Cognitive Science Program Orientation

https://bbs.utdallas.edu/degrees/cgs/

Cognitive Science Program Head:
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Leah Barfield

THE UNIVERSITY OF TEXAS AT DALLAS

School of Behavioral and Brain Sciences
The Cognitive Science Program is very excited that you have chosen to pursue your undergraduate studies in this area with us!

Our goal is to not only maximize your learning experience but also prepare you to pursue new career directions once you graduate!

In addition, we will do our best to make this process fun and enjoyable!!
Cognitive Science: The Multidisciplinary Study of Intelligent Systems

- Artificial Intelligence
- Psychology
- Computer Science
- Mathematics
- Neuroscience
- Human-Computer Interactions
Overview of UTD Cognitive Science Program

• Emphasizes novel integrations of neuroscience, psychology, computer science, and human-centered design
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• Understanding the Brain and Mind Requires Multidisciplinary View!
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- Understanding the Brain and Mind Requires Multidisciplinary View!
Concentration Areas: (Select 2 of 3 Areas)

1) Psychology/Human-Computer Interaction

2) Neuroscience

3) Artificial Intelligence & Computational Modeling
Equivalently group by Concentration Area Pairs
(Choose 1 pair):

- Psychology/Human-Computer Interaction
- Neuroscience

- Artificial Intelligence & Computational Modeling
- Neuroscience

- Psychology/Human-Computer Interaction
- Artificial Intelligence & Computational Modeling
Concentration Areas

• Psychology/Human-Computer Interaction
• Neuroscience

Career Paths

Psychologist
Neuroscientist
Neuropsychologist
Cognitive-Neuroscientist
Premed/Health Services
Neuropharmacology
Usability Engineer
User Experience (UX) Engineer
Concentration Areas

- Artificial Intelligence & Computational Modeling
- Neuroscience

Career Paths

- Neuroscientist
- Data Scientist
- Data Scientist Analyst
- Machine Learning Engineer
- Computational Neuroscientist
Concentration Areas

- Psychology/Human-Computer Interaction
- Artificial Intelligence & Computational Modeling

Career Paths

- Psychologist
- Data Scientist
- Data Scientist Analyst
- Machine Learning Engineer
- Usability Engineer
- User Experience (UX) Engineer
- Mathematical Psychologist
Learn More about a Potential Career Path By Visiting Wikipedia!

Data science

Data science is an inter-disciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from many structural and unstructured data. Data science is related to data mining, machine learning and big data.

Neuropsychology

Neuropsychology is a branch of psychology that is concerned with how the brain and the rest of the nervous system influence a person's cognition and behaviors. More importantly, professionals in this branch of psychology often focus on how injuries or illnesses of the brain affect cognitive functions and behaviors.

It is both an experimental and clinical field of psychology that aims to understand how behavior and cognition are influenced by brain functioning and is concerned with the diagnosis and treatment of

Usability engineering

Usability engineering is a field that is concerned generally with human-computer interaction and specifically with devising human-computer interfaces that have high usability or user friendliness. It provides structured methods for achieving efficiency and elegance in interface design.

Several broad disciplines including Psychology, Human Factors and Cognitive Science subsume usability engineering, but the theoretical foundations of the field come from more specific domains: human perception, attention, cognition, human-computer interaction, behavior design and human-computer interaction.
Learn More about Potential Career Paths By Visiting “Indeed.com”

Jr. Machine Learning Engineers
Enhance IT 3.1
Nashville, TN

$35 - $40 an hour

- Easily apply
- Urgently hiring

- Ability to translate objectives to a project plan with milestones, and resource/technology requirements, and teach, lead, and manage projects/people/clients...

14 days ago · Save job

Data Scientist
United Medical Credit
Remote

$105,000 - $125,000 a year

- Easily apply
- Urgently hiring

- Develop set processes for data mining, data modeling, and data production that will create data narratives around insights identification, trends, and business

new

Neuropsychologist
St. Elizabeth Physicians 3.3
Crestview Hills, KY 41017

$40 - $48 an hour

- Easily apply
- Urgently hiring

- Evaluates and (where appropriate) accepts referrals from St. Elizabeth and community sources for assessment in the areas of cognitive, psychological, and/or...

