. (3-0) T

**PHYS 4328 Optics** (3 semester hours) Topics include electromagnetic waves and radiation, the interaction of light and matter, geometric optics, polarization, interference, and diffraction. Prerequisite: PHYS 3416. (3-0) Y

**PHYS 4352 Modern Physics II** (3 semester hours) Topics in this advanced continuation of PHYS 3352 include the application of quantum mechanics and statistical physics to laser, molecular, and solid state devices; Nuclear structure (models and forces) and subnuclear particles will also be discussed. Prerequisite: PHYS 3352. (3-0) Y

**PHYS 4371 Solid State Physics** (3 semester hours) This course provides a basic but detailed picture of important concepts in solid state physics. Material covered includes crystal structure, x-ray crystallography, reciprocal space, lattice vibrations, thermal properties of solids, free electron gas, Bloch functions, metals, insulators and semiconductors. The course concludes with a description of basic semiconductor devices. Prerequisites: PHYS 3352 and PHYS 3416. (3-0) Y

**PHYS 4373 Physical Measurements Laboratory** (3 semester hours) Thermodynamics and physical properties of matter, vacuum technology, gas phase kinetics, spectroscopy, basic operations in electronics, literature skills, and use of computers. Prerequisites: PHYS 3352 and 3416. (0-6) Y

**PHYS 4381 Space Science** (3 semester hours) A survey of the structure and dynamics of the atmospheres of planets, including ionospheres and magnetospheres, as influenced by the sun's radiation and the solar wind. Topics include aurora and airglow, photochemistry and atmospheric electricity. Prerequisite: PHYS 2322, or PHYS 2326, or equivalent. (3-0) T

**PHYS 4383 - Plasma Physics** (3 semester hours) Plasmas are the 4th state of matter, in which some or all of the neutral particles in a gas are ionized. A working knowledge of plasma physics is important in nuclear physics, semiconductor processing, space science, astronomy, and many other areas. This course will examine the fundamental treatment of plasmas as embodied in the fluid equations, magneto-hydrodynamics, and simple kinetic theory. Specific topics include plasma waves and instabilities, diffusion, guiding center motion and drifts, currents in plasmas, and particle collisions. Prerequisite: PHYS 3311. Prerequisite or corequisite: PHYS 3416. (3-0) R

**PHYS 4399 Senior Honors in Physics** (3 semester hours) For students conducting independent research for honors theses or projects. Must be done under faculty supervision. (3-0) S

**PHYS 4V07 Senior Projects Laboratory** (1 to 6 semester hours) Intended as an introduction to research, this course involves independent reading and/or laboratory work on advanced topics or experiments. Prerequisite: consent of instructor. ([1-6] -0) R

**PHYS 4V10 Special Topics in Physics** (1-9 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). Prerequisite: consent of instructor. ([1-9] -0) S

## Psychology Course Descriptions

**PSY 1390 The Journey of Life** (3 semester hours) A conference course in developmental psychology. The focus of the course is the study of physical, cognitive, and socioemotional development throughout the lifespan. A number of lifespan theories, research, and applications will be discussed. (3-0) T

**PSY 2301 (PSYC 2301) Introduction to Psychology** (3 semester hours) Overviews the major theories and scientific research examining the human mind and behavior. The topics range from studies of perception, cognition, memory, language, and thought to studies of development, personality, relationships, motivation, abnormal patterns of thought and behavior, and cultural differences. (3-0) S

**PSY 2317 (PSYC 2317) Statistics for Psychology** (3 semester hours) This course introduces concepts and calculations of descriptive statistics, including mean, sum of squares, variance, standard deviation, correlation and regression. It also includes the logic of statistical decision making, the use of binomial and Gaussian distributions, and fundamental considerations in the design of psychological experiments. Prerequisite: MATH 1300, 1306, 1314, 1324 or higher. (3-0) S

**PSY 3100 Careers in Psychology** (1 semester hour) A one-credit course examining the professions that utilize the theories, research findings, and practices from the field of psychology. Psychology majors will gain information and skills that will help them select and pursue a career in psychology or a related field. Course information will be conveyed through readings, homework assignments, exercises, internet searches, guest speakers, in-class exercises and group discussions. It is recommended that all Psychology majors take this course during their sophomore year. Prerequisite: PSY 2301. (1-0) Y

**PSY 3310 Child Development** (3 semester hours) Introduction to psychological theory and research on physical, cognitive, social, and emotional development from birth to adolescence. Credit given for only one of PSY/CLDP 3310 or PSY/CLDP 4334. (Same as CLDP 3310) (3-0) Y

**PSY 3322 Psychology of Adjustment** (3 semester hours) This course is designed to give students a broad understanding of effective living and coping, combining basic scientific and applied perspectives to help students sort through the best approaches to personal adjustment. Among the topics covered are coping, stress, personality, the self and identity, interpersonal communication, work and career development, adult development, health, abnormal psychology, love and intimacy, and therapies. (3-0) Y

**PSY 3324 Psychology of Gender** (3 semester hours) This course examines gender as it is expressed in the personality of the individual and in the social relations of dyads and groups. Topics include gender identity, sexual orientation, gender differences in intellectual abilities and personality characteristics, gender as it is expressed in friendships, marriage, and sexuality, and cultural gender stereotypes as they affect individual psychology and personal relationships. (Same as GST 3301) (3-0) Y

**PSY 3331 Social Psychology** (3 semester hours) Theory and research on social perception, socialization, attitude change and social influence, aggression, interpersonal attraction, deviance and control, alienation, and commitment. (3-0) Y

**PSY 3332 Social and Personality Development** (3 semester hours) The study of the forces affecting the socialization of children. Emphasis is placed on children's interactions with others and how this influences their development in such areas as self-concept, identity, and morality. This course assumes an introductory background in child or life span development. Pre- or co-requisite: CLDP/PSY 3310, 3339, or 4334. (Same as CLDP 3332) (3-0) Y

**PSY 3333 Approaches to Clinical Psychology** (3 semester hours) A survey of therapeutic approaches used in modern psychotherapy. Covers a variety of psychotherapeutic approaches, including psychodynamic, behavioral, humanistic, cognitive, and medical. Prerequisite: PSY 2301. (3-0) Y

**PSY 3336 Infancy** (3 semester hours) Review of relevant developmental theories and processes as well as skills acquired in motor, sensory-perceptual, cognitive, and social domains from birth through two years of age. Pre- or corequisite: CLDP/PSY 3310, 3339, or 4334. (Same as CLDP 3336) (3-0) Y

**PSY 3338 Adolescence** (3 semester hours) Social, emotional, cognitive, moral, and physical development during adolescence. Specific topics covered in the course include parent-adolescent relations, self-identity, achievement, motivation, sex roles, and cultural and social class differences. (Same as CLDP 3338) (3-0) Y

**PSY 3339 Educational Psychology** (3 semester hours) This course focuses on the psychological foundations of education and teaching. Topics that are covered include development, individual variations, learning and cognitive processes, motivation, classroom management, and assessment. (Same as CLDP / ED 3339) (3-0) S

**PSY 3342 Exceptional Children** (3 semester hours) Introduction to the characteristics of exceptional children and their education, including children with disabilities (learning, emotional/behavioral, communication and physical) as well as those who are gifted. The causes and assessment of exceptionality are examined, along with educational and social policy considerations. This course assumes an introductory background in child development. Pre- or co-requisite: CLDP/PSY 3310, 3339, or 4334. (Same as CLDP 3342 and SPAU 4325) (3-0) Y

**PSY 3360 Historical Perspectives on Psychology: Mind and Machines since 1600** (3 semester hours) Basic frames of reference in 20th-century psychology and their historical development in Western thought since 1600 with an emphasis on issues involved with minds, brains, and machines. Includes behaviorism, learning theory, artificial intelligence, gestalt, structural and cognitive approaches. Pre- or corequisite: PSY 2301 or CGS 2301. (Same as CGS 3325) (3-0) Y

**PSY 3361 Cognitive Psychology** (3 semester hours) Theory and research on perception, learning, thinking, psycholinguistics, and memory. Prerequisite: PSY 2301 or CGS 2301. (Offered in the spring semester) (Same as CGS 3361) (3-0) Y

**PSY 3362 Cognitive Development** (3 semester hours) A contrast of Piagetian, behaviorist, and information-processing approaches to the development of cognitive processes throughout childhood. Pre- or corequisite: CLDP/PSY 3310, 3339, or 4334. (Same as CLDP 3362) (3-0) Y

**PSY 3363 Evolution of Behavior** (3 semester hours) This course places human behavior in an evolutionary framework, showing how much human behavior has been subject to natural selection and is genetically transmitted. Emphasizes the continuities between human and non-human behavior. Classic ethological theories and sociobiology are discussed. (3-0) T

**PSY 3364 Animal Communication** (3 semester hours) Surveys the diverse forms of communication used throughout the animal kingdom. Topics include the social contexts of communication, the sensory and neural mechanisms involved in signal production and perception, as well as the evolutionary and ecological forces that shape these systems in their natural environments. (3-0) Y

**PSY 3392 Research Design and Analysis** (3 semester hours) Advanced techniques for research design and data analysis in the behavioral sciences, with an emphasis on analysis of variance and the general linear model. Prerequisite: PSY 2317 or STAT 1342. (3-0) Y

**PSY 3393 Experimental Projects in Psychology** (3 semester hours) Laboratory and field experience in designing and conducting psychological research, with a major emphasis on the writing of research reports. This course fulfills the advanced writing requirement for Psychology majors. Prerequisite: PSY 3392 or PSY 3490. (3-0) S

**PSY 3490 Honors Quantitative Methods** (4 semester hours) An honors-level survey of methods of conducting research in psychology. Presents measurement techniques, basic research designs, and statistical analyses developed in terms of the general linear model. Draws upon examples primarily from cognitive and social psychology to illustrate methods in behavioral research. Prerequisite: PSY 2317 or PSY 3390 or STAT 1342. (4-0) Y

**PSY 4322 Social Communication** (3 semester hours) Interpersonal communication processes in dyads and groups. Relationships between those processes and global outcomes such as intimacy, group cohesion, decisions, and therapeutic change. Pre- or co-requisite: PSY 2301. (3-0) Y

**PSY 4323 Cultural Diversity and Psychology** (3 semester hours) Explores cultural diversity and multiculturalism from both scientific and practical perspectives. Psychological theory and research relevant to cultural diversity are explored. Emphasis is placed on increasing students' awareness of differing world views, privilege, the experience of self, and the interactions between different cultures. (3-0) Y

**PSY 4324 The Psychology of Prejudice** (3 semester hours) Examines prejudice and discrimination, applying social-psychological theory and research to various social and historical issues, including stereotypes and prejudice in the media, old-fashioned and modern prejudice, sexism, heterosexism, classism, acculturation, inter-group contact, and the application of theory to policies including public housing, Affirmative Action, drug laws and welfare. (3-0) Y

