

Syllabus
Introduction to Neurobiology
BSC 343
 Spring 2016



MWF 9:00 to 9:50 am, SCH 236

Instructor

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Course Objective

The overall objective of the course is to introduce advanced undergraduate and graduate students to the principles of neurobiology. Emphasis is placed on the teaching of neurobiology as an interdisciplinary and multifaceted field of study, as course materials are synthesized from diverse fields such as biochemistry, cell biology, physiology, pharmacology, biophysics, anatomy and computer science. The course is not restricted to a particular species, but rather discusses general principles of neurobiology on selected examples. Descriptive examples are chosen from a wide range of vertebrates and invertebrates that best illustrate the neurobiological principle, concept or mechanism.

Required Text

Purves D et al. 2012. *Neurosciences*. 5th Edition. Sinauer Associates, Sunderland MA.

Journal articles will also be assigned from the neurobiology literature for required reading.

Tentative Lecture and Exam Schedule

(Assigned reading from *Neuroscience*, Purves et al., 5rd edition, is noted in parentheses)

<u>Lecture#</u>	<u>Date</u>	<u>Topic</u>
1	1/11	Class Overview, Studying the Nervous System (Ch. 1)
2	1/13	Survey of Human Neuroanatomy (Appendix)
Neuronal Signaling		
3	1/15	Electrical Signaling of Nerve Cells (Ch. 2)
	1/18	M.L. King, Jr. Holiday
4	1/20	Voltage Dependent Membrane Permeability (Ch. 3)
5	1/22	Ion Channels and Transporters (Ch. 4)
6	1/25	Ion Channels and Transporters (Ch. 4)
7	1/27	Synaptic Transmission (Ch. 5)
8	1/29	Synaptic Transmission (Ch. 5)
9	2/01	Neurotransmitters and their Receptors (Ch. 6)
10	2/03	Neurotransmitters and their Receptors (Ch. 6)
11	2/05	Molecular Signaling within Neurons (Ch. 7)

12	2/08	Synaptic Plasticity (Ch. 8)
13	2/10	Synaptic Plasticity (Ch. 8)
	2/12	Exam 1
Sensation and Sensory Processing		
14	2/16	The Somatic Sensory System: Touch and Proprioception (Ch. 9)
15	2/18	Pain (Ch. 10)
16	2/20	Vision: The Eye (Ch. 11)
17	2/23	Central Visual Pathways (Ch. 12)
18	2/25	Central Visual Pathways (Ch. 12)
19	2/27	The Auditory System (Ch. 13)
20	3/02	The Vestibular System (Ch. 14)
21	3/04	The Chemical Senses (Ch. 15)
Movement and Its Central Control		
22	3/07	Lower Motor Neuron Circuits and Motor Control (Ch. 16)
	3/09, 3/11 and 3/13	Spring Break
23	3/16	Upper Motor Neuron Control of the Brain Stem and Spinal Cord (Ch. 17)
24	3/18	Modulation of Movement by the Basal Ganglia (Ch.18)
	3/20	Exam 2
25	3/23	Modulation of Movement by the Basal Ganglia (Ch.18)
26	3/25	Modulation of Movement by the Cerebellum (Ch. 19)
27	3/27	Eye Movements and Sensory Motor Integration (Ch. 20)
28	3/30	The Visceral Motor System (Ch. 21)
The Changing Brain		
29	4/01	Early Brain Development (Ch. 22)
30	4/03	Construction of Neural Circuits (Ch. 23)
31	4/06	Modification of Neural Circuits as a Result of Experience (Ch. 24)
32	4/08	Repair and Regeneration in the Nervous System (Ch. 25)
	4/10	Exam 3
Complex Brain Functions		
33	4/13	Association Cortex and Cognition (Ch. 26)
34	4/15	Association Cortex and Cognition (Ch. 26)
35	4/17	Speech and Language (Ch. 27)
36	4/20	Sleep and Wakefulness (Ch. 28)
37	4/22	Emotions (Ch. 29)

38	4/24	Emotions (Ch. 29)
39	4/27	Sex, Sexuality, and the Brain (Ch. 30)
40	4/29	Sex, Sexuality, and the Brain (Ch. 30)
41	5/01	Memory (Ch. 31)
	TBA	Exam 4

Grading

Total points = 500. Four exams, each covering approximately one fifth of the course material, are worth 100 points each. **Exam 4 is not a comprehensive final exam.** Four homework/written assignments (total 100 points = 20% of the grade) will be assigned during the semester.

Web Materials

Course materials and grades will be available on Reggienet. These materials will include lectures, homework assignments, and announcements. It is strongly recommended that students peruse lecture material before lecture. Students may also wish to download lecture notes to bring to lecture. In this way, more attention can be given to the lecture material and less time spent writing notes.

Absences

Attendance in lectures is voluntary. However, attendance at exams is mandatory. If an absence is unavoidable, you must notify me in advance for sponsored school events or within 24 hours for illness/personal reasons. Documentation for your absence may be requested prior to scheduling an alternate exam. It is your responsibility to notify me if you cannot attend an exam. If you miss an exam without the proper notification, that exam will count as a zero. In case of a death in the family, you must provide a letter from the clergy or funeral directors for you to take a makeup exam.

Academic Misconduct and Dishonesty:

Academic misconduct will not be tolerated. See the following website for a complete listing of what constitutes academic misconduct at Illinois State University:

<http://deanofstudents.illinoisstate.edu/conflict/conduct/code/academic.php>

If a student is caught engaging in academic misconduct a punishment ranging from an automatic 20% deduction to no credit for the assignment will be assessed based upon the seriousness of the infraction, and students may be reported to the Dean of Students. *Plagiarism* will not be tolerated. If a student has been caught plagiarizing material without proper citation, copying from another student, or cheating, the offense will be reported. Students are expected to be honest in all academic work. A student's placement of his or her name on any academic exercise shall be regarded as assurance that the work is the result of the student's own thought, effort, and study. Students who have questions regarding issues of academic dishonesty should refer to the University regulation that outlines unacceptable behaviors in academic matters.

It is your and my responsibility to uphold the principles of Academic Integrity. Academic Integrity is an important part of this University and this course. Academic Integrity should be used in preparation of this course, in class time, regarding exams, and with regard to written

assignments. In certain circumstances (such as cheating or plagiarism) faculty may be required to refer a student(s) to Community Rights & Responsibilities for a violation of Illinois State University's Code of Student Conduct. ***In short, I will not tolerate academic dishonesty under any circumstances. Academic Integrity is expected in all classroom endeavors.***

Syllabus Statement for Classroom Behavior:

Students are expected to behave in a manner consistent with being in a professional environment. Open discussion and disagreement are ***encouraged*** in a respectful manner. Open hostility, rudeness, and incivility are discouraged and will result in appropriate action. Mechanical disruptions (cell phones, pagers, electronic toys, music players, etc.) are also strongly discouraged. Students acting in a disruptive or uncivil manner may be dismissed from the class for the remainder of the class period. If necessary, referrals may also be made to Community Rights & Responsibilities for violations of the Code of Student Conduct.

Incomplete/Withdrawal:

Policies concerning the assignment of an incomplete and allowing for withdrawal from a course can be found in the Illinois State University Undergraduate Catalog. These guidelines will be followed.