Psychological & Brain Sciences

Psychological & Brain Sciences allows students to examine in depth the study of behavior in the areas of:

- Aging and development
- Biological bases of behavior
- Clinical and abnormal psychology
- Cognition
- Cognitive neuroscience
- Learning and memory
- Personality
- Sensation and perception
- Social interactions

The Department of Psychological & Brain Sciences at Washington University has particular strengths in the areas of:

- Aging
- Behavioral economics
- Human development
- Cognitive neuroscience
- Judgment and decision making
- Learning and operant conditioning
- Neuropsychology
- Personality and individual differences
- Adult psychopathology
- Sensory processes in vision and audition
- Social theories of self and social processes
- Human emotion

Opportunities for undergraduates include:

- Research involvement with faculty members
- Supervised internships with community service agencies
- Practicum in Applied Behavior Analysis
- Study abroad
- Concentrations within the major
- Senior Honors
- Membership in Psi Chi, the national honor society in psychology

Contact: Shelley Kohlman
Phone: 314-935-5169
Email: skohlman@wustl.edu
Website: https://psychweb.wustl.edu

Faculty

Chair
Deanna M. Barch (http://psychweb.wustl.edu/people/deanna-barch)
Gregory B. Couch Professor of Psychiatry
PhD, University of Illinois at Urbana-Champaign

Associate Chair
Jeffrey M. Zacks (http://dcl.wustl.edu/~ezacks)
Professor
PhD, Stanford University

Endowed Professors
John Baugh (http://psychweb.wustl.edu/people/john-baugh)
Margaret Bush Wilson Professor in Arts & Sciences
PhD, University of Pennsylvania
(African and African-American Studies; Anthropology; Education; English)

Randy J. Larsen (http://psychweb.wustl.edu/larsen)
William R. Stuckenberg Professor of Human Values and Moral Development
PhD, University of Illinois at Urbana-Champaign

Thomas F. Oltmanns (http://psychweb.wustl.edu/oltmanns)
Edgar James Swift Professor of Arts & Sciences
PhD, State University of New York–Stony Brook

Steven E. Petersen (https://neuro.wustl.edu/biographies/steven-petersen-phd)
James S. McDonnell Professor of Cognitive Neuroscience
PhD, California Institute of Technology
(Neurology and Neurological Surgery)

Henry L. Roediger III (http://psychweb.wustl.edu/roediger)
James S. McDonnell Distinguished University Professor
PhD, Yale University

Rebecca A. Treiman (https://psychweb.wustl.edu/treiman)
Burke and Elizabeth High Baker Professor of Child Developmental Psychology
PhD, University of Pennsylvania

Denise E. Wilfley (https://psychweb.wustl.edu/wilfley)
Scott Rudolph University Professor of Psychiatry
PhD, University of Missouri

Professors

Richard A. Abrams (http://psychweb.wustl.edu/people/richard-abrams)
PhD, University of Michigan

David A. Balota (http://psychweb.wustl.edu/people/david-balota)
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Pascal Boyer (http://psychweb.wustl.edu/people/pascal-boyer)  
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(Anthropology)

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Mark A. McDaniel (http://psychweb.wustl.edu/mcdaniel)  
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**Associate Professors**

Janet M. Duchek (https://psychweb.wustl.edu/people/janet-duchek)  
PhD, University of South Carolina

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Lori Markson (http://psychweb.wustl.edu/markson)  
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PhD, Harvard University

Julie M. Bugg (http://psychweb.wustl.edu/people/julie-bugg)  
PhD, Colorado State University

Tammy English (http://psychweb.wustl.edu/english)  
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Patrick Hill (https://psychweb.wustl.edu/hill-0)  
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Renee J. Thompson (http://psychweb.wustl.edu/thompson)  
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Kristin Van Engen (https://psychweb.wustl.edu/van-engen)  
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Heike Winterheld (https://psychweb.wustl.edu/winterheld)  
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**Affiliated Faculty**

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PhD, Virginia Commonwealth University  
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Joe Barcroft (http://pages.wustl.edu/barcroft)  
PhD, University of Illinois at Urbana-Champaign  
(Romance Languages and Literatures)

Cindy Brantmeier (http://education.wustl.edu/people/cindy-brantmeier)  
PhD, Indiana University  
(Education & Applied Linguistics)

Robert Carney (http://www.psychiatry.wustl.edu/c/Faculty/FacultyDetails.aspx?ID=508)  
PhD, Washington University  
(Psychiatry)

Robert Cloninger  
PhD, University of Gothenburg  
MD, University of Umea  
(Psychiatry)

Maurizio Corbetta (http://www.nil.wustl.edu/labs/corbetta/about.html)  
MD, University of Pavia  
(Neurology)

PhD, International Academy of Philosophy, Liechtenstein  
(Medicine)

Hillary Eifenbein (http://www.olin.wustl.edu/EN-US/Faculty-Research/Faculty/Pages/FacultyDetail.aspx?username=helfenbein)  
PhD, Harvard University  
(Business)

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PhD, University of Hawaii  
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(Occupational Therapy)

PhD, Washington University
(Neurology)

Jason Hassenstab (https://neuro.wustl.edu/biographies/jason-hassenstab-phd)
PhD, Fordham University
(Neurology)

Andrew Heath (http://www.psychiatry.wustl.edu/Faculty/FacultyDetails?ID=56)
DPhil, Oxford University
(Psychiatry)

Tamara Hershey (http://www.psychiatry.wustl.edu/Faculty/FacultyDetails?ID=568)
PhD, Washington University
(Psychiatry)

Barry Hong (http://psychiatry.wustl.edu/c/faculty/FacultyDetails.aspx?ID=81)
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MD, PhD, Washington University School of Medicine
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PhD, Harvard University
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Marshall S. Snow Professor in Arts & Sciences
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Heather Rice (http://psychweb.wustl.edu/rice)
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Martha Storandt (http://psychweb.wustl.edu/storandt)
PhD, Washington University
Majors
The Department of Psychological & Brain Sciences (P&BS) offers the following majors:

- Psychological & Brain Sciences (p. 4)
- Concentrations in Psychological & Brain Sciences (p. 5)
- Cognitive Neuroscience (p. 6)

The Major in Psychological & Brain Sciences

The field of psychology encompasses a large and diverse area of study that is empirical, theoretical and practical. As the science concerned with the study of behavior, psychology includes such areas as biological bases of behavior; brain-behavior interactions; learning; memory; cognition; motivation; sensation and perception; the study of social interactions, persuasion and attitudes; aging and development; personality; clinical, abnormal and health psychology; and leisure and work experiences. Psychology is a multipurpose, valuable discipline in which to major. It has relevance for those considering careers in law, medicine, the health professions, education and business. In addition, it provides important skills and knowledge for those who may not be planning additional schooling.

Total units required: 34 units, of which at least 25 must be at the 300 level or above.

Required courses:

- Psych 100B Introduction to Psychology is a prerequisite for all upper-level courses (numbered 300 and above). Exemption from Psych 100B is possible in the following circumstances:
  - Completion of an equivalent course transferred from another institution, if approved by the Director of Undergraduate Studies.
  - An AP Psychology test score of 5 or IB score of 6 or 7. (N.B. AP or IB earns exemption from Psych 100B but no credit.)
- Psych 300 Introduction to Psychological Statistics
  - Math 2200, or Math 3200, or both Marketing Statistics QBA 120 & QBA 121 may substitute for Psych 300, although no units of major credit will be awarded.
- Psych 301 Experimental Psychology or Psych 3011 Experimental Psychology

Core requirements: At least one course from each of the following five categories:

Social/Personality:

Psych 315 Introduction to Social Psychology 3

Abnormal/Affective Psychology:

Psych 3501 Psychotherapy: Introduction to Practice and Research 3
Psych 354 Abnormal Psychology 3
Psych 3645 Understanding Emotions 3

Biological/Neurological Bases of Behavior:

Psych 330 Sensation and Perception 3
Psych 3401 Biological Psychology 3
Psych 345 Genes, Environment and Human Behavior 3
Psych 3604 Cognitive Neuroscience 3
Psych 374 Drugs, Brain and Behavior 3

Behavior and Cognition:

Psych 360 Cognitive Psychology 3
Psych 361 Psychology of Learning 3
Psych 380 Human Learning and Memory 3
Psych 433 Psychology of Language 3

Lifespan Development:

Psych 321 Developmental Psychology 3
Psych 325 Psychology of Adolescence 3
Psych 326 Introduction to the Psychology of Aging 3
Psych 427 Social Gerontology 3

Elective courses: An additional 9 units of course work

No more than 6 units from the following categories may be used to satisfy the minimum requirements for the psychological & brain sciences major:

- 100-/200-level classes (other than Psych 100B)
- Psych 333 Independent Study in Psychological and Brain Sciences
- Psych 444C Independent Study for a Concentration in Psychological and Brain Sciences
- Psych 498 Study for Honors and Psych 499 Study for Honors
- University College-approved psychology classes
- Cross-listed courses not home-based in Psychological & Brain Sciences
- Transfer classes (students transferring from another college, please refer to the Transfer Credit section below)

Additional Information

Transfer Credit: If accepted by the College of Arts & Sciences, transfer credits will be evaluated by the Director of Undergraduate Studies in the psychological & brain sciences department for their applicability toward the major. At least 18
units of course work in Psychological & Brain Sciences must be completed at Washington University to earn a major.

