### Course Schedule—Fall 2008

#### Neuroscience

Note: Text highlighted in red indicates that a change has been made to the course listing. The red text indicates the current, updated information.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Credits</th>
<th>Limit</th>
<th>Prerequisites</th>
<th>Description</th>
<th>Section</th>
<th>Days</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>080.105 (N)</td>
<td>An Introduction to Neuroscience (3) Hendry Limit 120</td>
<td>Hendry</td>
<td>3</td>
<td></td>
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<td>Our knowledge of brain function from the level of single molecules to human behavior continues to expand at something approaching light speed. That knowledge invades our lives every day. And decisions are made based on that knowledge from every corner of life…from physician to politician and every stop in between. This course is meant to provide a fundamental understanding of how the cells and molecules as well as the regions and systems of the brain work to have you see and hear and move and remember. The course is divided into four sections that progress from the cells of the brain and spinal cord to circuits then systems and finally behaviors. Introduction to Neuroscience is designed for any college student who has an interest in the range of disciplines we call neuroscience.</td>
<td>Sec. 01</td>
<td>MWF</td>
<td>4:30-5:20</td>
</tr>
<tr>
<td>080.250 (N,S)</td>
<td>Neuroscience Lab: A Practical Approach (3) Gorman/Fortune Limit 20 per section Prereq: 080.305 and 080.306 or 200.141 or Permission of Instructor This course will give students the &quot;hands-on&quot; experience of the inter-disciplinary nature of neuroscience. Students will use anatomical and neuro-physiological techniques to understand the basic underlying principles of neuroscience.</td>
<td>Gorman</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>Sec. 01</td>
<td>T 1:30-4:30</td>
<td>02</td>
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<td>02</td>
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<td>Th 1:30-4:30</td>
<td>03</td>
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<td>F 9-12</td>
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<tr>
<td>080.305 (N)</td>
<td>The Nervous System I (3) Hendry Limit 200 Sophomores, Juniors, &amp; Seniors Only Prereq: 080.203 or 200.141 The nervous system is a fully integrated, two-semester course that surveys the cellular and molecular biology of neurons as well as the structure and function of the nervous system. Cross-listed with Biology</td>
<td>Hendry</td>
<td>3</td>
<td>200</td>
<td>080.203 or 200.141</td>
<td></td>
<td>Sec. 01</td>
<td>TTh</td>
<td>1:30-2:45</td>
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<tr>
<td>080.330 (N)</td>
<td>Brain Injury and Recovery of Function (CM) (ST) (3) Gorman Limit 30 Prereq: 080.203, 080.305 &amp; 080.306 or 080.205 and 080.304 or Perm. Req’d This course investigates numerous types of brain injuries and explores the responses of the nervous system to these injuries. The course's primary focus is the cellular and molecular mechanisms of brain injury and the recovery of function. Discussions of traumatic brain injury, stroke, spinal cord, and tumors, using historical and recent journal articles, will facilitate students' understanding of the current state of the brain injury field. Cross-listed with Psychological and Brain Sciences and Behavioral Biology</td>
<td>Gorman</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>Sec. 01</td>
<td>WF</td>
<td>1:30-2:45</td>
</tr>
<tr>
<td>080.345 (N)</td>
<td>Great Discoveries in Neuroscience (3) (CM) (ST) Baraban Limit 30 Prereqs: 080.205 and 080.304, or 080.305 and 080.306 This course examines the historical and intellectual context of selected, key advances in neuroscience, how they were made and the impact they had on an understanding of the nervous system. Particular attention will be paid to advances in cellular and molecular neuroscience. Among the topics covered will be the discovery of monoamine neurotransmitters and of endocannabinoids, the role of neurotrophins in neural development, and prion-based diseases of the brain.</td>
<td>Baraban</td>
<td>3</td>
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<td></td>
<td></td>
<td>Sec. 01</td>
<td>TTh</td>
<td>9-10:15</td>
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<tr>
<td>080.352 (N)</td>
<td>Primate Brain Functions (3) (ST) Hendry Limit 100 Prereq: 080.205 and 080.304, or 080.305 and 080.306. Neuroscience is</td>
<td>Hendry</td>
<td>3</td>
<td>100</td>
<td></td>
<td></td>
<td>Sec. 01</td>
<td>MW</td>
<td>3-4:15</td>
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</tbody>
</table>
approaching the time when it can offer a compelling explanation for how
the brain works. This course takes advantage of work done in humans
and non-human primates to survey concepts in sensory perception, motor
command, and memory mechanisms. Lectures are given by faculty whose
research explores these issues. Each subject is explored as a three-lecture
sequence: 1) a background lecture that lays out the general principles and
over-riding questions of the field; 2) an in-depth lecture that covers the
most recent scientific literature; and 3) a summary lecture that brings
together the major questions and their Resolution.

