Psychology

Department Website: http://psychology.uchicago.edu

PROGRAM OF STUDY

Psychology is the study of the mental states and processes that give rise to behavior. It seeks to understand the basic mechanisms and functions of perception, cognition, emotion, and attitudes in guiding behavior. Although it focuses on the level of the individual, individual behavior depends on the social relationships and structures in which people are embedded and the biological systems of which we are comprised. Thus, psychological study encompasses a broad set of topics that overlap with a number of disciplines across the social and biological sciences. The requirements of the major are designed to acquaint students with the research methods psychologists use and to provide a foundation of core knowledge covering the major areas of psychology. This broad foundation allows students to pursue a more advanced understanding of subfields related to their own particular interests and goals for the major. The program may serve as preparation for graduate work in psychology or related fields (e.g., neuroscience, education), as well as for students interested in careers in social work, public policy, business, or medicine. Students are encouraged to become actively engaged in research in the department and should consult with the director of undergraduate research about their interests as early as possible.

PROGRAM REQUIREMENTS

Although no special application is required for admission to the major, majors are required to subscribe to the Psychology Majors Listhost at lists.uchicago.edu/web/info/psychology-majors/ (https://lists.uchicago.edu/web/info/psychology-majors/). The listhost is the primary means of communication between the program and its majors or students interested in being majors. We use it to notify students of events relevant to psychology majors, such as research opportunities, job postings, fellowship announcements, and any changes in the course schedule, or curriculum updates.

NOTE: When planning your course schedule, please consult Class Search at registrar.uchicago.edu/classes/ (http://registrar.uchicago.edu/classes/) and the Courses section of the Psychology Department Undergraduate Program (https://psychology.uchicago.edu/content/undergrad-major/) website, which lists courses and the quarters they are offered for the current academic year.

Statistics/Methodology Sequence (must be completed by end of third year)

By the end of their third year, psychology majors are required to complete PSYC 20200 Psychological Research Methods and one of the following courses: PSYC 20250 Introduction to Statistical Concepts and Methods, STAT 22000 Statistical Methods and Applications, or PSYC 20100 Psychological Statistics (if taken Autumn Quarter 2018 or earlier). It is strongly recommended that these courses be taken as early as possible as they provide foundational concepts that facilitate understanding of subject area courses. These two courses cover the conceptual and methodological issues (PSYC 20200) and the statistical methods (PSYC 20250, STAT 22000, or PSYC 20100) used in psychological science and are typically taught in Autumn and Winter Quarters. We advise students to take PSYC 20200 Psychological Research Methods prior to taking statistics, but either order is acceptable.

Beginning with the Class of 2019, students with AP examination credit for STAT 22000 Statistical Methods and Applications may not count that credit toward the major and should instead replace that requirement with a higher-level statistics course or an additional psychology elective. Students interested in graduate programs in psychology or other empirical sciences are strongly encouraged to take a higher level statistics course.

Breadth Requirement

Students are required to take four of the following five courses, each of which will be offered every year:

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<tr>
<th>Course</th>
<th>Title</th>
<th>Restriction</th>
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<tbody>
<tr>
<td>PSYC 20300</td>
<td>Biological Psychology</td>
<td></td>
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<tr>
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Additional Courses

At least six additional courses (for a total of twelve in the major) must be chosen from among the courses offered by the Department of Psychology. Courses without a PSYC number must be approved by the Undergraduate Student Affairs and Curriculum Committee; petitions must be submitted to the department’s student affairs administrator. Only one independent study course can count toward the twelve courses required of students who are majoring in psychology (PSYC 29200 Undergrad Rdgs: Psychology or PSYC 29700 Undergraduate Research in Psychology). In addition to the six electives, students pursuing honors in psychology must also take the PSYC 29800 Honors Seminar: Psychology. Independent study courses can be taken for P/
F grading, but all other courses must be taken for a quality grade. NOTE: Before registering for an elective, students should confirm that they have met any prerequisites for the course.

Research

Students are strongly encouraged to gain additional research experience by working on a research project under the guidance of a faculty member.

Calculus

Students are required to take two quarters of calculus as part of the College general education requirements.

NOTE: For psychology students, a maximum of three courses can be transferred into the major from outside the University of Chicago.

SUMMARY OF REQUIREMENTS

GENERAL EDUCATION

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<tr>
<th>Course Code</th>
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<th>Units</th>
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<tr>
<td>MATH 13100-13200</td>
<td>Elementary Functions and Calculus I-II (or higher) †</td>
<td>200</td>
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<tr>
<td>PSYC 20200</td>
<td>Psychological Research Methods (by end of third year)</td>
<td>100</td>
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One of the following (by end of third year):

<table>
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<tr>
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<td>Introduction to Statistical Concepts and Methods</td>
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<tr>
<td>STAT 22000</td>
<td>Statistical Methods and Applications</td>
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<tr>
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<td>Sensation and Perception</td>
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Six electives †

Total Units 1200

† Credit may be granted by examination.

