School of Behavioral and Brain Sciences

The School of Behavioral and Brain Sciences at The University of Texas at Dallas offers degrees in Cognitive Science, Neuroscience, Psychology, and Speech-Language Pathology and Audiology. The Cognitive Science program provides a multidisciplinary approach to the study of the mind and behavior that incorporates methodology from the fields of philosophy, psychology, neuroscience, and computer science. The Neuroscience program provides students the opportunity to study the nervous system from a multidisciplinary approach that combines the study of brain structure, biochemistry, and physiology, and their links to behavior. The Psychology program provides basic training in the study of mind and behavior as preparation for graduate training in psychology, counseling and related fields, as well as providing courses which may be relevant to employment in human resources or research support positions. The Speech-Language Pathology and Audiology program offers study in the processes and disorders of speech, language and hearing. The program provides the foundation for graduate work leading to careers as a speech-language pathologist or audiologist. Students meeting B.S. degree and clinical practicum requirements are eligible for Texas state licensure as a speech-language pathology assistant.

The School of Behavioral and Brain Sciences offers a number of services and programs for students. Contact the Associate Dean’s office for more information. The school provides a number of Advising and Mentoring services for students, including professional Academic and Career Advising along with Faculty and Peer Mentors. The Career Paths Program helps students establish their own career paths. It integrates career exploration, individualized career planning, internships, preparation for graduate school and post-graduation placement. Students should sign up for the program in the Associate Dean’s office and watch for scheduled talks, workshops and fairs. The internship Placement Program is open to all students who have reached junior or senior standing (more than 53 hours). Students earn course credit for working 8 hours per week at an approved community agency of their choice. The program has over 50 established placement sites. Students keep daily job diaries, attend one class meeting per month, and write brief papers relevant to their experiences.

The School Honors Program provides eligible students with opportunities for indepth experience in research and writing, while working individually with members of the faculty. These opportunities enhance preparation for graduate school and employment in the student’s chosen field. To enter the program, students must have junior class standing, have taken at least 24 hours including two core courses in the major from U.T. Dallas, and have at least a 3.4 grade point average. The Honors Program includes a Spring Honors Seminar and the completion of the Honors Thesis.

Faculty


Associate Professors: Peter F. Assmann, Lawrence J. Cauller, Richard Golden, William F. Katz, Virginia A. Marchman, Teresa Nieworski, Pamela Rollins, Anu Sharma, Melanie Spence, Linda Thibodeau, Lucien T. Thompson, Marion Underwood

Assistant Professors: Michael Kilgard, Stephen Lomber

Clinical Lecturers: Michelle Aldridge, Mary Dodd, Sara Haynes, Barri Kalmans, Karen Kaplan, Janice Lougeay, Carolyn Musket, Stacy Nunnelee

Distinguished Scholar in Residence: James Jerger

Senior Lecturer: Betty Edelman

Cognitive Science (B.S.)

Cognitive science is the study of complex information processing in humans and machines and includes the multidisciplinary study of biological and artificial systems. The field of cognitive science draws from diverse approaches to understanding these processes, including research from experimental psychology, neuroscience, linguistics, computer science, mathematics, and engineering. Cognitive scientists believe that the design of artificially intelligent computer systems can benefit from a better understanding of human psychology and neuroscience. Likewise, our understanding of human thought and behavior can be informed by a better understanding of work in the area of artificial intelligence, computer science, and mathematical modeling. In addition to providing a sound preparation for graduate work in Cognitive Science and related areas, the
Cognitive Science major is an ideal choice for students pursuing careers that combine interests in neuroscience, cognition, mathematics, and computer science. There are exciting career prospects in both industry and academics. For example, the Human Computer Interaction specialization area provides students with a unique set of skills in both software engineering and behavioral science research methods that can prepare students for careers involving the evaluation and design of user-friendly software interfaces. The Intelligent Systems specialization area provides students with a unique background in mathematical modeling, computer programming, psychology, and neuroscience which can prepare students for careers associated with the development and implementation of intelligent systems (e.g., web search engine design, speech recognition technology, computer vision, and computer games).

Students can complete Core Curriculum and Cognitive Science major requirements in a minimum of 78 semester credit hours, leaving 42 elective hours.

