Department of Psychology

Chair

• Susan Cohen Levine

Professors

• Edward Awh
• Sian Beilock
• John T. Cacioppo
• Jean Decety
• Susan Goldin-Meadow
• Leslie M. Kay
• Boaz Keysar
• Susan Cohen Levine
• John A. Lucy, Comparative Human Development
• Daniel Margoliash, Organismal Biology and Anatomy
• Howard C. Nusbaum
• Brian Prendergast
• Steven K. Shevell
• Richard Shweder, Human Development
• Michael Silverstein, Anthropology
• Edward Vogel
• Amanda Woodward

Associate Professors

• David Gallo
• William Goldstein

Assistant Professors

• Marc Berman
• Jasmin Cloutier
• Jennifer Kubota
• Sarah London
• Gregory Norman
• Alex Shaw
The primary focus of the study of psychology is on the individual. Thus, its scope includes the biological processes of brain growth, development and functioning; the perceptual and cognitive processes by which information is acquired, stored, used and communicated; the comprehension, production, and use of language from a psychological viewpoint; the social, cultural, and emotional processes by which experience is interpreted and organized; and the developmental processes that underlie change from infancy through adulthood. Training emphasizes the conceptual theories that describe and explain these processes, and the variety of methods that are used to study them.

Originally founded as the Laboratory of Psychology in 1893, the Department of Psychology has been for a century a leading center of scholarship, research and teaching in psychology and related fields. Among its distinguished faculty and students have been James Rowland Angell, John Dewey, George Herbert Mead, John B. Watson, the founder of behaviorism, L. L. Thurstone, a pioneer in psychological measurement, Karl Lashley, Klüver and Bucy, Kleitman, discoverer of REM sleep, Frank Beach, founder of behavioral
endocrinology, W. C. Allee who viewed biology as a social phenomenon, and Roger Sperry, Nobel Prize winner for his work in cerebral lateralization. The present Department of Psychology is conscious of its distinguished intellectual forebears and continues to reflect its heritage in its commitment to research, the scope of its inquiry, and the diversity of its programs of graduate study.

Moreover, consistent with the interdisciplinary traditions of the University of Chicago, the Department of Psychology maintains close connections with other departments in the University. The department’s faculty and students actively participate in courses, colloquia, workshops and joint research ventures with scholars in related departments, including, but not confined to, anthropology, biology, computer science, computational neuroscience, linguistics, neurobiology, and philosophy, and in the University’s professional schools of business, public policy, law, medicine, and social service administration.

The Department of Psychology is organized into specialized training and research programs that reflect the contemporary state of the discipline as well as wide ranging interests of its own faculty. They are currently the Cognition Program, the Developmental Psychology Program, the Integrative Neuroscience Program, the Perception Program, and the Social Psychology Program. The interdisciplinary character of the University and the Department of Psychology is reflected in the fact that many faculty members serve on more than one of the department’s programs.

Degrees

The course of study offered by the Department of Psychology is designed primarily to prepare students for careers in research and teaching and for whatever professional work is necessary as an adjunct to these career objectives. Programs of graduate study offered by the department lead to the PhD degree in the Division of the Social Sciences. In order to qualify for the PhD degree, students must satisfy:

1. The University’s residency requirements
2. The requirements of the Division of the Social Sciences
3. The requirements of the particular program of the Department of Psychology

The Department of Psychology does not offer courses of study leading to the degree of Master of Arts. However, students admitted to doctoral study may take the Master of Arts degree as an optional step in the doctoral program. Similarly, a student admitted who must leave the program, for whatever reason, may apply for a terminal Masters of Arts degree, providing the student has met the University’s residency requirements, the requirements of the Division of the Social Sciences, and the program requirements of the particular program of the Department of Psychology.
Psychology Linguistics Joint PhD Program

A joint PhD degree program in psychology and linguistics exists for those students who are interested in completing degree requirements in both fields. Psychology students in the Language area of the Cognition Program may apply to the joint degree program in the second year and beyond, but are not required to do so.

Psychology-Business Joint PhD Program

A joint PhD degree program in psychology and business exists for those students who are interested in completing degree requirements in both fields. This program is overseen jointly by the Department of Psychology and by the Managerial and Organizational Behavior Area in the Booth School of Business. Admission to this program requires admission to both the PhD program in psychology and at Booth School of Business. Faculty in both programs will determine, based in a student’s primary research interests and/or explicit preferences for a primary research advisor, which program will be the student’s primary affiliation.

Admission

Students are admitted by application to the Department of Psychology to pursue courses of study in doctoral programs that are formulated by the individual programs. Applicants must specify the program to which they are applying. Applicants will be considered for admission only if they have earned a bachelor’s degree or its equivalent. Admission depends upon the strength of the general undergraduate record, scores on the Graduate Record Examination, letters of recommendation, personal statement and interests, and relevant laboratory or field research experience. Please refer to the Office of International Affairs web site: https://internationalaffairs.uchicago.edu/students/prospective/toefl.shtml. Foreign language students must provide evidence of English proficiency by submitting scores from either the Test of English as a Foreign Language (TOEFL) or the International English Testing System (IELTS). Candidates for admission are expected to have some background in psychology as well as mathematics and statistics. Candidates with backgrounds in anthropology, history or sociology are encouraged to apply to Psychology, (the Social Psychology Program); those with strong biological training and interests are encouraged to apply to Psychology, (the Integrative Neuroscience Program or the Social Program).

Students are admitted through the Division of the Social Sciences. Students already enrolled in the Department of Linguistics of the Division of the Humanities who wish to work toward the joint Ph.D. In Psychology, (the Language area of the Cognition Program) and in Linguistics must be admitted as well to the Department of Psychology through the Division of the Social Sciences.