**PSY 4327 Stress Management** (3 semester hours) This course examines stress management from scientific and practical perspectives. Topics include stress psychopathology, stress and illness/disease, interventions to reduce stress, relaxation techniques, and strategies of decreasing stressful behavior. Prerequisites: NSC 3361 and PSY 2301. (3-0) Y

**PSY 4328 Health Psychology** (3 semester hours) An examination of psychological factors as they influence physical disease; the involvement of personality variables and stress in heart disease, diabetes, and cancer. Behavioral interventions and their effects are discussed. Prerequisites: NSC 3361 and PSY 2301. (3-0) Y

**PSY 4331 Personality** (3 semester hours) A comparative survey and analysis of theories of personality, including consideration of research and research techniques. Prerequisite: PSY 2301. (3-0) Y

**PSY 4332 Psychology in the Workplace** (3 semester hours) Examines scientific knowledge about effective behavior in the workplace and provides practical ways to improve behavioral skills. Topics include communication, leadership, motivation, decision-making, teamwork, conflict and stress management, and abuse in the workplace, including sexual harassment. Prerequisite: PSY 2301. (3-0) Y

**PSY 4333 Human Relations** (3 semester hours) Factors influencing empathy and effective communication in long-term human relationships, such as those involved in family and employment. The role of human relations in a phenomenological-humanistic context is discussed. Pre- or co-requisite: PSY 2301 and either PSY 3331 or PSY 4331. (3-0) Y

**PSY 4334 Lifespan Development** (3 semester hours) The development of personality, social skills, language, and thought throughout the human life span. Credit given for only one of PSY/CLDP 3310 or PSY/CLDP 4334. (Same as CLDP 4334) (3-0) S

**PSY 4336 Psychology of Language** (3 semester hours) Psychological processes in the use of language, with consideration of language structure and acquisition. (3-0) T

**PSY 4343 Abnormal Psychology** (3 semester hours) Considers patterns of abnormal human behavior, approaches to psychotherapy, and related research. (3-0) S

**PSY 4344 Child Psychopathology** (3 semester hours) Present various views of clinical issues in childhood from sociological, anthropological, and psychological perspectives. Historical views of children are examined in terms of the evolution of current perspectives on childhood psychopathology. Pre- or co-requisite: CLDP/ PSY 3310, 3339, or 4334. (Same as CLDP 4344). (3-0) Y

**PSY 4345 Violence in the Family** (3 semester hours) Explores the area of family violence with primary emphasis on the problems of spouse abuse and child abuse. Analysis of each of these areas of family violence focuses specifically on the epidemiology of the problem, characteristics of the families, etiological theories, and treatment approaches. (Same as CLDP 4345) (3-0) Y

**PSY 4346 Human Sexuality** (3 semester hours) This course covers a wide range of issues, including both behavioral and biological aspects of sexuality. Topics include how to judge sexual research, values and sex, love and intimacy, male and female sexual anatomy and physiology, sexually transmitted diseases, patterns of sexual response, sexual problems and therapies, the development of sexuality, sexual orientation, reproductive sexuality, forcible sexual behavior, and social issues in sexuality. (3-0) S

**PSY 4360 Learning** (3 semester hours) The theoretical basis of learning is presented with emphasis on results from animal research. Introduces the student to the scientific analysis of behavior and the application of experiments in the development of a psychology of learning. Includes classical and instrumental conditioning, non-associative learning, and behavior modification. Prerequisite: PSY 2301. (Same as NSC 4360) (3-0) Y

**PSY 4362 Perception** (3 semester hours) Considers the processes by which the individual gathers information from the external world, the physiological basis of those processes, and how they develop throughout the life span of the individual. Prerequisite: CGS 2301 or PSY 2301. (3-0) Y

**PSY 4364 Attention and Memory** (3 semester hours) Factors influencing the capacity to pick up, organize, and remember complex information. Prerequisite: PSY 3361, or consent of instructor. (3-0) T

**PSY 4365 Psychology of Music** (3 semester hours) An examination of the psychological bases for musical understanding, emotional responses to music, musical creativity, and the dramatic use of music, including relationships between musical structure and the representation of psychological states. (3-0) R

**PSY 4370 Industrial and Organizational Psychology** (3 semester hours) Overview of psychological theory and research bearing on recruitment, personnel selection, training and development, job design, work group design, work motivation, leadership, performance assessment, and job satisfaction measurement. Prerequisite: PSY 2301. (3-0) Y

**PSY 4371 Psychology and the Legal System** (3 semester hours) Overviews the contributions of psychology to the legal and criminal justice systems. Criminal law issues, including theories about the causes of crime and research relating to investigative processes, are covered. A major focus is on the trial process itself, including presenting evidence, expert psychologist testimony, jury selection and deliberation, and eyewitness testimony. (3-0) R

**PSY 4372 Forensic Psychology** (3 semester hours) Explores forensic psychology as a profession and a field of study. Topics may include criminal profiling, lie detection, insanity and competency, spouse and child abuse, child custody, and police selection, training, and interrogation. Course content varies with expertise of instructor. Prerequisites: PSY 2301 and PSY 4343. (3-0) Y

**PSY 4373 Psychological Assessment** (3 semester hours) Explores both theory and application of psychological assessment, especially concerning individual differences in ability and personality, as well as for diagnostic purposes. Test construction and validation will be discussed and specific examples of tests will be presented. Prerequisite: PSY 2301. (3-0) T

**PSY 4374 Judgment and Decision Making** (3 semester hours) Processes of human judgment will be examined from the perspective of cognitive, and social psychological theories and research. Focus is on specific domains of judgment, such as attitude formation and change, biases and prejudices, decision making in organizations, and marketing strategies to illustrate basic principles of decision making. (3-0) Y

**PSY 4375 Honors Seminar** (3 semester hours) A course for students who conduct undergraduate thesis research in the School of Behavioral and Brain Sciences. The seminar explores the different types of thesis research, current research opportunities in the school, and appropriate techniques for writing the thesis proposal and final thesis report. Broader issues of professional development are also explored. Permission of Associate Dean required. This course is required for all students seeking School Honors (minimum GPA of 3.4 and 30 hours at UTD). Recommended, but not required, for students seeking University magna or summa cum laude honors. Usually offered only in spring semester. (Same as CGS 4375, CLDP 4375, NSC 4375, and SPAU 4375) (3-0) Y

## Special Topics

Topics under the following course number vary from semester to semester. The class schedule for the current semester will list the special topic that will be offered.

**PSY 4V90 Special Topics in Psychology** (1-6 semester hours) May be repeated for credit (12 hours maximum) provided course topics differ. ([1-6] -0) R

## Independent Study

The following independent study courses are advanced individualized learning experiences to be arranged with a supervising professor or course coordinator. Open only to qualified students by consent of instructor. Students must make appropriate arrangements with the professor or coordinator prior to the beginning of the semester (preferable at least six weeks ahead). Permission forms are available in the Associate Dean's office. Students may enroll in no more than a total of 6 semester credit hours of Independent Study courses during one semester, and may take as Independent Study a maximum of 20 percent of the total hours of course work undertaken at U.T. Dallas, or 12 semester credit hours, whichever is smaller.

**PSY 4394 Internship in Psychology** (3 semester hours) Students earn course credit for field experience in an applied setting. Requires working at least 8 hours per week at an approved community agency or business of the student's choice. Students keep daily job diaries, attend one class meeting per month, and write brief papers relevant to their experiences. Open to all students who have reached junior or senior standing (more than 53 hours). Apply for placements in the Dean's office. Credit/No Credit. (Same as CGS 4394, CLDP 4394, NSC 4394 and SPAU 4396) (3-0) S

**PSY 4395 Co-op Fieldwork** (3 semester hours) Students earn course credit for field experience in an approved business or government setting. Requires working at least 8 hours per week. Students will keep a journal of their workplace experience, maintain contact with the instructor, and prepare a written report that focuses on the accomplishments and insights gained through their co-op experience. Credit will not be awarded retroactively. Apply for placements through the Career Center office. May repeat for up to six hours. Credit/No Credit. (3-0) T

**PSY 4V96 Teaching Internship** (1-4 semester hours) Students work individually with faculty member in preparing and presenting course materials and tutoring students. Must have completed the relevant course with a grade of at least B and a U.T. Dallas GPA of 3.0. . Permission of instructor and Associate Dean required. Taken on a Credit/No Credit basis. Can be repeated for a total of 6 semester hours. ([1-3]-0) S

**PSY 4397 Honors Thesis** (3 semester hours) Student writes an honors thesis under faculty supervision. Permission of instructor and Associate Dean required. (3-0) S

**PSY 4V98 Directed Research** (1-6 semester hours) Student assists faculty with research projects or conducts a research project under weekly faculty supervision. Taken on a Credit/No Credit basis. May be repeated for credit. ([1-6] -0) S

**PSY 4V99 Individual Study** (1-6 semester hours) Student studies advanced topics under weekly faculty direction and writes a paper. Taken on a Credit/No Credit basis. May be repeated for credit. ([1-6] -0) S

## Public Administration Course Descriptions

(Note: For description of Social Science courses, see page 243.)

**PA 3304 Research Methods in Public Administration** (3 semester hours) Examines methods of Public Administration research. Topics include the nature of administrative inquiry, framing a research problem, choosing a research design, developing hypotheses, sampling designs, and measuring variables. Topics will be covered as students conduct their own study. Prerequisite: SOCS 3305 or STAT 1342. (3-0) Y

**PA 3310 Public Administration** (3 semester hours) Overview of management responsibilities, functions, and activities in government agencies within the framework of political values and organization dynamics. (Same as GOVT 3310) (3-0) Y

**PA 3314 Financial Management** (3 semester hours) Financial accounting, control, and management for efficient and effective resource use within public and nonprofit organizations. (3-0) T

**PA 3333 Human Resources Management** (3 semester hours) Leadership, motivation, decision making, conflict resolution, performance, and other important challenges of personnel management in government organizations. (3-0) T

**PA 3335 Organizational Behavior** (3 semester hours) Power, conflict, consensus, and other dynamic behaviors within and between public organizations, and between organizations and their constituents. (3-0) T

**PA 3377 Urban Planning and Policy** (3 semester credit hours) Explores important substantive areas and concepts in the field of urban and regional planning and current urban planning and policy issues and debates. Topics include: forces that have historically guided and are currently guiding U.S. urbanization; land use, growth management, transportation and traffic congestion, economic development, housing and community development, environmental planning; legal, environmental, governmental contexts. (Same as GEOG 3377, SOC 3377)

**PA 4312 Organizations** (3 semester hours) Study of the structures and dynamics of organizations. Examines problems of motivation, leadership, morale, networks, communications, hierarchy, control, and technology. (Same as SOC 4340) (3-0) T