**Bachelor of Science in Cognitive Science**

**Degree Requirements (120 hours)**

**I. Core Curriculum Requirements: 42 hours**

A. Communication (6 hours)
   - 3 hours Communication (RHET 1302)
   - 3 hours Communication Elective (CGS 3340 or PSY 3393)

B. Social and Behavioral Sciences (15 hours)
   - 6 hours Government (GOVT 2301 and 2302)
   - 6 hours American History
   - 3 hours Social and Behavioral Science Elective (PSY 2301)

C. Humanities and Fine Arts (6 hours)
   - 3 hours Fine Arts (AP 1301)
   - 3 hours Humanities (HUMA 1301)

D. Mathematics and Quantitative Reasoning (6 hours)
   - 6 hours Calculus (MATH 2417 and 2419)

E. Science (9 hours)
   - 6 hours Science (NSC 3361 and CGS 2301)
   - 3 hours Science Electives (including at least one course with a substantial laboratory component)

Core Curriculum Requirements can be fulfilled by other approved courses from accredited institutions of higher education. The courses listed in parentheses are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at U.T. Dallas.

**II. Major Requirements: 54 hours (36 hours beyond Core Curriculum)**

Major Preparatory Courses: 21 hours

All of the following:
- CGS 2301 Cognitive Science
- CS 1315 Computer Science I
- MATH 2417 Calculus I
- MATH 2418 Linear Algebra
- MATH 2419 Calculus II
- PSY 2301 Introduction to Psychology

Major Core Courses: 21 hours

All of the following:
- CGS 3325 Historical Perspectives: Mind and Machines Since 1600
- CGS 3342 Quantitative Models in Cognition
- CGS 3361 Cognitive Psychology
- CGS 4312 Computational Models of Language Understanding or CS 4365 Artificial Intelligence
- CGS 4361 Behavioral Neuroscience
- PSY 3392 Research Design and Analysis or PSY 3490 Honors Quantitative Methods or CGS 3340 Empirical Methods in Cognitive Science or PSY 3393 Experimental Projects in Psychology

Major Related Electives (12 hours)
Students majoring in Cognitive Science must complete 12 additional hours of elective Cognitive Science coursework associated with a particular specialization area. The specialization areas listed in the Specializations section serve as examples of possible concentrations. Other specialization areas are permissible with the approval of the Program Head of the Cognitive Science program.

2 A required Major course that also fulfills a Core Curriculum requirement.
3 Six hours of Calculus are counted to fulfill the Mathematics Core Requirement.

III. Elective Requirements: 42 hours

Advanced Electives:
Six hours of upper-division courses which do not have a CGS prefix.

Free Electives (36 hours)
Students are encouraged to explore areas of concentration in Cognitive Science as well as explore interests outside the field. Be aware that at least 51 hours of upper division credit hours are required for graduation.

Specialization Areas

Human Computer Interaction
Students specializing in the Human Computer Interaction area obtain skills in designing behavioral and computer software engineering. This area provides excellent preparation for careers associated with the design, software implementation, and evaluation of user-friendly software interfaces. Students electing this option should take CS 2315 Computer Science II, CS 2305 Discrete Mathematics for Computing I, and CS 3305 Discrete Mathematics for Computing II during their freshmen and sophomore years. Students electing this option should take CS 4365 Artificial Intelligence to fulfill the Cognitive Science Core Course requirement. Students should in addition also take:
- CGS 4352 Human Computer Interactions
- CS 3345 Algorithm Analysis and Data Structures
- CS 3354 Software Engineering
- and at least one of the following courses:
  - CGS 4362 Perception
  - CGS 4364 Attention and Memory
  - PSY 4374 Judgment and Decision Making

Intelligent Systems
Students specializing in the Intelligent Systems area obtain skills in computer programming, mathematical modeling, and intelligent system design and evaluation. This area provides excellent preparation for careers associated with the design, software implementation, and evaluation of intelligent systems. Intelligent systems arise in such diverse areas as the development of web-based intelligent search engines, speech recognition, robotics, pattern recognition, and computer vision. Students electing this option should take the following courses during their freshmen and sophomore years:
- CS 2315 Computer Science II
- CS 2305 Discrete Mathematics for Computing I
- CS 3305 Discrete Mathematics for Computing II
- MATH 2418 Linear Algebra
- MATH 2419 Calculus II
- MATH 2421 Multivariable Calculus with Applications
Students electing this option should also take CS 4365 Artificial Intelligence to fulfill the Cognitive Science Core requirements, and the following upper division courses:
- CGS 4314 Intelligent Systems Analysis
- CGS 4315 Intelligent Systems Design
- CS 3345 Algorithm Analysis and Data Structures
- STAT 4351 Probability