How to Apply

The application process for admission and financial aid for all Social Sciences graduate programs is administered through the divisional Office of the Dean of Students. The Application for Admission and Financial Aid, with instructions, deadlines and department
specific information is available online at: http://apply-ssd.uchicago.edu/apply/. Most of the required supplemental material can be uploaded into the application.

Questions pertaining to admissions and aid should be directed to admissions@ssd.uchicago.edu or (773) 702-8415. All correspondence and materials that cannot be uploaded should be mailed to:

The University of Chicago
Division of the Social Sciences
Admissions Office, Foster 107
1130 East 59th Street
Chicago, IL 60637

For additional information about the Psychology program, please see: http://psychology.uchicago.edu/ or call 773-702-8861.

General Requirements for Doctoral Students

All doctoral students in the Department of Psychology must complete the common graduate curriculum. In addition, each student must complete the course requirements specified by one of the department’s specialized training and research programs. In exceptional cases, a student may design an individual sequence of courses. This sequence must be approved by the curriculum and student affairs committee before the student undertakes it. Completion of these course requirements is a prerequisite for Ph.D. candidacy.

Common Graduate Curriculum

The common curriculum consists of a maximum of 8 courses. Other requirements for graduate students will be set by the areas of specialization.

Proseminar: One-quarter course in which faculty members whose primary affiliation is the Department of Psychology give a summary of their ongoing research and students write a research proposal, to be submitted for an NSF graduate fellowship if the student is eligible for this funding. Professional development topics are also covered.

Statistics requirement, passed with a grade of B or better:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>STAT 22000</td>
<td>Statistical Methods and Applications</td>
<td>100</td>
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<tr>
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<td>(or BUSF 41000 or equivalent approved by the Graduate Curriculum Committee. More advanced courses, for which these courses are prerequisites, also fulfill this requirement.)</td>
<td></td>
</tr>
<tr>
<td>PSYC 37300</td>
<td>Experimental Design I</td>
<td>100</td>
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Trial research seminar

All graduate students are required to take the trial research seminar in the spring of the first year. The purpose of this seminar is to help students formulate and complete their trial research projects.

Breadth Requirement

Students are required to take a minimum of three doctoral level courses in Psychology, extending across different areas of psychological science. These courses should be chosen in consultation with the student's advisor and program area. These courses must be passed with a grade of B or better.

Department of Psychology Research Requirements

Trial Research Project

1. Each student will complete a trial research project under the guidance of a faculty advisor or advisors by the end of the 7th week of the spring quarter of the second year.

2. At the start of the project, each student must form a trial research committee, composed of three faculty members. Typically, the chair of the committee is the student's primary research advisor. The chair of the committee must be a faculty or emeritus faculty member in the Psychology Department. At least one other member of the committee must be a faculty, emeritus faculty or affiliated faculty member in the Psychology Department. The third member of the committee may be from outside of the Psychology Department, provided that the chair of the trial research committee gives his or her approval.

3. The student must submit a proposal for the trial research project to his or her committee for approval by the second week of autumn quarter of the second year. Essential to this approval is the committee’s decision that the project can feasibly be completed by the end of the second year.

4. On Friday of the seventh week of the spring quarter of the student's second year a written report of the trial research project is due.

5. The student will submit the trial research paper prior to the end of the spring quarter of the second year and defend the trial research paper at a hearing with his or her committee prior to the end of the Spring Quarter of the second year. At the hearing, the committee will also assess the student’s breadth and depth of knowledge of his or her research problem.

6. The student's committee will have evaluated the report, and will have submitted a written evaluation to the Student Affairs Committee by the end of the spring quarter.

7. Successful completion of the trial research project is a prerequisite for PhD candidacy.
Dissertation

1. To begin the dissertation process, a student must form a three-member dissertation committee consisting of a chairperson and two other faculty members. Typically, the chair is the student's primary research advisor. The chair of the dissertation committee must be a faculty or emeritus faculty member in the Psychology Department. At least one other member of the committee must be a faculty, emeritus faculty or affiliated faculty member in the Psychology Department. The third member of the committee must be from the university of Chicago, but may be from outside of the Psychology Department, provided that the chair of the dissertation committee gives his or her approval.

2. Once a dissertation committee exists, the student must formulate an independent research project to be carried out under the committee's guidance. The student will then prepare a written dissertation proposal and submit it to his or her committee. When the student's advisor agrees, the student may schedule an oral defense of the proposal.

3. To be admitted to PhD candidacy, a student must have successfully completed: (a) the Common Graduate Curriculum (including the statistics, and breadth requirement); (b) the course requirements specified by a program or an individual course of study approved by the Curriculum Committee; (c) a trial research project; (d) approval of the dissertation proposal by all members of the student's dissertation committee following the oral defense.

4. The completed thesis must be submitted to all three committee members. When the student's advisor agrees, the student may schedule an oral defense of the dissertation. The oral exam is administered by four members of the University community: the three members of the dissertation committee and an outside reader. The outside reader may be a faculty member at the University of Chicago, or a scientist at another institution. The outside reader must be approved by the thesis advisor. If, after the oral defense, all committee members approve the thesis, the student has met the Psychology Department's requirements for the PhD degree.

Cognition Program

Research on cognition lies at the core of the study of many basic psychological mechanisms (e.g., recognition, attention, categorization, memory, inference) and in recent years, neuroimaging methods have been used to make enormous strides grounding these mechanisms in the brain. Work on cognitive mechanisms has been important in a number of other areas of psychology (e.g., Social Psychology and Developmental Psychology) and provides an important theoretical foundation for understanding higher order cognition including language use, reasoning, and problem solving.