**PA 4345 Negotiation and Conflict Resolution** (3 semester hours) This course will introduce students to the theory and practice of negotiations in the public sector. Students will learn to analyze the parties, issues and strategies in negotiations and will take part in many negotiation simulations to develop their skills in issues identification and problem resolution. The course will begin with the study of two-party negotiations and progress to multi-party, multi-issue negotiations. (Same as GOVT 4345) (3-0) T

**PA 4351 Urban Management** (3 semester hours) Examination of ways in which the fiscal and administrative policies of local government shape the structure of opportunities and incentives in urban areas. (3-0) R

**PA 4360 Ethics in Public Administration** (3 semester hours) Examines the relationship between ethical choices and the decision-making of public managers. The ethics of organizational policies and public policies are also examined. (3-0) R

**PA 4370 Leadership** (3 semester hours) Explores the gamut of leadership theories and modern views of requisites for success in positions of leadership. Students will take from this course knowledge of leadership theories and practical knowledge for applying leadership principles in any organizational setting. (3-0) Y

**PA 4396 Topics in Public Administration** (3 semester hours) Subject matters of current interest. Topics vary from semester to semester. May be repeated for credit (9 hours maximum). (3-0) R

**PA 4V97 Independent Study in Public Administration** (1-9 semester hours) Independent study under a faculty member's direction. May be repeated for credit. Consent of instructor required. ([1-9] -0) S

**PA 4V98 Internship** (1-6 semester hours) May repeat for credit up to a total of six semester credit hours. Consent of instructor required. This course can only be taken Credit/No Credit. ([1-6] -0) S

**PA 4V99 Senior Honors in Public Administration** (1-6 semester hours) For students conducting independent research for honors theses or projects. May be repeated for credit, but not more than six hours may be taken by a student under this number. ([1-6] -0) S

## Rhetoric Course Descriptions

**RHET 1101 Oral Communication/Critical Thinking** (1 semester hour) This class uses small group assignments and discussions to focus on the most important aspects of adapting to college. Students take part in discussions and demonstrations related to personal management, motivation, academic skills, and work habits, communication skills, and social relationships. Specific exercises are designed to promote critical thinking and creative planning. (1-0) S

**RHET 1302 (ENGL 1302) Rhetoric** (3 semester hours) The course presents an integrated approach to writing, reading, and

critical thinking by developing the grammatical, logical, and rhetorical skills necessary for university writing. All classes work in a computerized learning environment. Students are taught basic computer literacy and submit all work electronically and on paper. (3-0) S

## Social Science Course Descriptions

Social Science courses are applicable to all majors in the Social Sciences.

**SOCS 2V95 Individual Instruction in the Social Sciences** (1-6 semester hours) Individual study under a faculty member's direction. May be repeated for credit. Consent of instructor required. ([1-6] -0) R

**SOCS 3105 Social Statistics Laboratory** (1 semester hour) A laboratory to accompany SOCS 3305. Corequisite: SOCS 3305. Must be taken with SOCS 3305. (1-0) S

**SOCS 3111 Careers in the Social Sciences** (1 semester hour) This one-credit course is designed to provide social sciences majors and those interested in the social sciences with information and skills that will help them select and pursue a career in their major or a related field. (Same as ISSS 3111) (1-0) Y

**SOCS 3305 Introduction to Social Statistics** (3 semester hours) This course introduces students to the basic tools of statistics and shows how they are used in the analysis of social science data. A fundamental understanding of these tools is a critical foundation for social science research in many fields. The course covers descriptive statistics, inference from samples, hypothesis testing, and the basics of regression analysis. NOTE: This course is required of all social science majors and is a prerequisite for a required course in social science research methods within each discipline (for example CJS 3304, ECO 3304, GEOG 3304, PA 3304, or SOC 3304). Prerequisite: College Algebra (MATH 1314 or equivalent). Corequisite: SOCS 3105. Must be taken with SOCS 3105. (3-0) S

**SOCS 3323 Geographic Information Systems** (3 semester hours) An introduction to Geographic Information Systems with a focus on GIS methods and procedures used in the Social Sciences. Cartographic procedures for displaying the results of social scientific research are presented. Specific GIS methods are covered for use in several different applications areas, including political geography, transportation studies, land use for cadastral and zoning applications, and spatial statistics in the context of criminology. Industry standard GIS software tools are used to apply these methods. (Same as GEOG 3323 and ISSS 3323) (3-0) Y

**SOCS 3V96 Selected Topics in the Social Sciences** (1-3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-3] -0) R

**SOCS 4320 Social Entrepreneurship** (3 semester hours) This course is about providing those interested in entrepreneurial ventures with primarily a social focus with the skills and knowledge necessary to accomplish their goals. The course will be seminar style and require a practicum. Topics to be included are entrepreneurship in the non-profit sector, entrepreneurship in political campaigns, new public management and the role of entrepreneurship in government and public services, urban planning, and geographical information sciences as a tool all entrepreneurs can use in the creation of new opportunities. (Same as ISSS 4320) (3-0) R

**SOCS 4V98 Pre-Law Internship** (3-6 semester hours) An internship with law firms or judges that will expose students to legal issues and to the practice of law. An excellent exposure to the legal profession. May repeat for credit up to total of six semester credit hours. Consent of instructor required. This course can only be taken Credit/No Credit. ([3-6] -0) S

## Sociology Course Descriptions

(Note: For description of Social Science courses, see page 243.)

**SOC 1301 (SOCI 1301) Introduction to Sociology** (3 semester hours) An overview of the sociological perspective and its application to social research and social policy. (3-0) Y

**SOC 2300 Introduction to Gender Studies** (3 semester hours) An introduction to the way gender shapes individuals, social institutions and culture. Examines gender, class, sexuality, race/ethnicity, and nationality as interactive systems. Topics include biological arguments about gender and sexuality; the cultural construction of gender; the psychology of sex roles; the ways gender shapes families, workplaces and other social institutions. (Same as GST 2300) (3-0) Y

**SOC 2319 (SOCI 2319) Race, Gender and Class** (3 semester hours) The study of how race, gender, and class systems are interwoven. Explores how the multiple statuses of individuals (race, gender, and class) combine to produce packages of privileges and disadvantages. Topics include the social meanings of color, sex/gender systems in historical and contemporary perspectives,

theories of power, stereotyping, affirmative action, and welfare debates. (3-0) Y

**SOC 3303 Social Theory** (3 semester hours) Survey of the main currents of social theory as developed by European and American theorists and applied in contemporary social thought. Prerequisite: SOC 1301. (3-0) Y

**SOC 3304 Research Methods in Sociology** (3 semester hours) Examines methods of sociological research. Topics include the nature of scientific inquiry, framing a research problem, choosing a research design, developing hypotheses, sampling designs, and measuring variables. Topics will be covered as students conduct their own study. Prerequisite: SOC 1301. (3-0) Y

**SOC 3306 Professional Writing for Sociology** (3 semester hours) A review of professional writing and analytic skills used by sociologists. Students will prepare and revise a series of written assignments including, but not limited to, a literature review, a research design, a research report, and a policy analysis. Satisfies the Advanced Writing Requirement for sociology majors. Enrollment limited to sociology majors except with permission of instructor. Prerequisites: SOC 1301, 3303, and 3304. (3-0) Y

**SOC 3314 Individual and Society** (3 semester hours) The study of the relationship among the individual, social structure, and culture. Explores self-concept and personality, the process of socialization, role-taking and social interaction, norms, values, group membership, and group processes. (3-0) R

**SOC 3321 Deviance** (3 semester hours) Analysis of historical and contemporary perspectives which propose the causes, consequences, and cures for deviance. Description of theories, research, and public policy associated with efforts to control deviant behavior and deviant groups, and to establish normalcy. (3-0) R

**SOC 3322 Social Problems** (3 semester hours) An overview of how sociological concepts and approaches can be applied to the study of the causes and consequences of various social issues in contemporary society. Topics may include poverty, crime, violence, social isolation, social conflict, and failing social institutions. (3-0) T

**SOC 3325 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 3332 Social Control and Criminal Sanctions** (3 semester hours) Examines the means by which society attempts to control the deviant/criminal conduct of its members. Analysis of formal and informal means and a variety of institutions and social processes meant to deter, punish, and reform inappropriate conduct. Prerequisite: CJS 3302 or CJS 3303. (Same as CJS 4305) (3-0) R

**SOC 3333 Religion in Society** (3 semester hours) An assessment of the origins and forms of religious movements, including the practices and beliefs through which the religious experience is channeled; the impact of religious movements and cults on social, economic, and political institutions; the societal response to religious movements; the personality and behavioral changes wrought by religions. (3-0) R

**SOC 3342 The Life Cycle** (3 semester hours) An examination of the institutions that shape the course of people's lives from birth to death. Topics include primary socialization, family, schools, peer groups, occupations, retirement, and death. (3-0) R

**SOC 3343 Sociology of the Family** (3 semester hours) Trends in family life are examined with special attention to how these relate to changes in men's and women's roles. Topics include sex-role socialization, division of labor in the household, sexuality, emotional aspects of marriage, marital power and decision making, and divorce. (3-0) R

**SOC 3352 Gender Roles** (3 semester hours) Examines female and male gender roles in both historic and contemporary contexts. Topics may include the sex/gender distinction, gender socialization, masculinities, the sexual division of labor, gender and power, and the interaction of gender with race, class, and sexuality. (3-0) R

**SOC 3353 Law and Gender** (3 semester hours) Examines how laws and legal institutions reflect and reproduce cultural notions of gender. Focuses on how legal equality and sex discrimination have been defined and challenged. Topics include rape law, reproductive issues, marriage and divorce, pornography, workplace regulations, and, generally, how gender and race ideologies interact in legal decision making. (Same as GOVT 3353) (3-0) R

**SOC 3354 Gender, Society, and Politics** (3 semester hours) Addresses the influence of gender on the distribution of public goods and the way gender, interacting with race and class, shapes social, political, and economic institutions. Introduces students to traditional notions of rights and citizenship as conceptual underpinnings for contemporary political and legal debates (on welfare, reproductive rights, childcare, job segregation, women in the military, prostitution). (Same as GOVT 3354 and GST 3303) (3-0) T

**SOC 3357 Spatial Dimensions of Health and Disease** (3 semester hours) Examines the spatial dimensions of health, disease, and the public health and health care systems. Provides an introduction to spatial epidemiology and a bridge to the terminology of medical and health care professionals. (Same as GEOG 3357).

**SOC 3358 Population: Concepts and Issues** (3 semester hours) Introduces the key measures, data sources, concepts and theories to document and understand the variation of fertility and mortality, interregional migration, population distributions and their compositions in space and time. Historic, present and future population trends are discussed and analyzed in relation to

biological principles and environmental challenges as well as diverging societal organizations and economic constraints. (Same as GEOG 3358).