* Examination credit for PSYC 20250 Introduction to Statistical Concepts and Methods, PSYC 20100 Psychological Statistics, or STAT 22000 Statistical Methods and Applications will not count toward the requirements for the major. Students with credit for PSYC 20250, PSYC 20100, or STAT 22000 should replace that requirement with a higher level Statistics course or an additional psychology elective.

+ Courses without a PSYC number must be approved by the Undergraduate Student Affairs and Curriculum Committee; petitions must be submitted to the department’s student affairs administrator.

GRADING

All courses in the major must be taken for quality grades except for the independent study course, which is available for either a quality grade or for P/F grading.

HONORS

To qualify for honors, students must meet the following requirements:

1. Students must have a GPA of at least 3.0 overall, and a GPA of at least 3.5 in the major by the beginning of the quarter in which they intend to graduate.

2. Students should arrange to carry out a research project with a faculty advisor from the Department of Psychology and submit a scientific report of this research for an honors thesis. Papers must represent a more substantial treatment of the research topic than the average term paper. After the paper has been approved by the faculty advisor, the paper must then be read and approved by a second faculty member.

3. Students are required to take PSYC 29800 Honors Seminar: Psychology in Winter Quarter of their third or fourth year. This is in addition to the twelve required courses for the major. It is expected that students will be actively working on the thesis project during the quarter they are taking the honors research seminar.

4. Students are required to present their findings in Spring Quarter of their fourth year at an honors day celebration.

5. For more guidance on honors projects, visit psychology.uchicago.edu/content/honors (https://psychology.uchicago.edu/content/honors/).

Students pursuing honors in more than one major should note that:
1. The student’s thesis adviser for psychology cannot be the same person as the student’s thesis adviser for the second major.
2. The student must meet all the requirements listed in the preceding Honors section, including taking the Honors Seminar and presenting at an honors day celebration.

**Professional and Academic Development**

The undergraduate studies program runs a series of cocurricular events throughout the year to foster students’ professional and academic development. Programming takes many forms, including informational meetings regarding the undergraduate program, guest speaker career panels, specialized workshops, conference field trips, and informal receptions. For a list of events currently planned, please visit [psychology.uchicago.edu/content/professional-academic-development-events](https://psychology.uchicago.edu/content/professional-academic-development-events/)

**Specialized Courses of Study**

Faculty members (or the undergraduate program chair) are available to help individual students design a specialized course of study within psychology. For example, particular course sequences within and outside of psychology may be designed for students who wish to pursue specializations in particular areas. These areas include, but are not limited to, cognitive neuroscience, language and communication, computational psychology, behavioral neuroscience and endocrinology, sensation and perception, and cultural psychology.

**EARL R. FRANKLIN RESEARCH FELLOWSHIP**

The Earl R. Franklin Research Fellowship is awarded to select third-year students who are majoring in psychology. It provides financial support during the summer before their fourth year to carry out psychological research that will be continued as a senior honors project. Applications, which are submitted at the beginning of Spring Quarter, include a research proposal, personal statement, transcript, and letter of recommendation.

**Psychology Courses**

**PSYC 20200. Psychological Research Methods. 100 Units.**

This course introduces concepts and methods used in behavioral research. Topics include the nature of behavioral research, testing of research ideas, quantitative and qualitative techniques of data collection, artifacts in behavioral research, analyzing and interpreting research data, and ethical considerations in research.

Instructor(s): K. Ledoux
Terms Offered: Autumn

**PSYC 20209. Adolescent Development. 100 Units.**

Adolescence represents a period of unusually rapid growth and development. At the same time, under the best of social circumstances and contextual conditions, the teenage years represent a challenging period. The period also affords unparalleled opportunities with appropriate levels of support. Thus, the approach taken acknowledges the challenges and untoward outcomes, while also speculates about the predictors of resiliency and the sources of positive youth development.

Instructor(s): M. Spencer
Terms Offered: Spring
Prerequisite(s): Students will have previously taken one other course in CHDV
Note(s): CHDV Distribution: B
Equivalent Course(s): ENST 20250, EDSO 20250

**PSYC 20250. Introduction to Statistical Concepts and Methods. 100 Units.**

Statistical techniques offer psychologists a way to build scientific theories from observations we make in the laboratory or in the world at large. As such, the ability to apply and interpret statistics in psychological research represents a foundational and necessary skill. This course will survey statistical techniques commonly used in psychological research. Attention will be given to both descriptive and inferential statistical methodology.