Curriculum

There are three elements in the graduate curriculum of the Cognition Program.
1. Departmental curriculum. Students must complete the departmental core graduate curriculum.

2. Basic courses. Three basic courses. The following list includes possible courses, including those that are not offered every year. The purpose of this requirement is to develop a deeper understanding of the theories and methods used to scientifically study cognition, and how these approaches are central to many areas of psychological inquiry. Pre-approved courses are:

PSYC 31200 Systems Neuroscience

PSYC 32414: Cognitive Neuroscience

PSYC 35700: Psychology of Spoken Language

PSYC 37400 Human Memory

PSYC 38655: Environmental Neuroscience

PSYC 40107 Behavioral Neuroscience

PSYC 41000: Advanced Topics in Color Vision

PSYC 41400: Evolutionary Cognitive Psychology

PSYC 38300 Attention

PSYC 43200 Seminar in Language Development

PSYC 43600 Processes of Judgement and Decision Making

PSYC 43650: The Development of Social Cognition

Students may also propose other courses, based on course offerings in a given year. Such student-proposed courses should be approved by the cognition area chair prior to taking them.

3. Advanced courses and seminars. Students are strongly encouraged to participate in advanced courses and seminars, particularly in their area of interest.
The Developmental Psychology Program

There is a strong history of work in developmental psychology at the University of Chicago. The goal of this program is to foster the continuing development of this area by providing a program of study for graduate students and a community of researchers who share an interest in how development occurs. The Developmental Psychology program offers graduate study which investigates child psychology from a variety of perspectives. Four major research areas make up the program: cognitive development, social and emotional development, language and communicative development, and biological development. Specific topics of research specialization include: vocabulary acquisition, the development of gesture and other forms of nonverbal communication, the development of discourse abilities, mathematical and number knowledge in infants and children, the effects of early brain damage on development, social cognitive development in infancy and early childhood, early emotional understanding, the development of autobiographical memory, parent child interaction, language socialization, cultural influences on development, and environmental effects on language development and school achievement. The emphasis is on the use of experimental and observational methods for the study of development.

Curriculum

In their third and fourth year students write a theoretical review relevant to their dissertation. Ideally, this review could be a publishable article, suitable for a journal such as a Psychological Bulletin or Developmental Review and will help in formulating the dissertation.

1. General course: PSYC 40500 Advanced Seminar in Developmental Psychology is required of all students in the program. A prerequisite for this course is that the student has already taken a survey course in developmental psychology. This course will also fulfill a core course requirement for the common graduate curriculum.

2. An advanced course in three of four areas of Developmental Psychology. Certain seminars may also fulfill these requirements. Below are a few examples of courses that will fulfill these requirements. This is not a comprehensive list as course offerings change from year to year. Students may petition the developmental area chair to count courses not included on this list. Topics in Developmental Psychology along with an additional paper may, under special circumstances, be used towards one course satisfying this requirement, with permission of the developmental area chair.
   a. Cognitive/Intellectual Development:
      PSYC 42550 Topics in Cognitive Development; PSYC 33600 Development in Infancy; PSYC 42040 Seminar: Mathematical Development
   b. Biological Development:
      PSYC 31700 Developmental Biopsychology; Psyc 34900: Biopsychology of Attachment (D. Maestripieri); PSYC 36100 Developmental Cognitive Neuroscience; PSYC 36660 Genes and Behavior; PSYC 44450 Developmental Social Neuroscience.

Students are expected to take advanced courses and seminars, particularly in their area of interest, and to attend the weekly meeting of Topics in Developmental Psychology.

**Integrative Neuroscience**

The notion that 100 billion neurons give rise to human behavior proved daunting up through the 20th Century because neuroscientists were limited by existing technologies to studying the properties of single neurons or small groups of neurons. Characterizing simple neural circuits has led to an understanding of a variety of sensory processes, such as the initial steps in vision, and motor processes, such as the generation of locomotion patterns. However, unraveling the neural substrates of more complex behaviors, such as the ability to pay attention to relevant events in its surroundings or the ability to understand the likely events going through the mind of another, remains one of the major challenges for the neurosciences in the twenty-first century. In contrast to simple behaviors, these complex behaviors depend on interactions within a network of different brain structures. Studying the neural bases of complex behaviors, thus, requires an integrative neuroscience approach.

The Integrative Neuroscience graduate program at the University of Chicago is designed to provide the training and research opportunities for the next generation of behavioral, cognitive, and social neuroscientists. Behavioral, cognitive, and social neuroscience represent three complementary and partially overlapping aspects of this integrative neuroscience of mind and behavior. Behavioral neuroscience places an emphasis on the biological mechanisms underlying basic behavioral processes; cognitive neuroscience places an emphasis on the biological mechanisms underlying cognition, with a specific focus on the neural substrates of mental processes and their behavioral manifestations; and social neuroscience places an emphasis on the biological mechanisms underlying social processes and behavior, including the ability to perceive and communicate mental states including the beliefs and desires of others and to form and maintain interpersonal and group relationships. The University of Chicago is optimally positioned to meet this challenge because its unique academic structure facilitates interactions across disciplinary perspectives.

**Curriculum**

Students must complete the departmental core graduate curriculum.

As part of this curriculum and with one additional course, IN students complete:

1. Psychology Department Breadth Courses (2* courses)
   *IN students will take two advanced courses within the Department of Psychology
2. Two of Four Core Neuroscience Courses (Cellular, Behavioral, Systems, Molecular) It is suggested that most students take at least Cellular and Behavioral, but we understand that needs depend on research focus.

IN students are encouraged to take additional advanced courses. The program offers the following advanced courses. All of these courses will not be offered every year.