**SOC 3361 Crime and Justice Policy** (3 semester hours) Study of the forms, meanings, measurements, costs, and explanations for crime. Analysis of criminal justice policy, including issues of social control, deterrence, punishment, rehabilitation, danger, and justice. (Same as CJS 3311) (3-0) T

**SOC 3362 Youth Crime and Justice** (3 semester hours) Study of the social phenomenon of juvenile delinquency and state supervision of youths. The causes of delinquency and the social and legal agencies established to deal with it. (Same as CJS 3310) (3-0) R

**SOC 3372 Population and Development** (3 semester hours) Examines the relations between population, development, and the environment. Essential components of demographic analysis lay the foundation for a critical evaluation of demographic transition theory. Other topics include public health, population structure and life chances, cultural differences and women's status, aging, environmental impacts and population policy. (Same as ECO 3371 and GEOG 3371) (3-0) T

**SOC 3377 Urban Planning and Policy** (3 semester credit hours) Explores important substantive areas and concepts in the field of urban and regional planning and current urban planning and policy issues and debates. Topics include: forces that have historically guided and are currently guiding U.S. urbanization; land use, growth management, transportation and traffic congestion, economic development, housing and community development, environmental planning; legal, environmental, governmental contexts. (Same as GEOG 3377, PA 3377)

**SOC 4302 Class, Status, and Power** (3 semester hours) The nature of systems of differentiation and ranking in societies and their consequences; examination of how prestige, occupational skills, education, and economic assets are used to create class distinctions in the United States; the impact of class on life chances; concepts and processes of social mobility; and the influence of power inconsistencies on income, wealth, and status. Prerequisites: SOC 1301, 2319, or 3303. (3-0) Y

**SOC 4335 Immigrants, Immigration, and American Society** (3 semester hours) An examination of immigrants and immigration policy in relation to the U.S. labor market, industry, and economy, as well as American politics and political culture. Also examined are the processes of occupational and settlement adaptation, becoming legal, and attaining citizenship. (3-0) R

**SOC 4340 Organizations** (3 semester hours) A survey of current ideas about the structures and dynamics of modern formal organizations. Considers such topics as technology, hierarchy, goals, information systems, control structures, power and politics, decision making, environments, and change. (Same as PA 4312) (3-0) T

**SOC 4348 Business and Technology** (3 semester hours) This course explores the role of technological innovation in macroeconomic performance and firm-level business activity. It highlights theoretical and research contributions from across the several social sciences, engineering, and management. Topics included all reflect on how technical advances emerge from - and have their impacts shaped within - markets and broader societal organization. The roles of domestic political institutions and public policy, as well as geo-political contexts, will be used to illustrate the broader implications of the technology-business relationship. Prerequisite: ECO 2302 or permission of the instructor. (Same as ECO 4348) (3-0) Y

**SOC 4350 Political Sociology** (3 semester hours) The analysis of political behavior, political institution formation and change, and the state, from a sociological perspective; voting behavior, political attitude formation, and the interaction of the state with other social institutions. (Same as GOVT 4350) (3-0) R

**SOC 4355 Social Movements** (3 semester hours) The structure, causes, and consequences of change-oriented social movements. Historical and contemporary case studies, including the American labor movement, the civil rights movement, and the feminist movement. (Same as GOVT 4358) (3-0) R

**SOC 4361 Law and Society** (3 semester hours) Analyzes laws and legal institutions as forms of regulation and social control. Explores the links between legal decision making, social structure, and cultural knowledge systems. Theoretical perspectives on law and society, law and ideology, the relation of law to public policy, and legal change as a strategy of social reform are explored. (Same as GOVT 4361) (3-0) R

**SOC 4364 Civil Rights Law and Society** (3 semester hours) Examines the development of civil rights law, and how social ideologies are reflected and reproduced in race and sex discrimination law. Explores how power is exercised through law, and how legal change is pursued as a strategy for social reform. Topics include antislavery and the judicial process, the Reconstruction Amendments, the role of the Supreme Court in U.S. society, school segregation cases, and hate speech. (Same as GOVT 4364) (3-0) Y

**SOC 4370 Poverty and Unemployment** (3 semester hours) The historical, economic, political, and cultural context of poverty and unemployment in the United States, and the social and governmental response to these conditions. (3-0) R

**SOC 4372 Health and Illness** (3 semester hours) An examination of the social conditions and correlates of diseases, the social behavior of the sick, health institutions and professions, and the formulation and implementation of health policies and programs. (3-0) R

**SOC 4375 Gender and Work** (3 semester hours) A sociological analysis of historical trends and current patterns of gender inequality in paid and domestic work; examination of theories and research related to the role of gender in shaping labor market opportunities, experiences, and rewards; identification of various forms of workplace discrimination and potential remedies. (3-0) R

**SOC 4378 Work and Occupations** (3 semester hours) The structure of work, occupations, and industry with an emphasis on the rise of management and the modern corporation, productivity and work performance, the growth and decline of labor unions, and the emergence of service and high-tech industries. (3-0) R

**SOC 4379 Women, Work and Family** (3 semester hours) An examination of the relationship between women's work for pay in the marketplace and their unpaid work in homes across time and in different cultures. Topics include the historical separation of work from home under capitalism; division of household labor between men and women; public policy initiatives (socialized/commercial housework and daycare, family leave, telecommuting, part-time and flex-time work) designed to make juggling work and family easier; the ways class, race, and ethnicity constrain and enable women's choices. (Same as ISGS 4320) (3-0) Y

**SOC 4396 Selected Topics in Sociology** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). (3-0) R

**SOC 4V97 Independent Study in Sociology** (1-6 semester hours) Independent study under a faculty member's direction. May be repeated for credit (6 hours maximum). Consent of instructor required. ([1-6] -0) S

**SOC 4V98 Internship** (1-6 semester hours) May repeat for credit up to total of six semester credit hours. Consent of instructor required. This course can only be taken Credit/No Credit. ([1-6] -0) S

**SOC 4V99 Senior Honors in Sociology** (1-6 semester hours) For students conducting independent research for honors theses or projects. May be repeated for credit, but no more than six hours may be taken by a student under this number. ([1-6] -0) S

## Software Engineering Course Descriptions

**SE 2V95 Individual Instruction in Computer Science/Software Engineering** (1-6 semester hours) Individual study under a faculty member's direction. May be repeated for credit (6 hours maximum). Consent of instructor required. (Same as CS 2V95) ([1-6]-0) R

**SE 3195 Special Topics in Computer Science/Software Engineering** (1 semester hour) May be repeated for credit (4 hours maximum). Must be taken Credit/No Credit. Consent of instructor required. (Same as CS 3195) (1-0) R

**SE 3306 Mathematical Foundations of Software Engineering** (3 semester hours) Boolean logic, first-order logic, models of first-order logic. Introduction to program verification, applications in Software Engineering. Completeness Theorem. Regular expressions, regular sets, finite-state machines, and applications in Software Engineering. Fundamentals of Graph Theory, basic graph algorithms. Statecharts, Petri Nets and their role in Software Engineering. Prerequisite: CS 2305. (3-0) S

**SE 3341 Probability and Statistics in Computer Science and Software Engineering** (3 semester hours) Axiomatic probability theory, independence, conditional probability. Discrete and continuous random variables, special distributions of importance to CS/SE, and expectation. Simulation of random variables and Monte Carlo methods. Central limit theorem. Basic statistical inference, parameter estimation, hypothesis testing, and linear regression. Introduction to stochastic processes. Illustrative examples and simulation exercises from queuing, reliability, and other CS/SE applications. Prerequisites: MATH 1326 or MATH 2419, and CS 2305. (Same as CS 3341) (3-0) S

**SE 3345 Data Structures and Introduction to Algorithmic Analysis** (3 semester hours) Analysis of algorithms including time complexity and Big-O notation. Analysis of stacks, queues, and trees, including B-trees. Heaps, hashing, and advanced sorting techniques. Disjoint sets and graphs. Course emphasizes design and implementation. Prerequisites: CS 2336, and one of CS 3305 or SE 3306. Prerequisite or corequisite: CS/SE 3341. (Same as CS 3345) (3-0) S

**SE 3354 Software Engineering** (3 semester hours) Introduction to software life cycle models. Software requirements engineering, formal specification and validation. Techniques for software design and testing. Cost estimation models. Issues in software quality assurance and software maintenance. Prerequisites: CS 2336 or CS 3333, and CS 2305. Corequisite: ECS 3390. (Same as CS 3354) (3-0) S

**SE 3V95 Undergraduate Topics in Computer Science/Software Engineering** (2-9 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). (Same as CS 3V95) ([2-9]-0) S

**SE 4340 Computer Architecture** (3 semester hours) Boolean algebra and logic circuits; register transfer operations; design of a small computer; input, output, and interrupt organization; powerful addressing modes, instruction formats, and their hardware structures; microprogram control. Prerequisites: CS 2305 or TE 3307, and PHYS 2326. (Same as CS 4340) (3-0) S

**SE 4347 Database Systems** (3 semester hours) This course emphasizes the concepts and structures necessary for the design and implementation of database management systems. Topics include data models, data normalization, data description languages, query facilities, file organization, index organization, file security, data integrity, and reliability. Prerequisite: CS/SE 3345. (Same as CS 4347) (3-0) Y

**SE 4348 Operating Systems Concepts** (3 semester hours) An introduction to fundamental concepts in operating systems: their design, implementation, and usage. Topics include process management, main memory management, virtual memory, I/O and device drivers, file systems, secondary storage management, and an introduction to critical sections and deadlocks. Prerequisites: CS 4340, one of CS/SE 3345 or TE 3346, and a working knowledge of C and UNIX. (Same as CS 4348 and TE 4348) (3-0) S

**SE 4351 Requirements Engineering** (3 semester hours) Introduction to system and software requirements engineering. The requirements engineering process, including requirements elicitation, specification, and validation. Essential words and types of requirements. Structural, informational, and behavioral requirements. Non-functional requirements. Scenario analysis. Conventional, object-oriented and goal-oriented methodologies. Prerequisites: SE 3306, CS/SE 3354 or consent of instructor. (3-0) S

**SE 4352 Software Architecture and Design** (3 semester hours) Introduction to software design with emphasis on architectural design. Models of software architecture. Architecture styles and patterns, including explicit, event-driven, client-server, and middleware architectures. Decomposition and composition of architectural components and interactions. Use of non-functional requirements for tradeoff analysis. Component based software development, deployment and management. Prerequisites: SE 3306, CS/SE 3354 or consent of instructor. (3-0) S

**SE 4367 Software Testing, Verification, Validation and Quality Assurance** (3 semester hours). Methods for evaluating software for correctness, and reliability including code inspections, program proofs and testing methodologies. Formal and informal proofs of correctness. Code inspections and their role in software verification. Unit and system testing techniques, testing tools and limitations of testing. Statistical testing, reliability models. Prerequisites: SE 3306, CS/SE 3354 or consent of instructor. (3-0)