Instructor(s): Heald, S.
Terms Offered: Winter
Prerequisite(s): It is recommended that students complete MATH 13100 and MATH 13200 (or higher) before taking this course.
Equivalent Course(s): ENST 20250, EDSO 20250

**PSYC 20300. 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 introduces the anatomy, physiology, and chemistry of the brain; their changes in response to the experiential and sociocultural environment; and their relation to perception, attention, behavioral action, motivation, and emotion.

Instructor(s): B. Prendergast, L. Kay
Terms Offered: Winter
Prerequisite(s): Some background in biology and psychology.
Note(s): This course does not meet requirements for the Biological Sciences Major.
Equivalent Course(s): CHDV 20300, BIOS 29300, NSCI 21015

**PSYC 20400. Cognitive Psychology. 100 Units.**

Viewing the brain globally as an information processing or computational system has revolutionized the study and understanding of intelligence. This course introduces the theory, methods, and empirical results that underlie this approach to psychology. Topics include categorization, attention, memory, knowledge, language, and thought.
PSYC 20500. Developmental Psychology. 100 Units.
This is an introductory course in developmental psychology, with a focus on cognitive and social development in infancy through early childhood. Example topics include children's early thinking about number, morality, and social relationships, as well as how early environments inform children's social and cognitive development. Where appropriate, we make links to both philosophical inquiries into the nature of the human mind, and to practical inquiries concerning education and public policy.

Instructor(s): M. Berman Terms Offered: Spring
Equivalent Course(s): NSCI 22015, EDSO 20400

PSYC 20600. Social Psychology. 100 Units.
This course introduces students to the field of social psychology - the scientific study of how people think about, feel about, interact with, influence, and relate to one another. Topics covered include self and social perception, social influence, beliefs and attitudes, altruism, and intergroup processes. Where relevant, we will discuss if and how findings in social psychology can be applied in real-world contexts such as health, work, and relationships.

Instructor(s): K. O'Doherty Terms Offered: Spring
Note(s): CHDV Distribution, B
Equivalent Course(s): CHDV 25900, EDSO 20500

PSYC 20700. Sensation and Perception. 100 Units.
What we see and hear depends on energy that enters the eyes and ears, but what we actually experience - perception - follows from human neural responses. This course focuses on visual and auditory phenomena, including basic percepts (for example, acuity, brightness, color, loudness, pitch) and also more complex percepts such as movement and object recognition. Biological underpinnings of perception are an integral part of the course.

Instructor(s): K. Ledoux Terms Offered: Winter
Equivalent Course(s): NSCI 20140

PSYC 21100. Human Development Research Design. 100 Units.
The purpose of this course is to expose CHD majors in college to a broad range of methods in social sciences with a focus on human development research. The faculty in Comparative Human Development is engaged in interdisciplinary research encompassing anthropology, biology, psychology, sociology, and applied statistics. The types of data and methods used by faculty span the gamut of possible methodologies for addressing novel and important research questions. In this course, students will study how appropriate research methods are chosen and employed in influential research and will gain hands-on experience with data collection and data analysis. In general, the class will meet as a whole on Mondays and will have lab/discussion sections on Wednesdays. The lab/discussion sections are designed to review the key concepts, practice through applying some of the methods, and prepare students for the assignments. Students in each section will be assigned to small groups. Some of the assignments are group-based while others are individual-based.

Instructor(s): E. Abdelhadi Terms Offered: Winter
Note(s): Required Course for Comparative Human Development Majors
Equivalent Course(s): EDSO 20100, CHDV 20100, HLTH 20100

PSYC 21109. Concepts and Categories. 100 Units.
Despite how central categories and concepts are in theories of cognition, there is a lack of consensus within the scientific community as to the nature of concepts and categories. This course serves to introduce students to this ever-growing dialogue regarding concepts and categories. During the course we will analyze both classical and current theories of categorization. We will also briefly focus on how the process of categorization may change from infancy to adulthood. From this we will go on to discuss topics regarding the function and use of concepts and categories, as well as how concepts and categories may be acquired and maintained.

Instructor(s): S. Heald Terms Offered: Autumn

PSYC 21116. The Development of Social Cognition. 100 Units.
Our species is notably social, with both positive and negative consequences: we thrive in groups, yet we often discriminate against those who are not like us. This course focuses on social cognitive development in childhood, with the goal of understanding the foundations of human nature in a social context. Topics include theories of mind, social learning, motivation and achievement, moral development, social categorization and the origins and development of our tendency to divide the world into “us” versus “them.”
Instructor(s): K. Kinzler Terms Offered: Winter

**PSYC 21260. Psychology Research Incubator. 100 Units.**
Answering questions about how minds work, how choices are made, or about the forces that shape behavior depends on understanding how to carry out research. This course guides you through the process of developing an original research project of your own design. Whether your questions come from research you are already working on in a lab or reflect independent interests of your own, this course will lead you through the process of designing an empirical study to address an issue that interests you. From the first stages of turning an idea into a study, you will work either individually or with a group to develop your research questions scientifically to address issues that can add new knowledge to psychological science. In this course you will learn to: (1) generate testable hypotheses that are informed by prior research, (2) design and implement methods for testing these hypotheses, and (3) write an IRB protocol in order to collect data. The course culminates with drafting a research grant proposal so you will be well positioned to take advantage of the increased funding opportunities available for undergraduate research.