Cognition and Neuroscience
The Cognition and Neuroscience specialization provides a multidisciplinary program for preparing students to pursue graduate work in the areas of cognitive psychology and neuroscience. Students electing this option should take at least two neuroscience courses from the following list:
- NSC 4352 Cellular Neuroscience
- NSC 4353 Neuroscience Laboratory Methods
CGS 4354 Integrative Neuroscience
NSC 4355 Advanced Neuroscience Laboratory
NSC 4363 Neuropharmacology
NSC 4366 Neuroanatomy
NSC 4367 Developmental Neurobiology
NSC 4368 Computational Neuroscience
and at least two of the following psychology courses:
PSY 3362 Cognitive Development
PSY 4336 Psychology of Language
PSY 4357 Brain and Memory
PSY 4360 Learning
PSY 4362 Perception
PSY 4364 Attention and Memory
PSY 4374 Judgment and Decision Making

Language and Speech
The Language and Speech specialization provides a multidisciplinary program for preparing students to pursue
gradient work in areas such as language and communications disorders. Students electing this option should select at
least four courses from the following list.
LIT 3330 Linguistics
PSY 4336 Psychology of Language
SPAU 3303 Normal Language Development
SPAU 3304 Communication Sciences
SPAU 3343 Phonetics
SPAU 3344 Anatomy and Physiology of Speech and Hearing
SPAU 3345 Neural Basis of Communication

Additional Advanced Major Related CGS Electives
The following advanced electives are associated with all specialization areas. Approval from a Cognitive Science
Faculty Advisor is required in order to take these electives.
CGS 4390 Special Topics in Cognitive Science
CGS 4394 Internship in Cognitive Science
CGS 4397 Honors Thesis
CGS 4V98 Directed Research
CGS 4V99 Individual Study

Minor in Cognitive Science

Students who are not majoring in Cognitive Science may minor in Cognitive Science by completing 18 semester credit hours.
At least 12 of the 18 semester credit hours required by the minor in Cognitive Science must be upper-division courses. In
addition, 9 of the 18 semester credit hours required for the minor in Cognitive Science must have a Cognitive Science (CGS)
prefix and be upper-division courses. No credit hours may be used to satisfy both major and minor requirements; however,
free elective hours or major preparatory classes may be used to satisfy the minor. At least one-third of the hours for a minor
must be taken at U.T. Dallas. The following two specialization areas provide examples of possible course sequences which
satisfy the requirements of the minor in Cognitive Science.

Intelligent Systems Specialization Area. Students with an Electrical Engineering or Mathematics background who have taken
multivariable calculus and are interested in careers associated with the design, software implementation, and testing of
intelligent systems should take STAT 4351 Probability, CGS 3342 Quantitative Methods in Cognition, CGS 4314 Intelligent
Systems Analysis, and CGS 4315 Intelligent Systems Design.

Human Computer Interactions Specialization Area. Students with a Computer Science background who have taken CS 3354
Software Engineering and who are interested in careers associated with the design, software implementation, and testing of
user-friendly computer interfaces should take the course sequence CGS 3361 Cognitive Psychology, CGS 4352 Human
Computer Interactions, CGS 4362 Perception, and CGS 4364 Attention and Memory.
Fast Track Baccalaureate/Master’s Degrees

U.T. Dallas undergraduate students with strong academic records who intend to pursue a master’s degree in Applied Cognition and Neuroscience at UTD may consider an accelerated undergraduate-graduate plan of study. When accepted into the program, students may take up to 12 hours of graduate courses that may be used to complete the bachelor’s degree and also to satisfy requirements for the Master’s degree. Students must maintain a 3.0 grade point average and earn grades of B or better in the graduate courses taken. The Fast Track makes it possible for students to complete upperdivision undergraduate education and graduate training in three years. To qualify for application, students must have completed at least 72 semester credit hours toward their bachelor degree, including at least 18 semester credit hours in major core courses at UTD. Apply to the Fast Track program through the Cognitive Science Program Office. Students should consult with a graduate advisor regarding admissions criteria and plans of study.

Neuroscience (B.S.)

Neuroscience is the multidisciplinary study of brain function that draws on recent advances in computer science, biology, chemistry, physics, and cognitive science. It examines the brain’s global biochemistry, the subcellular processes of its individual cellular components, its complex and extensively networked anatomical structure, and its remarkably adaptive physiology. The field considers neuronal development from early embryology through advanced senescence, and examines the brain’s adaptive processes at the level of single neurons, through networks and systems of cells, on up to complete organisms. It studies the regulation and expression of behavior, and the complex interactions of multiple neuronal systems that underlie the emergence of cognitive function. The Neuroscience program at U. T. Dallas provides students with the opportunity to focus on the brain from a systems-level perspective, drawing on the behavioral and cognitive perspectives of psychology and the cellular and molecular perspectives of biology. It allows undergraduates extensive interactions with working neuroscientists who use the latest analytic techniques.

