

School of Behavioral and Brain Sciences

The School of Behavioral and Brain Sciences at The University of Texas at Dallas offers degrees in Child Learning and Development; Cognitive Science; Neuroscience; Psychology; and Speech-Language Pathology and Audiology. The **Child Learning and Development** program provides students a research-based approach to understanding child development as a preparation for careers as teachers, researchers, service providers, and policy makers. 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 school **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 70 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 in-depth 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

Professors: Hervé Abdi, Peter F. Assmann, James C. Bartlett, Thomas G.R. Bower, Duane Buhrmester, Sandra Chapman, J. Michael Coleman, W. Jay Dowling, George M. Gerken, (Emeritus) Richard Golden, Susan W. Jerger, Aage R. Møller, Bert S. Moore, George Moushegian (Emeritus), Alice J. O'Toole, Margaret T. Owen, Ross J. Roeser, John W. Santrock, Robert D. Stillman, Linda Thibodeau, Emily Tobey, Hanna Ulatowska, Marion Underwood, Anne van Kleeck

Associate Professors: Lawrence J. Cauller, William F. Katz, Michael Kilgard, Stephen Lomber, Teresa Nezworski, Pamela Rollins, Anu Sharma, Melanie Spence, Lucien T. Thompson,

Assistant Professors: Marco Atzori, Shayla Holub, Mandy McGuire, Candice Mills

Clinical Lecturers: Michelle Aldridge, Lucinda Dean, Mary Dodd, Sara Haynes, Karen Kaplan, Helen Kenedi, Janice Lougeay, Carolyn Musket, Felicity Sale

Distinguished Scholar in Residence: James Jerger

Senior Lecturer: Betty Edelman, Matthew Housson, Karen Huxtable-Jester, T oosje Vanbeveren

Child Learning and Development (B.S.)

Providing better ways to foster the intellectual and emotional development of all of our children is a national priority. As such, well-educated university graduates are needed to go on to become expert child development practitioners and researchers. Over the last 60 years, the academic disciplines of developmental psychology and child development have accumulated a vast body of research-based knowledge about the factors that promote optimal child learning, development and well-being, as well as those that contribute to disadvantaged child development. The Child Learning and Development major provides undergraduate students a rigorous science-based curriculum that immerses them in the theories, findings, research methods, and best-practices that the scientific study of child development has to offer.

The Child Learning and Development major focuses on the fundamental processes of child and adolescent development within the contexts of families, schools, peer groups, and larger cultural milieu. Its three objectives are to provide students with a strong foundation in 1) cognitive, language, and socio-emotional development, 2) research skills for conducting scientific studies and evaluating applied programs, and 3) translating scientific findings into practical applications for understanding and improving children's lives. Opportunities for supervised and independent research, as well as field placements that involve working with children, families, schools, and social services, are provided in addition to formal work.

The Child Learning and Development major prepares students for a wide range of careers in education, psychology, social work, family medicine, public health, family law, and public policy. The major is especially well suited for students seeking elementary teacher certification (early childhood – 4th grade) through UTD's Teacher Development Center. By combining a major in Child Learning and Development with elementary teacher certification, students will develop a strong foundation in child development and teaching. Elementary Teacher Certification requires a minimum of 45 additional hours of course work that can be completed within the free elective hours of the Child Learning and Development major. If you are interested in this combined child development/education program (called CLD/EC4), see an advisor to develop a degree plan.