- PSYC 33960 Biological Rhythms and Behavior
- PSYC 38300 Attention
- Advanced Cognitive Neuroscience (Psyc 38760)
- Neural Oscillations (Psyc 37150)
- PSYC 36100 Developmental Cognitive Neuroscience
- Neuropsychopharmacology (Psyc 36901)
- PSYC 32000 Color Vision
- PSYC 37400 Human Memory or LM&C
- PSYC 33700 Perception and Action
- PSYC 33750 Seminar: Skill Acquisition and Sensorimotor Learning
- PSYC 35750 Spoken Language Processing
- PSYC 33300 The Social Brain and Empathy
- Attitudes & Persuasion (Psyc 46100)
- PSYC 35950 Stereotyping and Prejudice
- PSYC 34700 Social Cognition
- PSYC 35000 Physiology of Vision
- PSYC 39000 Vision
- PSYC 32600 Speech Perception

Trial Research Project
Each student completes a Trial Research Project under the guidance of a faculty advisor. This is a significant piece of research carried out over a 12-month period. Both written and oral presentations of the research are required. The student will submit the trial research paper prior to the end of the Spring Quarter of the second year and defend the trial research paper at a hearing with his or her committee prior to the end of Spring Quarter of the second year. The oral examination will also probe the students' breadth and depth of knowledge associated with the completed coursework.

Doctoral Dissertation
The Doctoral Dissertation is an independent research project carried out under the guidance of a faculty Dissertation Committee with at least four members. At least two members of the committee, including the chair, must be in the Integrative Neuroscience program; a third member must be in the Department of Psychology. The chair of the
committee typically is the primary research advisor. A written dissertation proposal is presented to the committee in advance of an oral Proposal Hearing.

A student is admitted to PhD Candidacy after successfully completing (i) all course requirements, (ii) written and oral presentations of the Trial Research Project, and (iii) an approved dissertation proposal (including oral defense).

The doctoral dissertation is submitted to the dissertation committee prior to a final oral defense (the “final oral examination”). The dissertation committee plus an outside reader, who may be a faculty member at the University of Chicago or a scientist at another institution, administer the final oral exam. The committee members and reader evaluate the dissertation in private after the oral exam. At most one abstention or vote to disapprove is allowed among the committee members and reader; all others must approve the dissertation to satisfy the requirements for the PhD degree.

The Social Psychology Program

The general philosophy of the curriculum is to provide students with the requisite knowledge and skills to excel in mainstream, academic social psychology. In addition to Departmental requirements, graduate students in the University of Chicago Social Psychology Program must fulfill the following course requirements:

1. General Courses:
   a. PSYC 40600 Advanced Seminar in Social Psychology: Introductory course in experimental social psychology. This course will also fulfill part of the core course requirements of the common graduate curriculum.

2. Topics in Experimental Social Psychology: An ongoing seminar taught collectively by the Core Faculty each quarter. Required of Social Area Students in Years 1-3. Please note: This course is neither required of Joint students nor is it available to them.

3. An advanced course or seminar in at least two of the following Areas of Emphasis:
   - Self
   - Social Cognition
   - Social and Cognitive Neuroscience
   - Decision Making
   - Attitudes and Affect
   - Stereotyping and Prejudice
   - Communication and Language Processes
   - Interpersonal Relations and Group Processes
   - Political Psychology
   - Cultural Psychology
4. PSYC 45200 Advanced Methods in Experimental Social Psychology plus two additional courses in advanced methods and statistics.

5. Finally, students are expected to take advanced courses and seminars in their area of interest.

Psychology Courses

**PSYC 31600. Biopsychology of Sex Differences. 100 Units.**
This course will explore the biological basis of mammalian sex differences and reproductive behaviors. We will consider a variety of species, including humans. We will address the physiological, hormonal, ecological and social basis of sex differences. To get the most from this course, students should have some background in biology, preferably from taking an introductory course in biology or biological psychology.
Instructor(s): J. Mateo Terms Offered: Autumn
Note(s): CHDV Distributions: A; 1*
Equivalent Course(s): EVOL 36900, GNSE 30901, CHDV 30901

**PSYC 31900. Language, Culture, and Thought. 100 Units.**
Survey of research on the interrelation of language, culture, and thought from the evolutionary, developmental, historical, and culture-comparative perspectives with special emphasis on the mediating methodological implications for the social sciences.
Instructor(s): J. Lucy Terms Offered: Spring
Prerequisite(s): Grad status, Undergrads in 3rd or 4th year, or permission of instructor.
Note(s): CHDV Distribution: B, C; 2*, 3*, 5*
Equivalent Course(s): ANTH 27605, ANTH 37605, CHDV 31901, PSYC 21950, LING 27605, LING 37605, CHDV 21901

**PSYC 33000. Cultural Psychology: Philosophical and Theoretical Foundations. 100 Units.**
There is a substantial portion of the psychological nature of human beings that is neither homogeneous nor fixed across time and space. At the heart of the discipline of cultural psychology is the tenet of psychological pluralism, which states that the study of "normal" psychology is the study of multiple psychologies and not just the study of a single or uniform fundamental psychology for all peoples of the world. Research findings in cultural psychology thus raise provocative questions about the integrity and value of alternative forms of subjectivity across cultural groups. In this course we analyze the concept of "culture" and examine ethnic and cross-cultural variations in mental functioning with special attention to the cultural psychology of emotions, self, moral judgment, categorization, and reasoning.
Instructor(s): R. Shweder Terms Offered: Autumn
Prerequisite(s): Graduate students. Plus limited number of advanced undergrads (3rd and 4th year only) by consent. Caveat: This will be a low tech Socratic experience., computers closed, iphones off.
Note(s): CHDV Distribution: B, C; 2*, 3*
Equivalent Course(s): AMER 33000, ANTH 24320, ANTH 35110, CHDV 31000, GNSE 21001, GNSE 31000, PSYC 23000, CHDV 21000
PSYC 33360. Methods in Gesture and Sign Language Research. 100 Units.
In this course we will explore methods of research used in the disciplines of linguistics and psychology to investigate sign language and gesture. We will choose a set of canonical topics from the gesture and sign literature, such as pointing, use of the body in quotation, and the use of non-manuals, in order to understand the value of various effective methods in current use and the types of research questions they are best equipped to handle.
Instructor(s): D. Brentari, S. Goldin-Meadow Terms Offered: Autumn
Note(s): CHDV Distribution: M; M*
Equivalent Course(s): CHDV 23360, CHDV 33360, LING 23360, LING 33360, PSYC 23360