**Senior Honors:** The primary goal of the Honors Program in psychological & brain sciences is to provide students who have achieved a superior academic record the opportunity to conduct a comprehensive empirical investigation under the direction of a faculty member.

To be admitted into the honors program, students must meet the following requirements:

- Overall and psychological & brain sciences GPAs ≥ 3.65
- Completion of both Psych 300 and Psych 301 (or Psych 3011)
- An approved honors research adviser

## Concentrations in Psychological & Brain Sciences

To augment the broadly based psychological & brain sciences major, the department offers concentrations for students who wish to engage more intensively with a specific area within the discipline. The concentrations are meant as an enrichment of the major, but all of the units for the concentrations may be part of the regular P&BS major requirements.

A concentration requires a minimum of 12 units, which include required and elective courses, one of which must be at the 400 level. In addition, to complete a concentration, students will have to undertake an approved research assistantship (Psych 444C Independent Study for a Concentration in Psychological and Brain Sciences), or an approved internship, practicum or honors thesis.

A concentration will be a valuable experience for students planning on graduate study in psychology or related fields, or for those who have a particular interest or want to gain expertise in one of the approved concentrations. Each concentration will have a member of the faculty as the contact person to meet with and advise students in the concentration.

Courses taken for a concentration may be used to fulfill no more than one of the Core categories or distribution requirements of a psychological & brain sciences major. None of the units for a concentration can be counted for any other major or minor (i.e., there is no double counting). For those doing the psychological & brain sciences: cognitive neuroscience major, the cognitive neuroscience concentration is not an option.

### There are six concentrations, listed below:

**Cognition in Children** — This concentration allows students to acquire deeper knowledge of cognition and its development in the first few years of life. The courses for the concentration consider child development more generally and then explore in more depth the early development of cognitive, conceptual and social-cognitive abilities. Adviser/coordinator: Professor Lori Markson.

**Cognitive Neuroscience** — This concentration allows students to acquire deeper knowledge of the relation between mind and brain. The courses for the concentration consider the neurobiological basis for psychological functions at a more general level, and then explore in greater depth specialized topics relating to how higher cognitive processes, such as memory, attention, perception and emotion, emerge from brain function. Adviser/coordinator: Professor Todd Braver.

**Genes, Brain and Behavior: Pathways to Psychopathology** — This concentration allows students to undertake an approved research assistantship (Psych 444C Independent Study for a Concentration in Psychological and Brain Sciences) or an approved internship, practicum or honors thesis. Relevant faculty: Deanna Barch, Todd Braver, Ryan Bogdan, Ian Dobbins, Denise Head, Kathleen McDermott, Jeff Zacks.

**Bases of the Major Mental Disorders** — This course work required: Psych 321 Developmental Psychology

Electives (must include two classes, at least one of which is at the 400 level):

- Psych 358 Language Acquisition 3
- Psych 4046 Developmental Neuropsychology 3
- Psych 4591 The Development of Social Cognition 3

**Research mentorship:** Prior approved research mentorship with a relevant faculty member and successful completion of a research paper. Relevant faculty: Lori Markson, Rebecca Treiman, Desirée White.

**Reading, Language and Language Acquisition** — This concentration provides students with a deep and broad knowledge of linguistic development. The courses look in-depth at the development of written and spoken language. Adviser/coordinator: Professor Rebecca Treiman.

**Biomedical Psychology**

- Psych 3401 Biological Psychology 3
- Psych 344 Principles of the Nervous System 3

Electives (must include two classes, at least one of which is at the 400 level):

- Psych 3604 Cognitive Neuroscience 3
- Psych 374 Drugs, Brain and Behavior 3
- Psych 4046 Developmental Neuropsychology 3
- Psych 4413 Advanced Cognitive Neuropsychology 3
- Psych 4450 Functional Neuroimaging Methods 3
- Psych 4745 Genes, Brain and Behavior: Pathways to Psychopathology 3
- Psych 4765 Inside the Disordered Brain: Biological Bases of the Major Mental Disorders 3
- Psych 488 The Cognitive Neuroscience of Film 3

**Research mentorship:** Prior approved research mentorship with a relevant faculty member and successful completion of a research paper. Relevant faculty: Deanna Barch, Todd Braver, Ryan Bogdan, Ian Dobbins, Denise Head, Kathleen McDermott, Jeff Zacks.

**Developmental Neuropsychology**

Course work required: Ling 170D Introduction to Linguistics

Electives (must include two classes, at least one of which is at the 400 level):
### Experimental Psychopathology

This concentration allows students to acquire more advanced knowledge of the ways in which psychologists study mental disorders. Current research has demonstrated the importance of integrating psychological and biological variables in understanding the classification, etiology and treatment of a wide variety of mental disorders, including schizophrenia, mood disorders, anxiety disorders, substance use disorders and eating disorders. Students who pursue this concentration will develop a broadly-based appreciation for conceptual and methodological issues that are central to research in psychopathology. Adviser/coordinator: Professor Deanna Barch.

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Psych 234</td>
<td>Introduction to Speech and Hearing Disorders</td>
<td>3</td>
</tr>
<tr>
<td>Psych 358</td>
<td>Language Acquisition</td>
<td>3</td>
</tr>
<tr>
<td>Psych 358W</td>
<td>Language Acquisition (WI)</td>
<td>3</td>
</tr>
<tr>
<td>Psych 433</td>
<td>Psychology of Language</td>
<td>3</td>
</tr>
<tr>
<td>Psych 4351</td>
<td>Reading and Reading Development</td>
<td>3</td>
</tr>
<tr>
<td>Psych 4352</td>
<td>Reading and Reading Development WI</td>
<td>3</td>
</tr>
</tbody>
</table>

**Research mentorship:** Prior approved research mentorship with a relevant faculty member and successful completion of a research paper. Relevant faculty: Rebecca Treiman, David Balota, Lori Markson, Mitchell Sommers.

### Lifespan Development

— Many introductory courses in developmental psychology focus on changes that occur from birth to adolescence. The supplemental concentration in lifespan development provides students with an understanding of the cognitive and physiological changes that occur over the lifespan, with a primary focus on older adulthood. A major goal of the concentration is to provide students with an understanding of the similarities and differences in development at different stages of the lifespan. Adviser/coordinator: Professor Mitchell Sommers.

**Course work required:**

<table>
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<tr>
<th>Course Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Psych 326</td>
<td>Introduction to the Psychology of Aging</td>
<td>3</td>
</tr>
<tr>
<td>Psych 427</td>
<td>Social Gerontology</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives (must include one of the following courses):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Psych 321</td>
<td>Developmental Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Psych 4301</td>
<td>Contemporary Topics in Cognitive Development</td>
<td>3</td>
</tr>
</tbody>
</table>

**Research mentorship or internship experience:** Students can complete this aspect of the concentration with *either* a prior approved research mentorship or an approved internship related to older adults. Successful completion of a paper is required in either case. Relevant faculty for research mentorship: Mitchell Sommers, David Balota, Brian Carpenter, Sandra Hale, Denise Head, Lori Markson. **Possible internships:** Work in an assisted-living facility or other community-based program designed to assist older adults. Other internships are available; contact Dr. Brian Carpenter for opportunities.

### Personality and Individual Differences

— This concentration allows students to acquire deeper knowledge of how and why individuals differ from one another and the ways in which individual (e.g., personality, self) and group differences (e.g., gender) influence behavior, emotion, experience, identity and psychopathology. The core course for the concentration (Psych 353) considers personality more generally. The seminars explore in depth specific aspects of personality and individual differences, including biological bases of individual differences (i.e., genetics), the interpersonal processes associated with personality and personality judgment, individual differences in self and identity, group differences and personality pathology. Adviser/coordinator: Professor Tammy English.