Instructor(s): A. Henly Terms Offered: Winter
Prerequisite(s): PQ: PSYC 20200 Psychological Research Methods

**PSYC 21690. Media and Psychology: Causes and consequences of media use across the lifespan. 100 Units.**
This course will examine the influence of media on individuals and groups from both a developmental and socio-cultural perspective. Topics will include young children’s academic and social-emotional skill learning from television, video and tablets; adolescents’ social media identities and experiences including cyber-bullying; media influences on adults’ health behaviors, aggression, prejudice, and more. Students will engage in both qualitative and quantitative research on media and psychology as part of this course.

Instructor(s): K. O’Doherty Terms Offered: Winter

**PSYC 21750. Biological Clocks and Behavior. 100 Units.**
This course will address physiological and molecular biological aspects of circadian and seasonal rhythms in biology and behavior. The course will primarily emphasize biological and molecular mechanisms of CNS function, and will be taught at a molecular level of analysis from the beginning of the quarter. Those students without a strong biology background are unlikely to resonate with the course material.

Instructor(s): B. Prendergast Terms Offered: Spring
Prerequisite(s): A quality grade in PSYC 20300 Introduction to Biological Psychology. Additional biology courses are desirable. Completion of Core biology will not suffice as a prerequisite.
Equivalent Course(s): HLTH 21750, NSCI 21400, BIOS 24248

**PSYC 22210. Mathematical Development: Cognitive and Attitudinal Factors. 100 Units.**
We will explore the early emergence of numerical and spatial skills in young children, which have been found to predict their long term mathematical outcomes. The course will examine the role of children’s cognitive skills (e.g., number sense, working memory) as well as their math attitudes (e.g., math anxiety, math ability self-concepts, mindset, and math gender stereotypes). Finally, we will consider how key socializers - parents and teachers - contribute to children’s math skills and math attitudes.

Instructor(s): S. Levine Terms Offered: Winter

**PSYC 22350. Social Neuroscience. 100 Units.**
Social species, by definition, create emergent organizations beyond the individual - structures ranging from dyads and groups to families and cultures. Social neuroscience is the interdisciplinary field devoted to the study of neural, hormonal, cellular, and genetic mechanisms, and to the study of the associations and influences between social and biological levels of organization. The course provides a valuable interdisciplinary framework for students in psychology, neuroscience, behavioral economics, and comparative human development. Many aspects of social cognition will be examined, including but not limited to attachment, attraction, altruism, contagion, cooperation, competition, dominance, empathy, isolation, morality, and social decision-making.

Instructor(s): J. Decety Terms Offered: Autumn
Equivalent Course(s): BIOS 24137, CHDV 22350, NSCI 21000, HLTH 22350, ECON 21830

**PSYC 22580. Child Development in the Classroom. 100 Units.**
This discussion-based, advanced seminar is designed to investigate how preschool and elementary students think, act, and learn, as well as examine developmentally appropriate practices and culturally responsive teaching in the classroom. This course emphasizes the application of theory and research from the field of psychology to the realm of teaching and learning in contemporary classrooms. Course concepts will be grounded in empirical research and activities geared towards understanding the nuances and complexities of topics such as cognitive development (memory, attention, language), early assessment systems, standardized testing, “mindset”, “grit”, exercise/nutrition, emotion regulation, and more.

Instructor(s): Kate O’Doherty Terms Offered: Autumn
Equivalent Course(s): EDSO 22580, CHDV 22580

**PSYC 23000. Cultural Psychology. 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
Prerequisite(s): Undergraduates must be in third or fourth year.

Note(s): CHDV Distribution: B, C
Equivalent Course(s): ANTH 35110, CHDV 31000, CRES 21100, ANTH 24320, EDSO 21100, GNSE 21001, CHDV 21000, GNSE 31000, PSYC 33000, PSYC 33000

PSYC 23165. Multidisciplinary Perspectives on Morality. 100 Units.
The past decade saw an explosion of empirical research in the study of morality. Among the most exciting and novel findings and theories, evolutionary biologists and comparative psychologists have shown that moral cognition has evolved to facilitate cooperation and smooth social interactions, and that certain components of morality are present in non-human animals. Developmental psychologists came up with ingenious paradigms, demonstrating that the elements that underpin morality are in place much earlier than we thought, and clearly in place before children turn two. Social neuroscientists have begun to map brain circuits implicated in moral decision-making and identify the contribution of neurotransmitters to moral sensitivity. Changes in the balance of brain chemistry, or in connectivity between regions can cause changes in moral behavior. The lesson from all this new knowledge is clear: human moral behavior cannot be separated from human biology, its development, and past evolutionary history. As our understanding of the human brain improves, society at large, and justice and the law in particular, are and will be increasingly challenged. Discoveries in neuroscience will soon impact our legal system in ways that hopefully lead to a more cost-effective, humane and flexible system than we have today. The intent of this class is to provide an overview of the current research on the morality, and examine this topic from a range of relevant interdisciplinary perspectives.