PSYC 33550. The Psychopath: Mad or Bad? What Can We Learn About Morality. 100 Units.
Psychopathy can be considered as a disorder of the moral brain, because individuals with psychopathic traits seem to have the cognitive capacity to understand right from wrong but don’t care. They also exhibit a flagrant disregard for social and moral norms. Individuals with psychopathy provide “natural experiments” to examine the psychological and biological mechanisms involved in moral cognition and behavior.
Instructor(s): J. Decety Terms Offered: Winter

PSYC 34400. Computational Neuroscience III: Cognitive Neuroscience. 100 Units.
This course is concerned with the relationship of the nervous system to higher order behaviors (e.g., perception, action, attention, learning, memory). Psychophysical, functional imaging, and electrophysiological methods are introduced. Mathematical and statistical methods (e.g., neural networks, information theory, pattern recognition for studying neural encoding in individual neurons and populations of neurons) are discussed. Weekly lab sections allow students to program cognitive neuroscientific experiments and simulations.
Instructor(s): N. Hatsopoulos Terms Offered: Spring

PSYC 34410. Computational Approaches for Cognitive Neuroscience. 100 Units.
This course is concerned with the relationship of the nervous system to higher order behaviors such as perception and encoding, action, attention, and learning and memory. Modern methods of imaging neural activity are introduced, and information theoretic methods for studying neural coding in individual neurons and populations of neurons are discussed.
Instructor(s): N. Hatsopoulos Terms Offered: Spring
Prerequisite(s): BIOS 24222 or CPNS 33100
Equivalent Course(s): ORGB 34650, CPNS 33200
PSYC 36210-36211. Mathematical Methods for Biological Sciences I-II.

PSYC 36210. Mathematical Methods for Biological Sciences I. 100 Units.
This course builds on the introduction to modeling course biology students take in the first year (BIOS 20151 or 152). It begins with a review of one-variable ordinary differential equations as models for biological processes changing with time, and proceeds to develop basic dynamical systems theory. Analytic skills include stability analysis, phase portraits, limit cycles, and bifurcations. Linear algebra concepts are introduced and developed, and Fourier methods are applied to data analysis. The methods are applied to diverse areas of biology, such as ecology, neuroscience, regulatory networks, and molecular structure. The students learn computations methods to implement the models in MATLAB.
Instructor(s): D. Kondrashov Terms Offered: Autumn. L.
Prerequisite(s): BIOS 20151 or BIOS 20152 and three quarters of a Biological Sciences Fundamentals sequence or consent of the instructor
Equivalent Course(s): CPNS 31000, BIOS 26210

PSYC 36211. Mathematical Methods for Biological Sciences II. 100 Units.
This course is a continuation of BIOS 26210. The topics start with optimization problems, such as nonlinear least squares fitting, principal component analysis and sequence alignment. Stochastic models are introduced, such as Markov chains, birth-death processes, and diffusion processes, with applications including hidden Markov models, tumor population modeling, and networks of chemical reactions. In computer labs, students learn optimization methods and stochastic algorithms, e.g., Markov Chain, Monte Carlo, and Gillespie algorithm. Students complete an independent project on a topic of their interest.
Instructor(s): D. Kondrashov Terms Offered: Winter. L.
Prerequisite(s): BIOS 26210 or equivalent.
Equivalent Course(s): CPNS 31100, BIOS 26211

PSYC 37300-37900. Experimental Design I-II.

PSYC 37300. Experimental Design I. 100 Units.
This course covers topics in research design and analysis. They include multifactor, completely randomized procedures and techniques for analyzing data sets with unequal cell frequencies. Emphasis is on principles, not algorithms, for experimental design and analysis.
Instructor(s): Staff Terms Offered: Winter

PSYC 37900. Experimental Design II. 100 Units.
Experimental Design II covers more complex ANOVA models than in the previous course, including split-plot (repeated-measures) designs and unbalanced designs. It also covers analysis of qualitative data, including logistic regression, multinomial logit models, and log linear models. An introduction to certain advanced techniques useful in the analysis of longitudinal data, such as hierarchical linear models (HLM), also is provided. For course description contact Psychology.
Instructor(s): TBA Terms Offered: Spring
PSYC 37400. Human Memory. 100 Units.
This course surveys the scientific study of human memory, emphasizing both theory and applications. Lectures will cover current research and methods in cognitive psychology and cognitive neuroscience, as well as historical precursors and classic studies. Topics include consciousness and nonconscious processes, corresponding neural systems, and various phenomena such as amnesia, memory distortion, mnemonics, and metacognition.
Instructor(s): D. Gallo Terms Offered: Spring