**SE 4376 Object-Oriented Programming Systems** (3 semester hours) In-depth study of the features/advantages of object-oriented approach to problem solving. Special emphasis on issues of object-oriented analysis, design, implementation, and testing. Review of basic concepts of object-oriented technology (abstraction, inheritance, and polymorphism). Object-oriented programming languages, databases, and productivity tools. Prerequisite: CS 2336 or equivalent. (Same as CS 4376) (3-0) S

**SE 4381 Software Project Planning and Management** (3 semester hours) Planning and managing of software development projects. Software process models, ISO 9000, SEI's Capability Maturity Model, continuous process improvement. Planning, scheduling, tracking, cost estimation, risk management, configuration management. Prerequisite: CS/SE 3354. (3-0) Y

**SE 4485 Software Engineering Project** (4 semester hours) This course is intended to complement the theory and to provide an in-depth, hands-on experience in all aspects of software engineering. The students will work in teams on projects of interest to industry and will be involved in analysis of requirements, architecture and design, implementation, testing and validation, project management, software process, software maintenance, and software re-engineering. Prerequisites: at least two of SE 4351, SE 4352, SE 4367, SE 4381. (4-1) S

**SE 4399 Senior Honors in Computer Science/Software Engineering** (3 semester hours) For students conducting independent research for honors theses or projects. (Same as CS 4399) (3-0) R

**SE 4V95 Undergraduate Topics in Computer Science/Software Engineering** (1-9 semester hours) Subject matter will vary from semester to semester. May be used as SE Guided Elective on SE degree plans. May be repeated for credit (9 hours maximum). (Same as CS 4V95) ([1-9]-0) R

## Speech-Language Pathology and Audiology Courses

**SPAU 3301 Communication Disorders** (3 semester hours) Overview of the field of communication disorders with emphasis on speech-language pathology and audiology as a profession; state and national certification requirements; professional ethics; definition, identification, and classification of disorders of hearing, speech, language, cognition and swallowing. (3-0) Y

**SPAU 3303 Normal Language Development** (3 semester hours) The development of language and communication, including phonology, syntax, semantics, pragmatics, and literacy. (Same as CLD 3303) (3-0) Y

**SPAU 3304 Communication Sciences** (3 semester hours) Fundamentals of speech and hearing science: introductory acoustics, basic auditory phenomena, and acoustic aspects of speech. (3-0) Y

**SPAU 3340 Articulation Disorders** (3 semester hours) Etiology, symptomatology, evaluation, and treatment of articulation disorders. (3-0) Y

**SPAU 3341 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. Prerequisites: SPAU 3304 and 3344, or consent of instructor. (3-0) Y

**SPAU 3343 Phonetics** (3 semester hours) The study of speech sounds. Phonetic transcription and description of articulatory, acoustic, and linguistic properties of speech. (3-0) Y

**SPAU 3344 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

**SPAU 3345 Neural Basis of Communication** (3 semester hours) Organization and function of cortical and subcortical structures that underlie speech, language and hearing. Special consideration of structures and pathways typically affected in neurogenic disorders of communication. (3-0) Y

**SPAU 3388 Clinical Observation in Speech-Language Pathology** (3 semester hours) Guided observation and study of assessment procedures and intervention strategies used with individuals who have communication disorders. Must take on a credit/no credit basis. (3-0) S

**SPAU 3390 Clinical Practicum in Speech-Language Pathology** (3 semester hours) Guided observation and supervised participation in evaluation and therapeutic management of individuals with communication disorders. Weekly clinical conference required. Must be taken on a Credit/No Credit basis. May be repeated for credit. Pre- or corequisites: consent of instructor, SPAU 3303, 3340 or 4308, and 3343. (3-0) S

**SPAU 4308 Language Disorders in Children** (3 semester hours) Language impairment in children, including etiology, characteristics, and treatment procedures, with special emphasis on factors that interfere with normal development of language skills. Prerequisite: SPAU 3303 or consent of instructor. (3-0) Y

**SPAU 4325 Exceptional Children** (3 semester hours) Terminology and classification related to the education of exceptional populations. Special consideration of theoretical research, legal and humanistic issues, types of learning problems, physical and mental disabilities, teaching and assessment strategies, and services available to special learners. (Same as PSY 3342) (3-0) Y

**SPAU 4342 Assessment Procedures in Speech-Language Pathology** (3 semester hours) Principles and procedures in the diagnosis of communication disorders in preschool- and school-aged children and adults. A blend of philosophical issues with practical clinical methodology. Emphasis on application of diagnostic information to rehabilitation planning and techniques. Professional report writing skills included. Prerequisite: SPAU 3301 or consent of instructor. (3-0) Y

**SPAU 4375 Senior Honors Seminar** (3 semester hours) A course for students who conduct undergraduate thesis research in the School of Behavioral and Brain Sciences. The seminar explores the different types of thesis research, current research opportunities in the school, and appropriate techniques for writing the thesis proposal and final thesis report. Broader issues of professional development are also explored. Permission of Associate Dean required. This course is required for all students seeking School Honors (minimum GPA of 3.4 & 30 hours at UTD). Recommended, but not required, for students seeking University magna or summa cum laude honors. This course is usually offered only in the spring semester. (Same as CGS 4375, CLD 4375, NSC 4375, and PSY 4375) (3-0) Y

**SPAU 4393 Language in Culture and Society** (3 semester hours) Influence of languages on nonlinguistic aspects of culture and society. Topics include patterns of communication, speech community, communication and social structure, varieties of language, and the analysis of communicative competence and communicative performance. (3-0) Y

**SPAU 4394 Multicultural Aspects of Communication Disorders** (3 semester hours) Therapeutic management of foreign dialect, language differences, and the effects of cultural diversity upon learning. Needs of multicultural populations within the public schools will also be addressed. (3-0) Y

**SPAU 4395 Issues in the Management of Persons with Hearing Impairment** (3 semester hours) Assessment of hearing disorders, individual and group amplification, assistive listening devices, auditory and visual speech recognition, communication strategies, and service delivery to adults and children with hearing loss. (3-0) T

## Special Topics

Topics under the following course number vary from semester to semester. The class schedule for the current semester will list the special topic that will be offered.

**SPAU 4V90 Special Topics in Speech-Language Pathology and Audiology** (1-6 semester hours) May be repeated for credit as topics vary (9 hours maximum). ([1-6]-0) R

## Independent Study

The following independent study courses are advanced individualized projects to be arranged with a supervising professor. Open only to qualified students by consent of instructor. Students must contact professor and design a contract for study prior to enrollment. Permission forms are available in the Associate Dean's office. Student may enroll in no more than a total of 6 semester credit hours of independent study courses during one semester and a maximum of 20 percent of total hours undertaken at U.T. Dallas or 12 semester credit hours, whichever is smaller.

**SPAU 4396 Internship** (3 semester hours) Students earn course credit for field experience in an applied setting. Requires working at least 8 hours per week at an approved community agency or business of the student's choice. Students keep daily job diaries, attend one class meeting per month, and write brief papers relative to their experiences. Open to all students who have reached junior or senior standing (more than 53 hours). Apply for placements in the Associate Dean's office. Must be taken on Credit/No Credit basis. (Same as CGS 4394, CLD 4396, NSC 4394, and PSY 4394) (3-0) S

**SPAU 4397 Honors Thesis** (3 semester hours) An independent study in which the student writes an honors thesis under faculty supervision. Permission of instructor and Associate Dean required. (3-0) S

**SPAU 4V96 Teaching Internship** (1-4 semester hours) Students work individual with faculty member in preparing and presenting course materials and tutoring students. Must have completed the relevant course with a grade of at least B. Permission of the instructor and Associate Dean required. Taken on a Credit/No Credit basis. Can be repeated for a total of 6 semester hours. [1-4]-0) S

**SPAU 4V99 Individual Study** (1-6 semester hours) Study of advanced topics under weekly faculty direction. Must be taken on a Credit/No Credit basis unless Associate Dean approves for letter grade. May be repeated for credit. ([1-6] -0) S

## Statistics Course Descriptions

**STAT 1342 (MATH 1342) Statistical Decision Making** (3 semester hours) Principles of quantitative decision making: summarizing data, modeling uncertainty, loss functions, probability, conditional probability, random variables. Introduction to statistics: estimation, confidence intervals, hypothesis testing, regression. Introduction to statistical packages. Cannot be used to satisfy degree requirements for majors in the School of Engineering and Computer Science, or major requirements in the Schools of Management or Natural Sciences and Mathematics. Prerequisite: MATH 1306, MATH 1314 or equivalent. (3-0) S

**STAT 3103 Statistical Computer Packages** (1 semester hour) An introduction to the use of statistics packages, such as SAS, BMD, SPSS, Minitab, and S, for the analysis of data. Based primarily on self-study materials. Cannot be used to satisfy degree requirements for mathematical science majors. Prerequisite: one semester of statistics. (1-0) S

**STAT 3332 Statistics for Life Sciences** (3 semester hours) Graphs, histograms, mean, median, standard deviation, Chebyshev's inequality, standardized scores, simple linear regression and correlation; basic rules of Probability, Bayes theorem, Normal;  $t$ ,  $\chi^2$ ,  $F$ , binomial and Poisson distributions; point estimation; hypothesis tests and confidence intervals for means, proportions regression coefficients, and correlation; one way ANOVA; contingency tables. Applications in life sciences will be emphasized throughout the course. Cannot be used by mathematical sciences, engineering, or computer science majors to satisfy degree requirements. Prerequisite: MATH 1325 or equivalent. (3-0) Y

**STAT 3355 Data Analysis for Statisticians and Actuaries** (3 semester hours) Methods of data analysis used in different areas of Statistics and Actuarial Science. Sampling, fitting and testing models, regression, and comparison of populations. A statistical computer package will be used. Prerequisite: MATH 2419. (3-0) T

**STAT 3360 Probability and Statistics for Management and Economics** (3 semester hours) Probability theory including independence, conditioning, density functions, frequently used families of distributions, random variables, expectation, moments, and the central limit theorem; statistical inference including sampling, estimation, hypothesis testing, and regression. Cannot be used by mathematical sciences, engineering, or computer science majors to satisfy degree requirements. Prerequisite: MATH 1326. (3-0) S

**STAT 4351 Probability** (3 semester hours) Probability models, random variables, expectation, special distributions, and the central limit theorem. The theory is illustrated by numerous examples. Prerequisite: MATH 2451. (3-0) T

**STAT 4352 Mathematical Statistics** (3 semester hours) Theory and methods of statistical inference. Sampling, estimation, hypothesis testing, analysis of variance, and regression with examples from the physical, social, and management sciences. Prerequisite: STAT 4351 or equivalent. (3-0) T

**STAT 4372 Actuarial Science** (3 semester hours) Probability models and statistical methods used in insurance business. Typical

loss distributions including Pareto, Weibull, lognormal, loggamma, discrete and continuous mixtures. Effect of coverage modifications, and clustering in modeling. Estimation by simulation. Prerequisite: STAT 4351. (3-0) T.