Instructor(s): J. Decety
Terms Offered: Winter
Equivalent Course(s): PSYC 33165

PSYC 23200. Introduction to Language Acquisition. 100 Units.
This course addresses the major issues involved in first-language acquisition. We deal with the child’s production and perception of speech sounds (phonology), the acquisition of the lexicon (semantics), the comprehension and production of structured word combinations (syntax), and the ability to use language to communicate (pragmatics).

Instructor(s): S. Goldin-Meadow
Terms Offered: Winter
Equivalent Course(s): LING 31600, CHDV 31600, LING 21600, EDSO 23200, CHDV 23900, PSYC 33200

PSYC 23360. 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): S. Goldin-Meadow, D. Brentari
Terms Offered: Autumn
Equivalent Course(s): PSYC 33360, CHDV 23360, LING 33360, LING 23360, CHDV 33360

PSYC 23370. Bright and Dark Sides of Empathy. 100 Units.
This course invites students to critically explore the science of empathy by examining its scope and its limits. It delves into cutting-edge research from evolutionary theory, neurobiology, developmental and social psychology, social neuroscience, clinical neuroscience, and behavioral economics to illuminate the mechanisms behind feeling for and with others. Questions explored in this course include: What are the evolutionary roots of empathy? What are the neural and neuro-endocrinological mechanisms that facilitate empathy? How does empathy develop in young children? Is empathy a limited-capacity resource? How is empathy modulated by unconscious processing and implicit attitudes (e.g., group dynamics, social status)? Is empathy necessarily a good thing for social decision-making? Why empathy can make us act unfairly? Why do some individuals (i.e., psychopaths) lack empathy and concern for the well-being of others? How does empathy improve the overall effectiveness of medical care? This course introduces undergraduate students to current research and theories of empathy. The study of empathy serves as the basis for integrating a variety of perspectives including evolutionary biology, behavioral economics, affective neuroscience, developmental psychology, social psychology, behavioral neurology and psychiatry.

Instructor(s): J. Decety
Terms Offered: Autumn
Equivalent Course(s): PSYC 23370

PSYC 23660. The Disordered Mind. 100 Units.
What are disorders of the mind? What are some of the theoretical and practical issues surrounding the identification, classification, and treatment of such disorders? What do mental disorders have to teach us about the typically-functioning mind? This seminar course will address these and other questions within biological, psychological, and sociocultural perspectives to attempt to understand the current and historical paradigms that have influenced our perception of what it means for the mind to be “disordered.” Included will be discussion of behavioral, emotional, cognitive, and developmental disorders.
Instructor(s): K. Ledoux Terms Offered: Spring

PSYC 23820. Attention and Working Memory in the Mind and Brain. 100 Units.
This course will provide a broad overview of current work in psychology and neuroscience related to attention and working memory. We will discuss evidence for sharp capacity limits in an individual’s ability to actively monitor and maintain information in an “online” mental state. Readings will be primarily based on original source articles from peer-reviewed journals, with a focus on behavioral and neural approaches for measuring and understanding these basic cognitive processes.

Instructor(s): E. Vogel Terms Offered: Winter
Prerequisite(s): PQ: NSCI 20110 (Fundamental Neuroscience) is required for Neuroscience majors only.
Equivalent Course(s): NSCI 21600

PSYC 23860. Beyond Good and Evil: The Psychology of Morality. 100 Units.
Morality is a mysterious and possibly uniquely human capacity that influences how we make decisions in a number of domains. In this course we will explore how and why human beings have the moral intuitions that they do and also where these intuitions come from—what about our moral intuitions are built in and how are these intuitions shaped by experience? To achieve these goals, we will discuss literature from developmental, social, and evolutionary psychology, as well as some literature from behavioral economics and experimental philosophy. We will briefly review the history of moral psychology, but spend the bulk of our time discussing contemporary debates and findings from research on moral psychology.

Instructor(s): A. Shaw Terms Offered: Spring

PSYC 24010. Systems Neuroscience. 100 Units.
This course covers vertebrate and invertebrate systems neuroscience with a focus on the anatomy, physiology, and development of sensory and motor control systems. The neural bases of form and motion perception, locomotion, memory, and other forms of neural plasticity are examined in detail. We also discuss clinical aspects of neurological disorders.

