

Psychological and Brain Sciences

Chair

Mark S. Blumberg

Undergraduate major: psychology (BA, BS)

Undergraduate minor: psychology

Graduate degrees: MA in psychology; PhD in psychology

Faculty: <https://psychology.uiowa.edu/people/faculty>

Website: <https://psychology.uiowa.edu>

The Department of Psychological and Brain Sciences offers an undergraduate major and minor as well as graduate degree programs. It also offers courses that undergraduate students in all majors may use to satisfy the GE CLAS Core Social Sciences requirement, a course approved for the Understanding Cultural Perspectives requirement, and a First-Year Seminar designed for entering undergraduate students.

The department also collaborates with the Department of Biology to offer an undergraduate degree in neuroscience. See the BS in neuroscience in the catalog.

Faculty

Faculty members of the Department of Psychological and Brain Sciences are nationally and internationally renowned leaders in a variety of subdisciplines. Their research is funded by numerous federal and private research grants, their findings are documented in many publications, and their research and teaching accomplishments have earned them many awards.

Programs

Undergraduate Programs of Study

Majors

- Major in Psychology (Bachelor of Arts)
- Major in Psychology (Bachelor of Science)

Minor

- Minor in Psychology

Graduate Programs of Study

- Master of Arts in Psychology
- Doctor of Philosophy in Psychology

Facilities

The department's facilities for graduate training and research are among the finest in the country. The Department of Psychological and Brain Sciences is housed in three buildings. The newly constructed Psychological and Brain Sciences Building contains modern laboratories devoted to research in cognitive science, developmental science, and cognitive neuroscience. The building also houses administrative and faculty offices, an undergraduate advising center, classrooms, breakout rooms, conference rooms, and commons spaces.

The Kenneth W. Spence Laboratories of Psychology, which connects with the Psychological and Brain Sciences Building on each floor, houses additional laboratories devoted to research in human psychology, testing facilities associated with laboratories in behavioral neuroscience, animal housing, offices, meeting rooms, a mechanical shop, and a computer support facility. The adjacent and recently renovated Stuit Hall houses laboratories for many of the clinical science faculty, as well as offices, meeting rooms, and the Seashore Psychology Clinic.

The research and teaching activities of the department benefit greatly from the facilities and staff of other university entities and local agencies, including University of Iowa Health Care, the Iowa Neuroscience Institute, the VA Iowa City Health Care, the University Counseling Service, the Center for Disabilities and Development, the Speech, Language, and Hearing Clinic, the Center for Health Policy and Research, and the School of Social Work.

Courses

The following courses are open to first-year students who have satisfactorily completed an introductory psychology course (PSY:1001 Elementary Psychology or equivalent). Other courses numbered 1000–2999 are considered lower-level undergraduate courses.

Course #	Title	Hours
PSY:2301	Introduction to Clinical Psychology	
PSY:2401	Introduction to Developmental Science	
PSY:2501	Introduction to Social Psychology	
PSY:2601	Introduction to Cognitive Psychology	
PSY:2701	Introduction to Behavioral Neuroscience	

Before enrolling in any advanced undergraduate courses, students must complete all specified lower-level prerequisites or obtain the consent of the instructor. Courses numbered 3000–4999 are considered advanced undergraduate courses. Those numbered 5000–7610 are considered graduate-level courses.

Psychological and Brain Sciences Courses

PSY:1000 First-Year Seminar **1 s.h.**

Small discussion class taught by a faculty member; topics chosen by instructor; may include outside activities (e.g., films, lectures, performances, readings, visits to research facilities, field trips). Requirements: first- or second-semester standing.

PSY:1001 Elementary Psychology **3 s.h.**
Psychology as a behavioral science. GE: Social Sciences.

PSY:1005 Orientation to the Psychology Major: Foundations for Academic and Career Success **1 s.h.**

Science as the foundation of psychology; transferable skill development from the major; degree requirements and course planning; campus and department resources; department opportunities and extra-curricular involvement; career options across diverse professions; job and graduate school application process.

PSY:1010 Your Brain Unlocked: Learning About Learning 1 s.h.

Research about the human mind and brain that students can use to foster academic success at the UI; presentation of research findings that indicate best practices for studying, learning, and succeeding at the UI (not a remedial study skills course); topics range from retrieving information stored in memory to maintaining psychological health under stress; course format consists of lecture, student response to reading assignments, and discussion; readings are primarily original documents (journal articles).

PSY:2130 Advanced Psychology for Pre-Medical Track 3 s.h.