**Course work required:** Psych 353 Psychology of Personality

Electives (must include two classes, at least one of which is at the 400 level):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Psych 3645</td>
<td>Understanding Emotions</td>
<td>3</td>
</tr>
<tr>
<td>Psych 367</td>
<td>Positive Psychology: The Science of Happiness</td>
<td>3</td>
</tr>
<tr>
<td>Psych 413</td>
<td>Contemporary Topics in Social Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Psych 4541</td>
<td>Personality and Psychopathology</td>
<td>3</td>
</tr>
</tbody>
</table>

**Research mentorship:** Prior approved research mentorship with a relevant faculty member and successful completion of a research paper. Relevant faculty: Tammy English, Josh Jackson, Randy Larsen, Tom Oltmanns, Michael Strube, Renee Thompson, Denise Winterheld.

### The Major in Cognitive Neuroscience

**How does the brain think?** Cognitive neuroscience refers to the scientific study of the linkage between mental functions...
and the operation of the brain and nervous system. The goal of cognitive neuroscience is to provide an understanding of psychological processes, such as attention, memory, thinking and emotion, in terms of physical principles and biological components. At the same time, it aims to provide an understanding of the psychological constraints on how the brain functions, computes, and generates behavior. Students who pursue the undergraduate major in psychological & brain sciences: cognitive neuroscience will gain a strong foundation in how to study the brain and mind at various levels of analysis, including cellular biology, brain systems, cognitive and affective function, and neural computation. In addition, they will gain an appreciation of the relation between healthy cognitive and brain function and its breakdown in various disease states and disorders. A cognitive neuroscience degree provides excellent preparation for a career in health and medical professions, scientific research, computer fields, education, and the law.

**Total units required:** 37 units/12 courses (plus prerequisites).

**Prerequisites Outside of Psychological & Brain Sciences (6 units):**

- **Math 132** Calculus II 3
- **Biol 2960** Principles of Biology I 4

**Note:** Each of these prerequisites has its own prerequisites — Math 132 requires Math 131, and Biol 2960 requires Chem 111A and Chem 112A (concurrently).

**Note:** These are Biology and Pre-Med prerequisites as well and are typically completed in the freshman year. They might alternatively be satisfied through AP or any other already-approved mechanism from the respective department or the college.

**Core Requirements (19 units/6 courses):**

- **Psych 100B** Introduction to Psychology 3
- **Psych 300** Introduction to Psychological Statistics 3
- **Psych 301** Experimental Psychology 4
- or **Psych 3011** Experimental Psychology
- **Psych 3401** Biological Psychology 3
- or **Psych 344** Principles of the Nervous System
- **Psych 360** Cognitive Psychology 3
- **Psych 3604** Cognitive Neuroscience 3

**Total units** 19

**Note:** The first three requirements (i.e., Psych 100B, 300, and 301/3011) are the same as those for the regular psychological & brain sciences major.

**Note:** L33 Psych 344 is home-based in Biology; students should register under the cross-listed Psych L33 course designation, not L41 Biol 3411.

Exemption from Psych 100B is possible in the following circumstances:

- Completion of an equivalent course transferred from another institution, if approved by the Director of Undergraduate Studies.
- An AP Psychology test score of 5 or IB score of 6 or 7. *(N.B. AP or IB earns exemption from Psych 100B but no credit.)*

Math 2200, or Math 3200, or both Marketing Statistics QBA 120 & QBA 121 may substitute for Psych 300, although no units of major credit will be awarded.

**Additional Biological & Cognitive Distributions (6 units/2 courses): One each from A & B:**

**Group A eligible courses:**

- **Psych 330** Sensation and Perception 3
- **Psych 361** Psychology of Learning 3
- **Psych 380** Human Learning and Memory 3

**Group B eligible courses:**

- **Biol 3058** Physiological Control Systems 2
- **Biol 3151** Endocrinology 3
- **Physics 350** Physics of the Brain 3
- **Psych 345** Genes, Environment and Human Behavior 3
- **Psych 374** Drugs, Brain and Behavior 3

**Computation Requirement (3 units/1 course):**

- **CSE 131** Computer Science I 3
- **Psych 4175** Applied Statistical Analysis with R 3
- **Psych 5007** Statistics and Data Analysis in MATLAB 2

Or, with prior approval, another course involving a significant computational/programming component.

**Capstone/Depth requirement (9 units/3 courses): One each from A, B, C:**

*(Note: None of these can be used to also fulfill any of the other requirements — i.e., no double counting.)*

**Group A eligible courses:**

- **Psych 4046** Developmental Neuropsychology 3
- **Psych 4182** Perception, Thought and Action 3
- **Psych 4413** Advanced Cognitive Neuroscience 3
- **Psych 4450** Functional Neuroimaging Methods 3
- **Psych 4745** Genes, Brain and Behavior: Pathways to Psychopathology 3
- **Psych 4765** Inside the Disordered Brain: Biological Bases of the Major Mental Disorders 3
- **Psych 488** The Cognitive Neuroscience of Film 3
**Minors**

**The Minor in Psychological & Brain Sciences**

Units required: 15

Required course: Psych 100B Introduction to Psychology

Elective courses:
- Four additional courses (i.e., a minimum of 12 units of additional course work) in Psychological & Brain Sciences, all of which must be at the 300 level or above.

Additional Information

No more than 3 units of an approved cross-listed course originating outside the Department of Psychological & Brain Sciences, an approved psychology course taken in University College, an approved psychology course taken at another university, or an independent study-type course (e.g., Psych 500) may count toward the minor. (Transfer students must complete at least 9 advanced units of home-based Psychological & Brain Sciences courses at Washington University.)

For those who have a broad or general interest in psychological and brain sciences, we recommend taking several courses from the five core areas (i.e., Social/Personality; Abnormal/Affective Psychology; Biological/Neurological Bases of Behavior; Behavior and Cognition; and Lifespan Development).

For those students who want to concentrate in a more specialized area, courses can reflect such specialization. For example, a student interested in the helping professions or counseling may wish to select from such courses as Psych 353 Psychology of Personality, Psych 354 Abnormal Psychology, Psych 361 Psychology of Learning, and Psych 321 Developmental Psychology. A student wishing to pursue a specialization in experimental psychology/neuroscientific bases of behavior might select from such classes as Psych 3401 Biological Psychology, Psych 361 Psychology of Learning, Psych 330 Sensation and Perception, Psych 360 Cognitive Psychology, and Psych 3604 Cognitive Neuroscience, and consider doing Independent Study (Psych 333).

**Courses**


<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>L33 Psych 100B</td>
<td>Introduction to Psychology</td>
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<td>L33 Psych 102 Seminar: Introduction to Psychology</td>
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<td>L33 Psych 105 Psychology of Young Adulthood: College Years</td>
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**or** an appropriate 400-level course from outside the department (with prior approval), e.g.:

- Biol 4030 Biological Clocks 3
- Biol 404 Laboratory of Neurophysiology 4
- Biol 4580 Principles of Human Anatomy and Development 3
- Phil 4212 Philosophy of Neuroscience 3

**Group B eligible courses in capstone research/writing intensive experience:**

- Psych 4046 Developmental Neuropsychology 3
- Psych 4413 Advanced Cognitive Neuroscience 3
- Psych 444B Independent Study for the Major in P&BS: Cognitive Neuroscience 3
- Psych 498 Study for Honors 3

**Group C eligible courses:** An additional 3 units from group A or group B or, by prior approval: MBB 300, Psych 333, or Psych 498/Psych 499.

**Acceptance into the Psychological & Brain Sciences:**

Acceptance to the major is contingent on an application and then approval by the major committee. As part of this application, the student will meet with an appropriate adviser who will carefully review the requirements and oversee the student's progress. A brief paragraph statement from the student on why they feel that the cognitive neuroscience major is appropriate for them will be requested as part of the application.

Washington University students will be considered for admission to the cognitive neuroscience major no sooner than in their third semester (sophomore year). Decisions are based upon the student's application, academic record, and interview with the major adviser.
the scientific basis of concepts and on empirically supported strategies for growth and development. The knowledge gained may contribute to academic success, personal development and a more rewarding social and academic experience over the course of college and beyond. Freshman standing, entering first-year undergraduates only.

Credit 1 unit.

