

**Biology 461/565, Neurobiology  
Course Syllabus and Schedule, Fall 2018**

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Office hours: TTh, 3:30-4:45, and by appointment

**Class Meets:** TTh, 2:00 – 3:15; LSS 163

**Textbook:** Purves et al. (2017) Neuroscience 6<sup>th</sup> edition    REQ

**Learning Outcomes:** The goal of this course is to provide a fundamental understanding of the nervous system in vertebrates and invertebrates, by studying its molecular building blocks, individual cells and their functions, parts of cells and groups of cells. Based on this information, we will learn about the function of sensory and motor systems, the mechanisms of memory and learning, and the principles of neural development. Particular emphasis will be placed on the key experiments that led to our current understanding of the function and development of the nervous system.

The course will always start on time. **PLEASE turn off any device that might make a noise.** Material will be presented using PowerPoint and through some step-by-step generation of equations and illustrations representing cell processes. We will regularly access the text's web supplement or other resources to view animations/video.

**Slides and other course information** will be posted on Blackboard.

All slides or other material will be posted by 5 pm the day before the class meets. Alternatively, I will send materials and announcements to everyone as email attachments.

**Exams and grading.** Course grades will be based on three in-class exams, a term paper or oral presentation (your choice) and two take-home assignments. Exams will consist of two parts (probably divided 50/50): Part 1 will contain five short essay questions, many of which will require illustrations, and which are designed to test your understanding of the material and your ability to apply this understanding to novel situations. As a study guide, I will supply 10+ potential essay questions one week before the exam date; some of these questions **will be on the exam**. Part 2 of each exam will consist of multiple choice questions.

Please take the time to double-check that your score was summed correctly on any exam or assignment. If there was an error, see me and I will correct it. If you believe that your answer was correct (or more correct) than it was graded, please explain why you think so, in writing, then see me during my office hours or by appointment and we'll discuss it.

You have the option of preparing either a term paper or an oral presentation. This project can be on any topic in neurobiology or neuroscience, but the topic must be approved by me. You may use any reference material you can find: textbooks, web sites, reviews, etc, but all must be properly cited, and you must include as references **at least three research papers from the original literature**. More information will be provided later in the semester regarding this assignment. The take-home assignments

will consist of a problem set in electrophysiology and another in ligand binding/pharmacology, and will be assigned and due early in the semester.

Grading scheme:

	Points	Subtotal
Take-home assignments	50 + 50	100
In-class exams	100 ea, X 3	300
Term paper/Oral presentation	100	100
	<b>Total:</b>	<b>500</b>

You may request a make-up exam date/time only if you have 3 exams on the same day. Please bring syllabi for other courses to verify. **Absence from exams** will only be excused for reasons of illness, family emergency or conflict with an official University function. People with excused absences during the exam period must notify instructors in advance. Scores will not be curved. Letter grades are awarded based on the following scale:

A	90 – 100%
B	80 – 89.9%
C	70 – 79.9%
D	60 – 69.9%
F	0 – 59.9%

**Course Organization:** The course will consist of three major themes, each divided into topics. Questions and discussion throughout the course are encouraged and this syllabus should be considered flexible. For example, if there is great interest and prolonged discussion regarding neurotransmitters and receptors, we will spend more time on this subject and can easily adjust the rest of the course to accommodate. Guest presentations by faculty, and by graduate students enrolled in the graduate section of the course, include content that will be evaluated on exams and/or through assignments. Adjustments in the course schedule will be posted on Blackboard as these presentations, topics, and their timing are established.