The Neuroscience program is designed to prepare students for admission to graduate or medical school, or for careers in related biomedical research, medicine, dentistry, and other health science specialties. Required courses and guided electives can include the approved premedical curriculum and offer an alternative to other traditional premedical majors. Students who wish to continue their education in the fields of medicine, dentistry or allied professional areas should register with the Health Professions Advisory Committee during their first semester. Students are encouraged to design a personalized degree plan of guided electives with their advisor that will combine courses from the related disciplines of mathematics, physics, chemistry, biology, engineering, computer science, psychology, and speech pathology and audiology in a way that will suit their individual interests and goals.

Students can complete Core Curriculum and Neuroscience major requirements in a minimum of 85 semester credit hours, leaving 35 elective hours. Students can complete Core Curriculum, Neuroscience major, and Pre-health Professions requirements in a minimum of 111 semester credit hours, leaving 9 remaining elective hours.

Bachelor of Science in Neuroscience Degree Requirements (120 hours)

I. Core Curriculum Requirements: 42 hours
   A. Communication (6 hours)
      3 hours Communication (RHET 1302)
      3 hours Communication Elective (NSC 4353)
   B. Social and Behavioral Sciences (15 hours)
      6 hours Government (GOVT 2301 and 2302)
      6 hours American History
      3 hours Social and Behavioral Science Elective (PSY 2301)
   C. Humanities and Fine Arts (6 hours)
      3 hours Fine Arts (AP 1301)
      3 hours Humanities (HUMA 1301)
   D. Mathematics and Quantitative Reasoning (6 hours)
      3 hrs College Math (MATH 2417)
      3 hrs Quantitative Methods (PSY 2317 or STAT 1342)
   E. Science (9 hours)
II. **Major Requirements: 64 hours (43 hours beyond Core Curriculum)**

**Major Preparatory Courses:** 24 hours

All of the following:
- BIOL 2281 Introductory Biology Laboratory
- BIOL 2311/2111 Introduction to Modern Biology with Workshop
- CHEM 1311/1111 General Chemistry I w/ lab
- CHEM 1312/1112 General Chemistry II w/ lab
- MATH 2417 Calculus
- PSY 2301 Introduction to Psychology
- PSY 2317 Statistics for Psychology
- or STAT 1342 Statistical Decision Making

**Major Core Courses:** 25 hours

All of the following:
- NSC 3361 Behavioral Neuroscience
- NSC 4352 Cellular Neuroscience
- NSC 4353 Neuroscience Laboratory Methods
- NSC 4354 Integrative Neuroscience
- NSC 4356 Neurophysiology
- NSC 4363 Neuropharmacology
- NSC 4366/4166 Neuroanatomy with Workshop
- NSC 4367 Developmental Neurobiology

**Major Related Courses:** 15 hours (15 hours beyond the Core Curriculum)

Advanced Guided Electives. 15 semester hours from the following. Consultation with an advisor is required.
- CGS 4312 Computational Models of Language Understanding
- NSC 3323 Mind, Brain and Consciousness
- NSC 3344 Anatomy and Physiology of Speech and Hearing
- NSC 3345 Neural Basis of Communication
- NSC 4355 Advanced Neuroscience Laboratory
- NSC 4357 Brain and Memory
- NSC 4368 Computational Neuroscience
- NSC 4375 Senior Honors Seminar
- NSC 4394 Internship in Neuroscience
- NSC 4397 Honors Thesis
- NSC 4V98 Directed Research
- NSC 4V99 Individual Study
- NSC 4V90 Special Topics in Neuroscience
- PSY 4360 Learning
- PSY 4362 Perception
- SPAU 3304 Communication Sciences

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1. A required Major course that also fulfills a Core Curriculum requirement. Hours are counted in Core Curriculum.
2. May be repeated for credit, up to 9 hours.
3. May be repeated for credit, up to 6 hours.

III. **Elective Requirements: 35 hours**

**Advanced Electives (6 hours)**

Breadth Electives; 6 hours of upper-division courses, or lower-division courses that have prerequisites that are outside of Neuroscience.