PSYC 37950. Evolution and Economics of Human Behavior. 100 Units.
This course explores how evolutionary biology and behavioral economics explain many different aspects of human behavior. Specific topics include evolutionary theory, natural and sexual selection, game theory, cost-benefit analyses of behavior from an evolutionary and a behavioral economics perspective, aggression, power and dominance, cooperation and competition, biological markets, parental investment, life history and risk-taking, love and mating, physical attractiveness and the market, emotion and motivation, sex and consumer behavior, cognitive biases in decision-making, and personality and psychopathology.
Instructor(s): D. Maestripieri Terms Offered: Autumn
Prerequisite(s): This course does not meet the requirements for the Biological Sciences Major.
Note(s): CHDV Distribution: A; 1*
Equivalent Course(s): CHDV 37950, PSYC 27950, BIOS 29265, ECON 14810, CHDV 27950

PSYC 40107. Behavioral Neuroscience. 100 Units.
This course is concerned with the structure and function of systems of neurons, and how these are related to behavior. Common patterns of organization are described from the anatomical, physiological, and behavioral perspectives of analysis. The comparative approach is emphasized throughout. Laboratories include exposure to instrumentation and electronics, and involve work with live animals. A central goal of the laboratory is to expose students to in vivo extracellular electrophysiology in vertebrate preparations. Laboratories will be attended only on one day a week but may run well beyond the canonical period.
Instructor(s): D. Margoliash Terms Offered: Winter
Equivalent Course(s): NURB 30107, CPNS 30107

PSYC 40300. Advanced Topics in Biological Psychology. 100 Units.
What are the relations between mind and brain? How do brains regulate mental, behavioral, and hormonal processes; and how do these influence brain organization and activity? This course provides an introduction to the anatomy, physiology, and chemistry of the brain; their changes in response to the experiential and sociocultural environment; and their relation to perception, attention, behavior, action, motivation, and emotion.
Instructor(s): L. Kay Terms Offered: Winter
PSYC 40450-40451-40452. Topics in Cognition I-II-III.
Broadly speaking, this workshop will address fundamental topics in cognitive psychology such as attention, memory, learning, problem solving, and language. One unique aspect of this workshop is that we will not only explore topics central to the study of cognition, but we will also explore how the study of cognitive psychology can be used to enhance human potential and performance in a variety of contexts. These contexts range from an exploration of optimal teaching practices to enhance the acquisition of mathematical knowledge in the classroom, to issues regarding how individuals communicate best to foster the optimal exchange of information in, for instance, medical settings, to the optimal strategies older adults can use to help stave off the deleterious effects of aging on cognitive functioning and the performance of everyday activities.

**PSYC 40450. Topics in Cognition I. 100 Units.**
Discussion of current research in psychology.
Instructor(s): Staff

**PSYC 40451. Topics in Cognition II. 100 Units.**
Discussion of current research in psychology.
Instructor(s): TBA

**PSYC 40452. Topics in Cognition III. 100 Units.**
Discussion of current research in psychology.
Instructor(s): TBA

PSYC 40500. Advanced Seminar in Developmental Psychology. 100 Units.
This is an introductory course for graduate students in developmental psychology. Topics in biological, perceptual, cognitive, social, and language development will be covered. This course will satisfy one of Psychology graduate students’ core course requirements.
Instructor(s): A. Shaw, A. Woodward Terms Offered: Autumn

PSYC 40600. Advanced Seminar in Social Psychology. 100 Units.
This seminar course examines social psychological theory and research based on both classic and contemporary contributions. Among the major topics examined are conformity and deviance, the attitude-change process, social role and personality, social cognition, and political psychology.
Instructor(s): J. Cloutier Terms Offered: Spring

PSYC 40851-40852-40853. Topics in Developmental Psychology I-II-III.
Brown-bag discussion of current research in psychology.

**PSYC 40851. Topics in Developmental Psychology I. 100 Units.**
Brown-bag discussion of current research in psychology.
Instructor(s): D. Yurovsky Terms Offered: Autumn

**PSYC 40852. Topics in Developmental Psychology II. 100 Units.**
Brown-bag discussion of current research in psychology.
Instructor(s): S. Goldin-Meadow Terms Offered: Winter
Note(s): CHDV Distribution: 2*
Equivalent Course(s): CHDV 40852
PSYC 40853. Topics in Developmental Psychology III. 100 Units.
Brown-bag discussion of current research in psychology.
Instructor(s): A. Shaw

PSYC 41000. Advanced Topics in Color Vision. 100 Units.
No description available.
Instructor(s): S. Shevell Terms Offered: Autumn
Prerequisite(s): Permission of instructor.
Equivalent Course(s): OPTH 41000

PSYC 41210. Psychophysiology: Methods, Concepts, and Applications. 100 Units.
This course will provide an overview of the principles, theory, and applications of psychophysiological research. The course has two primary goals: (1) to provide an overview of major psychophysiological approaches and measures through discussion of contemporary research; and (2) to provide an introduction to theory and research in major areas of human psychophysiology with specific applications to the study of cognition, affect, and health.
Instructor(s): G. Norman Terms Offered: Spring

PSYC 41920. The Evolution of Language. 100 Units.
How did language emerge in the phylogeny of mankind? Was its evolution saltatory or gradual? Did it start late or early and then proceed in a protracted way? Was the emergence monogenetic or polygenetic? What were the ecological prerequisites for the evolution, with the direct ecology situated in the hominine species itself, and when did the prerequisites obtain? Did there ever emerge a language organ or is this a post-facto construct that can be interpreted as a consequence of the emergence of language itself? What function did language evolve to serve, to enhance thought processes or to facilitate rich communication? Are there modern “fossils” in the animal kingdom that can inform our scholarship on the subject matter? What does paleontology suggest? We will review some of the recent and older literature on these questions and more.
Instructor(s): S. Mufwene Terms Offered: Winter
Equivalent Course(s): CHSS 41920, ANTH 47305, CHDV 41920, EVOL 41920, LING 21920, CHDV 21920, LING 41920

