

School of Behavioral and Brain Sciences

Master of Science in Applied Cognition and Neuroscience



Program Description

The Master of Science in Applied Cognition and Neuroscience (ACN) program is an applied multidisciplinary program that incorporates and integrates methodologies from such diverse fields as psychology, neuroscience, computer science, and philosophy.

The Neuroscience specialization area enables students to focus on the brain from a variety of perspectives including systems, cellular, and molecular-level approaches with the objective of understanding the interactions of these systems and how they underlie the emergence and diversity of behavior.

The Cognition and Neuroscience specialization area provides a flexible multidisciplinary curriculum for studying the mind and brain. Students enrolling in the Cognition and Neuroscience specialization area learn to use behavioral research methods in conjunction with neuroscience research methods to investigate the neural foundations of cognitive processes.

The Computational Modeling/Intelligent Systems specialization area provides advanced training applicable to mathematical and computer simulation models of the brain and behavior as well as the design, development, and evaluation of artificially intelligent systems.

The Human-Computer Interaction specialization area provides preparation for work in areas involving human-computer interactions. These areas include usability engineering and user-experience design issues associated with the design, development, and evaluation of user-friendly human-computer interfaces.

The Neurological Diagnosis and Monitoring specialization area provides advanced training for using functional brain imaging methodologies such as: EEG, SPECT, PET, and fMRI for both clinical and experimental investigations. It also provides training for career paths in the field of Intraoperative Neurophysiological Monitoring. Furthermore, all five specialization areas provide excellent preparation for doctoral work in the Cognition and Neuroscience area as well as medical or dental school.

Career Opportunities

The Master of Science in Applied Cognition and Neuroscience (ACN) provides advanced multidisciplinary training opportunities in the areas of Neuroscience, Experimental Psychology, Artificial Intelligence, and Human-Computer Interaction. A few representative career opportunities in the Applied Cognition and Neuroscience Area are listed as follows.

- **Usability Engineering and User Experience.** Software development and engineering professionals interested in pursuing careers in the areas of usability engineering and user-experience (UX) design and development will greatly benefit from the Human-Computer Interactions specialization area.



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Usability engineering and user-experience design involve the evaluation and design of human-computer interfaces such as: website and software graphical user interfaces (GUIs), smartphone interfaces, and voice-user interfaces (VUIs).

- **Brain Imaging Technologies.** Medical health brain imaging professionals (e.g., Electroneurodiagnostic Technologists, MRI Technicians, Radiologists) who are working in the area of brain imaging technology will find the Neurological Diagnosis and Monitoring specialization area relevant for improving their knowledge and understanding of functional brain imaging technologies such as: EEG, SPECT, PET, and fMRI.
- **Machine Learning.** Software development and engineering professionals interested in machine learning algorithms should consider the Computational Modeling/Intelligent Systems specialization area. Machine learning algorithms are now widely embedded in a variety of systems for the purposes of providing “intelligent assistance” to the end-user. Examples of such systems include: web search engines, speech recognition systems, robotics, computer-vision systems, computer games, natural language understanding systems, bionic and prosthetic technology, and data mining systems.
- **Neuropharmacology.** Professionals working in the area of Neuropharmacology have the opportunity to receive advanced training through both the Neuroscience and Cognitive-Neuroscience specialization areas.
- **Mental Health and Education.** Psychological counselors, mental health, and education professionals (e.g., high school science teachers, adult literacy educators, and mental health related fields) will greatly benefit from the basic neuroscience and psychological science courses offered in the Cognition and Neuroscience specialization area.

Marketable Skills

Upon successful completion of the MS in Applied Cognition and Neuroscience, UT Dallas students will have acquired basic knowledge in at least one of the following areas: cognitive-neuroscience, neuroscience, neurological diagnosis and monitoring, usability engineering, and machine learning.

- Acquire written and oral communication skills.
- Acquire thinking and analytical skills in the student’s specialization area.
- Acquire a combination of data analysis and computer programming skills.

Benefits

The Applied Cognition and Neuroscience master’s program ensures that students gain a broad understanding of their discipline, apply their knowledge and analytical skills to create effective and novel solutions to practical problems and communicate and work effectively in collaborative environments.

Other benefits include:

- *World-Class Faculty:* The program is led by faculty of the School of Behavioral and Brain Sciences who are widely cited experts in their respective fields.
- *Comprehensive Curriculum:* Courses in the Applied Cognition and Neuroscience program will introduce students to new ideas, technologies, and competencies while preparing them to succeed in competitive, ever-changing industries.
- *Facilities:* In addition to numerous individual faculty research labs, the Applied Cognition and Neuroscience Program utilizes several facilities that are shared among faculty and graduate students in the School of Behavioral and Brain Sciences including both the Center for BrainHealth and the Center for Vital Longevity which are adjacent to the UT Southwestern Medical Center at Dallas campus.
- *Labs and Internships:* Students have the opportunity for hands-on research at one of the more than 50 labs across campus and within the School’s centers and institutes.
- *Location:* Situated in the greater Dallas region—recently rated by Forbes magazine as the #1 “Best City for Jobs”—UT Dallas provides students with easy access to employers and internship opportunities, not to mention a large and supportive alumni population.