**Free Electives (29 hours)**

At least 30 hours of lower- or upper-division courses of the student’s choice. Students are encouraged to explore areas of concentration in Neuroscience as well as explore interests outside the field. Be aware that at least 51 hours of upper-division credit hours are required for graduation.
Premedical and/or other pre-health professions students: 27 hours

Students seeking to complete Pre-health Professions requirements should take the following as free electives:

**Required pre-medical courses (12 hours):**
- BIOL 2312/2112 Introduction to Modern Biology II with Workshop
- CHEM 2323/2123 Introductory Organic Chemistry I with Laboratory
- CHEM 2325/2125 Introductory Organic Chemistry II with Laboratory

**Pre-med Advanced Biology requirement (6 hours, select 2 courses):**
- BIOL 3301 Classic and Molecular Genetics
- BIOL 3302 Eukaryotic Molecular and Cell Biology
- BIOL 3361 Biochemistry I
- BIOL 3362 Biochemistry II

**Pre-med Physics requirement (8 hours, select 2 courses):**
- PHYS 1301/1101 College Physics I with Laboratory *
- PHYS 1302/1102 College Physics II with Laboratory *
- PHYS 3341/2125 Physics for Bioscience I with Laboratory **
- PHYS 3342/2126 Physics for Bioscience II with Laboratory **

* algebra based Physics courses
** calculus based Physics courses

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**Minor in Neuroscience**

Students who are not majoring in Neuroscience may minor in Neuroscience by taking 18 semester credit hours selected from the lists of major core courses and major related courses. At least 12 hours must be upper-division Neuroscience core courses. No credit hours may be used to satisfy both major and minor requirements; however, free elective hours or major preparatory classes may be used to satisfy the minor. At least one-third of the hours for a minor must be taken at U.T. Dallas.

**Fast Track Baccalaureate/Master’s Degrees**

U.T. Dallas undergraduate students with strong academic records who intend to pursue a master’s degree in Applied Cognition and Neuroscience at UTD may consider an accelerated undergraduate-graduate plan of study. When accepted into the program, students may take up to 12 hours of graduate courses that may be used to complete the baccalaureate degree and also satisfy requirements for the master’s degree. Students must maintain a 3.0 grade point average and earn grades of B or better in graduate courses taken. The Fast Track makes it possible for students to complete upper-division undergraduate education and graduate training in three years, including summer study. To qualify for application, students must have completed at least 72 semester credit hours toward their bachelor degree, including at least 18 semester credit hours in major core courses at UTD. Apply to the Fast Track program through the Applied Cognition and Neuroscience Program Office. Students should consult with a graduate advisor regarding admissions criteria and plans of study.

**Psychology (B.A.)**

William James characterized psychology as "the study of mental life." Psychology is both a domain of scientific inquiry and a field of applied practice. The science of psychology is concerned with the study of how people perceive, learn, feel, think, develop, and interact with others. The practice of psychology helps people improve learning, performance, and mental health.

Undergraduate degrees in psychology provide students a number of career path options. Further study in graduate school leads to professional careers as clinical, counseling, industrial, academic and other kinds of psychologists. Psychology is also a useful major for students planning careers in law, management, medicine, or social work. A psychology major provides students with the knowledge about human behavior and methods of research and data analysis that is valuable in business, helping fields, and many other occupations.

The Psychology program at UTD approaches the field from a scientific perspective, applying behavioral science research methods to the study of the human mind and behavior. Thus, students will have laboratory experiences in addition to lectures, reading, and demonstrations. Psychology students learn to evaluate evidence relating to theories of social behavior,
personality development, perception, memory, brain processes, and other facets of human experience. Students also gain hands-on experience through internship placements, directed research experiences in professor’s labs, and individualized study with faculty in specialized topics.

Selected courses are offered in a “conference” format (i.e., discussion seminar format), and students are encouraged to include some of these courses in their course of study. Conference courses are limited to an enrollment of 15, emphasize discussion of reading from primary sources, include written assignments with feedback from instructors, and are aimed at providing students with interactive experiences in critical thinking and writing.

The undergraduate degree awarded through the Psychology program is a bachelor of arts. Students may choose electives to obtain a broader grounding in psychology or a general education in the liberal arts. Students should note that it is possible to select clusters of electives that lead to particular concentrations in careers and graduate study. Students can complete Core Curriculum and Psychology major requirements in a minimum of 72 semester credit hours, leaving 48 elective hours.

**Bachelor of Arts in Psychology**

Degree Requirements (120 hours)

