

## Intro to Neuroscience and Behavior: Neur 105, Spring 2020

Lecture: Tuesday / Thursday 9:00 am-10:15 am; OH 169

*Contact Info:* Megan D. Gall; OH A52; [megall@vassar.edu](mailto:megall@vassar.edu); phone: x7115

*Drop in office hours:* Thursday 1:00-3:00 in my office

*Other good times to meet with me:* By appointment in my office (usually Wednesday 10-noon, 3:15-5). Monday and Fridays are research days and I am often not available by appointment on those days.

### Course Materials

*Text:* Neuroscience: Exploring the Brain 4th Edition by Bear et al.

### Course Description:

This course provides a broad introduction to neuroscience and behavior, focusing on examples and approaches from cellular and molecular, cognitive, behavioral, and systems neuroscience. Basic principles of neuroscience are covered including how the cells in the nervous system develop, process signals and transmit information, basic brain anatomy and an introduction to human and comparative systems in neuroscience and behavior. Students gain an understanding of brain-behavior relationships with particular interest in identifying the biological mechanisms important for human and animal behavior.

### Course Goals:

1. Understand and explain the fundamental principles and mechanisms of neuroscience and behavior.
2. Use information about the ecology, evolution and behavior to predict the behavior and neurobiology of organisms.
3. Demonstrate ability to independently learn information about behavior and neuroscience.
4. Convey information about animal behavior and neurobiology in written and oral formats.
5. Become comfortable *not* knowing the answer - scientists are interested in the unknown!

### GRADING

Exams (75 pts each)	300
Final Exam	100
Independent Assignments	100
<b>Total</b>	<b>500</b>

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TENATIVE SCHEDULE (note: the class schedule will be available via Moodle)

Week	LECTURE	Chapters*
Week 1	1/23: Introduction to Neuroscience and Behavior	1
Week 2	1/28: <i>Neuroanatomy</i> : Cells of the Nervous System 1/30: <i>Neuroanatomy</i> : Cells / Organization of the Nervous System <i>Exploration and Dissection Plan Due by Sunday at 5pm</i>	2 3 (membranes)
Week 3	2/4: <i>Neuroanatomy</i> : 1: Hands on; comparative external brain structures 2/6: <i>Neuroanatomy</i> :: Hands on; sagittal and coronal brain dissections	7 and Appendix
Week 4	<b>2/11: Test 1: Neuroanatomy</b> <i>Cells: Physiology and Information</i> : The Membrane at Rest 2/13: <i>Cells: Physiology and Information</i> : Graded and Action Potentials Download and bring: <a href="http://www.metaneuron.org/">http://www.metaneuron.org/</a>	3 3,4
Week 5	2/18: <i>Cells: Physiology and Information</i> : Graded and Action Potentials Download and bring: <a href="http://www.metaneuron.org/">http://www.metaneuron.org/</a> 2/20: <i>Cells: Physiology and Information</i> : Synaptic Transmission	4 5
Week 6	2/25: <i>Cells: Physiology and Information</i> : Neurotransmitter Systems <i>Electrophysiology Assignment Due in Class Tuesday</i> <b>2/27: Test 2: Cells: Physiology and Information Transfer</b> <i>Information and Integration</i> : What are neural circuits?	6
Week 7	3/3: <i>Information and Integration</i> : Detecting and Processing Electromagnetic Radiation (Vision, magnetic and electrical senses) 3/5: <i>Information and Integration</i> : Detecting and Processing Mechanical Stimuli (Touch and Hearing)	9,10 11,12
<b>Spring Break</b>	<b>No Class (Spring Break)</b>	
Week 8	<i>Visual or Auditory Illusion Assignment Due in Class Thursday</i> 3/24: <i>Information and Integration</i> : Detecting and Processing Chemicals (Olfaction and Gustation) 3/26: <i>Information and Integration</i> : Acting on information (motor systems)	8 13
Week 9	3/31: <i>Information and Integration</i> : Acting on information (motor systems) <b>4/2: Test 3: Information and Integration: whole organism</b> <i>A Lifetime of Information</i> : Development of the Brain	14 23
Week 10	4/7: <i>A Lifetime of Information</i> : Where do new cells come from? 4/9: <i>A Lifetime of Information</i> : How do we learn and remember?	23 24,25
Week 11	4/14: <i>A Lifetime of Information</i> : How do we unlearn and forget? 4/16: <i>A Lifetime of Information</i> : Paper Discussion <i>Paper Discussion Assignment Due in Class Thursday</i>	24,25 Paper Discussion
Week 12	<b>4/21: Test 4: A Lifetime of Information</b> <i>Comparative Neuroscience and Behavior</i> : An introduction 4/23: <i>Comparative Neuroscience and Behavior</i> : Biological Clocks	19
Week 13	4/28: <i>Neuroscience and Behavior</i> : Communicating 4/30: <i>Neuroscience and Behavior</i> : Sex and Reproduction	Paper Discussion 17, Paper
Week 14	5/5: <i>Integrative Neuroscience and Behavior</i> <i>Final Exam Study Guide Due Friday by 5</i>	

\*These are the chapters associated with the lecture, but we will not cover all material, particularly in the later chapters. It is your responsibility to read the material associated with the lecture.