L33 Psych 106 The Science of Effective Study Strategies
You have now spent at least 12 years in school, studying for exams and/or tests (for most of you, that’s most of your lifetime). What can current research tell us about how well we study, whether we make efficient study decisions, and whether our study strategies are effective? This course offers an overview of current research from cognitive and educational psychology on effective study strategies. Throughout this course, students are encouraged to develop their understanding of scientific research and evaluate evidence supporting study strategies. Prerequisite: open only to freshmen and sophomores. Credit/no credit only. Credit 1 unit. A&S: SS A&S IQ: SSC EN: S

L33 Psych 109 Research Seminar in Psychology
Weekly presentations by various members of the psychology faculty; introduces students to research areas and current issues. Attendance at all lectures required. Open to freshmen and sophomores only. Prerequisite: Psych 100B. Credit/no credit only. Credit 1 unit. A&S: SS A&S IQ: SSC Art: SSC

L33 Psych 111 Mindfulness: Science and Practice
Mindfulness is a term that is becoming increasingly used in popular culture to refer to a set of skills associated with increased attentional focus, successful stress-management, and improved health, sleep, and emotional well-being. This course will expose students to the various facets of mindfulness from both an applied and scientific perspective, both through the teaching of mindfulness skills through a set of easy-to-learn practices and exercises, and through a survey of empirical research regarding mindfulness effects on cognition, emotion, brain function and health. The goal of the seminar will be to provide practical skills that can contribute to personal development, emotional well-being and academic success, while also developing critical thinking skills in learning how to read and evaluate primary scientific literature on mindfulness. Open to freshmen only. Credit 1 unit.

L33 Psych 219 The Infant Mind
What goes on inside the mind of an infant? Descartes argued that the infant was entirely bound by sensation; thus, to think like a baby was to not think at all. Over the past few decades, however, research has revealed that the mind of the infant is abuzz with activity, capable of quickly learning astonishing amounts of information in a relatively short time. In this course we explore different topics concerning the inner workings of the infant mind. We cover topics such as imagination, language, memory, emotions and morality. This course is open to students from all majors, but Psych 100B is highly recommended. Enrollment is restricted to 24 sophomores or by permission of the instructor. Credit 3 units. A&S: SS A&S IQ: SSC EN: S

L33 Psych 221 Freshman Seminar: Introduction to Memory Studies
This course focuses on memory not only as an individual phenomenon but also as the basis for the transmission of culture and the construction of collective identity. We survey such topics as experimental methods and findings in the study of individual memory; questions of accuracy and vividness of memory and witness reports; repressed memories; transmission of cultural norms and identity through narratives; shared historical memories; individual trauma and historical upheaval; revision of the past and political usage of collective memory.
Credit 3 units. A&S: SS A&S IQ: SSC Arch: SSC Art: SSC BU: BA EN: S

L33 Psych 225 Internship in Psychology
An opportunity to gain supervised, applied experience in a nonacademic, community service agency. For a description of prerequisites, goals, agency selection, registration policies and course requirements, obtain a copy of A Guide to Internships in Psychology from the Psychology department office. In addition to work at their internship site, students are required to meet regularly with the internship coordinator. This course can be taken only once. CBTL (http://www.gephardtinstitute.wustl.edu/CBTL/Pages/overview.aspx) course. Credit/no credit only. Credit 3 units.

L33 Psych 234 Introduction to Speech and Hearing Disorders
Introduction to the fields of speech-language pathology, audiology, education of hearing-impaired children, and speech and hearing sciences. Normal speech and hearing processes are discussed, as well as communication disorders. Selected research topics in speech and hearing sciences are presented. Same as L12 Educ 234 Credit 3 units. BU: BA EN: S

L33 Psych 235 Practicum in Applied Behavior Analysis: Autism Spectrum Disorder
An opportunity to be trained in applied behavior analytic techniques and to work with a child with autism pervasive developmental disorder. Training and supervision are arranged and coordinated by the family of the child and their consultant. To receive credit, students must undertake a year’s work with the child, complete the minimum number of hours of training and therapy, and attend regular therapy meetings. In addition, students must meet with the practicum coordinator for discussion of assigned readings and presentations on autism and therapy. Completion of a paper also is required. For further information and petition form, pick up the Practicum brochure from the department. This course can be taken only once for credit. Credit/no credit only. Enrollment through the practicum coordinator only. CBTL (http://www.gephardtinstitute.wustl.edu/CBTL/Pages/overview.aspx) course. Credit 3 units.

L33 Psych 246 Mindfulness in Psychology and Eastern Philosophies: Sophomore Seminar
This course is intended to explore the connection between psychology and Eastern philosophies, including aspects of Buddhism, mindfulness, Zen meditation and yogic traditions. Credit 3 units. A&S: SS, CD A&S IQ: LCD, SSC Arch: SSC Art: SSC BU: IS EN: S
L33 Psych 300 Introduction to Psychological Statistics
Descriptive statistics including correlation and regression. Inferential statistics including nonparametric and parametric tests of significance through two-way analysis of variance. Course emphasizes underlying logic and is not primarily mathematical, although knowledge of elementary algebra is essential. Prerequisite: Psych 100B. Credit 3 units. A&S: NS, QA A&S IQ: NSM, AN Art: NSM

L33 Psych 301 Experimental Psychology
This course provides training in the logic and techniques of psychological research so as to provide students with experience in the design of psychology experiments and interpretation of results. Topics include experimental design and control, library research, quantitative treatment of data, graphical presentation of results, and clarity of scientific writing. Lectures focus on general principles of experimentation, whereas the laboratory sections provide an introduction to a range of psychological phenomena through hands-on experience in experimentation. Each student also completes an independent research project. Declared psychology majors are given priority over others to enroll. Limited to 15 students per section. Prerequisites: Psych 100B and Psych 300. Credit 4 units. A&S: NS A&S IQ: NSM Art: NSM BU: BA

L33 Psych 3011 Experimental Psychology
Psych 3011 is limited to students who have not taken Psych 300 and want to enroll in Psych 300 and Experimental Psychology concurrently. Therefore, students who enroll in Psych 3011 also must register for Psych 300. Psych 3011 fulfills the Psych 301 requirement for the major. Topics in the two courses (i.e., Psych 300 and Psych 3011) are coordinated in order to integrate the concepts from Statistics with those from Experimental Psychology. Experimental Psychology provides training in the logic and techniques of psychological research so as to provide students with experience in the design of psychology experiments and interpretation of results. Topics include experimental design and control, library research, quantitative treatment of data, graphical presentation of results, and clarity of scientific writing. Lectures focus on general principles of experimentation while the laboratory component provides an introduction to a range of psychological phenomena through hands-on experience in experimentation. Each student also completes an independent research project of his or her own design under supervision of a faculty member. Enrollment limited to 15 students. Prerequisites: Psych 100B and concurrent enrollment in Psych 300. Credit 4 units. A&S: NS A&S IQ: NSM BU: BA

L33 Psych 304 Educational Psychology
A course in psychological concepts relevant to education. Organized around four basic issues: how humans think and learn; how children, adolescents and adults differ in their cognitive and moral development; the sense in which motivation and intention explain why people act as they do; how such key human characteristics as intelligence, motivation and academic achievement can be measured. Prerequisite: sophomore standing. Offered fall and spring semester. Same as L12 Educ 304 Credit 3 units. A&S: SS A&S IQ: SSC Art: SSC BU: BA

L33 Psych 3091 Lesbian, Gay, Bisexual Identity Development
Examination of sexual orientation and identity. Topics: historical perspectives, gender socialization, identity formation across the life span, cultural prejudices, the liberation movement, and recent legal changes affecting stigmatized minorities. Prerequisite: Psych 100B. Credit 3 units. A&S: SS, SD A&S IQ: SSC, SD Art: SSC BU: BA EN: S

L33 Psych 314 Behavior Modification and Self-Management
Provides an overview of behavior modification and its applications for behavior change in various personal and social contexts. An important focus is on how behavioral tools can be used to enhance the personal change process leading to effective self-improvement. Prerequisite: Psych 100B. Enrollment limited to 15. Credit 3 units. A&S: SS A&S IQ: SSC Arch: SSC Art: SSC BU: BA EN: S

L33 Psych 315 Introduction to Social Psychology
Introduction to the scientific study of individual behavior in a social context. Topics: person perception; stereotyping and prejudice; attitudes; memory; and political psychology, among other issues. Prerequisite: Psych 100B. Credit 3 units. A&S: SS A&S IQ: SSC Arch: SSC Art: SSC BU: BA EN: S