Psychology as a behavioral science; elementary psychology in more depth, advanced topics. Prerequisites: PSY:1001. Requirements: non-psychology major.

PSY:2301 Introduction to Clinical Psychology 3 s.h.

Introduction to abnormal psychology; scientist-practitioner model, training, ethics, research methods in clinical psychology; current approaches to intellectual, personality, behavioral assessment; theories, research on treatment of psychological disorders. Prerequisites: PSY:1001. GE: Social Sciences.

PSY:2401 Introduction to Developmental Science 3 s.h.

Current research in developmental science; prenatal development, brain development, motor and physical development, perceptual development, language development, cognitive development, aspects of socio-emotional development; emphasis on modern theoretical approaches. Prerequisites: PSY:1001.

PSY:2501 Introduction to Social Psychology 3 s.h.

Research and theories on people's thoughts, feelings, and behaviors in social situations; attitudes, attributions, person perception, aggression, stereotypes and prejudice, attraction, relationships, social influence, group processes, altruism. Prerequisites: PSY:1001.

PSY:2601 Introduction to Cognitive Psychology 3 s.h.

Individual human cognition; perception, attention, memory, language, learning, problem solving, decision-making, thought considered from viewpoint of information processing. Prerequisites: PSY:1001. GE: Social Sciences.

PSY:2701 Introduction to Behavioral Neuroscience 4 s.h.

Biological mechanisms of behavior; comparative study of behavior, behavioral organization, animal intelligence, social behavior, communication; behavioral neuroscience, how brain systems control sensation, movement, homeostasis, emotion, learning.

PSY:2811 Research Methods and Data Analysis in Psychology I 3 s.h.

Foundational knowledge in psychological research methods and corresponding statistical concepts; basic concepts of statistics, statistical inference, and research design as applied in psychological research; study of descriptive statistics, measurement, survey design, correlational analyses, and regression analysis; first in a sequence of two courses. Prerequisites: PSY:1001 or PSY:2701. GE: Quantitative or Formal Reasoning.

PSY:2812 Research Methods and Data Analysis in Psychology II 3 s.h.

Foundational knowledge in psychological research methods and corresponding statistical concepts; basic concepts of statistics, statistical inference, and research design as they are applied in psychological research; study of experimental control, experimental design, and hypothesis testing; second in a sequence of two courses. Prerequisites: PSY:2811 with a minimum grade of C-.

PSY:2930 Abnormal Psychology: Health Professions 3 s.h.

Introduction to psychological disorders; description of psychopathology; general issues in etiology and treatment; for non-psychology students in allied health professions. Prerequisites: PSY:1001. Requirements: non-psychology major.

PSY:2975 Introduction to Cognitive Neuroscience 3 s.h.

Analysis of brain systems and neuroanatomy that underlie cognitive tasks such as vision, hearing, emotion, attention, language, decision-making, learning, and memory. Prerequisites: PSY:2701.

PSY:3020 Mind and Behavior 3 s.h.

Theories of what it is to act and know, of what intelligence might be in animals, humans, machines; perspectives from philosophy, psychology. Prerequisites: PSY:2811 with a minimum grade of C- and (PSY:2701 with a minimum grade of C- or PSY:2601 with a minimum grade of C-). Requirements: junior or senior standing.

PSY:3025 Science of Addiction 3 s.h.

Biological, psychological, social, cognitive, and cultural bases of addiction; models for defining addiction; evidence-based prevention and treatment interventions; historical perspectives on substance use and misuse. Prerequisites: PSY:2811 with a minimum grade of C-.

PSY:3030 Social and Personality Development 3 s.h.

Emotional, social, and personality development from infancy to adolescence; major theories and empirical research; child temperament, parent-child relationship, and social context as contributors to individual differences. Prerequisites: PSY:2811 with a minimum grade of C- and (PSY:2501 with a minimum grade of C- or PSY:2401 with a minimum grade of C-).

PSY:3035 Science of Emotion 3 s.h.

Scientific study of emotion from psychological and neuroscientific perspectives; theories, measurements, and mechanisms (e.g., physiological, psychological, neural); perception, expression, and function of emotion. Prerequisites: PSY:2811 with a minimum grade of C- and (PSY:2501 with a minimum grade of C- or PSY:2601 with a minimum grade of C- or PSY:2701 with a minimum grade of C-).

PSY:3040 Psychology of Learning 3 s.h.

Psychological science of acquired behavior; interests in experimental study of Pavlovian conditioning, operant conditioning, cognition in humans and nonhuman animals, relevance to behavioral adaptation. Prerequisites: PSY:2811 with a minimum grade of C- and (PSY:2701 with a minimum grade of C- or PSY:2601 with a minimum grade of C-).

