

# COGNITIVE SCIENCES

## THE SCHOOL OF SOCIAL SCIENCES

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### **DEGREE OFFERED: BA**

Researchers in this interdisciplinary field seek to understand such mental phenomena as perception, thought, memory, the acquisition and use of language, learning, concept formation, and consciousness. Some investigators focus on relations between brain structures and behavior, some work with computer simulation, some use experimental methodology, and others work at more abstract theoretical levels.

### **DEGREE REQUIREMENTS FOR BA IN COGNITIVE SCIENCES**

For general university requirements, see Graduation Requirements (Undergraduate Students section, pages 2–5). Students majoring in cognitive sciences must complete five core courses and seven additional courses (see below). Among the seven additional courses, at least three and no more than four must be in a single area of concentration—linguistics, philosophy, psychology, or neuroscience.

### **INTRODUCTORY COURSES**

Because the major is interdisciplinary, no single course introduces the full range of the subject. However, students who are interested in majoring in cognitive sciences should take one or more of the following courses during their first and second years: LING 200, PHIL 103, PSYC 101, or PSYC 203.

### **HONORS PROGRAM**

Students with a 3.5 GPA in cognitive sciences and 3.3 overall GPA may apply for the cognitive sciences honors program. Students in the honors program

are expected to conduct an independent research project of either one or two semesters under the guidance of a member of the cognitive sciences faculty. Students who wish to enter this program should consult with prospective advisors during their junior year and submit a proposal by the end of the semester preceding the initiation of the project. Typically, this means submitting a proposal by the end of the junior year and beginning the project during the fall of the senior year. Proposal will be reviewed by both the supervisor and the program director. Students who undertake a two-semester project will be allowed to continue into the second semester only if their advisor judges that sufficient progress has been made during the 1st semester. At the end of a project, honors students are expected to submit a final paper to both their advisor and the program director and make an oral presentation to faculty and students. For more details, contact the program director.

## INDEPENDENT RESEARCH

Majors may undertake supervised independent research by enrolling in CSCI 390 or the honors program. Students who wish to take CSCI 390 must complete a CSCI 390 contract and have it approved by their supervisor and the program director prior to the end of the first week of classes. All students taking CSCI 390 also must write a substantive research paper, which is to be submitted to both their advisor and the program director at the end of the semester. (Copies of the contract form and instructions are available on the “forms” section of the cognitive sciences Web site.)

### Core Courses

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The core courses are divided into five groups. Majors just take one course from each group.

#### **Computer Science**

*Though all of these courses may be used to satisfy the computer science core requirements, no more than one may be taken for credit within the major*

CAAM 210 *Introduction to Engineering Computation*

COMP 140 *Computational Problem Solving*

COMP 200 *Elements of Computer Science*

COMP 201 *Principles of Object-Oriented Programming*

#### **Psychology**

PSYC 203 *Introduction to Cognitive Psychology*

#### **Linguistics**

LING 200 *Introduction to the Scientific Study of Language*

LING 306 *Language and the Mind*

LING 315 *Semantics*

#### **Philosophy**

PHIL 103 *Philosophical Aspects of Cognitive Science*

PHIL 305 *Mathematical Logic*

PHIL 312 *Philosophy of Mind*

#### **Advanced Psychology**

PSYC 308 *Memory*

PSYC 309 *Psychology of Language*

PSYC 351 *Psychology of Perception*

PSYC 360 *Thinking*

PSYC 362 *Biopsychology*

PSYC 430 *Computational Modeling of Cognitive Processes*

PSYC 432 *Brain and Behavior*

### Additional Courses

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At least three and no more than four courses must be in one of the following areas of concentration: linguistics, philosophy, psychology, or neuroscience. Note: you may not use the same courses to fulfill both a core course requirement and an additional course requirement; in other words, no double counting.

#### **Cognitive Sciences**

CSCI 390 *Supervised Research in Cognitive Sciences*

CSCI 481 *Honors Project*

#### **Computer Science**

COMP 211 *Principles of Program Design*

COMP 440 *Artificial Intelligence*

COMP 450 *Algorithmic Robotics*

### **Linguistics**

LING 200 *Introduction to the Scientific Study of Language*

LING 300 *Linguistic Analysis*

LING 301 *Phonetics*

LING 304 *Introduction to Syntax*

LING 306 *Language and the Mind*

LING 311 *Phonology*

LING 314 *Second Language Acquisition*

LING 315 *Semantics*

LING 317 *Language and Computers*

LING 320 *The Origins and Evolution of Human Language*

LING/PSYC 325 *Language Acquisition*

LING 403 *Foundations of Modern Linguistics*

LING 404 *Research Methodologies and Linguistic Theories*

LING 405 *Discourse Analysis*

LING 411 *Neurolinguistics*

LING 419 *Bilingualism*

LING 420 *Cognition and L2 Acquisition*

### **Neuroscience**

Many of the neuroscience courses are taught by Baylor College of Medicine faculty.

For more information, see [www.ruf.rice.edu/~neurosci/neurocoursesmain.html](http://www.ruf.rice.edu/~neurosci/neurocoursesmain.html).

BIOS 421 *Neurobiology*

CAAM 415 *Theoretical Neuroscience*

ELEC 481 *Computational Neuroscience*

LING 411 *Neurolinguistics*

PSYC 362 *Biopsychology*

PSYC 432 *Brain and Behavior*

NEUR 500 *Functional Neuroanatomy and Systems Neuroscience*

NEUR 501 *Cognitive Neuroscience I*

NEUR 502 *Cognitive Neuroscience II*

NEUR 503 *Molecular Neuroscience I and II*

NEUR 504 *Cellular Neurophysiology I and II*

NEUR 505 *Optical Imaging in Neuroscience*

NEUR 506 *Learning and Memory*

NEUR 515 *Neural Development*

### **Philosophy**

PHIL 103 *Philosophical Aspects of Cognitive Science*

PHIL 303 *Theory of Knowledge*

PHIL 305 *Mathematical Logic*

PHIL 312 *Philosophy of Mind*

PHIL 353 *Philosophy of Language*

PHIL 357 *Incompleteness, Undecidability, and Computability*

### **Psychology**

PSYC 308 *Memory*

PSYC 309 *Psychology of Language*

PSYC 321 *Developmental Psychology*

PSYC/LING 325 *Language Acquisition*

PSYC 340 *Research Methods*

PSYC 351 *Psychology of Perception*

PSYC 360 *Thinking*

PSYC 362 *Biopsychology*

PSYC 370 *Introduction to Human Factors*

PSYC 375 *Neurophysiology of Language and Memory*

PSYC 409 *Methods in Human-Computer Interaction*

PSYC 411 *History of Psychology*

PSYC 430 *Computational Modeling of Cognitive Processes*

PSYC 432 *Brain and Behavior (formally cross-listed as CSCI 420)*

PSYC 441 *Human-Computer Interaction*

PSYC 465 *Olfactory Perception*

PSYC 471 *Introduction to fMRI*

### **Other**

ANTH 406 *Cognitive Studies in Anthropology and Linguistics*

ELEC 201 *An Introduction to Engineering Design*

ELEC 498 *Introduction to Robotics*

STAT 300 *Model Building*

**Note:** Rice-Baylor neuroscience offerings change frequently. Baylor courses not on the above list may be counted at the discretion of the steering committee. The most up-to-date listing of courses counting as additional courses is found at [cogsci.rice.edu](http://cogsci.rice.edu).