**STAT 4382 Stochastic Processes** (3 semester hours) Stochastic models including Markov chains, random walks, Poisson processes, renewal processes, and an introduction to time series and forecasting. Prerequisite: STAT 4351 or equivalent. (3-0) T

**STAT 4V02 Independent Study in Statistics** (1-6 semester hours) Independent study under a faculty member's direction. May be repeated for credit. Student must obtain approval from participating mathematical sciences faculty member and the undergraduate advisor. Can satisfy Communication elective (3 hours) if it has a major writing/report component. ([1-6] -0) S

**STAT 4V97 Undergraduate Topics in Statistics** (1-9 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-9]-0) S

## Telecommunications Engineering Course Descriptions

**TE 1102 Introduction to Experimental Techniques** (1 semester hour) EE fundamentals laboratory that stresses laboratory procedures; learning use of common laboratory equipment such as power supplies, multimeters, signal generators, and oscilloscopes; making measurements; familiarization with simple DC resistor circuits; Ohm's law; analyzing AC signals, including frequency, period, amplitude, and rms value; inductors, capacitors and DC transients; measuring phase shift in an AC circuit due to an inductor or capacitor; and basics of laboratory report writing. (Same as EE 1102) (0-1) S

**TE 3101 Electrical Network Analysis Laboratory** (1 semester hour) Laboratory to accompany EE 3301. Design, assembly and testing of linear electrical networks and systems. Use of computers to control electrical equipment and acquire data. Prerequisite: EE/TE 1102. Corequisite: EE/TE 3301. (Same as EE 3101) (0-1) S

**TE 3102 Signals and Systems Laboratory** (1 semester hour) Laboratory based on MATLAB to accompany EE 3302. Fourier series and Fourier transform analysis, implementation of discrete-time linear time-invariant systems, applications of Fast Fourier Transform, design of digital filters, applications of digital filters. Corequisite: EE/TE 3302. (Same as EE 3102) (0-1) S

**TE 3301 Electrical Network Analysis** (3 semester hours) Analysis and design of RC, RL, and RLC electrical networks. Sinusoidal steady state analysis of passive networks using phasor representation; mesh and nodal analyses. Introduction to the concept of impulse response and frequency analysis using the Laplace transform. Prerequisites: MATH 2420 and PHYS 2326. (Same as EE 3301) (3-0) Y

**TE 3302 Signals and Systems** (3 semester hours) Introduces the fundamentals of continuous and discrete-time signal processing. Linear system analysis including convolution and impulse response, Fourier series, Fourier transform and applications, discrete-time signal analysis, sampling and z-transform. Prerequisite: EE/TE 3301. Corequisite: EE/TE 3102. (Same as EE 3302) (3-0) Y

**TE 3307 Discrete Mathematics** (3 semester hours) Principles of counting. Boolean operations. Sets, relations, functions, and partial orders. Recurrence relations. Graph theory. Prerequisite: MATH 2417. (3-0) Y

**TE 3341 Probability Theory and Statistics** (3 semester hours) Axioms of probability, conditional probability, Bayes theorem, random variables, probability density/mass function (pdf/pmf), cumulative distribution function, expected value, functions of random variables, joint, conditional and marginal pdfs/pmfs for multiple random variables, moments, central limit theorem, elementary statistics, empirical distribution. Prerequisite: MATH 2419. (Same as EE 3341) (3-0) Y

**TE 3346 Computer Algorithms and Data Structures** (3 semester hours) Basic data structures such as arrays, stacks, queues, lists, trees. Algorithmic complexity. Sorting and search techniques. Fundamental graph algorithms. Prerequisites: CS 2336 and TE 3307. (3-0) S

**TE 4334 Numerical Methods in Engineering** (3 semester hours) Computer arithmetic and error analysis. Solution of linear equations, roots of polynomial equations, interpolation and approximation, numerical differentiation and integration, solution of ordinary differential equations. Emphasis on engineering applications and numerical software. Prerequisites: EE 2300, EE 3300, and knowledge of a high level programming language. (Same as EE 4334) (3-0) Y

**TE 4348 Operating Systems Concepts** (3 semester hours) An introduction to fundamental concepts in operating systems, their design, implementation, and usage. Topics include: process management, main memory management, virtual memory, I/O and device drivers, file systems, secondary storage management, introduction to critical sections and deadlocks. Prerequisites: CS/SE 4340, one of TE 3346 or CS/SE 3345, and a working knowledge of C and UNIX. (Same as CS/SE 4348) (3-0) S

**TE 4365 Introduction to Wireless Communication** (3 semester hours) Introduction to the basic system concepts of cellular telephony. Mobile standards, mobile system architecture, design, performance and operation. Voice digitization and modulation techniques; PCS technologies. Prerequisite: EE 3350. (Same as EE 4365) (3-0) Y

**TE 4367 Telecommunications Switching and Transmission** (3 semester hours) Trunking and queuing, switching technolo-

gies: voice, data, video, circuit switching and packet switching, transmission technologies and protocols, transmission media - copper, fiber, microwave, satellite, protocols - bipolar formats, digital hierarchy, optical hierarchy, synchronization, advanced switching protocols and architectures; frame relay, ATM, HDTV, SONET. Prerequisite or Corequisite: EE 3350. (Same as 4367) (3-0) Y

**TE 4381 Mobile Communications System Design Project I** (3 semester hours) Fundamental topics in network design including graph theory, internal and external routing protocols, reliability, availability, capacity, security, and quality of service for networks comprised of SONET, Ethernet, cable, DSL, and wireless infrastructures. All students will design and configure multi-node, multi-topology networks, complete with cost analysis, then will submit a written report and make an oral presentation of their project. Prerequisites: EE 3300, EE 3302, EE 3311, EE 3320. Pre- or corequisite: EE/TE 4365. (Same as EE 4381) (3-0) Y

**TE 4382 Individually Supervised Senior Design Project I** (3 semester hours) Detailed design assembly and testing of a system or component under the guidance of a faculty member. Specific technical requirements will be set by the faculty member. All students must submit a written report and make an oral presentation of the culmination of the project. Prerequisites: EE 3300, EE 3302, EE 3311, and EE 3320. (Same as EE 4382) (3-0) R

**TE 4384 Mobile Communications System Design Project II** (3 semester hours) Radio frequency system design, propagation, antennas, traffic and trunking, technology issues, channel modeling, link budget, cell design principles, demographics and capacity analysis, project management, and regulatory issues. All students must submit a written report and make an oral presentation at the culmination of their project. Prerequisites: EE 3300, EE 3302, EE 3311, EE 3320. Pre- or corequisite: EE 4390 or CS/TE 4390. (Same as EE 4384) (3-0) Y

**TE 4385 DSP-Based Design Project I** (3 semester hours) Basic discrete-time signal processing concepts, hands-on experience in real-time digital communications systems, digital signal processor architectures, programming, and interfacing with external systems. All students must finish laboratory experiments, submit a written report, and make an oral presentation at the culmination of the project. Prerequisites: EE 3300, EE 3302, EE 3311, EE 3320 and EE 3350 (or EE/TE 4361). (Same as EE 4385) (3-0) Y

**TE 4386 DSP-Based Design Project II** (3 semester hours) Graphical programming of DSP systems, real-time signal processing, analog to digital signal conversion, digital filtering systems, frequency domain processing, DSP chip architecture, DSP software development tools, design projects. Prerequisites: EE 4385 or EE 3300, EE 3302, EE 3311, EE 3320 and EE 3350 (or EE/TE 4361) and knowledge of C. (2-3) Y

**TE 4387 Individually Supervised Senior Design Project II** (3 semester hours) Detailed design assembly and testing of a system or component under the guidance of a faculty member. Specific technical requirements will be set by the faculty member. All students must submit a written report and make an oral presentation of the culmination of the project. Prerequisites: EE/TE 4382 or EE 3300, EE 3302, EE 3311, and EE 3320. (Same as EE 4387) (3-0) R

**TE 4390 Computer Networks** (3 semester hours). The design and analysis of computer networks. Topics include the ISO reference model, transmission media, medium-access protocols, LANs, data link protocols, routing, congestion control, internetworking, and connection management. Prerequisite: TE 3346 or CS/SE 3345. (Same as CS 4390) (3-0) S

**TE 4V95 Undergraduate Topics in Telecommunications Engineering** (1-9 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-9]-0) R

## Developmental Courses

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Developmental courses cannot be used for degree credit.

**DMTH OV93 Fundamentals of Mathematics and Elementary Algebra** (1-3 semester hours) A mathematics course that offers students the opportunity to develop proficiency in solving problems involving integers, rational numbers (including ratios, percentages, and proportions), and geometric figures; interpreting and constructing tables, charts and graphs; forming equivalent algebraic expressions using various appropriate algebraic models that involve linear equations, linear systems, or linear inequalities. This developmental course cannot be used for degree credit. ([1-3]-0)

**DRDG OV92 Reading for Success** (1-3 semester hours) A reading course that offers students the opportunity to develop proficiency in reading comprehension, vocabulary development, critical reasoning, study skills, and other reading skills necessary for success in academic and career advancement. The course emphasizes learning how to learn and includes reading/learning experiences designed to strengthen the total educational background of each student. This developmental course cannot be used for degree credit. ([1-3]-0)

**DWTG )V91 Writing for Success** (1-3 semester hours) A writing course that offers students the opportunity to develop proficiency in the inventing, drafting, revising and editing skills necessary for writing multiparagraph papers. Topics will include

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sentence structure, grammar, paragraph development, usage and mechanics. The course is writing-intensive, and students will have the opportunity to do class assignments on a word processor. This developmental course cannot be used for degree credit. ([1-3]-0)

## Interdisciplinary Studies

While the processes of education rest upon the foundation of clearly defined disciplines, there are many problems and issues that require a broader approach. Hence, The University of Texas at Dallas is committed to developing interdisciplinary studies. Some of these problems arise initially out of the traditional disciplines but cannot be solved by exclusive reference to them. For example, social historians have found it imperative to emancipate themselves from the methods of the traditional historian and to enlist the support of the social anthropologist, the sociologist, and the art historian.

Other problems and ideas, by their very nature, involve the integrated activity of scholars in disparate fields, as in the case of issues posed by contemporary medical ethics, which require the integrated perspectives of the moral philosopher, the psychologist, the sociologist, and the physician. Furthermore, in some instances the processes of interdisciplinary fusion result in the emergence of new disciplines, as in the case of molecular biology, which arose largely out of the work of physicists and chemists working in the field of biology. In other words, from whatever perspective it is viewed, interdisciplinarity is an intellectually enriching and potentially creative process which can be an important component of the educational experience at The University of Texas at Dallas.

The Interdisciplinary Studies courses which follow are sponsored by particular schools but are open to all students at the University.