PSYC 42052. Genes and Environment in Language and Cognitive Development. 100 Units.
Children show tremendous variability in how quickly and how well they learn their native language. Where does this variability come from? We’ll explore both genetic and environmental contributions to language and cognitive development, aiming for an integrative understanding that moves beyond debates about nature and nurture. Readings will include work in behavioral genetics, environmental plasticity, niche inheritance, and cultural evolution and transmission.
Instructor(s): S. Levine, D. Yurovsky Terms Offered: Spring

PSYC 42100. Trial Research Seminar. 100 Units.
PSYC 42100 is required of first-year Psychology graduate students The purpose of this seminar is to assist students in formulating their trial research project.
Instructor(s): S. London Terms Offered: Spring
PSYC 42260. Seminar on Advanced Topics in EEG Analysis. 100 Units.
Advanced seminar on EEG analysis.
Instructor(s): E. Awh Terms Offered: Winter

PSYC 42400. Teaching Psychology. 100 Units.
No description available.
Instructor(s): J. Cacioppo Terms Offered: Autumn
Prerequisite(s): Psychology graduate students who TA for PSYC 20000.

PSYC 42510. Attention Seminar. 100 Units.
We will read original journal articles on the topic of attention and we will discuss the
definition of this construct, the methods used to study it, and the neural basis of this
cognitive function.
Instructor(s): E. Vogel Terms Offered: Spring

PSYC 42650. Working Memory. 100 Units.
This course will cover basic working memory theory, broadly defined, with a focus on neural
models.
Instructor(s): E. Awh, E. Vogel Terms Offered: Autumn

PSYC 42750. Advanced Topics in Chronobiology and Behavior. 100 Units.
This course will explore the mechanisms by which circadian and seasonal biological clocks
influence the development and adult functioning of the brain, the neuroendocrine system,
and the immune system, all within the context of adaptive changes in behavior. In addition
to being immersed in theoretical aspects of chronobiology, students will be trained in critical
reading of primary research literature, the construction of testable hypotheses, and designing
experiments to test these hypotheses. We will also discuss features of the scientific process
that allow rapid progress in developing a scientific field.
Instructor(s): B. Prendergast Terms Offered: Spring
Prerequisite(s): Psychology PhD Student or consent.

PSYC 43550. Gesture. 100 Units.
This course will examine the spontaneous movements that we produce when we talk—
our gestures. We will first consider what gesture is (and is not), and then explore gesture
in relation to communication, thinking, learning, action, and the brain, ending with an
exploration of gesture as it becomes language, on-the-spot and over longer periods of time.
Instructor(s): S. Goldin-Meadow Terms Offered: Winter
Equivalent Course(s): CHDV 43550

PSYC 43600. Processes of Judgement and Decision Making. 100 Units.
This course offers a survey of research on judgment and decision making, with emphasis
placed on uncertainty and (intrapersonal) conflict. An historical approach is taken in which
the roots of current research issues and practices are traced. Topics are drawn from the
following areas: evaluation and choice when goals are in conflict and must be traded off,
decision making when consequences of the decision are uncertain, predictive and evaluative
judgments under conditions of uncertain, incomplete, conflicting, or otherwise fallible
information.
Instructor(s): W. Goldstein Terms Offered: Autumn
Equivalent Course(s): CHDV 43600
PSYC 44000. Moral Psychology and Comparative Ethics. 100 Units.
Three types of questions about morality can be distinguished: (1) philosophical, (2) psychological, and (3) epidemiological. The philosophical question asks, whether and in what sense (if any) “goodness” or “rightness” are real or objective properties that particular actions possess in varying degrees. The psychological question asks, what are the mental states and processes associated with the human classification of actions are moral or immoral, ethical or unethical. The epidemiological question asks, what is the actual distribution of moral judgments across time (developmental time and historical time) and across space (for example, across cultures). In this seminar we will read classic and contemporary philosophical, psychological, and anthropological texts that address those questions.
Instructor(s): R. Shweder Terms Offered: Autumn
Prerequisite(s): Advanced undergraduates may enroll with permission of instructor
Note(s): CHDV Distribution: B, C; 3
Equivalent Course(s): CHDV 45601

PSYC 44460. Advanced Seminar in Social Neuroscience. 100 Units.
This seminar provides an advanced overview of current methodological and theoretical issues central to social neuroscience with an emphasis on fmri research. Topics will include: the role and function of brain networks believed to support social cognition, neural correlates of person perception and evaluation; and neural regions involved in self-regulation.
Instructor(s): J. Cloutier, J. Kubota Terms Offered: Winter

PSYC 44700. Seminar: Topics in Judgement and Decision Making. 100 Units.
This course offers a survey of research on judgment and decision making, with emphasis placed on uncertainty and (intrapersonal) conflict. An historical approach is taken in which the roots of current research issues and practices are traced. Topics are drawn from the following areas: evaluation and choice when goals are in conflict and must be traded off, decision making when consequences of the decision are uncertain, predictive and evaluative judgments under conditions of uncertain, incomplete, conflicting, or otherwise fallible information.
Instructor(s): W. Goldstein Terms Offered: Spring
Equivalent Course(s): CHDV 44700