L33 Psych 3195 Abnormal Child Psychology
This course familiarizes students with current perspectives on the nature, causes, assessment, treatment and prevention of child psychiatric disorders and related family dysfunction. Theoretical perspectives and research findings are discussed pertaining to anxiety, depression, conduct disorder, attention deficit/hyperactivity disorder, autism, learning impairments and parent-child conflict. Prerequisite: Psych 100B. Credit 3 units. A&S: SS A&S IQ: SSC Arch: SSC Art: SSC BU: BA EN: S

L33 Psych 321 Developmental Psychology
This course concentrates on the cognitive and social development of the person from conception to adolescence. Topics covered include: infant perception, attachment, cognitive development from Piagetian and information processing perspectives, aggression and biological bases of behavior. Prerequisite: Psych 100B. Credit 3 units. A&S: SS A&S IQ: SSC Arch: SSC Art: SSC BU: BA

L33 Psych 3211 Music Cognition
An introduction to modern research on music perception and cognition. The course covers four main topics: the perception of key, the psychoacoustics of dissonance, the relationship between attention and musical meter, and the process by which melodies establish, fulfill, and deny expectations. Students read and discuss research from both cognitive science and music theory, in addition to completing several projects. Same as L27 Music 3221 Credit 3 units. A&S: NS A&S IQ: NSM BU: HUM

L33 Psych 323 Play and Development
An examination of current research and theory in play, in development and education, from infancy through the early school years. Topics include play and the development of
language, social skills, creativity and cognitive abilities. We also 
examine the uses of play in educational contexts, focusing on 
pre-school and the early primary grades. Prerequisite: Psych 321 
or Educ 304. 
Same as L12 Educ 337 
Credit 3 units. A&S: SS A&S IQ: SSC BU: BA EN: S

L33 Psych 3242 Introduction to African-American 
Psychology 
This course provides an introduction to the experiences 
of African Americans from a psychological perspective. 
Throughout the course, we consider a range of theoretical and 
methodological approaches that scholars have developed to 
conceptualize the thoughts, styles and behaviors of African 
Americans. The course begins with an overview of these 
theories, methodologies and frameworks. The second part 
of the course is devoted to exploring psychological research 
around pertinent topics in the field such as racism and 
discrimination, gender, achievement and schooling, kinship 
and family, racial identity, religion and spirituality, and mental 
health. Finally, we conclude the course with discussions of 
current topics, controversies and recent advances in African-
American psychology. Prerequisite: Psych 100B or permission of 
instructor. 
Same as L90 AFAS 3242 
Credit 3 units. A&S: SS A&S IQ: SSC Arch: SSC Art: SSC BU: BA EN: S

L33 Psych 325 Psychology of Adolescence 
A broad introduction to adolescence as a developmental 
period of transition and change. The major topics include 
the fundamental changes of adolescence; the context of 
adolescence; and processes of psychological development. 
Prerequisite: Psych 100B. 
Credit 3 units. A&S: SS A&S IQ: SSC Arch: SSC Art: SSC BU: BA

L33 Psych 326 Introduction to the Psychology of Aging 
Study of the processes of aging in the individual in terms of 
their behavioral effects. Age changes in biological functions, 
sensation, perception, intelligence, learning, memory and 
creativity are studied to understand the capacities and 
potentials of the mature and older person. Limited to 20 
students. Prerequisite: Psych 100B. 
Credit 3 units. A&S: SS A&S IQ: SSC BU: BA EN: S

L33 Psych 330 Sensation and Perception 
What's involved in seeing and hearing? This course covers 
perception from the physical stimuli (light and sound) that 
impinge upon the sensory receptors through the higher-level 
percepts that the stimuli generate. Demonstrations and illusions 
are used as we learn about the anatomy and physiology of 
the sensory systems and study the brain mechanisms that are 
involved in vision and audition. Prerequisite: Psych 100B. 
Credit 3 units. A&S: NS A&S IQ: NSM Art: NSM BU: BA, SCI

L33 Psych 333 Independent Study in Psychological and 
Brain Sciences 
Prerequisites: Psych 100B and permission of a member of the 
faculty of the department (or other approved supervisor) who 
agrees to supervise the student's work. Credit to be arranged. A 
maximum of 6 units may be applied toward upper-division credits 
required for the major. The electronic Petition for Supervision 
of Independent Study form is available online. Students will 
be enrolled only after their form is approved by the faculty 
supervisor and forwarded to the Undergraduate Coordinator. CR/ 
NCR only. 
Credit variable, maximum 3 units.

L33 Psych 3401 Biological Psychology 
An introduction to biological mechanisms underlying behavior. 
Topics include the physiology of nerve cells; anatomy of the 
nervous system; control of sensory and motor activity, 
 arousal and sleep; motivation; and higher mental processes. 
Prerequisite: Psych 100B. 
Credit 3 units. A&S: NS A&S IQ: NSM Art: NSM BU: SCI

L33 Psych 344 Principles of the Nervous System 
The basic anatomical, physiological and chemical organization 
of the nervous system; how nerve cells communicate with 
each other, the ionic basis of nerve signals, the function and 
properties of chemical agents in the nervous system, the 
development of neural circuitry, and how neurons interact 
to produce behavior. Prerequisite: Biol 2960, Biol 2970. 
Recommended, Biol 3058 recommended or Psych 3401 and 
 permission of instructor. 
Same as L41 Biol 3411 
Credit 3 units. A&S: NS A&S IQ: NSM Arch: NSM Art: NSM BU: SCI

L33 Psych 345 Genes, Environment and Human Behavior 
This class examines how genetic influences impact various 
dimensions of human behavior, ranging from personality to 
clinical disorders. Topics covered include methods used to study 
genetic influence, how genetic predispositions interact with the 
environment, and ethical implications of genetic research in psychology. Prerequisite: Psych 100B. 
Credit 3 units. A&S: SS A&S IQ: SSC Arch: SSC Art: SSC BU: BA EN: S

L33 Psych 347 Environmental Psychology 
Explores relations between people and their physical and social 
environments. Topics include interactions between human 
behavior and toxins, habitat destruction/species extinction, 
exhaustion of fossil fuels, and climate change as well as 
environmental contributors to psychopathology. The course 
examines the influence of space on human behavior and the 
design of homes, work areas, educational settings, and urban 
environments. Prerequisite: Psych 100B. 
Credit 3 units. A&S: SS A&S IQ: SSC Arch: SSC Art: SSC BU: BA EN: S

L33 Psych 3501 Psychotherapy: Introduction to Practice and 
Research 
This is an introductory course in psychotherapy: The treatment of 
psychological problems through the application of interventions 
grounded in psychological theory and focusing on behavior 
or mental processes. Students become familiar with the more 
popular schools of psychotherapy, including their historical 
context, characteristic techniques, theoretical underpinnings and 
current research support. Students also gain an appreciation of 
the problems and solutions in researching psychotherapy, 
as well as emerging variations on psychotherapy procedures. 
Prerequisite: Psych 100B. 
Credit 3 units. A&S: SS A&S IQ: SSC EN: S
development of written language skills. Prerequisites: Psych 100B and Ling 170D and junior or senior standing. Writing-intensive. Credit 3 units. A&S: SS, WI A&S IQ: SSC, WI EN: S

L33 Psych 360 Cognitive Psychology
Introduction to the study of thought processing from an information-processing approach. Emphasis on theoretical models grounded in empirical support. Topics include pattern recognition, attention, memory, reasoning, language processes, decision making and problem solving. Prerequisite: Psych 100B. Credit 3 units. A&S: NS A&S IQ: NSM Art: NSM BU: BA

L33 Psych 3604 Cognitive Neuroscience
A general introduction to the underlying principles and mechanisms of brain function that give rise to complex human cognitive behavior. Emphasis is placed on how emerging methods and approaches from both neuroscience and cognitive psychology have been integrated to yield new insights into the organization and structure of higher mental processes. Topics include perception, attention, memory, language and executive control. Prerequisite: Psych 100B. Credit 3 units. A&S: NS A&S IQ: NSM Art: NSM BU: SCI

L33 Psych 361 Psychology of Learning
Basic learning processes in animals, such as conditioning, reinforcement, punishment and constraints on learning. Comparisons and interactions between classical and operant conditioning. Consideration given to learning theorists and theories, along with applications from the laboratory to the "real world." Prerequisite: Psych 100B. Credit 3 units. A&S: NS A&S IQ: NSM Art: NSM BU: SCI