Bachelor of Science in Child Learning and Development Degree Requirements (120 hours)

I. Core Curriculum Requirements¹: 42 hours

- A. Communication (6 hours)
 - 3 hours Communication (RHET 1302)
 - 3 hours Communication Elective (CLDP 3394)²
- 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)²
- C. Humanities and Fine Arts (6 hours)
 - 3 hours Fine Arts (ARTS 1301)
 - 3 hours Humanities (HUMA 1301)
- D. Mathematics and Quantitative Reasoning (6 hours)
 - 3 hours College Math (recommend MATH 1306, 1314 or 2417)
 - 3 hours Quantitative Methods or Math (PSY 2317)²
- E. Science (9 hours)
 - 3 hours Science (NSC 3361 and CGS 2301 recommended)
 - 6 hours Science Electives (including at least one course with a substantial laboratory component)

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: 36 hours (27 hours beyond Core Curriculum)

- Major Preparatory Courses: 6 hours
 - PSY 2301 Introduction to Psychology² (also satisfies 3 hours part B of Core Curriculum)
 - PSY 2317 Statistics for Psychology²
 - or STAT 1342 Statistical Decision Making² (also satisfies 3 hours part D of Core Curriculum)
- Major Core Courses: 21 hours
 - CLDP 3303 Normal Language Development
 - CLDP 3310 Child Development
 - or CLDP 4334 Lifespan Development
 - or CLDP 3339 Educational Psychology
 - CLDP 3332 Social and Personality Development
 - CLDP 3342 Exceptional Children
 - or CLDP 4344 Child Psychopathology
 - CLDP 3362 Cognitive Development
 - or CLDP 3365 Child Learning
 - CLDP 3394 Research and Evaluation Methods² (also satisfies 3 hours part A of Core Curriculum)
 - CLDP 4394 Internship

or CLDP 4395 Co-op Fieldwork
or CLDP 4V98 Directed Research
or CLDP 4397 Honors Thesis

Major Guided Electives (9 hours)

Any 9 hours of courses with CLDP prefix or any of the following courses: CGS 2301, CGS 3342, CGS 4312, CGS 4313, CGS 4314, CGS 4315, CGS 4352, CGS 4353, ED 4352, ED 4355, ED 4357, NSC 3345, NSC 4352, NSC 4353, NSC 4354, NSC 4367, PSY 3331, PSY 3333, PSY 3361, PSY 4331, PSY 4343, PSY 4360, PSY 4362, PSY 4364, PSY 4373, SPAU 3301, SPAU 3304, SPAU 3340, SPAU 3343, SPAU 3344, SPAU 3345 or SPAU 4308.

² A required Major course that also fulfills a Core Curriculum requirement.

III. Elective Requirements: 51 hours

Advanced Electives (6 hours):

Six hours of upper-division courses which do not have a CLDP prefix.

Free Electives (45 hours)

Students are encouraged to explore areas of concentration in Child Learning and Development as well as explore interests outside the field. Be aware that at least 51 hours of upper division credit hours are required for graduation.

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 Requirements¹: 42 hours

- A. Communication (6 hours)
 - 3 hours Communication (RHET 1302)
 - 3 hours Communication Elective (CGS 3340 or PSY 3393)²
- 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)²
- C. Humanities and Fine Arts (6 hours)
 - 3 hours Fine Arts (ARTS 1301)
 - 3 hours Humanities (HUMA 1301)
- D. Mathematics and Quantitative Reasoning (6 hours)
 - 6 hours Calculus (MATH 2417 and 2419)³
- E. Science (9 hours)
 - 6 hours Science (NSC 3361 and CGS 2301)²

3 hours Science Electives (including at least one course with a substantial laboratory component)

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: 54 hours (36 hours beyond Core Curriculum)

Major Preparatory Courses: 24 hours

All of the following:

CGS 2301 Cognitive Science² (also satisfies 3 hours part E of Core Curriculum)

CS 1337 Computer Science I

CS 2305 Discrete Mathematics for Computing I

MATH 2417 Calculus I ³ (also satisfies 3 hours part D of Core Curriculum)

MATH 2418 Linear Algebra

MATH 2419 Calculus II (also satisfies 3 hours part D of Core Curriculum)

PSY 2301 Introduction to Psychology²(also satisfies 3 hours part B of Core Curriculum)

PSY 2317 Statistics for Psychology

or STAT 4351 Probability

Major Core Courses: 18 hours

All of the following:

CGS 3325 Historical Perspectives: Mind and Machines Since 1600

CGS 3361 Cognitive Psychology

CGS 4312 Computational Models of Language Understanding

or CGS 3342 Cognitive and Neural Modeling Laboratory

or CS 4365 Artificial Intelligence

NSC 3361 Behavioral Neuroscience²(also satisfies 3 hours part E of Core Curriculum)

PSY 3392 Research Design and Analysis

CGS 3340 Empirical Methods in Cognitive Science²

or PSY 3393 Experimental Projects in Psychology²(also satisfies 3 hours part A of Core Curriculum)

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. The Human Computer Interaction specialization area has a Behavioral Science Track and a User-Interface Development Track.

Behavioral Science Track

Students electing this option should take at least two of the following courses:

PSY 3362 Cognitive Development

PSY 4336 Psychology of Language

PSY 4360 Learning

PSY 4362 Perception

PSY 4364 Attention and Memory
PSY 4374 Judgment and Decision Making
And take at least two of the following courses:
CGS 4352 Human Computer Interactions I
CGS 4353 Human Computer Interactions II
CGS 4355 Human Computer Interactions Laboratory

User-Interface Track

Students electing this option should take:
CS 3333 Data Structures
CS 3354 Software Engineering
And take at least two of the following courses:
CGS 4352 Human Computer Interactions I
CGS 4353 Human Computer Interactions II
CGS 4355 Human Computer Interactions Laboratory

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. All students electing this option should take the following courses during their freshmen and sophomore years:

CS 2336 Computer Science II
CS 3305 Discrete Mathematics for Computing II
MATH 2418 Linear Algebra
MATH 2419 Calculus II

Students in the Intelligent Systems specialization area have the option of selecting either the Mathematical Modeling Track or the Computer Simulation Modeling Track.

Mathematical Modeling Track

CGS 4313 Neural Net Mathematics
CGS 4314 Intelligent Systems Analysis
CGS 4315 Intelligent Systems Design
MATH 2451 Multivariable Calculus with Applications
STAT 4351 Probability

Computer Simulation Modeling Track

All students in this track should take:
CS 3345 Data Structures and Introduction to Algorithmic Analysis
And three of the following courses:
CGS 3342 Cognitive and Neural Modeling Laboratory
CGS 4312 Computational Models of Language Understanding
CS 4365 Artificial Intelligence
CS 4391 Introduction to Computer Vision

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
NSC 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 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 graduate 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

All School of Behavioral and Brain Science courses with a PSY (Psychology) or NSC (Neuroscience) prefix are approved CGS electives. In addition, advanced CGS students in good academic standing may request permission from the Cognitive Science Program Head to take graduate Applied Cognition and Neuroscience coursework (CAN prefix) to fulfill the CGS elective course requirements.

In addition, 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 4V90 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 in Mathematical Modeling. Students with an Electrical Engineering or Mathematics background who have taken linear algebra and multivariable calculus and are interested in careers associated with the design, software implementation, and testing of intelligent systems should take JAT 4351 Probability or CGS 4313 Neural Net Mathematics,, CGS 3342 Cognitive and Neural Modeling Laboratory, CGS 4314 Intelligent Systems Analysis, and CGS 4315 Intelligent Systems Design.

Human Computer Interactions Specialization Area in User-Interface Development. 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 CGS 3361 Cognitive Psychology; take two of the following courses: CGS 4352 Human Computer Interactions I, CGS 4353 Human

Computer Interactions II, and CGS 4355 Human Computer Interactions Lab; and one of the following courses: CGS 4362 Perception, and CGS 4364 Attention and Memory, and PSY 4374 Judgment and Decision Making.

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 3.00 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 upper-division 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 at the beginning of their junior year.