- PSY:3050 Applied Psychology: Addressing Real-World Problems** 3 s.h.
Bridging the basic applied research divide in psychology; contributions of cognitive, clinical, social, and developmental psychology to understand real-world problems (e.g., traffic safety, screen time). Prerequisites: PSY:2301 with a minimum grade of C- or PSY:2401 with a minimum grade of C- or PSY:2501 with a minimum grade of C- or PSY:2601 with a minimum grade of C-.
- PSY:3055 Interdisciplinary Science of Sound and Hearing** 3 s.h.
Introduction to physics of sound, biology/psychology of hearing, and audio technology; theories and experimental methods; music, speech, and environmental sounds. Same as CSD:3119, MUS:3055.
- PSY:3060 Sensation and Perception** 3 s.h.
Principles of sensory processes in vision, audition, and other modalities; perception of objects and events.
- PSY:3066 Aging Mind and Brain** 3 s.h.
Current theories and research on cognitive, affective, socioemotional, and decision-making changes that occur during aging; behavioral, cognitive, and cognitive neuroscience methodologies applied to study of aging in these domains; lifespan perspective with emphasis on decline and adaptation. Prerequisites: PSY:2811 with a minimum grade of C- and (PSY:2701 with a minimum grade of C- or PSY:2601 with a minimum grade of C-).
- PSY:3075 The Damaged Brain** 3 s.h.
Understanding relationships between brain structure and function with emphasis on how brain trauma and illnesses affect cognition and behavior; foundations of neuropsychology, structure of nervous system, functional specialization of brain, cognitive functions, and assessments of brain disorders. Prerequisites: PSY:2811 with a minimum grade of C-.
- PSY:3110 Animal Cognition** 3 s.h.
Cognition in nonhuman animals, comparison to humans; intelligence, learning, memory, reasoning, communication, consciousness, evolution, development. Prerequisites: PSY:2811 with a minimum grade of C- and (PSY:2601 with a minimum grade of C- or PSY:2701 with a minimum grade of C-).
- PSY:3120 What Animals Can Teach Us About Being Human** 3 s.h.
Comparative psychology; assess human-animal similarities and differences through lab and field studies; human-animal interactions; outreach and service learning with local non-profit organizations. Prerequisites: PSY:2811 with a minimum grade of C-.
- PSY:3150 Cinema and the Brain** 3 s.h.
Exploration of psychological and neuroscientific topics of memory, emotion, perception, and neurodegenerative disease; film as the primary medium; examination of how cinematic narratives reflect, distort, or illuminate real mechanisms of cognition and behavior. Prerequisites: PSY:2811 with a minimum grade of C-.
- PSY:3160 Psychological Science of Creativity** 3 s.h.
Psychological science of creativity; its definition, measurement, development, evolution, neurobiology, and adaptive significance in individual behavior and cultural practices. Prerequisites: PSY:2811 with a minimum grade of C- and (PSY:2601 with a minimum grade of C- or PSY:2701 with a minimum grade of C-).