## Interdisciplinary Studies Course Descriptions

**BIS 2390 Topics in Interdisciplinary Studies** (3 semester hours) May be repeated for credit as topics vary. (9 hours maximum). (3-0) Y

**BIS 3320 The Nature of Intellectual Inquiry** (3 semester hours) Core course designed to enhance the student's critical thinking and reasoning in order to understand and utilize the methodologies of scholarly pursuits. To be taken during the student's first twelve hours as a junior in the Interdisciplinary Studies program. May not be taken on a Credit/No Credit basis. (3-0) S

**BIS 3390 Theory and Practice of Group Motivation and Leadership** (3 semester hours) An elective course designed to provide students with a basic understanding of the theoretical knowledge and skills needed to lead and motivate groups engaged in personal or professional transitions. Includes supervised and paraprofessional experience. Prerequisite: Permission of instructor. May be repeated for credit (6 hours maximum). (3-0) Y

**BIS 4301 Special Topics** (3 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). (3-0) Y

**BIS 4303 Senior Honors in Interdisciplinary Studies** (3 semester hours) Required for graduation magna cum laude and summa cum laude. See requirements for Graduation with Latin Honors in this catalog. Consent of the instructor and Associate Dean of General Studies is required. (3-0) S

**BIS 4305 Learning Studies Practicum** (3 semester hours) Supervised instructional experiences with school-age students. Focus is on enrichment activities that meet the learning needs of individual students. Consent of the faculty member is required. (3-0) Y

**BIS 4310 Co-op Education** (3 semester hours) Students completing this course will integrate academic learning with their co-op work experience. To attain this goal, students will keep a journal of their workplace experience, maintain contact with the instructor, and prepare a written report that focuses on the accomplishments and insights gained through their co-op experience. May be repeated for credit (6 hours maximum) (3-0) T

**BIS 4V02 Independent Study** (1-9 semester hours) Independent study under a faculty member's direction. An Independent Study course may be used in the Interdisciplinary Studies degree plan wherever appropriate. An Independent Study course involves an individual contract between the student and a faculty member, specifying what requirements the student will meet. This usually involves some combination of reading, research, papers, examinations, and meetings with the faculty member. To undertake an Independent Study, the student must arrange with an appropriate faculty member for supervision of a particular topic. For written papers, 10 pages are required for each hour of credit. Consent of the faculty member is required. May be repeated for credit (9 hours maximum) ([1-9]-0) S

**BIS 4V04 Internship** (1-6 semester hours) Students undertake a new learning experience at a faculty-supervised work situation

in business, government, or social service agency, arts institution, or other setting appropriate to the student's concentration. Sites may be local, out of state, or abroad. An internship provides exposure to a professional working environment, application of theory to working realities, and an opportunity to test skills and clarify goals in a specific field. Experience gained may also serve as a work credential after graduation. Course requirements include writing a journal and research paper connecting theory to practice. This course is open to all majors at UTD. May be repeated for credit (6 hours maximum) ([1-6]-0) S

## School of Arts and Humanities

**ISAH 3236 Debate** (2 semester hours) The principles and practices of formal intercollegiate team and parliamentary debate. The course is based on the national debate topic. Teams participate in intramural and intercollegiate debate and forensic competitions, including extemporaneous speech, oratory, and group discussion. Primarily intended for members or prospective members of the UTD debating team. May be repeated for credit (16 hours maximum). (2-0) S

**ISAH 3300 Film as Reflection of Society** (3 semester hours) A study of the cinema in its historical, economic, propagandistic, and symbolic relationship to society. Topics vary and will consider films in different eras and nations. (3-0) Y

**ISAH 3330 Venus to Vampire: Women in History and Art** (3 semester hours) Starting with the Greeks, this course will explore the female as a constant source of inspiration and vehicle of expression during the major periods of Western art up to the present time. Emphasis will be on the social and philosophical context in which these images were created and on the persistence and change of types of images from period to period. (3-0) T

**ISAH 3394 Women and Western Thought** (3 semester hours) Drawing from philosophy, theology, literature, and art, this course will attempt to trace and understand the development of the concept of woman from the classical period until the present, and examine the evolution of such attitudes and their impact on the images of women in literature and the visual arts. (Same as GST 3302) (3-0) T

**ISAH 4301 Music as a Second Language** (3 semester hours) An exploration of the creative process and the changing role of the composer. Methods of analytical and aesthetic appreciation applied to musical examples, with corollaries in literature, history, theatre, and the visual arts. Musical knowledge helpful but not required. (3-0) T

**ISAH 4336 Growing Up in America** (3 semester hours) Did Childhood and Adolescence exist in the past? Will they tomorrow? This course investigates changes in growing up with perspectives from history, the social sciences, psychology, literature, and film. (3-0) T

**ISAH 4340 Motion Pictures: Popular Art Symbolic Form** (3 semester hours) The course explores the nature of popular art and the relationship of motion pictures to other forms of artistic expression, and emphasizes critical and analytical approaches to movies by considering symbolic and significant enactments in them. (3-0) Y

**ISAH 4342 Peace, War, and Ethics** (3 semester hours) This course is a study of attitudes, concepts, and realities regarding war and peace issues. It seeks to understand why people fight and why peace is difficult to attain. (3-0) T

**ISAH 4370 Arts Management** (3 semester hours) Examination of the role of arts managers in contemporary visual and performing arts organizations, with a focus on business and administrative practices. Topics will include organizational structuring, fund raising, personnel management, and basic accounting procedures (profit and nonprofit). (3-0) T

**ISAH 4V88 Special Interdisciplinary Topics in the Arts and Humanities** (1-6 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-6]-0) R

## School of Behavioral and Brain Sciences

**ISHD 3343 Children in a Changing World** (3 semester hours) Issues relevant to childhood in the 20th century. Topics include day care, divorce, parenting styles, and parental leave. The influence of social policy, socioeconomic factors, and family structure on childrearing will be discussed. (3-0) Y

**ISHD 4347 Drugs, Behavior, and the Brain** (3 semester hours) An examination of the nature of brain cells and the brain-cell chemical communication process. Mechanisms of action of major psychoactive drugs, drug dependence, withdrawal, and drug-induced brain damage are considered. (3-0) R

**ISHD 4365 Language in Culture and Society** (3 semester hours) An investigation of the influence of language on nonlinguistic aspects of culture and society. Topics will include patterns of communication, speech community, communication and social structure, varieties of language, and the analysis of communicative competence and communicative performance. (3-0) Y

**ISHD 4391 Psychology and the Legal System** (3 semester hours) Relationship of psychology to legal issues including the insanity defense and criminal responsibility, mental competency, standards for involuntary commitment, and predictions of future behavior. Other topics include polygraphic examinations, jury selection, decision processes, and rules of evidence. (3-0) Y

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**ISHD 4V82 Special Interdisciplinary Topics in Human Development** (1-6 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-6]-0) R

### **Erik Jonsson School of Engineering and Computer Science**

**ISEC 4102 Computer Art Laboratory** (1 semester hour) This course involves the creation and use of algorithms for art on microcomputers. Will not satisfy core requirement in Natural Sciences. Corequisite: ISEC 4201 The Computer and the Artist. (0-2) R

**ISEC 4201 The Computer and the Artist** (2 semester hours) This course explores the problems, tools, and opportunities presented to the artist by the birth of this new medium. From the analytic aspects of computer graphics to the aesthetics of interactive design, the wide range of extant techniques foreshadows the richness of future computer art. Will not satisfy core requirement in Natural Sciences. Corequisite: ISEC 4102 Computer Art Laboratory. (2-0) R

**ISEC 4395 Computing in Society** (3 semester hours) Computing in society and business. The internet. Information Technology: principles, practices, risks, and opportunities. Tour of a computer system. Software systems. The social context of computing. Careers in computing. Popular culture in the Digital Age. The risks of technology: ACM code of ethics, computer crime, system disasters. Human rights and privacy issues. Computers and education. (3-0) R

**ISEC 4V87 Special Interdisciplinary Topics in Engineering or Computer Science** (1-6 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-6]) R

### **School of General Studies**

**ISGS 3130 Pre-Health Professional Development** (1 semester hour) This course is for students who are committed to a career in health and wish to improve communication skills. This course will focus on content areas relevant to the health care professions. (Permission of instructor required). (1-0) S

**ISGS 3312 Women in Management** (3 semester hours) Earnings differences, employment policies, and other critical issues affecting the status of women in managerial and professional positions. (3-0) S

**ISGS 3335 United States and East Asia** (3 semester hours) This course examines the interaction between the United States and East Asia. Topics include sociocultural differences, conflicts in political ideals, economic relations, and trans-Pacific diplomacy. The course highlights the spread of American culture and the rise of East Asia's economic power. (3-0) Y

**ISGS 4305 Humans: Our Place in Nature** (3 semester hours) The history of the human lineage is a complicated but fascinating combination of biological and cultural changes. (3-0) Y

**ISGS 4306 Human Female: Biology and Culture** (3 semester hours) This course takes a life cycle approach to the major biological events in a woman's life, and the various cultural observances or lack thereof, which accompany these changes. (3-0) Y

**ISGS 4308 Bones, Bodies, and Disease** (3 semester hours) An introduction to the wealth of knowledge that can be ascertained through an analysis of skeletal and mummified remains. (3-0) Y

**ISGS 4309 Diversity and Globalization** (3 semester hours) This course studies the meanings, processes, and impacts of globalization. It highlights sensitivity to global diversity and examines how global companies cope with a wide array of political/legal forces and transform social/cultural differences into competitive advantages. Topics include conflict resolution in business diplomacy and strategies of managing global diversity. (3-0) Y

**ISGS 4311 Gender and Education** (3 semester hours) An examination of the impact of gender, race, and class on the educational experiences of men and women. Considers the way educational institutions both empower individuals and reproduce social inequalities based on class, gender, ethnicity, and sexuality. Topics include Enlightenment discussions of gender and reason, co-ed vs. single sex education, curriculum transformation efforts to include the history and experiences of women and ethnic minorities, feminist and critical pedagogies. (3-0) Y

**ISGS 4320 Women, Work and Family** (3 semester hours) An examination of the relationship between women's work for pay in the marketplace and their unpaid work in homes across time and in different cultures. Topics include the historical separation of work from home under capitalism; division of household labor between men and women; public policy initiatives (socialized/commercial housework and daycare, family leave, telecommuting, part-time and flex-time work) designed to make juggling work and family easier; the ways class, race, and ethnicity constrain and enable women's choices. (Same as SOC 4379) (3-0) Y

**ISGS 4338 Native American Cultures** (3 semester hours) This course provides an overview of the Indian, Eskimo, and Aleuts of North America from first contacts with the European world to the present. Native Americans will be viewed from an interdisciplinary and culture area perspective. Topics discussed include pan-Native American ideologies and problems. (3-0) Y

**ISGS 4V89 Special Interdisciplinary Topics in General Studies** (1-6 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-6]-0) Y

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## School of Management

**ISSM 4V83 Special Interdisciplinary Topics in Business Administration** (1-6 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-6]-0) S