L33 Psych 361A Psychology of Learning: Laboratory
This laboratory course is a supplement to the Psych 361 Psychology of Learning class. Students gain firsthand experience, via a virtual rat, of principles and procedures related to the acquisition and maintenance of behavior. Weekly lab meetings introduce Pavlovian and operant principles, which are then implemented as laboratory exercises with the virtual rat. Concurrent enrollment in Psych 361 required. Credit 1 unit. A&S: NS A&S IQ: NSM

L33 Psych 3645 Understanding Emotions
Emotions shape and are shaped by our subjective experiences, physiology, behaviors, cognitions, social interactions and health. Their complexity and significance make the study of emotions particularly exciting and challenging. This course offers an overview of theory and research on emotions with content stretching across psychological disciplines, including personality, social, clinical, developmental and neuropsychology. Course content includes definitions of emotions, physiological changes associated with emotions, and individual differences in emotional experience. The course also examines how culture, cognitions and relationships shape and are shaped by emotions and how emotions are related to physical and mental health. Prerequisite: Psych 100B. Credit 3 units. A&S: SS A&S IQ: SSC BU: BA EN: S

L33 Psych 366 Psychology of Creativity
Same as L12 Educ 366 Credit 3 units. A&S: SS A&S IQ: SSC Art: SSC BU: BA
L33 Psych 367 Positive Psychology: The Science of Happiness
Reviews the relatively recent development in the field known as "Positive Psychology." Topics may include: happiness and life-satisfaction, positive self-esteem, creativity, caring relationships, love (passionate and otherwise), empathy, optimism, ambition, moral character development, attachment, compassion, forgiveness, helping, work ethics, and successful aging. Designed to take a sampling of those aspects of psychology that emphasize the positive side of human nature. Prerequisites: Psych 100B, junior or senior standing. Credit 3 units. A&S: SS A&S IQ: SSC Art: SSC BU: BA EN: S

L33 Psych 374 Drugs, Brain and Behavior
This course reviews information pertaining to both medications used to treat psychiatric disorders and to psychoactive drugs of abuse. By learning principles of pharmacology and mechanisms of action of these agents, students develop an enhanced knowledge of the brain mechanisms underlying abnormal human behavior. Prerequisites: Psych 100B and one of the following: Psych 354 or Psych 3401 or Psych 344. Credit 3 units. A&S: NS A&S IQ: NSM Art: NSM BU: SCI

L33 Psych 380 Human Learning and Memory
A survey of issues related to the encoding, storage and retrieval of information in humans. Topics include memory improvement strategies, people with extraordinary memories, memory illusions and distortions, among other topics. Limited to 25 students. Prerequisite: Psych 100B. Credit 3 units. A&S: NS A&S IQ: NSM Art: NSM BU: BA

L33 Psych 399 Living, Dying and Death: A Biopsychosocial Approach to Understanding the End of Life
This survey course examines dying and death from biological, psychological and social perspectives. Topics include theoretical and research approaches to studying dying and death; historical and cross-cultural attitudes; psychological understanding and coping with death over the life span; the process of dying and definitions of death; health care professionals and treatment approaches for the dying; assisted death and other ethical/legal issues, grief and bereavement, mass tragedy and public death, and planning for death. Prerequisite: Psych 100B. Credit 3 units. A&S: SS A&S IQ: SSC Art: SSC BU: BA EN: S

L33 Psych 4046 Developmental Neuropsychology
Development of the brain and associated changes in cognitive abilities are discussed, with an emphasis on recent research that integrates the theoretical perspectives of cognitive psychology and neuropsychology. Discussion focuses on early development and disorders affecting the brain such as cerebral palsy, sickle cell disease and autism. Prerequisite: Psych 321, Psych 360, Psych 3604 or Psych 3401. Credit 3 units. A&S: NS, WI A&S IQ: NSM, WI Art: NSM

L33 Psych 413 Human Behavior in Extreme Situations
This course familiarizes students with psychological theory and research that attempts to answer the question: What are the protective factors that help people who find themselves in an extreme situation respond constructively to the stress they must cope with? Extreme situations are characterized by conditions that force individuals and groups to adapt themselves involuntarily, entirely and with the greatest of speed. Readings are drawn from two sources (a) literature that describes extreme situations and human response to the trauma they cause (e.g., prisoner behavior in Nazi concentration camps, brainwashing of American soldiers during the Korean War, and response to a natural disaster and an airliner crash), and (b) research on potentially protective psychological variables such as coping and resilience. Prerequisites: junior or senior standing and 6 hours of advanced, home-based psychology course work. Enrollment limited to 17. Credit 3 units. A&S: SS A&S IQ: SSC EN: S

L33 Psych 4175 Applied Statistical Analysis with R
This course is designed to introduce R as both a means of applied statistical analysis as well as a window into data organization and programming. The goal of the course is to teach the tools needed to take a raw dataset and not only perform a statistical test in R, but also to learn how to arrange the dataset to perform a variety of tests, to choose the appropriate test, and to visualize the results. Students gain practical knowledge of how to use statistics in research. Prerequisites: Psych 300, or Math 2200 or Math 3200, or other approved university statistics course; or graduate standing in psychology, or graduate standing in another department by permission. Credit 3 units.

L33 Psych 4182 Perception, Thought and Action
This course focuses on current topics in visual perception, visual attention, eye movements and sensory-motor behavior. Readings consist of recent journal articles. Class meetings emphasize presentation and discussion of the material in the readings. Prerequisite: previous course work in cognitive psychology, experimental psychology or perception. Credit 3 units. A&S: NS A&S IQ: NSM Art: NSM

L33 Psych 4227 The Psychology of Close Relationships
This course examines close relationships from a scientific perspective. The course focuses on intimate relationships but also touches on friendships and family relationships. The objective of this course is to introduce students to the scientific perspective of close relationships. Students learn how research psychologists apply the scientific method of data collection and analysis to investigate how people experience and think about relationships. We explore questions such as: Why are people attracted to some people but not others? How do relationships develop over time? How does each person's personality influence the trajectory of a relationship? How do external factors (e.g., social norms, stress, life events) influence relationships? How do gender and sexual orientation influence people's experiences in romantic relationships? Prerequisites: Psych 100B and Psych 301. Credit 3 units. A&S: SS A&S IQ: SSC EN: S

L33 Psych 427 Social Gerontology
This course provides an introduction to aging and growing old, from an interdisciplinary perspective. Specific attention is paid
L33 Psych 4301 Contemporary Topics in Cognitive Development
Cognitive Developmental topics include: Piagetian abilities (e.g., conservation, formal reasoning), basic cognitive abilities (e.g., processing speed), executive functions (e.g., working memory), and other current topics (e.g., processing facial stimuli). Prerequisite: Psych 321 or 360. Credit 3 units. A&S: SS &S IQ: SSC Art: SSC

L33 Psych 4302 Cognitive Psychology Applied to Education
This course is intended to cover topics in the cognitive psychology of human memory, conceptual learning and comprehension with special focus on areas, theory and research that have potential application to education. Thus, the course provides selective coverage of theoretical and empirical work in cognitive psychology that provides potential to inform and improve educational practice. The applicability of these themes are explicitly developed and evaluated through the primary research literature using educationally oriented experimental paradigms. The course is of interest and benefit to education majors and to psychology majors interested in cognitive psychology and its applications. Prerequisites: junior/senior status; 9 units in psychology and Psych 100B or junior/senior status; 9 units in Education and Psych 100B. Credit 3 units. A&S: SS &S IQ: SSC EN: S

L33 Psych 4305 Psychological Science: Fact and Fiction
Skeptical analysis of psychological science as practiced and popularized in the media. Analysis of discrepancies between media and scientific claims regarding areas such as repressed memory, brain imaging, heritability and psychotherapy. Additional examination of scientific career demands such as peer review, journal publication and research funding. These topics are interwoven with a review of common errors in reasoning particularly with respect to probabilistic reasoning and the public misperception of the practice and principles of scientific psychology. Prerequisite: junior or senior standing and completion of 6 advanced units in psychology. Credit 3 units. A&S: SS &S IQ: SSC WI EN: S

L33 Psych 433 Psychology of Language
This course surveys current research and theory in psycholinguistics, covering the biological bases, cognitive bases and learning of language. We consider studies of normal children and adults, the performance of individuals with various types of language disorders, and computer simulations of language processes. Topics range from the perception and production of speech sounds to the management of conversations. Each student carries out an original research project on some aspect of psycholinguistics. Prerequisites: Ling 170D and Psych 100B. Credit 3 units. A&S: SS &S IQ: SSC Art: SSC