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 pre-medical curriculum and offer an alternative to other traditional pre-medical 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)²
- 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)²
- C. Humanities and Fine Arts (6 hours)
 - 3 hours Fine Arts (ARTS 1301)
 - 3 hours Humanities (HUMA 1301)
- D. Mathematics and Quantitative Reasoning (6 hours)
 - 3 hrs College Math (MATH 2417)²
 - 3 hrs Quantitative Methods (PSY 2317 or STAT 1342)²

E. Science (9 hours)

9 hrs Science (CHEM 1311 and CHEM 1111, BIOL 2311 and BIOL 2281)²

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: 64 hours (43 hours beyond Core Curriculum)

Major Preparatory Courses: 24 hours

All of the following:

- BIOL 2281 Introductory Biology Laboratory² (also satisfies 3 hours part E of Core Curriculum)
- BIOL 2311/2111 Introduction to Modern Biology I ² with Workshop
- CHEM 1311/1111 General Chemistry I with lab² (also satisfies 3 hours part E of Core Curriculum)
- CHEM 1312/1112 General Chemistry II with lab
- MATH 2417 Calculus ² (also satisfies 3 hours part D of Core Curriculum)
- PSY 2301 Introduction to Psychology² (also satisfies 3 hours part B of Core Curriculum)
- PSY 2317 Statistics for Psychology²
or STAT 1342 Statistical Decision Making² (also satisfies 3 hours part D of Core Curriculum)

Major Core Courses: 25 hours

All of the following:

- NSC 3361 Behavioral Neuroscience
- NSC 4166 Neuroanatomy Workshop
- NSC 4352 Cellular Neuroscience
- NSC 4353 Neuroscience Laboratory Methods² (also satisfies 3 hours part A of Core Curriculum)
- NSC 4354 Integrative Neuroscience
- NSC 4356 Neurophysiology
- NSC 4363 Neuropharmacology
- NSC 4366 Neuroanatomy
- 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.

- BIOL 3361 Biochemistry I
- BIOL 3362 Biochemistry II
- CGS 4312 Computational Models of Language Understanding
- 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 4358 Neuroscience of Sensation and Perception
- NSC 4368 Computational Neuroscience
- NSC 4370 Neuroendocrinology
- NSC 4372 Neuroimmunology
- NSC 4373 Sensory Neurophysiology
- NSC 4374 Neural Plasticity in Neuropathologies
- NSC 4375 Honors Seminar
- NSC 4376 Stress and the Nervous System
- NSC 4394 Internship in Neuroscience
- NSC 4397 Honors Thesis
- NSC 4V98 Directed Research³
- NSC 4V99 Individual Study⁴
- NSC 4V90 Special Topics in Neuroscience
- PSY 4360 Learning
- PSY 4362 Perception
- SPAU 3304 Communication Sciences

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

³ May be repeated for credit, up to 9 hours.

⁴ 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 2112 Introduction to Modern Biology II Workshop
BIOL 2312 Introduction to Modern Biology II
CHEM 2123 Introductory Organic Chemistry I Laboratory
CHEM 2125 Introductory Organic Chemistry II Laboratory
CHEM 2323 Introductory Organic Chemistry I
CHEM 2325 Introductory Organic Chemistry II

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 1101 College Physics Laboratory I
PHYS 1102 College Physics Laboratory II
PHYS 1301 College Physics I *
PHYS 1302 College Physics II *
PHYS 2125 Physics for Bioscience Laboratory I
PHYS 2126 Physics for Bioscience Laboratory II
PHYS 3341 Physics for Bioscience I **
PHYS 3342 Physics for Bioscience II **

* algebra based Physics courses

** calculus based Physics courses

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 3.00 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 generally limited to an enrollment of 20, 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)

I. Core Curriculum Requirements¹: 42 hours

- A. Communication (6 hours)
 - 3 hours Communication (RHET 1302)
 - 3 hours Communication Elective (PSY 3393)²
- 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)²
- C. Humanities and Fine Arts (6 hours)
 - 3 hours Fine Arts (ARTS 1301)
 - 3 hours Humanities (HUMA 1301)
- D. Mathematics and Quantitative Reasoning (6 hours)
 - 3 hours College Math (recommend MATH 1306, 1314 or 2417)
 - 3 hours Quantitative Methods or Math (PSY 2317)²
- E. Science (9 hours with at least one lab course)
 - 3 hours Science (NSC 3361)²
 - 6 hours Science Elective (see PSY 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 (30 hours beyond the Core Curriculum)