Cross-listed with Psychological and Brain Sciences

080.355 (N) VISUAL SYSTEM II (ST) (3) Hendry
Limit 100  Prereq: Nervous System I or Systems Neuroscience or Cell
Biology or Physiological Foundations or Intro to the Human Brain.
From outer segments of photoreceptors to the Fusiform Face Area of the
cerebral cortex we have come to understand how the visual system works
at each of many fundamental levels. This course examines the basis for
perception of visible objects at each of these levels. We will use the
secondary literature (scientific reviews) to accent the hard-won truths
about visual system functional organization and to highlight ongoing
controversies. Students will be lead through carefully chosen reviews in a
series of lectures and written summaries prepared by faculty. Three
exams and a final exam will test students not on their memorization of
minutiae but on their understanding of fundamental principles.

The following Advanced Seminars (080.411-080.414) in Neuroscience are the official classes for the students who are admitted
to the BA/MS program in Neuroscience. They provide 3 credit hours each semester, and are offered in the Fall and Spring terms.
The class is composed of a guest lecture by a prominent scientist at the beginning of each semester followed by student
presentations focusing on the areas related to the student’s thesis research. Cumulative credit hours of minimum 6 and maximum
12 are required for graduation.

Course numbers reflect the cumulative number of semesters each student has taken this course.

080.411 (N) ADVANCED SEMINAR: NEUROSCIENCE I (3) Yoshioka
Limit 20  For students in 4th year of the BA/MS Program  Perm. Req’d.

080.412 (N) ADVANCED SEMINAR: NEUROSCIENCE II (3) Yoshioka
Limit 20  For students in 4th year of the BA/MS Program  Perm. Req’d.

080.413 (N) ADVANCED SEMINAR: NEUROSCIENCE III (3) Yoshioka
Limit 20  For students in 4th year of the BA/MS Program  Perm. Req’d.

080.414 (N) ADVANCED SEMINAR: NEUROSCIENCE IV (3) Yoshioka
Limit 20  For students in 4th year of the BA/MS Program  Perm. Req’d.

020.317 (N) SIGNALING IN DEVELOPMENT AND DISEASE (3) Kuruvilla
Limit 100 Biology, Molecular and Cellular Biology and Neuroscience
Majors only
Cross-listed with Biology

020.330 (N) GENETICS (3) Hoyt/Cunningham  Prereq: 020.305  Limit 320
Cross listed with Biology

050.105 (N,S) INTRODUCTION TO COGNITIVE NEUROPSYCHOLOGY (3)
McCloskey Limit  Cross-listed with Cognitive Science

050.339 (N,S) INTRODUCTION TO COGNITIVE DEVELOPMENT (3) Landau
Limit 25 44
Meets with 050.639.
Cross-listed with Psychological and Brain Sciences

200.344 (N,S) BEHAVIORAL ENDOCRINOLOGY (3) Staff
Limit 70  Prereq: 200.141 or 080.205 or Perm. Req’d.
Cross-listed with Behavioral Biology and Psychological and Brain
Sciences