L33 Psych 4351 Reading and Reading Development
This seminar surveys current research on reading and spelling skills and their development. Students read and discuss journal articles that examine the cognitive and linguistic processes involved in reading, reading disorders, and educational issues. Prerequisites: permission of instructor and previous course work in experimental psychology or psychology of language. Credit 3 units. A&S: SS &S IQ: SSC EN: S

L33 Psych 4352 Reading and Reading Development WI
This writing-intensive seminar surveys current research on reading and spelling skills and their development. Students read and discuss articles and chapters that examine the cognitive and linguistic processes involved in reading, reading disorders, and educational issues. Prerequisites: Psych 100B and Ling 170D and junior or senior standing. Credit 3 units. A&S: SS, WI A&S IQ: SD, WI EN: S

L33 Psych 4361 Psychological Perspectives on the Self
Historical and contemporary theories related to the self-social psychology. Emphasis on contemporary research and a focus on the self as a construct central to understanding important social phenomena. Topics include definitions and measurement of the self; motivational implications of the self for impression management, ability appraisal, self-regulation and social inference. Prerequisites: Psych 100B and Psych 315. Credit 3 units. A&S: SS, WI &A IQ: SSC, WI Art: SSC

L33 Psych 4408 Trauma and Memory
A thorough investigation of the effects of trauma on memory in both individuals and collective groups. Topics include flashbulb memories; forgetting and repression; post-traumatic stress and memory; and effects of trauma on individual and group identity. Prerequisites: Psych 100B and 6 units of advanced-level psychology or anthropology course work. Credit 3 units. A&S: SS &A IQ: SSC EN: S

L33 Psych 4413 Advanced Cognitive Neuroscience
An intensive, case-study based approach to the underlying principles and mechanisms of brain function that give rise to complex human cognitive behavior. Emphasis is placed on understanding and evaluating cutting-edge neuroscience research that has yielded new insights into the organization and structure of higher mental processes. Students develop critical thinking and writing skills via a strong class participation component and a writing intensive format. Topics include perception, attention, memory, language, emotion and executive control. Writing-Intensive. Declared psychology majors are given priority over others to enroll. Prerequisites: Psych 100B and either Psych 3401 or Psych 344/Biol 3411 or Psych 3604. Credit 3 units. A&S: NS, WI A&S IQ: NSM, WI Art: NSM

L33 Psych 444A Independent Study for a Supplemental Concentration
Prerequisites: acceptance into a supplemental concentration in Psychological & Brain Sciences (only for students who matriculated prior to 2016). Written permission (Petition for Supervision of Psych 444A) of a member of the faculty of the department (or other approved supervisor) who agrees to supervise the student's work is also required. In addition to the approved research for the supplemental concentration, an APA-study research paper must be satisfactorily completed to obtain credit. Petition for Supervision of P&B 444A forms are available in the Psychology Building, room 207B. Students will be enrolled only after they have completed both the Petition for a Supplemental Concentration in P&B and the Petition for Supervision of P&B 444A, and returned them to the
Undergraduate Coordinator in Psychology 207B. Open only to P&BS majors. Max 3 units.
Credit 3 units.

L33 Psych 444B Independent Study for the Major in P&BS: Cognitive Neuroscience
Prerequisites: acceptance into the P&BS cognitive neuroscience major. Permission of a member of the faculty of the department (or other approved supervisor) who agrees to supervise the student's work. In addition to the approved research in the area of cognitive neuroscience, an APA-style research paper must be satisfactorily completed to obtain credit. Petition for Supervision of P&BS 444B forms are available in the Psychology Building, room 207B. Students will be enrolled only after they have completed the petition and returned it to the Undergraduate Coordinator in Psychology 207B.
Credit 3 units. A&S IQ: SSC EN: S

L33 Psych 444C Independent Study for a Concentration in Psychological and Brain Sciences
Prerequisites: acceptance into a concentration in Psychological & Brain Sciences (only for students who matriculate after fall 2016). Written permission (Petition for Supervision of P&BS 444C) of a member of the faculty of the department (or other approved supervisor) who agrees to supervise the student's work is also required. In addition to the approved research for the concentration, an APA-style research paper must be satisfactorily completed to obtain credit. Petition for Supervision of P&BS 444C forms are available in the Psychology Building, room 207B. Students will be enrolled only after they have completed both the Petition for a Concentration in P&BS and the Petition for Supervision of P&BS 444C, and returned them to the Undergraduate Coordinator in 207B. Open only to P&BS majors.
Credit 3 units.

L33 Psych 4450 Functional Neuroimaging Methods
This course is intended for students wishing to become sophisticated producers or consumers of functional neuroimaging data. Emphasis is on extracting the most information from neuroimaging techniques toward the goal of answering psychologically motivated questions. A number of issues relating to neuroimaging methodology are covered, including technical principles; acquisition options; potential sources of artifact; experimental design; software tools; and analytical techniques. Class approach is hands-on, with students gaining experience in actually acquiring and working with neuroimaging data. Prerequisite: graduate standing or permission of instructor.
Credit 3 units. A&S: SS A&S IQ: SSC Art: SSC EN: S

L33 Psych 4535 Personality Judgment: How We Perceive Ourselves and Others
This course examines how we form judgments of people’s personalities. The central question is the accuracy of personality judgments. The readings examine theory and research concerning this topic, and class discussion focuses on critical evaluations of the readings and generation of new research questions. This course examines personality judgment from a scientific perspective and addresses such questions as: How should accuracy be measured? What do you have to know about a person to judge their personality accurately? Does accuracy increase with greater acquaintance? Who makes a good judge of personality? How well do relationship partners know each others' personalities? How is judging our own personality similar to or different from judging others’ personalities? How accurate are our perceptions of our own personality? How can the accuracy of personality judgment be improved? Prerequisites: at least 6 units of home-based psychology courses and Psych 353.
Credit 3 units. A&S: SS A&S IQ: SSC EN: S

L33 Psych 4541 Personality and Psychopathology
This course is an advanced seminar in the study of personality disorders. It covers a range of conceptual and methodological issues involved in scientific efforts to understand ways in which pathological personality features disrupt people’s lives. Students learn about the similarities and distinctions between normal and pathological features of personality as well as the role that personality may play with regard to the causes and treatment of other kinds of mental disorder. A laboratory component of the class focuses on the development of practical skills in conducting research interviews designed to elicit information about personality and social adjustment. Prerequisites: Psych 354, junior or senior standing, and permission of the instructor.
Credit 3 units. A&S: SS A&S IQ: SSC Arch: SSC Art: SSC EN: S

L33 Psych 4557 Biopsychosocial Aspects of Eating Disorders and Obesity
The aim of this seminar course is to examine the epidemiology, etiology, prevention and treatment of body image, eating disorders and obesity. An emphasis is placed on understanding the characteristic symptoms of excessive dieting, body image disturbance and binge eating, not only as formal psychiatric syndromes but as a representation of dysregulatory processes reflecting social-cultural, psychological and biological disturbances. Students also learn about the clinical characteristics, medical sequelae and physical aspects of eating disorders and obesity. Prerequisites: Psych 100B and junior/senior standing plus 6 units of advanced home-based psychology.
Credit 3 units. A&S: SS A&S IQ: SSC

L33 Psych 4591 The Development of Social Cognition
This course explores what is known about the development of social cognition. Our starting point is infants’ capacity to navigate the social world, for instance, detecting agents, identifying social partners and learning from those around us. We consider what happens when the human ability to reason about others breaks down (as with autism), and what this can teach us about typical development. Each week we cover one topic and a related set of readings. Class meetings are devoted to active discussion and debate about the content of the readings. Students are required to write a weekly reaction paper to the readings to promote class discussion and give an in-class presentation on a novel research topic at the end of the semester. Graduate students may have additional course requirements. Prerequisites: Psych 100B and one of the following: Psych 315 or Psych 321 or Psych 360.
Credit 3 units. A&S: SS A&S IQ: SSC BU: BA EN: S