<table>
<thead>
<tr>
<th>I. Core Curriculum Requirements: 42 hours</th>
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<tbody>
<tr>
<td>A. Communication (6 hours)</td>
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<tr>
<td>3 hours Communication (RHET 1302)</td>
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<tr>
<td>3 hours Communication Elective (PSY 3393)²</td>
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<tr>
<td>B. Social and Behavioral Sciences (15 hours)</td>
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<tr>
<td>6 hours Government (GOV 2301 and 2302)</td>
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<td>6 hours American History</td>
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<tr>
<td>3 hours Social and Behavioral Science Elective (PSY 2301)²</td>
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<td>C. Humanities and Fine Arts (6 hours)</td>
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<td>3 hours Fine Arts (AP 1301)</td>
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<td>3 hours Humanities (HUMA 1301)</td>
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<tr>
<td>D. Mathematics and Quantitative Reasoning (6 hours)</td>
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<tr>
<td>3 hours College Math (recommend MATH 1300, 1314 or 2417)</td>
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<tr>
<td>3 hours Quantitative Methods or Math (PSY 2317)²</td>
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<td>E. Science (9 hours with at least one lab course)</td>
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<tr>
<td>3 hours Science (NSC 3361)²</td>
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<tr>
<td>6 hours Science Elective (see PSY Advisor for options)</td>
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¹Curriculum Requirements can be fulfilled by other approved courses from accredited institutions of higher education. The courses listed in parentheses are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at U.T. Dallas.

<table>
<thead>
<tr>
<th>II. Major Requirements: 42 hours (30 hours beyond the Core Curriculum)</th>
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<tbody>
<tr>
<td>Major Preparatory Courses</td>
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<tr>
<td>PSY 2301 Introduction to Psychology²</td>
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<tr>
<td>PSY 2317 Statistics for Psychology²</td>
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<tr>
<td>Major Core Courses (30 upper-division hours)</td>
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<tr>
<td>NSC 3361 Behavioral Neuroscience²</td>
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<tr>
<td>PSY 3360 Historical Perspectives on Psychology: Mind and Machines Since 1600</td>
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<td>PSY 3361 Cognitive Psychology</td>
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<td>PSY 3392 Research Design &amp; Analysis</td>
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<td>or PSY 3490 Honors Quantitative Methods</td>
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<td>PSY 3393 Experimental Projects in Psychology² (Advanced Writing Course)</td>
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<td>PSY 4331 Personality</td>
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<td>or PSY 3331 Social Psychology</td>
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<td>PSY 4334 Lifespan Development</td>
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<td>or PSY 3310 Child Development</td>
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<tr>
<td>PSY 4343 Abnormal Psychology</td>
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<tr>
<td>Major Related Courses (12 hours)</td>
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<tr>
<td>Advanced Guided Electives; 3 hours of one of the following:</td>
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<tr>
<td>PSY 4394 Internship in Psychology</td>
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<td>PSY 4396 Teaching Internship</td>
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<tr>
<td>PSY 4397 Honors Thesis</td>
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</tbody>
</table>
III. Elective Requirements 48 hours

Advanced Electives (6 hours)
Breadth Electives; 6 hours of upper-division courses, or lower-division courses that have prerequisites, that are outside of Psychology.
Free Electives (42 hours)
Courses of the student's choice. Students are encouraged to explore areas of concentration in Psychology as well as explore interests outside the field. Both lower- and upper-division courses may count as electives but students must be sure to complete at least 51 hours of upper-division courses to qualify for graduation.

Minor in Psychology

Students who are not majoring in Psychology may minor in Psychology by taking 18 semester credit hours selected from the lists of major core courses and major related courses on page 140. At least 12 hours must be upper-division courses, of which at least 9 hours must be Psychology core courses. No credit hours may be used to satisfy both major and minor requirements; however, free elective hours or major preparatory classes may be used to satisfy the minor. At least onethird of the hours for a minor must be taken at U.T. Dallas. Because Psychology is concerned with a wide range of social behaviors, it provides a strong foundation for all careers that deal with people. Students considering careers in business, education, law, medicine, clinical psychology, counseling or social work can benefit from minoring (or majoring) in psychology. The following courses are suggested preparation for each of these career paths.

Business Careers
Graduate schools of business look for students with a strong liberal arts background that focuses on both writing and quantitative skills. Suggested courses are Cognitive Psychology, Personality Psychology, Social Psychology, Psychology in the Workplace, Industrial and Organizational Psychology, Human Relations, and Research Design and Analysis.

Education Careers
Psychology courses are especially relevant for students pursuing careers in child development, educational psychology, education counseling, and school psychology. Suggested courses are Child or Lifespan Development, Cognitive Psychology, Educational Psychology, Cognitive Development, Exceptional Children, Social and Personality Development, Adolescent Psychology, Psychological Testing, Statistics for Psychology, and Research Design and Analysis.

Law and Crime and Justice Careers

Medical Careers
Psychology is highly recommended as a major or minor for premedical students interested in psychiatry or neurology, or any student who wishes to practice medicine. The intended area of medical specialization should influence choice of courses; for example, a future pediatrician would benefit from courses in developmental psychology. In general, suggested courses are Lifespan Development, Behavioral Neuroscience, Health Psychology, Abnormal Psychology, Cognitive Psychology, Adolescent Psychology, Approaches to Clinical Psychology, Statistics for Psychology, and Research Design and Analysis.