Instructor(s): J. MacLean Terms Offered: Spring
Prerequisite(s): NSCI 20101, NSCI 20111 or consent of instructors
Equivalent Course(s): NSCI 20130, BIOS 24130

PSYC 24133. Neuroscience of Seeing. 100 Units.
This course focuses on the neural basis of vision, in the context of the following two questions: 1. How does the brain transform visual stimuli into neuronal responses? 2. How does the brain use visual information to guide behavior? The course covers signal transformation throughout the visual pathway, from retina to thalamus to cortex, and includes biophysical, anatomical, and computational studies of the visual system, psychophysics, and quantitative models of visual processing. This course is designed as an advanced neuroscience course for undergraduate and graduate students. The students are expected to have a general background in neurophysiology and neuroanatomy.

Instructor(s): W. Wei, J. Maunsell, M. Sherman, S. Shevell Terms Offered: Autumn
Prerequisite(s): NSCI 20111 or BIOS 24110 or consent of instructor
Equivalent Course(s): NSCI 22400, CPNS 34133, BIOS 24133, NURB 34133, PSYC 34133

PSYC 24231. Methods in Computational Neuroscience. 100 Units.
Topics include (but are not limited to): relating neural data to behavior, Signal Detection theory, models of vision and artificial neural networks, Information Theory, Generalized Linear Models, dimensionality reduction, classification, and clustering.

Instructor(s): M. Kaufman Terms Offered: Winter. L
Prerequisite(s): For Neuroscience Majors: NSCI 20130, BIOS 26210 and BIOS 26211 which must be taken concurrently, or consent of instructor.
Equivalent Course(s): BIOS 24231, CPNS 34231, NSCI 23700

PSYC 24450. Foundations of Neuroscience. 100 Units.
This course is an introduction to the broad field of neuroscience. This is a lecture-based course that aims to introduce undergraduate students to concepts and principles that explain how the nervous system is built and how it functions. Examples of thematic areas covered in lectures include: (a) cellular anatomy of the nervous system, (b) development and evolution of the nervous system, (c) sensory systems, (d) motor systems, (e) cognition and behavior.

Instructor(s): D. Freedman, P. Kratsios, M. Sheffield Terms Offered: Autumn
Equivalent Course(s): NSCI 20101, BIOS 24101

PSYC 24451. Cognitive Neuroscience in Humans and Rodents. 100 Units.
This course examines how complementary research in humans and rodents informs our understanding of cognition and the brain. We will explore fundamental questions in cognition that include how we learn from reward, how we form and update mental maps, how we give rise to and process emotions, and why we sleep. You will learn the experimental methods used in each species to tackle these questions. At the end of the course you will appreciate the complementary research across species that were indispensable in advancing our understanding of how the brain gives rise to cognition.

Instructor(s): A. Bakkour, J. Yu Terms Offered: Spring
Equivalent Course(s): NSCI 21625
PSYC 25101. The Psychology of Decision Making. 100 Units.
We constantly make decisions, determine our preferences, and choose among alternatives. The importance of our decisions range from ordering a meal at a restaurant to choosing what college to attend. How do we make such decisions? What are the rules that guide us and the biases that shape our decisions? What determines our preferences? What impacts our willingness to take risks? In this course we consider how the way we go about gathering information affects our judgment, and how the way we frame problems affects our perceptions and shapes the solutions to problems. We learn what governs choice and the systematic way it deviates from normative rules. We consider how we think about the future and how we learn from the past. The course focuses on the psychology behind making decisions with implications for a wide range of areas such as public policy, law, and medicine.
Instructor(s): B. Keysar Terms Offered: Autumn
Prerequisite(s): Third and fourth-year students only. Priority will be given to third-year students.

PSYC 25120. Child Development and Public Policy. 100 Units.
The goal of this course is to introduce students to the literature on early child development and explore how an understanding of core developmental concepts can inform social policies. This goal will be addressed through an integrated, multidisciplinary approach. The course will emphasize research on the science of early child development from the prenatal period through school entry. The central debate about the role of early experience in development will provide a unifying strand for the course. Students will be introduced to research in neuroscience, psychology, economics, sociology, and public policy as it bears on questions about “what develops?”, critical periods in development, the nature vs. nurture debate, and the ways in which environmental contexts (e.g., parents, families, peers, schools, institutions, communities) affect early development and developmental trajectories. The first part of the course will introduce students to the major disciplinary streams in the developmental sciences and the enduring and new debates and perspectives within the field. The second part will examine the multiple contexts of early development to understand which aspects of young children’s environments affect their development and how those impacts arise. Throughout the course, we will explore how the principles of early childhood development can guide the design of policies and practices that enhance the healthy development of young children, particularly for those living in adverse circumstances, and thereby build a strong foundation for promoting equality of opportunity, reducing social class disparities in life outcomes, building human capital, fostering economic prosperity, and generating positive social change. In doing so, we will critically examine the evidence on whether the contexts of children’s development are amenable to public policy intervention and the costs and benefits of different policy approaches.
Instructor(s): A. Kalil Terms Offered: Spring Winter
Prerequisite(s): Attendance on the first day of class is required or registration will be dropped.
Equivalent Course(s): EDSO 25120, PPHA 31520, CHDV 25120, PBPL 25120, EDSO 35120