L33 Psych 4592 The Development of Social Cognition
From birth we are surrounded by other social beings, making children’s ability to navigate the social world a foundational capacity. This writing-intensive course explores how children navigate the social world. We discuss topics such as infants' concept of agency, intentional understanding, children's learning from and about others, trust and skepticism, social groups, and morality. We also consider what happens when the human ability to reason about the mind and understand behavior breaks down
L33 Psych 4615 The Science of Paying Attention
What processes underlie humans' ability to "pay" attention? This course introduces students to theories of attention and cognitive control. Students develop an understanding of empirical approaches to studying the control of attention, and examine factors that facilitate and impair humans' ability to pay attention. A final section examines attention and cognitive control challenges that accompany aging and select psychological disorders such as ADHD, and applications of attention and cognitive control research to the classroom, driving, and other contexts. Prerequisites: Psych 100B and Psych 360. Credit 3 units. A&S: SS A&S IQ: SSC Arch: SSC Art: SSC EN: S

L33 Psych 462 Psychology of Memory and Cognition
This course explores the core readings that have shaped the way scientists tackle fundamental aspects of memory and cognition. These include cognitive methods, pattern recognition, attention, working memory, episodic memory, semantic memory, language acquisition and comprehension, decision making, problem solving, and expertise. Each week we explore at least three "classic" readings on a given topic along with some more recent papers. The goal is to expose students to this foundational literature, and develop a better understanding of the zeitgeist that set the stage for these papers to change how researchers tackled specific problems. Prerequisite: Psych 360 or Psych 380. Credit 3 units. A&S: SS A&S IQ: SSC EN: S

L33 Psych 4625 Autobiographical Memory
This course investigates how people create and remember their personal life histories, with an emphasis on empirical studies within the cognitive tradition. Possible topics include childhood amnesia, false memories, emotional memories, the role of motivation in remembering, and how personal events are represented in memory. Prerequisite: Psych 360 or Psych 301 or Psych 380. Credit 3 units. A&S: SS WI A&S IQ: SSC WI Art: SSC

L33 Psych 4647 Ancient Madness
In this course we ask what madness meant in Greek and Roman culture. We find reading strategies that are sensitive both to ancient evidence and to the ethical demands of talking about, evaluating and categorizing people treated as mad. While we concentrate on literary (particularly tragic and epic), philosophical, and medical texts, we also look at visual representations and evidence from ritual and cult. An important part of our project involves tracing the afterlife of classical ideas. The history of melancholia grounds this aspect of the course. We then consider how antiquity informs psychanalysis, and how ancient madness might partake in a critique of contemporary understandings of what it means to be mentally ill. Same as L08 Classics 4647. Credit 3 units. A&S: TH, CD A&S IQ: HUM, LCD EN: H

L33 Psych 4651 History and Modern Systems of Psychology
An introduction to the history of psychology. This course begins with a brief consideration of forces leading to development of psychology in the mid-1800s. It then examines the birth of modern psychology in Germany, and the schools of psychology that emerged early in the 20th century. Newer orientations and ideas are considered in the final segment of the course. We also consider the impact of psychology on American public life during the 20th century. Prerequisite: Psych 100B, junior or senior standing and 6 units of advanced home-based psychology courses or permission of the instructor. Credit 3 units. A&S: TH A&S IQ: HUM Art: HUM EN: H

L33 Psych 4702 Current Debates in Psychology
In this seminar we debate issues of current controversy in psychology. Topics range from perception (Can subliminal messages affect behavior?) to development (Do children in daycare develop differently than children cared for at home?) to mental illness (Is road rage a real psychological illness?). Discussions are based on readings of primary research and review articles, and are augmented by written assignments. Prerequisite: completion of 6 units of advanced home-based psychology courses. Credit 3 units. A&S: SS A&S IQ: SSC EN: S

L33 Psych 4745 Genes, Brain and Behavior: Pathways to Psychopathology
This seminar introduces students to emerging methods and recent empirical literature evaluating links between genes, brain and behavior, that is beginning to illuminate specific biological pathways shaping risk for and the emergence of psychopathology. In particular, the course focuses on the design, analysis and interpretation of multimodal research (e.g., fMRI, PET, EEG, pharmacology, molecular genetics, environmental assessment/manipulation) examining the biological underpinnings of behavioral traits relevant to psychopathology. Seminar readings are primary journal articles, reviews and book chapters. Prerequisite: Psych 3401 (or equivalent). Credit 3 units. A&S: SS A&S IQ: SSC EN: S

L33 Psych 4746 Biological Pathways to Psychopathology: From Genes and the Environment to Brain and Behavior
This seminar will introduce students to methods and recent empirical literature evaluating links between genes, brain and behavior. This research is beginning to illuminate specific biological pathways shaping risk for psychopathology. In particular, the course focuses on the design, analysis, and interpretation of multimodal research (e.g., IMRI, PET, EEG, pharmacology, molecular genetics, environmental assessment/manipulation) examining the biological underpinnings of behavior relevant to psychopathology. Primary journal articles, reviews, and book chapters are the readings for this seminar. Prerequisites: Psych 100B and Psych 345 or Psych 3401 or Biol 2970; or graduate standing (prior course work in psychology, neuroscience, and genetics is advised). Credit 3 units. A&S: NS A&S IQ: NSM

L33 Psych 4765 Inside the Disordered Brain: Biological Bases of the Major Mental Disorders
How do subtle disturbances in brain circuits lead to abnormal behavior and psychopathology? This course provides students with a working knowledge of our rapidly evolving understanding
of brain circuits that create order in our social, emotional and cognitive worlds, and how disorder within these circuits leads to a broad range of psychopathology including depression, anxiety, phobias, PTSD, OCD, addiction, schizophrenia, psychopathy and violence. Prerequisite: Psych 3401, graduate standing, or permission of instructor. Credit 3 units. A&S: NS A&S IQ: NSM Art: NSM

L33 Psych 488 The Cognitive Neuroscience of Film
To understand complex events in real life depends on perception, action and memory. To understand movies, people probably depend on similar psychological and neural mechanisms. This seminar uses results from psychology and neuroscience to try to better understand the experience of a movie viewer, and uses theory and practice to explore psychological hypotheses about perception. Prerequisite: Psych 360 or Psych 3604 or Psych 4604, or graduate standing in Psychology. Credit 3 units. A&S: SS A&S IQ: SSC, WI Art: SSC

L33 Psych 489 The Science and Politics of Testing in the United States
Why do tests permeate American Society? Tests have been integral to the decision-making process in many venues of American culture-e.g., immigration opportunities, voting rights, college admissions, workforce considerations, special education placement, educational reform, and graduation requirements. The credibility of these decisions depends upon the claim that a particular test is a scientific instrument and relevant to the decision-making process. This claim is worthy of study. The purpose of this course is twofold. The first purpose is to examine how the nexus of science and politics influence testing practices in American society. The second purpose is explore how testing practices influence the culture of schools, civil liberties, the work place, and public discourse about merit. Same as L12 Educ 4891 Credit 3 units. A&S: SS, SD A&S IQ: SSC, SD EN: S

L33 Psych 494 Behavioral Psychology Readings Group
This weekly journal-style readings class provides the opportunity to read and discuss seminal as well as current papers on the conceptual aspects of behavioral psychology and relevant research. Points of contact among behaviorism, cognitivism and neuroscience, and the natural lines of fracture, are examined. Prerequisite: permission of instructor. Credit 1 unit. A&S: SS A&S IQ: SSC EN: S

L33 Psych 4971 Undergraduate Teaching
Limited opportunities for outstanding undergraduates to serve as teaching assistants for selected departmental courses. Prerequisites: Psychology majors only, junior/senior standing and permission of psychology adviser, course instructor and departmental approval. Credit cannot be counted toward fulfilling the requirements for the major or minor in psychology. Credit/No Credit only. Enrollment by department only. Credit 2 units.

L33 Psych 498 Study for Honors
Acceptance into the Honors Program is based on superior performance as evidenced by the student's record in undergraduate course work and the written agreement (Petition for Permission to Enroll) of a member of the faculty of the department (or other approved supervisor) to supervise an Honors project. The student must complete 6 units of Honors work (3 units of Psych 498 and 3 units of Psych 499), submit an acceptable written thesis, and be recommended by the department. Recommendation for an Honors degree is based on the evaluation of the written thesis and the student's overall performance as an undergraduate. Students in the Honors Program meet regularly in the Honors Seminar to discuss their research and become acquainted with the work of the other students. Psych 498 is a writing-intensive course. All students must meet with Dr. Sommers prior to registering. Prerequisite: Psych 301 or equivalent and permission of instructor. Credit 3 units. A&S: SS, WI A&S IQ: SSC, WI Art: SSC