Careers in Clinical Psychology, Counseling, or Social Work
All courses in psychology are good preparation for these careers. It is especially important that students take Lifespan Development, Behavioral Neuroscience, Cognitive Psychology, Personality Psychology, Abnormal Psychology, Statistics for Psychology, and Research Design and Analysis. Other courses of interest include Approaches to Clinical Psychology, Social Communication, Human Relations, Health Psychology, Psychological Testing, Child Psychopathology, and Violence in the Family.

Minor in Child Development

This minor is well suited for students pursuing Elementary Teacher certification and for those generally interested in the psychological development of children. Students must complete 18 credit hours including 9 required hours of foundation coursework and 9 credit hours of guided electives. At least 12 hours must be upper-division courses, of which at least 9
hours must have been completed at UTD. Students majoring in Psychology or Speech-Language Pathology and Audiology may minor in Child Development provided that no course is used to satisfy both major and minor requirements.

**Foundation Courses (9 hours required)**

- PSY 3310 Child Development
- or PSY 4334 Lifespan Development
- PSY 3332 Social and Personality Development
- PSY 3362 Cognitive Development

**Guided Electives Courses (select 9 hours)**

- PSY 3339 Educational Psychology
- PSY 3342 Exceptional Children
- PSY 4344 Child Psychopathology
- PSY 4373 Psychological Assessment
- PSY 4394 Internship in Psychology
  - or ED 4693 Student Teaching (approval of Associate Dean required)
- SPAU 3303 Normal Language Development
- SPAU 4308 Language Disorders in Children

Other courses as approved by the Associate Dean

*PSY majors take an additional 3 hours of guided electives to replace PSY 3310 or PSY 4334.

1 Required for EC-4 Teacher Certification.

**Fast Track Baccalaureate/Master’s Degrees**

U.T. Dallas undergraduate students with strong academic records who intend to pursue a master’s degree in Human Development and Early Childhood Disorders or in Applied Cognition and Neuroscience at U.T. Dallas may consider an accelerated undergraduate-graduate plan of study. When accepted into the program, students may take up to 12 hours of graduate courses that may be used to complete the baccalaureate degree and also to satisfy requirements for the master’s degree. Students must maintain a 3.0 grade point average and earn grades of B or better in graduate courses taken. The Fast Track makes it possible for students to complete upper-division undergraduate education and graduate training in three years, including summer study. To qualify for application, students must have completed at least 72 semester credit hours toward their bachelor degree, including at least 18 semester credit hours in major core courses at UTD. Apply to the Fast Track program through the Human Development and Early Childhood Disorders or Applied Cognition and Neuroscience Program Offices. Students should consult with a graduate advisor regarding admissions criteria and plans of study.

**Speech-Language Pathology and Audiology (B.S.)**

The Speech-Language Pathology and Audiology program offers study in the processes and disorders of speech, language, and hearing. The program provides the foundation for graduate study leading to career opportunities and clinical certification as a speech-language pathologist or audiologist. Students completing the B.S. degree and required clock hours of clinical practicum are also eligible for Texas state licensure as a speech-language pathology assistant. The curriculum in Speech-Language Pathology and Audiology focuses on the development of communicative abilities; the anatomical and physiological mechanisms underlying speech, language, and hearing; the causes of communication disorders in children and adults; and theories and techniques of assessment and treatment of communication disorders. Supervised clinical practicum provides students experience in clinical assessment and intervention with persons having communication impairments.

Students majoring in Speech-Language Pathology and Audiology are strongly encouraged to select electives in Psychology to complement course work in their major field. PSY 3361 Cognitive Psychology, PSY 4334 Life Span Development, and NSC 3361 Behavioral Neuroscience are especially relevant for Speech-Language Pathology and Audiology majors. Suggested electives in the major include SPAU 4325 Special Populations, SPAU 4342 Assessment Procedures in Speech-Language Pathology, and SPAU 4395 Issues in the Management of Hearing-Impaired Persons.