- PSY:3165 Music Perception and Cognition** 3 s.h.
Introduction to psychology of music; basics of music perception and cognition, musical emotions and preferences, and transfer benefits of musical training. Prerequisites: PSY:2811 with a minimum grade of C-.
- PSY:3170 Fantasy Football: Predictive Analytics and Empiricism** 3 s.h.
Empiricism; statistics; judgment, prediction, and decision making in the context of uncertainty; introductory overview of data analysis techniques, with applications using Fantasy Football; modern analytical techniques used to make informed predictions, test theories, and draw conclusions from data; how to evaluate and improve the accuracy of various prediction models; causal inference; heuristics and cognitive biases; judgment vs. actuarial prediction; base rates; Bayes' theorem; overconfidence; delay discounting; expertise and automaticity; wisdom of the crowd; risk aversion; reinforcement schedules; correlation; multiple regression; machine learning; R software. Prerequisites: PSY:2811 with a minimum grade of C- or PSQF:1020 with a minimum grade of C- or STAT:1020 with a minimum grade of C- or PSQF:4143 with a minimum grade of C- or STAT:4143 with a minimum grade of C- or STAT:1010 with a minimum grade of C- or STAT:1015 with a minimum grade of C- or STAT:1030 with a minimum grade of C- or STAT:3510 with a minimum grade of C-.
- PSY:3180 Minds Unboxed: The Psychology of Social Labels** 3 s.h.
Socially-guided perception and cognition; contemporary topics in socio-cognitive processes. Prerequisites: PSY:2811 with a minimum grade of C- and (PSY:2501 with a minimum grade of C- or PSY:2601 with a minimum grade of C-).
- PSY:3190 Psycholinguistic Aspects of Bilingualism** 3-4 s.h.
Interaction of two languages in a bilingual in terms of sound system, words, and grammar; different meanings of bilingualism, how bilingualism and multilingualism can change across lifespan. Taught in English. Requirements: linguistics or language acquisition course. Same as LING:3190.
- PSY:3230 Psychopharmacology** 3 s.h.
How drugs act to influence behavior; general principles of drug action on the nervous system; licit and illicit drugs, use/abuse, historical perspective on drug use. Prerequisites: PSY:2811 with a minimum grade of C-.
- PSY:3250 Neuroscience of Learning and Memory** 3 s.h.
Major topics in the neuroscience of learning and memory; focus on anatomical, cellular, molecular bases of various learning and memory processes. Prerequisites: (PSY:2701 with a minimum grade of C- or BIOL:2753 with a minimum grade of C-) and PSY:2811 with a minimum grade of C-.
- PSY:3265 Cognitive and Clinical Neuroscience of Executive Functions** 3 s.h.
Major topics in cognitive and clinical neuroscience of executive functions; focus on attention, working memory, cognitive control, and executive dysfunction in psychiatric and neurological disorders. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2701 with a minimum grade of C-.