**SCHEDULE FALL 2018**

Day/Date		Topic <i>Course schedule subject to change</i>	Readings in Purves	Assignments
T	Aug 21	Introduction/History	Ch 1 and Appendix	
Th	Aug 23	Cells of the Nervous System		
T	Aug 28	Organization of the Nervous System		
Th	Aug 30	Electrical Signaling: Membrane Potential	Ch 2, 3, 4	
T	Sept 4	Electrical Signaling: Action Potentials		
Th	Sept 6	Electrical Signaling: Graded Potentials		
T	Sept 11	Synapses		Ch 5
<b>Th</b>	<b>Sept 13</b>	Neurotransmitters	Ch 6, 7	<b>Electrophysiology assignment due</b>
T	Sept 18	Receptors and Second Messengers	Ch 7	
<b>Th</b>	<b>Sept 20</b>	<b>Exam I (through Sept. 13)</b>		<b>Exam I</b>
T	Sept 25	General Senses I	Ch 9	
Th	Sept 27	General Senses II	Ch 9, 10	
T	Oct 2	Special Senses: Chemical Senses	Ch 15	
<i>Th</i>	<i>Oct 4</i>	<i>Guest Presentation: Dr. Ben Richardson Neuropharmacology</i>		
T	Oct 9	Special Senses: Vision I	Ch 11	
Th	Oct 11	Special Senses: Vision II	Ch 12	
T	Oct 16	Special Senses: Auditory	Ch 13	
Th	Oct 18	Special Senses: Vestibular (+ overview of term project assignment)	Ch 14	<b>Ligand binding assignment due</b>
<i>T</i>	<i>Oct 23</i>	<i>Guest Presentation, Dr. Craig McGowan Motor Control Pathways</i>	<i>Ch 16,17</i>	
<i>Th</i>	<i>Oct 25</i>	<i>Guest Presentation, Dr. Ben Richardson Modulation of Movement</i>	<i>Ch 18, 19</i>	
<b>T</b>	<b>Oct 30</b>	<b>Exam II (through Oct 18)</b>		<b>Exam II</b>
Th	Nov 1	Patterning the Nervous System I	Ch 22	
T	Nov 6	Patterning the Nervous System II; Neurogenesis	Ch 22	
Th	Nov 8	Development of Neural Circuitry	Ch 23	
T	Nov 13	Neural Plasticity I	Ch 25	
Th	Nov 15	Neural Plasticity II <i>Graduate student guest presentations: Imaging the nervous system I and II</i>	Ch 8, 1	<b>Abstract or Outline, + 3 References due for Term Project</b>
<i>M-F</i>	<i>N. 19-23</i>	<i>Thanksgiving HOLIDAY</i>		
<b>T</b>	<b>Nov 27</b>	Neural Damage and Regeneration	Ch 26	<b>Drafts of Term Paper/Presentation Due (optional)</b>
Th	Nov 29	<i>Graduate student guest presentations: Cerebellar plasticity; Sex differences in circuitry Cortical visual pathways; Basal ganglia and disease; Neural-immune interactions</i>	Ch 8, 12, 24, 18, 26	
<b>T</b>	<b>Dec 4</b>	<b>Student Presentations</b>		
<b>Th</b>	<b>Dec 6</b>	<b>Student Presentations</b>		<b>Term Paper Due</b>

T	Dec 11	Exam III (at time of final exam; 12:45-2:45)		Exam III
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**Other Information**

***Withdrawal from Course:***

Friday, August 31, 2018: Last day to Withdraw without a W

Friday, October 26, 2018: Last day to Withdraw

***Academic Dishonesty:***

Unfortunately, recent events obligate me to include the following written warning. **Acts of cheating or plagiarism in this class will not be tolerated. It will result in zero points for that assignment and may ultimately result in you failing this class. All persons involved will be held accountable.**

Cheating refers to the acquisition of answers to test questions in a dishonest fashion.

Plagiarism is defined as i) the representation of another persons work as your own, in its entirety or with slight changing of wording, ii) the use of writing from published sources without citing the author(s) or iii) downloading material from the internet and presenting it as your own work.

*UI Faculty-Staff Handbook:* [its.uidaho.edu/fsh/2300.html](https://its.uidaho.edu/fsh/2300.html) outlines the expected code of conduct for students at the University of Idaho. Article II addresses academic honesty of students.