PSYC 25700. The Psychology of Negotiation. 100 Units.
Negotiation is ubiquitous in interpersonal interactions, from making plans for a trip with friends or family, to determining working conditions with an employer, to managing international conflicts. In this course we examine the structure of different negotiations and the psychology that governs the processes and outcomes of a negotiation. For instance, we consider the role of perceptions, expectations, intuitions, and biases. We evaluate the role of information processing, modes of communication, and power in influencing a negotiated outcome. We see how the psychology of trust, reciprocity, fairness, cooperation, and competition can affect our ability to benefit from an exchange or contribute to the escalation of conflict. To better understand the dynamics of the negotiation process, we learn both through engaging in a variety of negotiation role-plays and relating these experiences to research findings.
Instructor(s): B. Keysar Terms Offered: Winter
Prerequisite(s): Third- or fourth-year students only. Priority will be given to fourth-year students.
Note(s): It is recommended that students take PSYC 25101 The Psychology of Decision Making before this course, as it provides the conceptual foundations.

PSYC 25750. The Psychology and Neurobiology of Stress. 100 Units.
This course explores the topic of stress and its influence on behavior and neurobiology. Specifically, the course will discuss how factors such as age, gender, and social context interact to influence how we respond to stressors both physiologically and behaviorally. The course will also explore how stress influences mental and physical health.
Instructor(s): G. Norman Terms Offered: Spring
Note(s): This course does not meet the requirements for the Biological Sciences Major.
Equivalent Course(s): BIOS 29271, CHDV 25750, NSCI 22535

PSYC 25820. Psychology of Conflict: Lessons from Jerusalem. 100 Units.
Conflict is an inescapable aspect of life. Psychological theories help us to understand the origin of conflict, its escalation and resolution. In this course students will learn about the psychology of power, perspective taking and competition. We will also explore the various barriers to mutually-beneficial solutions. We will study all this in the context of Jerusalem, an ancient city that is sacred to many religions. It is a kaleidoscope of diversity, with multitudes of holy places, traditions, languages, identities and nationalities. Jerusalem will provide the prism through which to look at the intersection of linguistic and cultural landscapes, tensions between and within religions and the Israeli-Palestinian conflict. In this multi-disciplinary course, we will consider concepts from Psychology, History, Sociology, Religion and Political Science. Students will engage in role plays to simulate real-
life events, learning from direct experience as well as from discussions of research findings. We will use a variety of media including short videos, art, a virtual tour, and lectures by visiting experts.

Instructor(s): B. Keysar
Terms Offered: Winter
Prerequisite(s): The course has no pre-requisites.
Equivalent Course(s): NEHC 25820, RLST 25821

PSYC 26010. Big Data in the Psychological Sciences. 100 Units.
Innovative research in Psychology has been pushing the bounds of traditional experiments through the usage of "Big Data", where experiments are conducted at humungous scales-at the levels of thousands to millions of participants, images, or neurons. With these developments in the field, fluency in these new technologies, methods, and computational skills are becoming increasingly important. In this course, students will develop an understanding of these new directions, and will learn practical plug-and-play tools that will allow them to easily incorporate Big Data in their lives and research. We will also discuss the looming ethical issues and societal implications that come with Big Data. The class will culminate in a final project in which students will be able to collect and analyze their own Big Data.

Instructor(s): W. Bainbridge
Terms Offered: Spring
Prerequisite(s): Familiarity with basic statistics and Excel. PSYC 20100 (Statistics) and PSYC 20200 (Research Methods) recommended but not required.

PSYC 27010. Psycholinguistics. 100 Units.
This is a survey course in the psychology of language. We will focus on issues related to language comprehension, language production, and language acquisition. The course will also train students on how to read primary literature and conduct original research studies.