30+ days ago · Save job

Neuropsychologist
Justin Lo MD
San Jose, CA 95128 (Rose Garden area) · Temporarily remote

$70,000 - $100,000 a year

- Easily apply
- Responsive employer

- Conduct neuropsychological evaluations such as assessments of Intelligence, academic ability, attention, concentration, sensorimotor function, language,...

24 days ago · Save job

new

Solutions Engineer
Holland & Hart LLP 3.8
Boulder, CO 80302 (Whittier area)

$51,000 - $84,000 a year

- Diagnose and solve technical and usability problems while maintaining a clear awareness and genuine appreciation of challenges facing non-technical users...

7 days ago · Save job

Application Engineer
Appian Corporation 3.5
McLean, VA

- Easily apply

- Proactively provide feedback to Appian’s Engineering team and participate in usability testing for new product features.

30+ days ago · Save job

UX/UI Designer
Goji Labs
Remote

$70,000 - $85,000 a year

- Easily apply

- Familiarity with programming languages and experience working with engineers is a plus.

- Plan and conduct user research, including user interviews, usability...
Cognitive Science Major at UTD
(Major Core Coursework)

• CGS 3361 Cognitive Psychology:
  Experimental behavioral methods for testing models and theories of human information processing.
Cognitive Science Major at UTD (Major Core Coursework)

- **CGS 3361 Cognitive Psychology**: Experimental behavioral methods for testing models and theories of human information processing.

- **NSC 3361 Neuroscience**: The structure and function of the brain and its relationship to the mind.
Cognitive Science Major at UTD
(Major Core Coursework)

• **CGS 3361 Cognitive Psychology:**
  Experimental behavioral methods for testing models and theories of human information processing.

• **NSC 3361 Neuroscience:**
  The structure and function of the brain and its relationship to the mind.

• **PSY 3392 Research Design and Analysis:**
  Design of experiments and data analysis methodologies.
Cognitive Science Major at UTD (Major Core Coursework)

- **CGS 3361 Cognitive Psychology**: Experimental behavioral methods for testing models and theories of human information processing.

- **NSC 3361 Neuroscience**: The structure and function of the brain and its relationship to the mind.

- **PSY 3392 Research Design and Analysis**: Design of experiments and data analysis methodologies.

- **PSY 3393/CGS 3340 Experimental Projects**: Projects involving experimental design, data analysis, and scientific writing.
Psychology Concentration Area

Major Preparatory Lower-Division Coursework

• CGS 2301 (Cognitive Science)
• Math 2417 (Calculus 1) or Math 2413
• Math 2419 (Calculus 2) or Math 2414
• CS 1337 (Computer Science 1)
• Math 2418 (Linear Algebra)
• Psy 2301 (Introduction to Psychology)
• Psy 2317 (Statistics for Psychology)
Psychology/HCI  Concentration Area

Concentration Area Coursework (Choose 4 of the following)

- Historical Perspectives
- Cognitive Neuroscience
- Perception
- Social Psychology
- Child Development
- Cognitive Development
- Attention and Memory
- Neuropsychology
- Psychology of Reasoning
- Human Computer Interaction 1
- Human Computer Interaction 2
What is Usability Engineering?

Usability engineering is a field that is concerned generally with human-computer interaction and specifically developing human-computer interfaces that have high usability or user friendliness.

Usability engineering uses behavioral science research methodologies to evaluate how specific subpopulations interact with technology (e.g., websites, smart phones, voice user interface systems).

I CAN use this website to order knitting supplies.
What is User Experience (UX)?

- Usability Engineering
- Has Functional Value
- Has Aesthetic Value

I LOVE using this website to order knitting supplies!!! Its so much FUN!!!!!!
More Usability Engineering and UX Resources!

