

NRO C69F The Synaptic Organization of the Brain

Fall, 2001; Room B-382; F 1-3 p.m.

Instructor: Professor Gwen O. Ivy

Office: S-569, Phone 287-7438

Office Hours: T 5-6, W 12-1, TH 5-6, F 3-4 or by appointment

NOTE: T and TH, I teach in S-128 until 5:00 p.m. and may be detained there by students asking questions.

COURSE DESCRIPTION

Synaptic organization may be defined as the study of principles underlying the organization of neurons and synapses into circuits that mediate the functional operations of different brain regions. It is a multidisciplinary subject, requiring the integration of results from studies in molecular neurobiology, neuroanatomy, neurophysiology, neurochemistry, neuropharmacology, development and behavior, as well as theoretical studies of computational neural models and neuronal networks. It is also a multilevel subject, beginning with the properties of the individual synapse and building up through microcircuits and neurons to the local circuits characteristic of a given region and finally, to the interactions between various circuits that form a given system, and even system-system interactions (that tastes as beautiful as it looks!).

TEXT

The Synaptic Organization of the Brain. Fourth Edition. Gordon M. Shepherd (ed.), Oxford University Press, New York, 1998.

ORGANIZATION

The course will meet weekly for two hours and will consist of lectures by the instructor and extensive class discussions. The textbook will be the major source of information, supplemented by illustrations and concepts provided by the instructor in class.

EVALUATION

*Midterm Exams - Week of Oct. 15, TBA 5-7 p.m.;	20%
Week of Nov. 12, TBA 5-7 p.m.;	20%
(multiple choice, short answer, label diagrams, draw circuits)	
Final Exam - Final exam period, TBA	30%
(same format as midterm; emphasis placed on material after midterms)	
Term Paper - Due Dec. 3 (Last day of class)	25%
Fifteen pages, topic of your choice approved by instructor	
Possible topics will be provided. Format will be provided	

*Exam questions will be taken from both the book and the lectures.

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Schedule of Topics

DATE :	TOPIC :
F Sept. 14	No class
F Sept. 21	Introduction to the course Begin Chapter 1: Introduction to synaptic circuits
F 28	Chapter 1
F Oct. 05	Chapter 2: Membrane properties and neurotransmitter actions
F 12	Chapter 2: (cont'd.)

MIDTERM 1 week of Oct. 15, TBA

F 19	Chapter 2 : (cont'd.)
F 26	Chapter 5: Olfactory Bulb
F Nov. 02	Chapter 5 : (cont'd.)
F 09	Chapter 7: Cerebellum

MIDTERM 2 week of Nov. 12, TBA

F 16	Chapter 7: (cont'd.)
F 23	Chapter 11: Hippocampus
F 30	Chapter 11: (cont'd.)
F Dec. 03	Last day of class, Term paper due
F Dec 10 - 21	Final exam period, date TBA 30% of grade