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Application Deadlines and Requirements

Please take note of all application deadlines and visit the Apply Now webpage to begin the application process. See the Applied Cognition and Neuroscience website for additional information.

Applicants to the Applied Cognition and Neuroscience master's degree program are required to submit the following materials as part of their application process.

- Documentation of the student has a bachelor's degree or its equivalent.
- Course transcripts showing a grade point average (GPA) in undergraduate-level coursework of 3.0 or better on a 4.0-point scale.
- Test Scores: Both GRE math and verbal scores are required for admission.
- Letters of Recommendation: Applicants must submit three letters of recommendation from individuals able to judge the candidate's potential for success in the master's degree program.
- Admissions Essay: Applicants must submit a "statement of purpose" essay outlining their academic interests and career goals.
- International applicants must submit a TOEFL score of at least 80 on the internet-based test. Scores must be less than two years old. See the Graduate Catalog for additional information regarding English proficiency requirements for international applicants.

To be accepted for the fall semester, applicants must submit completed applications by May 1.

Applications for acceptance in the spring semester are due October 1, and applications for acceptance in the summer semester are due by March 1.

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About the School



The School of Behavioral and Brain Sciences is focused on the intersection of mind, brain and behavior. Through the school's research-intensive culture, our professors and students work together to unravel mysteries that will improve human lives. They accomplish this by engaging in novel scientific discovery, translating the latest research into treatments, and sharing this knowledge through professional and community outreach. The School provides innovative training and research, offering an array of programs to develop creative thinkers. Graduate training in BBS prepares students to become scientists, educators, clinicians, social service professionals, innovators, and corporate leaders.

Graduate Research

The School of Behavioral and Brain Sciences is committed to translating the latest research into interventions that add depth to education and provide valuable contributions to the health and well-being of humans. BBS researchers in neuroscience, psychology, and speech, language, and hearing sciences have many research grants from the most prestigious national funding agencies, including the National Institutes of Health and the National Science Foundation.

Departments

Neuroscience. Research in the Department of Neuroscience focuses primarily on cell and circuit plasticity in the nervous system and how this influences behavior. Major research strengths are in learning and memory; targeted plasticity for therapeutic intervention; and the neurobiology of pain.

Speech, Language, and Hearing Sciences. Research in the Department of Speech, Language, and Hearing Sciences, based at the Callier Center for Communication Disorders, this program emphasizes clinical and translational research in basic scientific understanding of brain and behavioral mechanisms of speech, language, and hearing, as well as on disorders that affect the ability of children and adults to communicate. Research strengths broadly encompass basic science, applied (translational) applications, prevention, and remediation.

Psychology. Research in the Department of Psychology focuses on all aspects of cognitive, developmental, and social psychology, and cognitive neuroscience. Areas of expertise include learning and memory; reasoning; perception; modeling; lifespan development (from early childhood through the oldest old); and brain disease (e.g., autism, schizophrenia, traumatic injury, neurodegeneration, addiction).

BBS Graduate Programs

Applied Cognition and Neuroscience	MS	
Audiology		AUD
Cognition and Neuroscience		PHD
Speech-Language Pathology	MS	
Speech, Language, and Hearing Sciences		PHD
Human Development and Early Childhood Disorders	MS	
Psychology	MS	PHD

Contact Information

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About the School



Research Centers

Many of the school's activities are shaped significantly by faculty and student involvement in five centers listed below.

Callier Center for Communication Disorders: The Center is a national leader in providing care for children and adults with speech, language, and hearing disorders. Supporting this clinical mission, faculty members research the causes, treatments and prevention of communication disorders.

Center for Advanced Pain Studies: This Center's mission is to elucidate fundamental mechanisms underlying chronic pain, and to discover novel therapeutics for the treatment of chronic pain through academic, public and private partnerships.

Center for BrainHealth: This Center focuses its research on understanding the brain's ability to restore or protect healthy function, to protect the brain from unnecessary mental decline and to heal the brain through treatments that regenerate function.

Center for Children and Families: Center research emphasizes parenting and healthy families, strengthening interpersonal relationships, and enhancing thinking and learning.

Center for Vital Longevity: This Center focuses on understanding and expanding the capacity of the aging mind, aiming to understand how the brain changes over the lifespan, the consequences of neural aging on everyday function, and interventions that show promise for slowing cognitive aging.

Texas Biomedical Device Center: The Center consists of scientists, engineers, medical doctors, regulatory specialists, and clinicians committed to the development of affordable and innovative therapies and technologies to improve the quality of life for individuals suffering from neurological disorders.

Additional Facts about BBS

- Our Audiology and Speech-Language Pathology programs are ranked #2 and #10 in the nation respectively, according to *U.S. News and World Report*.
- The School is home to leading experts in Psychology, Neuroscience and Speech, Language, and Hearing Sciences.
- In fiscal year 2019, BBS faculty members were responsible for nearly \$13 million in total research funding, including roughly \$12 million from National Institutes of Health, National Science Foundation, and Department of Defense.
- BBS has more than 2,300 undergraduate students and nearly 600 graduate students, including two of the top 10 undergraduate majors at UTD (Neuroscience, Psychology).

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