Biology 461/565, Neurobiology
Course Syllabus and Schedule, Fall 2020

Instructor:	Dr. Deborah Stenkamp
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Office hours:	By appointment

Class Meets: TTh, 2:00 – 3:15; Zoom link (TBA) will be provided

Textbook: Purves et al. (2017) Neuroscience 6th 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, and I will be "in the room" 5-10 minutes prior to 2:00. Please mute your mic. Normally this is a highly interactive class with many questions – please use the Chat function or raised hand to indicate you have a question, and then I would really like to hear your voice! I would also like to see your faces, so please engage video if you are able to do so. The UI will soon provide some Zoom etiquette recommendations to all instructors, and I will make these available on BBLearn. Hopefully they are consistent with this syllabus.

Material will be presented using PowerPoint and through some step-by-step generation of equations and illustrations representing cell processes, classic and contemporary experiments, etc. We will regularly access the text's web supplement and other resources to view animations/video.

Slides and other course information will be posted on BBLearn. 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. I am pondering the use of a Slack workspace for the class, and I am happy to consider other mechanisms for student engagement as they are suggested.

Exams and grading (note that this plan is still a work in progress at the time of this writing). Course grades will be based on two take-home assignments, three "in-class exams," and a critique of a paper from the original (primary) literature.

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.

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 at least 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. As of this writing, I have not yet determined how best to administer exams for a virtual course but am surveying colleagues here and at other institutions. I also welcome suggestions based upon your experiences in other courses in Spring 2020.

Please take the time to double-check that your score was summed correctly on any exam or assignment. If there was an error, let me know 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, and then we'll discuss it.

One writing assignment is also required, a 3-4 page critique of a paper from the original literature. More information regarding this assignment will be posted, and discussed early in the course. The critique itself will be due late in the semester.

You may request a make-up exam date/time only if you have 3 exams on the same day. Please provide 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 anticipated 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:

Grading scheme (BIOL 461):

	Points	Subtotal
Take-home assignments	50 + 50	100
In-class exams	100 ea, X 3	300
Paper critique	50	50
	Total:	**450**

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

Additional Requirements for Graduate Credit in Neurobiology (BIOL 565). As of this writing, there are 10 graduate students registered for BIOL 565. For graduate credit in this course, two additional assignments/activities are required: a presentation for the class, and the use of more than one reference from the primary literature for your paper critique.

The topic of the presentation will be determined by instructor in consultation with graduate students. I will provide a list of options, and encourage graduate student to present topics related to their research activities, as appropriate. The presentation should be supported by materials that can be provided to, or are already available to, the class (e.g., the textbook, a review article, etc.). The presentation should be 15 minutes in length (with ~5 more min for Q/A). Presentations will be practiced with instructor, and then delivered to the class. Evaluation of the presentation will include level of understanding of the subject matter and degree of improvement from presentation 1 to 2. A rubric and further information will be provided later in the semester.

Paper critiques from graduate students will either compare findings from two studies that appear in disagreement with each other, or critique two or more studies that build upon each other.

Grading scheme (BIOL 565):

	Points	Subtotal
Take-home assignments	50 + 50	100
In-class exams	100 ea, X 3	300
Paper critique	100	100
Presentation	100	100
	Total:	**600**

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: i) Fundamentals of Neurobiology; ii) Sensory and Motor Systems; and iii) Development, Plasticity, and "Potpourri" (the graduate student presentations). Each of these themes will be divided into topics. Questions and discussion throughout the course are encouraged and this course schedule 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 BBLearn as these presentations, topics, and their timing are established.

SCHEDULE FALL 2020

Day/Date		Topic *Course schedule subject to change*	Readings in Purves	Assignments
T	Aug 25	Introduction/History	Ch 1 and Appendix	
Th	Aug 27	Cells of the Nervous System		
T	Sept 1	Organization of the Nervous System		
Th	Sept 3	Electrical Signaling: Membrane Potential	Ch 2, 3, 4	
T	Sept 8	Electrical Signaling: Action Potentials		
Th	Sept 10	Electrical Signaling: Graded Potentials		
T	Sept 15	Synapses	Ch 5	
Th	**Sept 17**	Neurotransmitters	Ch 6, 7	**Electrophysiology assignment due**
T	Sept 22	Receptors and Second Messengers	Ch 7	
Th	**Sept 24**	**Exam I (through Sept. 13)**		**Exam I**
T	Sept 29	Neuropharmacology		
Th	Oct 1	General Senses I	Ch 9	
T	Oct 6	General Senses II	Ch 9, 10	
Th	Oct 8	Special Senses: Chemical Senses	Ch 15	
T	Oct 13	Special Senses: Vision I	Ch 11	
Th	Oct 15	Special Senses: Vision II	Ch 12	
T	Oct 20	Special Senses: Auditory	Ch 13	
Th	Oct 22	Special Senses: Vestibular (+ overview of Paper Critique assignment)	Ch 14	**Ligand binding assignment due**
T	*Oct 27*	*Guest Presentation, Dr. Craig McGowan* *Motor Control Pathways*	*Ch 16, 17*	
Th	Oct 29	Modulation of Movement	Ch 18, 19	
T	**Nov 3**	**Exam II (through Oct 18)**		**Exam II**
Th	Nov 5	Neurulation	Ch 22	
T	Nov 10	Patterning the Nervous System	Ch 22	**Select paper(s) for Paper Critique**
Th	Nov 12	Neurogenesis and Axon Pathfinding	Ch 22	
T	Nov 17	Refinement of Neural Circuitry	Ch 23	
Th	Nov 19	Learning/Memory	Ch 8, 1, 12	
M-F	*N. 23-27*	*Thanksgiving HOLIDAY*		
T	**Dec 1**	Damage and Regeneration	Ch 25, 26	**Drafts of Paper Critique due (optional)**
Th	Dec 3	*Graduate student guest presentations*		
T	Dec 8	*Graduate student guest presentations*		
Th	**Dec 10**	*Graduate student guest presentations*		**Paper Critique Due**
Th	**Dec 17**	**Exam III** (12:45-2:45)		**Exam III**

Other Information

Withdrawal from Course:
Friday, September 4, 2020: Last day to Withdraw without a W.
Friday, October 30, 2020: 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 outlines the expected code of conduct for students at the University of Idaho. Article II addresses academic honesty of students.