

Changed 4/11/2012-Cooper

BIOLOGY 535 - COMPARATIVE NEUROBIOLOGY AND BEHAVIOR

Meeting: 12:30- 1:45 Tuesdays and Thursdays
Room 109 Morgan

Instructor: Elizabeth Debski
MDR#3, Room 201
323-9537
debski@uky.edu

Office Hours: By Appointment

TEXTBOOK: *Neuroscience* by Dale Purves and others is required for the course.

EXAMS: There will be two exams and a final examination. Each test will count 25% towards your final grade. These exams will consist primarily of short answer and essay-type questions. The final exam will not be cumulative.

ASSIGNMENTS: The final 25% of your grade will be determined by an original term paper addressing a current topic in the Neurosciences. You may **not** choose a topic dealing with clinical neuroscience. Suitable topics include but are not limited to:

- Learning and Memory
- Cell Death
- Effects of Aging on the Nervous System
- Stem Cells and Nervous System Repair
- Critical Periods in Nervous System Development
- Synaptic plasticity
- Synapse Formation
- Pathfinding in Neurons

Your topic must be approved by me. The paper must include: a title page, an abstract, an introduction, a detailed analysis/descriptive section (main body of the paper), a summary/conclusions section, and references. References must include at least eight original research papers in addition to reviews, textbooks, etc. All term papers will be due in final form on April 19, 2012. The maximum grade attainable on the paper will decrease 5 points/day for each day past the due date. So if you are three days late in turning in the paper, you can only get an 85 for a paper that would have gotten a 100 if turned in on time. Undergraduates should aim for a length of 10-14 pages and graduate students, for 15-20 pages.

GRADING: Numbers will be assigned to individual exams and assignments. A final letter grade for the course will be determined by averaging the scores obtained on those exams and assignments applying the scale below:

90-100	A
80-89	B
70-79	C
60-69	D
less than 60	E

I reserve the option of grading more leniently than the listed scale should circumstances warrant it. However, under no circumstances will grading be more rigorous than the listed scale.

MISSED EXAMS: If you have a valid University excuse for missing an exam, a make-up exam will be administered at a time convenient to both the instructor and the student. A valid University excuse is also required for late submission of term papers etc. If there are any questions concerning this policy, see me.

IMPORTANT DATES: February 1 is the last day to drop a class without it appearing on your transcript. April 6 is the last day to drop a class (it will appear on your transcript).

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LECTURE SCHEDULE: The following is a tentative lecture schedule outline. Readings from Purves' book appear in parentheses after the lecture title. Additional readings may be assigned in class. I reserve the right to add or delete material as I feel necessary. The class will be informed of any changes.

Introduction

JANUARY	12	The brain and behavior
	17	Cellular structure of the nervous system (Chapter 1)
	19	Nervous system organization (Chapter 1)
	24	Early Brain Development (Chapters 22)
	26	Nervous system development (Chapter 22)
	31	Axon Guidance (Chapter 23)

Neuronal Signaling

FEBRUARY	2	Structure and electrical properties of membranes (Chapter 2)
	7	EXAM
	9	Passive electrical properties of neurons (Chapter 2)
	14	Ionic basis of the action potential (Chapter 3)
	16	Channels underlying action potentials (Chapter 4)
	21	Computer Lab Day
MARCH	23	Ion transporters and ion channels (Chapter 4)
	28	Synaptic transmission (Chapter 5)
	1	Synaptic integration (Chapter 5)
	6	Computer Lab Day
	8	Neurotransmitters and their receptors (Chapter 6)
	15	SPRING VACATION
	17	SPRING VACATION
	20	Second messenger systems (Chapter 7)
	22	EXAM
	27	Cognitive neural science
	29	Somatic sensory system (Chapter 9)

Nervous System Functioning

APRIL	3	Pain (Chapter 10)
	5	Vision (Chapter 11)
	10	Central Visual pathways (Chapter 12)
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	12	Motor systems : General concepts (Ch 16, 17) & Modulation of Movement (Ch19)- Cooper
	17	Sleep and Modulation of CNS - O'Hara
	19	Hand In Term Paper
		Synaptic Plasticity (Chapter 8) - Cooper
	24	Experience-dependent modification (Chapter 24) - Cooper
	26	Memory (Chapter 31) - Cooper
MAY	2 (WED)	FINAL EXAM -8:00 a.m.

Dr. Robin Cooper

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