- PSY:3275 The Science of Sleep** **3 s.h.**
 What is the brain doing during sleep? Why do we and other animals exhibit an altered state of consciousness that renders us unresponsive to the outside world? These questions and many others are subjects of the rapidly growing field of sleep research, including neurobiological basis of sleep drive and biological clock, cognitive and emotional functions of sleep, significance of dreams, relationship between sleep and psychopathology, and impact of sleep on society (i.e., serendipitous discoveries and major disasters attributable to sleep). Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2701 with a minimum grade of C-.
- PSY:3320 Psychopathology** **3 s.h.**
 Etiology, phenomenology, and treatment of adult DSM-5-TR psychological disorders (e.g., depressive disorders, psychotic disorders, anxiety disorders, personality disorders). Formerly titled Abnormal Psychology. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2301 with a minimum grade of C-.
- PSY:3330 Childhood Psychopathology** **3 s.h.**
 Major forms of childhood psychopathology; current theoretical approaches and methodological issues in diagnosis, conceptualization, treatment of developmental psychopathology. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2301 with a minimum grade of C-.
- PSY:3340 Behavior Modification** **3 s.h.**
 Basic approaches to modification of clinically distressing behavior; learning theory principles underlying techniques, translation into procedures, experimental evaluation of effectiveness. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2301 with a minimum grade of C-.
- PSY:3350 Psychotherapies** **3 s.h.**
 Current theories and research on frequently used psychotherapeutic approaches; focus on methodology in psychotherapy research, specific types of therapy, and empirically supported therapies. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2301 with a minimum grade of C-.
- PSY:3360 The Psychosis Spectrum** **3 s.h.**
 Severe mental illnesses including schizophrenia, bipolar disorder, and depression with psychotic features; neurobiological basis for hallucinations, delusions, and impaired cognition; current genetic, neuroscience, clinical, cultural, and evolutionary perspectives on causes, course, and treatment of severe mental illness. Prerequisites: PSY:2301 with a minimum grade of C- or PSY:2701 with a minimum grade of C-.
- PSY:3380 Personality Pathology** **3 s.h.**
 Scientific evaluation of theories of personality pathology. Examination of models used to diagnose personality disorder and review of personality pathology beyond the DSM-5-TR (e.g., profiles such as psychopathy, sociopathy). Theories, measurements, and treatments for personality pathology. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2301 with a minimum grade of C-.
- PSY:3390 Severe Mental Illness: Brain Mechanisms** **3 s.h.**
 Severe mental illnesses including schizophrenia, bipolar disorder, and treatment-resistant depression; brain maturation; genetic risk factors; neuroimaging; sleep disturbances; novel treatments such as neuromodulation; aging and dementia in severe mental illness. Prerequisites: PSY:2811 with a minimum grade of C- and (PSY:2301 with a minimum grade of C- or PSY:2701 with a minimum grade of C-).
- PSY:3395 Cognitive and Psychosocial Mechanisms of Severe Mental Illness** **3 s.h.**
 Severe mental illnesses including schizophrenia, bipolar disorder, and borderline personality disorder; cognitive and psychosocial mechanisms; psychological, social, and environmental risk and protective factors; social and non-social information processing; evidence-based psychosocial interventions for severe mental illnesses. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2301 with a minimum grade of C-.
- PSY:3420 Cognitive Development of Children** **3 s.h.**
 Developmental research, theory concerning children's concepts, thinking, problem solving, memory, communication. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2401 with a minimum grade of C-.
- PSY:3530 Personality** **3 s.h.**
 Classic theoretical models and contemporary empirical research in personality, including influence of heredity and environment, consistency and stability of behavior. Prerequisites: PSY:2811 with a minimum grade of C- and (PSY:2301 with a minimum grade of C- or PSY:2501 with a minimum grade of C-).
- PSY:3560 Psychology of Gender** **3 s.h.**
 Origins of gender roles, gender socialization in childhood, gender differences across lifespan; research on gender differences in cognition, emotions, behavior, physical and mental disorders, communication. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2501 with a minimum grade of C-.
- PSY:3570 Social Cognition** **3 s.h.**
 Research and theory on cognitive structures and processes that underlie judgment, decision, belief, and behavior in social situations; attribution, heuristics, schemas, person perception, stereotypes, attitudes. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2501 with a minimum grade of C-.
- PSY:3575 Social Cognition in Autism** **3 s.h.**
 Introduction to social, cognitive, and neural mechanisms in autism spectrum disorder (ASD); topics include emotion processing, theory of mind, social attention, main theories of autism, and relevant research techniques (e.g., eye tracking); discussion of insights from neuroscience, as well as approaches to train/improve social cognition in ASD. Prerequisites: PSY:2811 with a minimum grade of C- and (PSY:2601 with a minimum grade of C- or PSY:2501 with a minimum grade of C- or PSY:2701 with a minimum grade of C-).
- PSY:3580 Judgment and Decision Making** **3 s.h.**
 Processes and biases that shape judgments and decisions of various types (e.g., about other people, the future, competitions, products, medical treatments, health risks, crime suspects). Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2501 with a minimum grade of C-.
- PSY:3590 Stereotyping and Prejudice** **3 s.h.**
 Research and theory on prejudice, stereotyping, discrimination, and stigmatization; focus on nature, origins, and impact of prejudice and stereotypes. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2501 with a minimum grade of C-.
- PSY:3620 Human Memory** **3 s.h.**
 Contemporary psychological theory and research on short-term and long-term memory, acquisition processes, related topics in cognition. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2601 with a minimum grade of C-.