PSYC 45300. When Cultures Collide: Multiculturalism in Liberal Democracies. 100 Units.
Coming to terms with diversity in an increasingly multicultural world has become one of the most pressing public policy projects for liberal democracies in the early 21st century. One way to come to terms with diversity is to try to understand the scope and limits of toleration for variety at different national sites where immigration from foreign lands has complicated the cultural landscape. This seminar examines a series of legal and moral questions about the proper response to norm conflict between mainstream populations and cultural minority groups (including old and new immigrants), with special reference to court cases that have arisen in the recent history of the United States.
Instructor(s): R. Shweder Terms Offered: Winter
Prerequisite(s): Advanced undergraduates may enroll with permission of instructor
Note(s): CHDV Distribution: C; 3*
Equivalent Course(s): ANTH 45600, HMRT 35600, GNDR 45600, CHDV 45699
PSYC 45650. Language and the Senses. 100 Units.
Language and sound have obvious interactions, as do language and sight. But there are also surprisingly strong interactions between language and the perception of odors. In this seminar, we will read current and historical literature on the sensory systems and language, including seminal texts in neuroanatomy, neuroimaging, perception, naming of sensory stimuli, sensory attention, and temporal and other properties of sensory systems. Students should have a background in basic neuroscience and be in a graduate program in psychology, neurobiology or a related discipline.
Instructor(s): D. Casasanto, L. Kay Terms Offered: Winter
Prerequisite(s): Background in basic neuroscience and be in a graduate program in psychology, neurobiology, or a related discipline

PSYC 45950. Stereotyping and Prejudice. 100 Units.
This seminar provides an overview of the literature on stereotyping, prejudice, and discrimination. Topics will include: the formation of stereotypes and prejudice; the processes that underlie stereotyping and prejudice; stereotyping and prejudice from the target’s perspective; and prejudice and stereotype reduction.
Instructor(s): J. Kubota Terms Offered: Spring

PSYC 46661. Advanced Topics in Behavioral Genomics. 100 Units.
One of the great opportunities in this post-genome age is to use DNA to better understand behavior. It is increasingly obvious that the interactions between genes and behavior are complex. Thus, identifying meaningful connections between them requires careful consideration of both. This seminar course will use primary literature as a platform to consider how behavior is influenced by, and itself alters, the genome, including the epigenome. The course will cover examples from a variety of animals including humans, various methods for measuring the epigenome, genome and behavior, and the relevant neurobiology for each system.
Instructor(s): S. London Terms Offered: Winter
Equivalent Course(s): CHDV 46661, NURB 36661

PSYC 47001-47002. Language in Culture I-II.
This two-quarter course presents the major issues in linguistics of anthropological interest. These courses must be taken in sequence.

PSYC 47001. Language in Culture I. 100 Units.
Among topics discussed in the first half of the sequence are the formal structure of semiotic systems, the ethnographically crucial incorporation of linguistic forms into cultural systems, and the methods for empirical investigation of “functional” semiotic structure and history.
Instructor(s): C. Nakassis Terms Offered: Autumn
Prerequisite(s): Consent of instructor
Note(s): CHDV Distribution: 5*
Equivalent Course(s): CHDV 37201, LING 31100, ANTH 37201
PSYC 47002. Language in Culture II. 100 Units.
The second half of the sequence takes up basic concepts in sociolinguistics and their criticism.
Instructor(s): Kristina Wirtz Terms Offered: Spring
Prerequisite(s): Consent of instructor
Note(s): CHDV Distribution: 5*
Equivalent Course(s): LING 31200, CHDV 37202, ANTH 37202

PSYC 48000. Proseminar in Psychology. 100 Units.
Required of first-year Department of Psychology graduate students. Department of Psychology faculty members present and discuss their research. This introduces new students to the range of research areas in the department.
Instructor(s): M. Berman Terms Offered: Autumn

PSYC 48001-48002-48003. Mind and Biology Proseminar I-II-III.
Seminar series at the Institute for Mind and Biology meets three to four times per quarter. Sign up for three quarters; receive credit at the end of Spring Quarter.

PSYC 48001. Mind and Biology Proseminar I. 000 Units.
The goal of this proseminar is to give graduate students the opportunity to be exposed to and discuss the research in biopsychology currently conducted at the Institute for Mind and Biology. The Mind and Biology Proseminar meets four times a quarter (plus an orientation meeting in Autumn quarter, each time for two hours. A meeting consists of a 45–60 minute research presentation by an IMB faculty member (or a guest speaker) and 60 minutes of discussion. Students will earn 100 units in Spring quarter after completing the three-quarter sequence.
Instructor(s): L. Kay Terms Offered: Autumn
Prerequisite(s): Consent only
Equivalent Course(s): CHDV 48001

PSYC 48002. Mind and Biology Proseminar II. 000 Units.
Seminar series at the Institute for Mind and Biology meets three to four times per quarter. Sign up for three quarters; receive credit at the end of Spring Quarter.
Instructor(s): L. Kay Terms Offered: Winter

PSYC 48003. Mind and Biology Proseminar III. 100 Units.
Seminar series at the Institute for Mind and Biology meets three to four times per quarter. Sign up for three quarters; receive credit at the end of Spring Quarter.
Instructor(s): L. Kay Terms Offered: Spring

PSYC 48150. Graduate Seminar. 100 Units.
No description available.
Instructor(s): B. Keysar Terms Offered: Winter
PSYC 48412. Publications, Grants, and the Academic Job Market. 100 Units.
In this graduate seminar we will discuss how to write and publish scientific articles, prepare
grant applications, write CVs and job applications, and give job talks and interviews. In other
words, everything students always wanted to know about being successful in academia but
were afraid to ask.
Instructor(s): D. Maestripieri Terms Offered: Autumn
Equivalent Course(s): EVOL 48412, CHDV 48412
Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Times was used instead of Trajan.

Times was used instead of Palatino.

The editor may contact Leepfrog for a draft with the correct fonts in place.