Resources for learning more about HCI:
https://www.usabilitysciences.com/blog
https://jnd.org/
https://www.nngroup.com/
https://bigdesignevents.com/

Note: Usability Engineering does not necessarily require advanced software development skills but you must be able to interface with software developers. Familiarity with HTML and CSS a definite plus!!!

UTD UX Club

Big Design Conference (Every Fall)

Note: UX positions may require both Usability Engineering skills AND additional skills like software development, artistic design, or managerial skills.
Neuroscience Concentration Area

Major Preparatory Lower-Division Coursework

- CGS 2301 (Cognitive Science)
- Math 2417 (Calculus 1) or Math 2413
- Math 2419 (Calculus 2) or Math 2414
- CS 1337 (Computer Science 1)
- Math 2418 (Linear Algebra)
- Psy 2301 (Introduction to Psychology)
- Psy 2317 (Statistics for Psychology)
- Biol 2111 Introduction to Modern Biology Workshop 1
- Biol 2281 Introductory Biology Lab
- Biol 2311 Introduction to Modern Biology 1
- Chem 1311 General Chemistry 1
- Chem 1112 General Chemistry Lab 2
- Chem 1312 General Chemistry 2
Neuroscience Concentration Area

Concentration Area Coursework
(Choose 4 of the following)

- Cellular Neuroscience
- Integrative Neuroscience
- Neurophysiology
- Neuroanatomy
- Neuropharmacology
- Development Neurobiology
- Cognitive Neuroscience
- Neuroscience Lab Methods
- Neuropsychology
- Molecular Neuroscience
- Medical Neuropathology
- Neuroimmunology
Computational Modeling/Artificial Intelligence Specialization Area
Computational Modeling/Artificial Intelligence

- Use Machine Learning Algorithms to Analyze Cognitive-Neuroscience Data
- Develop and Evaluate Machine Learning Algorithms as Behavioral or Neural Information Processing Models
Computational Modeling and Artificial Intelligence Specialization Area

In order to have a successful career in this area you MUST have strong computer programming skills and familiarity with one or more machine learning development languages. For more details: https://www.learningmachines101.com/lm101-078-ch0-how-to-become-a-machine-learning-expert/
Computational Modeling and Artificial Intelligence
Concentration Area

Major Preparatory Lower-Division Coursework

- CGS 2301 (Cognitive Science)
- Math 2417 (Calculus 1) or Math 2413
- Math 2419 (Calculus 2) or Math 2414
- CS 1337 (Computer Science 1)
- Math 2418 (Linear Algebra)
- Psy 2301 (Introduction to Psychology)
- Psy 2317 (Statistics for Psychology)
- CS 2305 Discrete Math for Computing 1
- CS 2336 Computer Science 2

Important Note:
Contact your CGS Advisor to Sign up for CS courses which are Required for your Major with the same priority as CS students because CS students can fill up CS courses quickly!!!
Computational Modeling and Artificial Intelligence
Concentration Area

Concentration Area Coursework
(Choose 4 of the following)

• CS 3341 Probability and Statistics in Computer Science
• CGS 3342 Cognitive and Neural Modeling Lab (Introduction to Machine Learning)
• CGS 4314 Intelligent Systems Analysis (Advanced Machine Learning 1)
• CGS 4315 Intelligent Systems Design (Advanced Machine Learning 2)
• CS 3345 Data Structures and Introduction to Algorithmic Analysis
• CS 4365 Artificial Intelligence
• CS 4375 Introduction to Machine Learning

Important Notes:
1) Watch Prerequisites!
2) Some courses only offered every other year!
3) Contact your CGS Advisor to Sign up for required CS courses with same priority as CS students
Fast-Track to a Masters Degree in Applied Cognition and Neuroscience (ACN)

• If you are a Junior with a good GPA and sufficient number of credit hours, then you can take graduate courses and have them count towards your undergraduate degree.

• This is typically done by applying to the “Fast-Track Program”.