- PSY:3650 How the Brain Creates the Mind** 3 s.h.
How the brain sees the world, makes decisions, controls actions, and experiences emotions; the nature of free will, justice, and consciousness; examination of how these questions are informed by insights from modern neuroscience. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2601 with a minimum grade of C-.
- PSY:3670 Language Processes** 3 s.h.
Psychological processes involved in using languages, including speech perception and production, the meaning of words, understanding and producing sentences, and basics of discourse and pragmatics; developmental and neural bases of language processes. Prerequisites: (PSY:2811 with a minimum grade of C- and PSY:2601 with a minimum grade of C-) or CSD:1015 or LING:3001. Same as LING:3670.
- PSY:3690 Understanding Cognitive Processes Using Artificial Neural Networks** 3 s.h.
Basic approaches to how artificial neural networks can be used to help understand mechanisms of human cognitive processing. Prerequisites: PSY:2811 with a minimum grade of C- and PSY:2601 with a minimum grade of C-.
- PSY:3994 Research Practicum in Psychology** arr.
Small-group participation in faculty research projects; literature review, study planning, data collection, analysis, interpretation, write-up.
- PSY:3995 Advanced Research Practicum** 1-3 s.h.
Individual participation in faculty research projects; significant reading and writing. Requirements: two semesters of PSY:3994 or HONR:3994.
- PSY:3996 External Practicum in Psychology** 1-3 s.h.
Student participation in career-related professional activities in community and University of Iowa agencies.
- PSY:3997 Teaching/Advising Practicum in Psychology** 1-3 s.h.
Participation in faculty teaching as undergraduate teaching assistant or the Psychology Peer Advisor Program.
- PSY:3998 Individual Readings and Projects** 1-3 s.h.
Requirements: psychology major and undergraduate standing.
- PSY:3999 Independent Research in Neuroscience** 2-3 s.h.
Independent scientific research related to the field of neuroscience. Same as BIOL:3999.
- PSY:4020 Laboratory in Psychology** 4 s.h.
Laboratory study of an aspect of behavior; topics in a particular area (e.g., learning and memory, perception, social behavior, operant behavior, physiological processes). Prerequisites: PSY:2701 and PSY:2812 with a minimum grade of C-.
- PSY:4025 Laboratory in Cognitive Neuroscience** 4 s.h.
Practical, hands-on experience analyzing data from three of the most common methods of cognitive neuroscience—scalp electroencephalography (brain waves), functional magnetic resonance imaging (brain imaging), and transcranial magnetic stimulation (brain stimulation). Prerequisites: PSY:2975 and PSY:2812. Requirements: neuroscience major.
- PSY:4035 Laboratory in Computational Neuroscience** 4 s.h.
How neuroscience and computer science benefit each other; classic findings in computational neuroscience; basics of neural networks and machine learning techniques; modification of computer programs of neural networks to model cognitive processes; application of machine learning algorithms to analysis of neural data; interpretation of findings in computational neuroscience. Prerequisites: PSY:2812. Requirements: linear algebra course. Recommendations: programming skills.
- PSY:4090 Psychology Seminar** 3 s.h.
Readings from original sources, presentations, papers, student participation. Prerequisites: PSY:2812 with a minimum grade of C-. Requirements: junior or senior standing.
- PSY:4990 Honors Thesis Research** 1-3 s.h.
Supervised original project; leads to written thesis, oral defense. Requirements: honors standing.
- PSY:4995 Honors Research in Neuroscience** arr.
Independent scientific research related to the field of neuroscience. Requirements: honors standing in neuroscience, UI GPA of at least 3.33, and neuroscience GPA of at least 3.33. Same as BIOL:4995.
- PSY:5050 Quantitative Methods in Psychology** 4 s.h.
Overview of statistical methods based on the general linear model, including ANOVA, ANCOVA, and multiple regression; how to conduct these analyses using SPSS. Requirements: first-year graduate standing in psychology.
- PSY:5055 Mixed-Effects Modeling in Psychology** 4 s.h.
Introduction to mixed-effects analysis of hierarchically structured and cross-classified psychological data using R. Prerequisites: PSY:5050.
- PSY:5060 Doing Bayesian Analysis** 3 s.h.
Introduction to Bayesian data analysis, emphasizing both conceptual foundations and practical applications; students will learn to build, estimate, and interpret Bayesian models using real data and modern computational tools.
- PSY:5070 Programming for Psychologists** 3 s.h.
Basics of programming; experiment design, stimulus delivery and response recording using Python; implementation of online testing using JavaScript; data analysis of behavioral data using Python; basic machine learning techniques and their applications to data analysis implemented using Python. Requirements: PSY:2812 or graduate standing.
- PSY:5080 Foundations in Cognitive Neuroscience** 4 s.h.
Key concepts and findings in human cognitive neurosciences.
- PSY:5090 From Design to Discovery: Computational Tools for Cognitive Neuroscience** 3 s.h.
Introduction to computational modeling as tool for linking brain and behavior; design and analysis of experiments with model-based approaches, computationally connect latent cognitive variables to neural signals, and critically evaluate modeling results in cognitive neuroscience.
- PSY:5203 Fundamental Neurobiology I** 3 s.h.
Neurobiology from molecular/cellular to systems levels, including cell biology of the neuron; membrane electrophysiology; synaptic transmission and plasticity, functional neuroanatomy, sensory, motor and autonomic systems; emotion, memory, sleep, language, attention and cognition, neuronal development; focus on systems and developmental neurobiology; first in a two-semester sequence. Same as BIOL:5653, NSCI:5653.