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*Lecture Exams:* The four lecture exams will cover notes given in class, videos posted on moodle, class assignments, and pertinent information from the textbook. Some notes will come from sources other than the text, so it is important that you attend lectures. The first four exams will be over material covered prior to the exam period and will be approximately 30-45 minutes in duration during the exam class period. The final exam will be a cumulative test, covering all the information covered during the semester.

*Make up policy:* The makeup will be a take-home essay exam administered at the end of the semester. You will only be allowed to make up one exam, which will require an excused absence from the Dean of Studies. You will receive a zero for each exam beyond that.

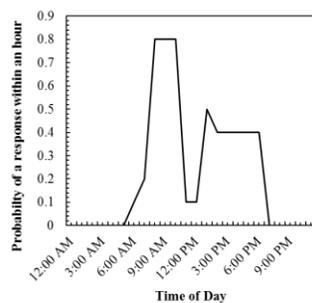
*Independent Assignments:* There will be five independent assignments for you to complete, one prior to each exam. These include the dissection plan for our neuroanatomy classes, a cell physiology assignment, a short report on an auditory or visual illusion of your choice and how it is produced, an assignment for our paper discussion, and a study guide for the final exam. Specific instructions can be found posted on Moodle. These assignments are designed for you to practice using information from the class (hint: they also give you a good idea of what types of questions you are likely to find on our exams!)

*Participation:* Participation in class is HIGHLY encouraged. Material will be covered in lecture that may come from sources other than your textbook.

*Late Policy:* You have a total of 2 grace days during the semester (write “grace day” on top of a late assignment). After your two grace days there will be a 5% penalty for each 24 hour period that an assignment is turned in late.

*Originality and Attribution:* You are responsible for following the procedures detailed in the handbook, Originality and Attribution: A Guide for Student Writers at Vassar College. If you have any questions about attribution, you must see me well before an assignment is due.

*E-mail and Electronics Policy (Monday through Friday):*



Phones should not be used in class, unless expressly permitted. Phone use may result in a reduction of your maximum possible grade. Laptops are allowed in class, but I reserve the right to ban their use on an individual or class basis if they are being used for non-class activities (e-mail, facebook, etc.) or distracting other students. I strongly encourage handwritten notes (and drawings!) as they have been show to improve retention.

### ACCOMMODATIONS:

Academic accommodations are available for students registered with the Office for Accessibility and Educational Opportunity. Students in need of ADA/504 accommodations should schedule an appointment with me early in the semester to discuss any accommodations for this course that have been approved by the Office for Accessibility and Educational Opportunity, as indicated in your AEO accommodation letter.

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### Grades:

<b>% Points</b>	<b>Final Grade</b>
94-100:	A
90-93.99:	A-
86-89.99	B+
82-85.99	B
80-81.99	B-
76-79.99	C+
72-75.99	C
70-71.99	C-
66-69.99	D+
60-65.99	D
0-59.99	F

*From the Vassar Catalogue*

**A** indicates achievement of distinction. It involves conspicuous excellence in several aspects of the work.

**B** indicates general achievement of a high order. It also involves excellence in some aspects of the work, such as the following:

- Completeness and accuracy of knowledge
- Sustained and effective use of knowledge
- Independence of work
- Originality

**C** indicates the acceptable standard for graduation from Vassar College. It involves in each course such work as may fairly be expected of any Vassar student of normal ability who gives to the course a reasonable amount of time, effort, and attention. Such acceptable attainment should include the following factors:

- Familiarity with the content of the course
- Familiarity with the methods of study of the course
- Evidence of growth in actual use both of content and method
- Full participation in the work of the class
- Evidence of an open, active, and discriminating mind
- Ability to express oneself in intelligible English

**C-**, **D+**, and **D** indicate degrees of unsatisfactory work, below standard grade. They signify work which in one or more important respects falls below the minimum acceptable standard for graduation, but which is of sufficient quality and quantity to be counted in the units required for graduation. Work evaluated as **F** may not be counted towards the degree.

If you come say “hi” to me in my office by the end of the first week (Friday by 5pm) I will give you a small amount of extra credit – be sure to introduce yourself (name and the class you are taking with me). I will be available in my office Thursday afternoon and Friday from 10-5pm.

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### Our Contract

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This syllabus is our contract for the course. It details my expectations for your performance in the class. However, it also details my role in the course and sets up expectations you should have for me about what course material we will cover, what the timeline of the class will be, and when you can find me to discuss work outside of class. For these reasons, it is very important that you read and understand the content of this syllabus. I will keep a photocopy of your acknowledgement and return the original form to you in class.

**I have read and understand the material contained within this syllabus**

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Print Name

Signature

Date

Received by Dr. Gall

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Signature

Date