Major Preparatory Courses

PSY 2301 Introduction to Psychology² (also satisfies 3 hours part B of Core Curriculum)

PSY 2317 Statistics for Psychology² (also satisfies 3 hours part D of Core Curriculum)
 Major Core Courses (30 upper-division hours)
 NSC 3361 Behavioral Neuroscience²
 PSY 3360 Historical Perspectives on Psychology: Mind and Machines Since 1600
 PSY 3361 Cognitive Psychology
 or CGS 2301 Cognitive Science
 PSY 3392 Research Design & Analysis
 or PSY 3490 Honors Quantitative Methods
 PSY 3393 Experimental Projects in Psychology² (also satisfies 3 hours part A of Core Curriculum) PSY 4331 Personality
 or PSY 3331 Social Psychology
 PSY 4334 Lifespan Development
 or PSY 3310 Child Development
 PSY 4343 Abnormal Psychology
 Major Related Courses (12 hours)
 Advanced Guided Electives; 3 hours of one of the following:
 PSY 4394 Internship in Psychology
 PSY 4V96 Teaching Internship
 PSY 4V97 Honors Thesis
 PSY 4V98 Directed Research
 PSY 4V99 Individual Study
 Plus any 9 hours of courses with PSY or CGS or NSC prefixes or the following SPAU courses: 3301, 3303, 3304, 3340, 3343, 3344, 3345 or 4308.

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

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 one-third 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. A background in psychology can be enormously useful for the study and practice of law and law enforcement. Suggested courses are Forensic Psychology, Psychology and the Legal System,

Lifespan Development, Cognitive Psychology, Judgement and Decision-Making, Personality Psychology, Social Psychology, Abnormal Psychology, Psychological Testing, Statistics for Psychology, and Research Design and Analysis.

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 or Child 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*¹

PSY 3332 Social and Personality Development

PSY 3362 Cognitive Development

Guided Electives Courses (select 9 hours)

PSY 3339 Educational Psychology¹

PSY 3342 Exceptional Children¹

PSY 4344 Child Psychopathology

PSY 4373 Psychological Assessment

PSY 4394 Internship in Psychology

or ED 4693 Student Teaching Grades EC - 4¹ (approval of Associate Dean required)

SPAU 3303 Normal Language Development¹

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 3.00 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 3390 Clinical Practicum in Speech-Language Pathology (may be taken twice for credit), SPAU 4325/PSY 3342 Exceptional Children, 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 Requirements¹: 42 hours

- A. Communication (6 hours)
 - 3 hours Communication (RHET 1302)
 - 3 hours Communication Elective (SPAU 3390)²
- 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)²
- C. Humanities and Fine Arts (6 hours)
 - 3 hours Fine Arts (ARTS 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)²
 - 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 Psychology² (also satisfies 3 hours part B of Core Curriculum)
- 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 Hearing² (also satisfies 3 hours part E of Core Curriculum)
SPAU 3345 Neural Basis of Communication
or NSC 3361 Behavioral Neuroscience
SPAU 3388 Clinical Observation in Speech-Language Pathology (3 semester hrs)
SPAU 3390 Clinical Practicum in Speech-Language Pathology (3 semester hrs)² (also satisfies 3 hours part A of Core Curriculum)
SPAU 4308 Language Disorders in Children
SPAU 4394 Multicultural Aspects of Communication Disorders
or SPAU 4393 Language in Culture and Society
SPAU elective (3 hours of course with SPAU prefix)

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 3388 Clinical Observation in Speech-Language Pathology
SPAU 3390 Clinical Practicum in Speech-Language Pathology
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 Disorders 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 earn grades of B or better in graduate courses taken. For application forms and information on application procedures, please contact the Associate Dean's Office.