PSY:5204 Fundamental Neurobiology I Discussion 2 s.h.

Discussion of selected papers, including classics from neurobiology literature; coordinated with BIOL:5653 lecture material. Same as BIOL:5658, NSCI:5658.

PSY:5205 Fundamental Neurobiology II 3 s.h.

Neurobiology from molecular/cellular to systems levels, including cell biology of the neuron; membrane electrophysiology; synaptic transmission and plasticity; functional neuroanatomy, sensory, motor and autonomic systems; emotion, memory, sleep, language, attention and cognition, neuronal development; focus on molecular/cellular neurobiology and neurophysiology; second in a two-semester sequence. Prerequisites: BIOL:5653 or NSCI:5653 or PSY:5203. Same as BIOL:5654, NSCI:5654.

PSY:5206 Fundamental Neurobiology II Discussion 2 s.h.

Discussion of selected papers, including classics from neurobiology literature; coordinated with BIOL:5654 lecture material. Same as BIOL:5659, NSCI:5659.

PSY:5212 Foundations in Behavioral and Cognitive Neuroscience 4 s.h.

Concepts, methods, and findings in behavioral and cognitive neurosciences. Prerequisites: BIOL:3253. Same as NSCI:5212.

PSY:5320 Descriptive Psychopathology 3 s.h.

Psychiatric syndromes, including description, etiology, experimental and clinical research; development, function of classification systems.

PSY:5330 Principles of Psychological Assessment 3 s.h.

Assessment theory and basic psychometric principles in test construction, evaluation, application; ethical, social, psychological, and psychometric issues and controversies in assessment.

PSY:5365 Seminar: Neuropsychology and Neuroscience arr.

Clinical neuropsychology and cognitive neuroscience: cutting-edge research from scientific journals, case presentations in clinical neuropsychology, and current research. Same as NEUR:5365, NSCI:5365.

PSY:5410 Proseminar in Developmental Science 3 s.h.

Introduction to developmental process and developmental science; topics organized around mechanisms of development, with cross-disciplinary focus.

PSY:5610 Proseminar in Cognition and Perception 3 s.h.

Broad overview of study of cognition, including cognitive psychology, computer science and artificial intelligence, linguistics, neuroscience, philosophy of mind.

PSY:5710 Introduction to Health and Behavioral Science 3 s.h.

Evolution of health psychology; survey of major physiological systems in which pathology is affected by behavioral processes; review of theoretical approaches, experimental paradigms from behavioral science as they may apply to assessment of health problems; prevention, intervention, psychological adaptation to physical disease.

PSY:6070 Practical Introduction to Theoretical Methods for Brain Sciences 3 s.h.

Introductory overview of how mathematical and computational models are used to model and explain the mind and brain; encoding/decoding, learning and optimization, differential equations (e.g., Hodgkin-Huxley model of spiking neurons), dynamical systems, probability and statistics, information theory and inference, efficient coding.

PSY:6101 Cognitive Science of Language Proseminar I 3 s.h.

Survey of five major disciplines within language sciences: formal linguistic, communication disorders, psychological, neuroscience, and computational approaches. Requirements: graduate standing in communication sciences and disorders, linguistics, psychology, or neuroscience. Same as CSD:6101, LING:6101.

PSY:6102 Cognitive Science of Language Proseminar II 3 s.h.

Survey of five major disciplines within language sciences: formal linguistic, communication disorders, psychological, neuroscience, and computational approaches. Requirements: graduate standing in communication sciences and disorders, linguistics, psychology, or neuroscience. Same as CSD:6102, LING:6102.

PSY:6230 Foundations of Learning, Memory, and Cognition 3 s.h.

Determinants of adaptive behavior in humans and animals; emphasis on behavioral analysis of learning, memory, and cognition; relevance of laboratory research to real life activities.

PSY:6240 Neurobiology of Learning and Memory 3 s.h.

Memory systems, techniques to study learning and memory, invertebrate and mammalian learning, synaptic and systems consolidation, molecular mechanisms underlying learning and memory, neuroanatomy of mammalian episodic memory, human studies, theories of consolidation, memory liability, sleep and memory, engram representations, future directions.

PSY:6265 Neuroscience Seminar 0-1 s.h.

Research presentations. Same as ACB:6265, BIOL:6265, MPB:6265, NSCI:6265.

PSY:6280 Structural and Functional MRI Methods and Application 3 s.h.

Introduction to basic principles of magnetic resonance imaging and its application to psychology; imaging of brain structure; focus on functional MRI. Requirements: graduate-level introductory statistics.

PSY:6340 Psychological Therapies 3 s.h.

Historical development and current status of empirically based therapies for psychological disorders, including anxiety, depression, schizophrenia, childhood disorders; emphasis on critical evaluation of therapy techniques.

PSY:6360 Psychosis: Neurobiological, Cultural, and Evolutionary Perspectives 4 s.h.

Severe mental illnesses including schizophrenia, bipolar disorder, and depression with psychotic features; neurobiological basis for hallucinations, delusions, and impaired cognition; current genetic, neuroscience, clinical, cultural, and evolutionary perspectives on causes, course, and treatment of severe mental illness.

PSY:6370 Principles of Neuropsychology 3 s.h.

Principles of human neuropsychology, including foundations (history, methods, approaches), major functional systems (vision, memory, language, spatial processing), executive functions (emotional processing and personality), and applications (experimental, clinical). Recommendations: prior coursework in psychological assessment, psychopathology, and neuroanatomy.