• As a “Fast-Track” student, you can take up to 5 graduate courses and have them count towards your undergraduate degree.

• In addition, if you decide to pursue your Master’s Degree after you complete your Bachelor’s degree and you are a fast-track student, then you are automatically accepted into the Master’s program and the number of required course credits to obtain a Master’s degree is reduced by the number of graduate course credits completed as an undergraduate student.

• To learn more about the ACN Masters Degree, check out the ACN Orientation Powerpoint and Video!!!

Research Internships

Working in a Research Lab provides you an opportunity to interact more closely with faculty members and acquire research experiences.

This is important if you are considering a career in research because it helps you discover what aspects of research you may (or may not) like.

It may also be useful for obtaining letters of reference which are important for entering graduate schools.

Also some graduate schools would like students applying to their programs to have some research experience.
How NOT to Seek out an Internship or Research Opportunity.

“Hi. Do you have any internships available?”
How **NOT** to Seek out an Internship or Research Opportunity.

“Hi. Do you have any internships available?”
Hello. My name is __________________. I am currently an undergraduate student in the Cognitive Science program at the University of Texas at Dallas. I noticed that you were doing research in the area of ___________. I am very interested in __________________ and was wondering if I could set up a 20 minute meeting with you to learn more about what type of work you are doing in this area?
How to Seek Out an Internship/Research Opportunity

Hello. My name is __________________. I am currently an undergraduate in the Cognitive Science program at the University of Texas at Dallas. I noticed that you were doing research in the area of __________. I am very interested in _________________ and was wondering if I could set up a 20 minute meeting with you to learn more about what type of work you are doing in this area?

During the meeting, try to figure out how you might assist in the work they are doing (If you think it is interesting).
How to Seek Out an Internship/Research Opportunity

Hello. My name is __________________. I am currently an undergraduate student in the Cognitive Science program at the University of Texas at Dallas. I noticed that you were doing research in the area of ___________. I am very interested in _________________ and was wondering if I could set up a 20 minute meeting with you to learn more about what type of work you are doing in this area?

During the meeting, try to figure out how you might assist in the work they are doing (If you think it is interesting).

At the end of the meeting say:
“Thank you for meeting with me. I really enjoyed the meeting and was particularly interested in ______. Would it be possible for me to participate as a member of your lab or research group working in the area of ____?”
NETWORK using LINKED-IN

• Connect with “Richard Golden” on LINKED-IN

• This is a good way to network with other alumni of the Cognitive Science program

• Aggressively explore career opportunities BEFORE you graduate!!!
UNDERGRADUATE ACADEMIC ADVISING RESOURCES

When Must I See my Advisor?

- Any freshman with fewer than 30 credits completed must see an advisor prior to registration for classes.
- New transfer students must attend transfer orientation prior to registration.
- Students with an account hold must see an advisor to register for courses.
- Students who are experiencing registration issues should see an advisor for assistance (e.g., prerequisite issues, transfer credit, etc).
- Students intending to graduate must complete a graduation audit with an advisor prior to being permitted to complete the online graduation application. Deadlines to file an audit and apply can be found on the Academic Calendar.
- Students who wish to apply AP, IB, or CLEP credits.
- Students who wish to take courses off-campus must meet with an advisor to seek approval prior to registration off-campus.

How to Submit Registration Requests

Send a request to bbsadvising@utdallas.edu with the following information:

- Five digit class number (e.g., 81234)
- Course Prefix (e.g., PSY)
- Course Number (e.g., 2301)
- Section Number: (e.g., 001)

Please note, email will be answered as second priority to in-person students. Urgent registration requests should be addressed in person in the Advising Office.

It is the student's responsibility to check that the correct course is added to their schedule and to follow-up that the course is appropriate for their degree plan and graduation requirements.
Thank you for your Attention!
We are here to help you succeed!!

Cognitive Science
Program Head:
Professor Richard Golden

BBS Director of Undergraduate Advising:
Leah Barfield