## School of Natural Sciences and Mathematics

**ISNS 3367 The Oceans** (3 semester hours) Physical, chemical, biological, and geological aspects of oceanography. Description and origin of features on sea floor; evolution of ocean basins; chemistry of sea water; influence of oceans on weather and climate; formation of waves, tides, currents; factors affecting biological productivity; economic resources and environmental problems. Enrollment in GEOS 3401 Oceanography precludes enrollment in ISNS 3367. (3-0) S

**ISNS 3368 Weather and Climate** (3 semester hours) An overview of the fields of meteorology and climatology. The approach is scientific yet nonmathematical, and students will be exposed to a wide spectrum of ideas from folklore, history, law, economics, and environmental issues. (3-0) S

**ISNS 4331 History of Modern Physics** (3 semester hours) History of the major fundamentals of modern physics: Classical Physics and Newton's Theory of Gravitation; The Maxwell Theory of Electrodynamics; Special Theory of Relativity and General Theory of Relativity; Einstein's Theory of Gravitation. Quantum Mechanics, Quantum Electrodynamics, the Quantum Theory of Weak Interactions and Quantum Chromodynamics. The unification of the Quantum Theory of Electromagnetic and Weak Interactions. The Standard Model of Fundamental Elementary Particles and the Interactions. Recent development of String and M-Theory. No prerequisites. (3-0) Y

**ISNS 4332 Future Energy Resources** (3 semester hours) Major Energy Consuming Sectors: Residential, Industrial, Transportation and Electric Energy Generating Sectors. Present major energy resources: oil, gas, coal, hydroelectric, and nuclear. Energy mix used in consuming sectors. Imported energy. Domestic and world resources in conventional energies. Future energy resources: nuclear fission (conventional and breeder reactors), fusion reactors, technology and safety aspects, nuclear proliferation and terrorism, nuclear waste disposal, solar energy, solar heating and cooling. Non-conventional energy resources. Major problems of energy transportation. An energy mix for the future. Possible scenarios for a U.S. energy plan. Major fields of research and development. No prerequisites. (3-0) Y

**ISNS 4359 Earthquakes and Volcanoes** (3 semester hours) Earthquakes and volcanoes appear capricious and devastating in human terms, but they are also a regular part of geological history. This course will integrate current geological thinking with elements of statistics, physics, chemistry, human history, sociology, psychology, and religion to develop an understanding and to provide pragmatic strategies for living with these events. (3-0) Y

**ISNS 4371 The Phenomena of Nature: Forces, Gases, Motion, Heat, Light and Electricity** (3 semester hours) The purpose of the course is to cultivate in students an intuitive perception of the nature of observable physical reality through the presentation and analysis of striking experimental demonstrations. No substantial prior training in science is assumed, but students with a background in science may profit from the course. There will be considerable reference to the historical growth of scientific knowledge and to the aesthetic quality of the explanations offered by science. (3-0) Y

**ISNS 4373 Our Nearest Neighbors in the Sky** (3 semester hours) A description of the tools and principles the astronomer and space scientist use in exploration of the solar system; the earth, moon, the sun, planets, asteroids, meteors, and comets; the origin of the solar system; classroom demonstrations, multimedia presentations, and telescope observations. NATS 4173 may be taken with this course to satisfy a General Education laboratory science requirement. (3-0) Y

**ISSS 4377 Alternative Approaches to National Security** (3 semester hours) There is a pressing need to reconsider how nations can best achieve security in the face of drastic changes in the international arena in the last decades of the twentieth century. The Cold War has ended, the Soviet Union has collapsed, yet regional conflicts abound, ethnic antagonisms threaten the peace, and international terrorism is still a real danger. At the same time, important progress has been made in arms reduction, international cooperation, and the spread of democracy. In the light of these changes, this course explores a variety of alternatives to the traditional threat or use of massive military force as a means for achieving national and global security. (3-0) R

**ISNS 4V81 Special Interdisciplinary Topics in Natural Sciences and Mathematics** (1-6 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-6]-0) R

## School of Social Sciences

**ISSS 3111 Careers in the Social Sciences** (1 semester hour) This one-credit course is designed to provide social sciences majors and those interested in the social sciences with information and skills that will help them select and pursue a career in their major or a related field. (Same as SOCS 3111) (1-0) R

**ISSS 3323 Geographic Information Systems for Social Scientists** (3 semester hour) An introduction to Geographic Information Systems with a focus on GIS methods and procedures used in the Social Sciences. Cartographic procedures for displaying the results of social scientific research are presented. Specific GIS methods are covered for use in several different applications areas, including political geography, transportation studies, land use for cadastral and zoning applications, and spatial statistics in the context of criminology. Industry standard GIS software tools are used to apply these methods. (Same as GEOG 3323 and SOCS 3323) (3-0)

**ISSS 3336 Culture Regions** (3 semester hours) Survey of a major region of the world as defined by a set of common cultural traditions and institutions such as Latin America, the Islamic World, Africa south of the Sahara, or South Asia. Each time the course is offered it will review both the key cultural features and the major disciplinary approaches needed to create an interdisciplinary comprehension of the region. Areas will be announced in advance, and the course may be repeated for credit when a different culture region is treated. (3-0) Y

**ISSS 3349 World Resources and Development** (3 semester hours) Analysis of resource mobilization, technological changes and economic development from a multidisciplinary perspective. Primary focus on the problems of the less-developed countries. Topics include: technology transfer, industrialization strategy, education policy, population growth, nutrition and foreign aid. (3-0) R

**ISSS 3360 Politics and Values in Business and Technology** (3 semester hours) A social and behavioral science survey of current business practices and the normative value systems by which they operate and are regulated. Topics will include the influences on business practices by culture, especially race, ethnicity, gender, religion, and by developing technology and the Information Society. (3-0) S

**ISSS 4320 Social Entrepreneurship** (3 semester hours) This course is about providing those interested in entrepreneurial ventures with primarily a social focus with the skills and knowledge necessary to accomplish their goals. The course will be seminar style and require a practicum. Topics to be included are entrepreneurship in the non-profit sector, entrepreneurship in political campaigns, new public management and the role of entrepreneurship in government and public services, urban planning, and geographical information sciences as a tool all entrepreneurs can use in the creation of new opportunities. (Same as SOCS 4320) (3-0) R

**ISSS 4329 Survival in the Fourth World** (3 semester hours) Examines the life circumstances and concerns of the world's poorest peoples through perspectives offered by such fields as sociology, economics, and anthropology, and through the eyes of the people themselves. In addition to exploring basic survival issues such as population growth, migration, food, employment, education, and environment, the course concerns itself with relationships between the ways different perspectives shape assumptions about realities, and how such assumptions influence actions to improve these same realities. (3-0) R

**ISSS 4357 Religions** (3 semester hours) A comparative study of the world's major systems of religious belief and their relation to other influential social and cultural systems, with special reference to the way these traditions are applied in the creation of new religious movements. (3-0) Y

**ISSS 4358 National and International Security** (3 semester hours) Investigates problems associated with national and international security in the post-cold war world. Includes analysis of the use of military force, nuclear arms, terrorism, international treaties, and the economic dimensions to national security. (3-0) R

**ISSS 4366 Japanese Organization and Management** (3 semester hours) An examination of the structure of Japanese organizations: small and large business firms, government ministries, and multinational corporations. Consideration is also given to the relationships between the education system and labor market, and government and business. (3-0) R

**ISSS 4V86 Special Interdisciplinary Topics in the Social Sciences** (1-6 semester hours) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-6]-0) R

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## Physical Instruction

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The University of Texas at Dallas program in Physical Instruction is designed to provide experiences in a variety of sport, exercise, and recreational activities. The courses are designed to offer opportunity for physical exercise, increase skill level in specific activities, and as a source of recreation and enjoyment. The program is designed to meet student needs and interests, is voluntary, and is coeducational. The emphasis of the program is in the lifetime sports areas. Any PHIN course may be taken up to three times for credit. PHIN courses may not be taken on a Credit/No Credit basis. A maximum of three PHIN credits may be applied toward graduation.

### Physical Instruction Course Descriptions

**PHIN 1102 Racquetball** (1 semester hour) Emphasis on acquiring enjoyment, knowledge, and skills in racquetball. Instruction will vary according to individual ability. (1-0) S

**PHIN 1103 Beginning Tennis** (1 semester hour) Designed for the beginning player; development of basic strokes, rules of play, scoring. (1-0) Y

**PHIN 1104 Intermediate Tennis** (1 semester hour) Designed for the player who has mastered the basic skills; utilization of strategy and tactics in game playing. (1-0) Y

**PHIN 1106 Aerobics** (1 semester hour) Emphasis on the development of cardiovascular endurance by utilizing choreographed routines which may combine basic dance pattern with activities such as walking, jogging, and jumping. (1-0) S

**PHIN 1107 Beginning Basketball** (1 semester hour) Instruction in basic basketball skills, including rules, strategies, and competitive activities. (1-0) Y

**PHIN 1108 Beginning Volleyball** (1 semester hour) Instruction in basic volleyball skills, including rules, strategies, and competitive activities. (1-0) Y

**PHIN 1120 Yoga** (1 semester hour) Instruction in the basic asanas and their use in building and maintaining muscle tone throughout the body. (1-0) Y

**PHIN 1121 Martial Arts and Self-Defense** (1 semester hour) Instruction in basic self-defense techniques. Emphasis on judo and karate for self-defense and physical exercise. (1-0) Y

**PHIN 1122 Physical Fitness and Conditioning** (1 semester hour) Instruction and participation in weight training and conditioning techniques. Designed to improve muscle tone, flexibility, and endurance. (1-0) S

**PHIN 1130 Swimming** (1 semester hour) Instruction in basic swimming including stroke development, water safety, and fitness. (1-0) S

**PHIN 2102 Raquetball II** (1 semester hour) This course will emphasize the continued development and increase in skills necessary for the game of racquetball. Skill development will continue in strokes, serving, court position, rules and strategies. (1-0)

**PHIN 2120 Open Water Scuba** (1 semester hour) Learn to Scuba dive under the PADI diver-training program. This is a hands on course that will teach you in a classroom and pool environment all of the skills to receive diver certification. At the end of the course, you will demonstrate your skills at a Scuba Park near Dallas. Upon successful completion of four open water dives, you will receive a PADI Open Water Certification card. Prerequisites: You must be able to swim and tread water. Additionally, you must complete a medical questionnaire. Depending on the response to the questionnaire, you might need a medical release from a Licensed Medical Doctor prior to any in-water training. (1-0) Y

**PHIN 2150 Soccer** (1 semester hour) This course will teach understanding and demonstration of the basic skills and concepts used in the game of soccer. (1-0)

**PHIN 2151 Topics in Athletics** (1 semester hour) Skill instruction in the basic fundamentals and style of playing. Emphasis on techniques, conditioning, and play patterns. By permission of instructor only. (1-0) R

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