- PSY:6390 History and Systems of Psychology** 3 s.h.
Pre-scientific psychology; influence of physiology, psychophysics, and early scientific conceptualization of the mind on modern psychology; development of the scientific discipline of psychology in Germany; initial development and early schools of psychology in the United States; development of applied and professional psychology in the United States; major systems of psychology, including psychoanalysis, behaviorism, and cognitive psychology; development of social action and social change in psychology; integrating historical sources and major systems ideas with personal areas of research or clinical interests.
- PSY:6440 Developmental Cognitive Neuroscience** 3 s.h.
Overview of current developmental cognitive neuroscience theory, research, and methods (PET, fMRI, optical imaging, EEG, ERPs); neural development, computational neuroscience, and methods.
- PSY:6590 Judgment and Decision Making** 3 s.h.
Theory and research on how people gather, perceive, and use information when making judgments and decisions; includes risky and uncertain contexts; social and nonsocial contexts.
- PSY:7010 Professional Writing in Psychological and Brain Sciences** 2 s.h.
Development of writing skills for research papers, fellowship applications, and grant proposals; workshop.
- PSY:7050 Special Topics in Psychology: Social Bases of Behavior** 2 s.h.
Directed readings on social bases of behavior. Requirements: graduate standing in psychology.
- PSY:7070 Seminar: Behavioral Biomedical Interface** 1 s.h.
Ongoing seminar; discussion of research at behavioral-biomedical interface. Requirements: acceptance to Behavioral Biomedical Interface Training Program.
- PSY:7110 Research Projects** arr.
- PSY:7130 PhD Dissertation Research** arr.
- PSY:7150 Current Topics in Psychology** 3 s.h.
- PSY:7160 Problems in Psychology** arr.
Individual study.
- PSY:7170 Teaching Practicum** arr.
Supervised practice in teaching.
- PSY:7210 Seminar: Advanced Topics in Behavioral and Cognitive Neuroscience** 3 s.h.
- PSY:7270 Principles of Scholarly Integrity** 1 s.h.
Training in responsible conduct of research; student/mentor responsibilities; authorship and reviewing; plagiarism/falsification/fabrication of data; intellectual property; conflict of interest; fiscal, institutional, societal; treatment of human and animal subjects; data handling. Requirements: enrollment in graduate psychology or biology program. Same as BIOL:7270.
- PSY:7310 Seminar: Orientation to Clinical Research** 0-1 s.h.
Issues in clinical research, including use of databases, advisor/advisee relationships, preparation of IRB proposals, paper presentation and publication, common early career problems, funding resources.
- PSY:7330 Seminar: Acceptance and Commitment Therapy** 1 s.h.
Core processes of acceptance and commitment therapy (ACT); case conceptualization and targeted intervention across a range of psychiatric and physical diagnoses; emphasis on therapeutic stance and theoretical underpinnings of ACT; readings, discussion, video review, therapist-patient role play, and discussion of ongoing cases.
- PSY:7331 Seminar: Advanced Acceptance and Commitment Therapy** 1 s.h.
Core processes of acceptance and commitment therapy (ACT) and implementation in clinical practice; theoretical underpinnings of ACT theory; ACT research; case conceptualization and targeted intervention across a range of psychiatric and physical diagnoses; reading, discussion, video review, therapist-patient role play, and discussion of ongoing cases. Prerequisites: PSY:7330.
- PSY:7350 Introductory Practicum** arr.
Orientation to Department of Psychology clinic, including instruction in interviewing, observation of clinic procedures, attendance at clinic rounds under supervision of clinical psychology faculty members.
- PSY:7355 Assessment Practicum** arr.
Supervised practice in psychological assessment techniques.
- PSY:7360 Therapy Practicum** arr.
Supervised practice and clinical experience in application and evaluation of psychological therapies.
- PSY:7365 External Practicum** arr.
Supervised practice and clinical experience in field setting; psychological assessment techniques and/or application, evaluation of psychological therapies.
- PSY:7370 Supervision and Consultation Practicum** arr.
Supervision and training of less advanced students; consultation to other programs and agencies.
- PSY:7604 Principles of Scholarly Integrity** 0 s.h.
Training in responsible conduct of research and scholarly activities; student/mentor responsibilities; authorship; plagiarism/falsification/fabrication of data; intellectual property; conflict of interest; fiscal, institutional, societal; treatment of human and animal subjects; data handling. Requirements: postdoctoral standing in psychology or biology. Same as BIOL:7604.
- PSY:7610 Seminar: Cognitive Psychology** 2-3 s.h.
- PSY:7620 Seminar: Human Perception and Performance** 1 s.h.
Professional issues and current topics relevant to psychologists studying human perception and performance.