Instructor(s): Ming Xiang (Autumn), Chi Dat Lam (Spring)
Terms Offered: Autumn Spring
Equivalent Course(s): LING 27010

PSYC 27950. 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: Winter
Note(s): CHDV Distribution, A, 1
Equivalent Course(s): PSYC 37950, CHDV 37950, BIOS 29265, ECON 14810, CHDV 27950

PSYC 28791. Behavioral Science and Public Policy. 100 Units.
Many policies are aimed at influencing people's behavior. The most well-intentioned policies can fail, however, if they are not designed to be compatible with the way people actually think and make decisions. This course will draw from the fields of cognitive, social, and environmental psychology to (1) examine the ways in which human behavior deviates from the standard rational actor model typically assumed by economics, and (2) provide strategies for improving the design, implementation, and evaluation of public-facing policies. The basic premise of this course is that a foundational understanding of human behavior can lead not only to more effective policies, but enhanced decision-making and well-being.

Instructor(s): K. Wolske
Terms Offered: Spring
Equivalent Course(s): PSYC 28791, PSYC 37950, CHDV 37950, BIOS 29265, ECON 14810, CHDV 27950

PSYC 28850. The Biological Nature of Psychological Problems. 100 Units.
This course is based on the strong assumption that psychology is a biological science, albeit with elements of the social sciences. The course uses a combination of lectures and classroom discussion of primary and secondary source readings assigned for each class meeting. It presents a strong biological science perspective on individual differences in emotions, motivations, and cognitions that cause distress or interfere with adaptive life functioning, but does so in a non-stigmatizing manner. The course begins with a description and discussion of the nature of psychological problems. The course will survey what is known about the genetic, environmental, and epigenetic bases of such problems and the methods used to study genetic influences and gene-environment interactions. Next, students will review what is currently known about the neural and other biological mechanisms involved in maladaptive individual difference in emotion, motivation, and cognitive processes, with discussion of the methods of studying such mechanisms in humans and nonhumans. The pros and cons of the medical model of ‘mental illness’ will be discussed as the major contrast with the natural science view advocated by the instructor.

Instructor(s): B. Lahey
Terms Offered: Spring
Prerequisite(s): BIOS 10130 or BIOS 10140. NO BIOLOGICAL SCIENCES MAJORS OR NON-MAJOR PRE-MED STUDENTS, except by petition.
Equivalent Course(s): BIOS 16120

PSYC 28990. Constructing consciousness: Lessons on mind and matter from color and culture. 100 Units.
This course will use historical examinations of color perception and cognition as a model for exploring how we study the brain and mind. What is color, and why is it a useful model for these investigations? How has thinking about color and about cognition evolved over the centuries? How do we approach the "mind-body problem"
in attempts to link physical states to mental ones? How does culture relate to cognition of color, and cognition more generally? This reading- and discussion-focused course will address these questions, and help students sharpen their thinking about the links between the worlds of physics, physiology, and psychology. Due to the highly interdisciplinary nature of this course there are no prerequisites other than a strong curiosity about color, the brain, or the mind.
Instructor(s): R. Lange Terms Offered: Spring

**PSYC 29010. Contemporary Computational Approaches to the Cognitive Revolution: A Conceptual Introduction. 100 Units.**

The classical cognitive revolution in the 1950s proposed an ambitious scientific project attempting to integrate psychology and other multiple disciplines to answer some of the most significant questions about the human mind. While its influence has been wide and deep, researchers also realize flaws in the original program and question whether the original attempt of integration was too overambitious. This course first reviews the classical cognitive revolution and its two main dissatisfactions (the problems of culture and of body) and then introduces three main computational approaches in today's cognitive and related sciences (cultural evolution, connectivism, and statistical learning) that attempt to overcome the old difficulties. Students will study how the three approaches developed relatively independently from each other, and how they begin to overlap and converge in recent research. Overall, the course intends to provide a general conceptual and scientific picture with minimum technical details to undergraduates in psychology, helping students comprehend the conceptual and scientific foundations of some important and exciting contemporary developments in computational cognitive science, and identify emerging psychological, computational, or interdisciplinary research areas that interest them.
Instructor(s): Y. Ji Terms Offered: Winter

**PSYC 29200. Undergrad Rdgs: Psychology. 100 Units.**

Students are required to submit the College Reading and Research Course Form. Available for either quality grades or for P/F grading. Only one independent study course may count toward the twelve courses required of students majoring in psychology.
Terms Offered: Autumn, Spring, Winter

**PSYC 29700. Undergraduate Research in Psychology. 100 Units.**

Students are required to submit the College Reading and Research Course Form. Available for either quality grades or for P/F grading. Only one independent study course may count toward the twelve courses required of students majoring in psychology.
Terms Offered: Autumn, Spring, Winter

**PSYC 29800. Honors Seminar: Psychology. 100 Units.**

This course is a reading and discussion of general papers on writing and research, and individual students present their own projects to the group. A literature review, data from ongoing or completed empirical projects, or portions of the thesis paper itself can be presented. Students are expected to give thoughtful feedback to others on their presentations and written work.
Instructor(s): B. Prendergast Terms Offered: Winter
Note(s): Open to third- or fourth-year students who are majoring in psychology and have begun their thesis project.