080.511 INDEPENDENT STUDY

080.531 RESEARCH IN NEUROSCIENCE
FRESHMEN

080.541 RESEARCH IN NEUROSCIENCE
SOPHOMORES
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Limit</th>
<th>Requirements</th>
<th>Section</th>
<th>Time</th>
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<tbody>
<tr>
<td>080.551</td>
<td>RESEARCH IN NEUROSCIENCE JUNIORS</td>
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<tr>
<td>080.561</td>
<td>RESEARCH IN NEUROSCIENCE SENIORS</td>
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<tr>
<td>080.620</td>
<td>THEORETICAL NEUROSCIENCE Niebur Limit 20 Perm. Req’d.</td>
<td>Niebur</td>
<td>20</td>
<td></td>
<td>Sec. 01</td>
<td>F 4-4:50</td>
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<td>Topics of theoretical neuroscience and computational neuroscience will be discussed based on the original literature. Students are expected to actively participate in the discussion and also to present selected material to the class. Open to graduate students and postdocs and advanced undergraduates.</td>
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<tr>
<td>080.630</td>
<td>BODIAN SEMINAR SERIES Von Der Heydt Limit 30 Perm. Req’d. for Undergraduate Students</td>
<td>Von Der Heydt</td>
<td>30</td>
<td></td>
<td>Sec. 01</td>
<td>M 4-4:50</td>
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<td></td>
<td>The Bodian Seminar is an interdisciplinary colloquium for discussion of current research into the neural basis of mental processes. Leading researchers, generally from outside the University, are invited to give lectures, which will be announced per e-mail. Undergraduate students who register for this course are asked to study a publication by the speaker, as provided with the announcement, and to prepare a question for each speaker together with a brief discussion of the possible answers.</td>
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<tr>
<td>050.639</td>
<td>INTRODUCTION TO COGNITIVE DEVELOPMENT Landau</td>
<td>Landau</td>
<td>5</td>
<td>25 Cross-listed with Psychological and Brain Sciences and Cognitive Science</td>
<td>Sec. 01</td>
<td>MW 1:30-2:45</td>
</tr>
<tr>
<td>080.810</td>
<td>READINGS IN SYSTEMS NEUROSCIENCE I Niebur/Stuphorn</td>
<td>Niebur/Stuphorn</td>
<td>20</td>
<td>Perm. Req’d This is a graduate-level seminar series on current literature in systems neuroscience. It also serves as a discussion group/journal club for students and faculty at the Krieger Mind/Brain Institute, and is open to the wider systems/cognitive neuroscience community at Homewood and other Hopkins campuses. Each week, a student or faculty member will present a recent article selected in consultation with the course directors. The selected readings will focus on the neural mechanisms of perception, attention, motor behavior, learning and memory. Pass/Fail only</td>
<td>Sec. 01</td>
<td>T 5-5:50</td>
</tr>
<tr>
<td>080.850</td>
<td>MENTORED RESEARCH IN NEUROSCIENCE Yoshioka/ Holland</td>
<td>Yoshioka/Holland</td>
<td>30</td>
<td>per section Departmental consent required</td>
<td>Sec. 01</td>
<td></td>
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<tr>
<td>080.851</td>
<td>MENTORED RESEARCH IN NEUROSCIENCE Yoshioka/ Gorman</td>
<td>Yoshioka/Gorman</td>
<td>30</td>
<td>per section Departmental consent required</td>
<td>Sec. 01</td>
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<tr>
<td>080.852</td>
<td>MENTORED RESEARCH IN NEUROSCIENCE Yoshioka Limit 20 Perm. Req’d.</td>
<td>Yoshioka</td>
<td>20</td>
<td>Perm. Req’d.</td>
<td>Sec. 01</td>
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<td>080.854</td>
<td>MENTORED RESEARCH IN NEUROSCIENCE Yoshioka Limit 20 Perm. Req’d.</td>
<td>Yoshioka</td>
<td>20</td>
<td>Perm. Req’d.</td>
<td>Sec. 01</td>
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</tbody>
</table>

For students in the BA/MS Program Perm. Req’d.