Students who wish to combine Speech-Language Pathology and Audiology with Psychology or Neuroscience should be able to meet requirements in both majors, and, with the approval of the Associate Dean, complete a double major. Students considering a double major should consult with their advisor regarding specific requirements. Students can complete Core Curriculum and Speech Language Pathology and Audiology major requirements in a minimum of 78 semester credit hours, leaving 42 elective hours.
Bachelor of Science in Speech-Language Pathology and Audiology Degree Requirements (120 hours)

I. Core Curriculum Requirements 1: 42 hours
   A. Communication (6 hours)
      3 hours Communication (RHET 1302)
      3 hours Communication Elective (SPAU 3390)  
   B. Social and Behavioral Sciences (15 hours)
      6 hours Government (GOVT 2301 and 2302)
      6 hours American History
      3 hours Social and Behavioral Science Elective (PSY 2301)  
   C. Humanities and Fine Arts (6 hours)
      3 hours Fine Arts (AP 1301)
      3 hours Humanities (HUMA 1301)
   D. Mathematics and Quantitative Reasoning (6 hours)
      3 hours College Math (see Advisor for recommended courses)
      3 hours Quantitative Methods (see Advisor for recommended courses)
   E. Science (9 hours with at least one lab course)
      3 hours Science (SPAU 3344)  
      6 hours Science Elective (see Advisor for options)

1 Curriculum Requirements can be fulfilled by other approved courses from accredited institutions of higher education. The courses listed in parentheses are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at U.T. Dallas.

II. Major Requirements: 42 hours (33 hours beyond the Core Curriculum)
   Major Preparatory Courses
   - PSY 2301 Introduction to Psychology
   Major Core Courses (39 hours)
   - SPAU 3301 Communication Disorders
   - SPAU 3303 Normal Language Development
   - SPAU 3304 Communication Sciences
   - SPAU 3340 Articulation Disorders
   - SPAU 3341 Audiology
   - SPAU 3343 Phonetics
   - SPAU 3344 Anatomy and Physiology of Speech and Hearing
   - SPAU 3345 Neural Basis of Communication
   - SPAU 3390 Clinical Practicum in Speech-Language Pathology (3 semester hrs)
   - SPAU 4308 Language Disorders in Children
   - SPAU 4394 Multicultural Aspects of Communication Disorders
   - SPAU elective (3 hour)

2 A required Major course that also fulfills a Core Curriculum requirement. Three hours are counted in Core Curriculum.

III. Elective Requirements: 45 hours
   Advanced Electives (6 hours)
   - Breadth Electives: 6 hours of upper-division courses, or lower-division courses that have prerequisites, that are outside of Speech-Language Pathology and Audiology.
   Free Electives (39 hours)
   - At least 39 hours of lower- or upper-division courses of the student’s choice. Students are encouraged to explore areas of concentration in Speech-Language Pathology and Audiology as well as explore interests outside the field. At least 51 hours of upper-division credit hours are required for graduation.

Minor in Speech-Language Pathology and Audiology
Students interested in communication sciences and disorders may elect to minor in Speech-Language Pathology and Audiology. Students complete 18 credit hours including 12 required hours of foundation coursework and 6 elective hours. Foundation coursework in conjunction with elective hours permits students to choose to emphasize hearing science/audiology, language development and disorders, or speech production and perception. Students majoring in Psychology, Neuroscience, or Cognitive Science, or students with interests in the health sciences may find that a minor in Speech-Language Pathology and Audiology adds a valuable interdisciplinary dimension to their overall plan of study and may enhance their opportunities for graduate study. No credit hours may be used to satisfy both major and minor requirements; however, free elective hours or major preparatory classes may be used to satisfy the minor. At least one-third of the hours for a minor must be taken at U.T. Dallas.

Foundation Courses (12 hours required)
- SPAU 3301 Communication Disorders
- SPAU 3303 Normal Language Development
- SPAU 3304 Communication Sciences
- SPAU 3343 Phonetics

Elective Courses (select 6 hours)
- SPAU 3340 Articulation Disorders
- SPAU 3341 Audiology
- SPAU 3344 Anatomy and Physiology of Speech and Hearing
- SPAU 3390 Clinical Practicum in Speech-Language Pathology (clinical observation section)
- SPAU 4308 Language Disorders in Children
- SPAU 4393 Language in Culture and Society
- SPAU 4395 Issues in the Management of Persons with Hearing-Impairment

**Fast Track Baccalaureate/Master’s Degrees**

U.T. Dallas undergraduate students with strong academic records who intend to pursue a master’s degree in communication at the University may consider an accelerated undergraduate-graduate plan of study. When accepted into the program, students may take up to 12 hours of graduate courses that may be used to complete the baccalaureate degree and also to satisfy requirements for the master’s degree. Students must maintain a 3.0 grade point average and earn grades of B or better in graduate courses taken. The Fast Track makes it possible for students to complete upper-division undergraduate education and graduate training in three years, including summer study. For admission to the Fast Track program, students must apply and be admitted to the graduate program in Communication Disorders. Students should consult with a graduate advisor regarding admissions criteria and plans of study.