Neurophysiology, BIOL 418, Spring 2012

Instructor: Jonathan R. Day, Ph.D.
Office Hours: M W F 2-4 pm (Holt 223); T R 1-5 pm (Holt 281A); or by appointment

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Grades: 3 Exams: 50 questions (1.0 point each) = 150 points
Final exam: 100 questions (1.0 point each) = 100 points
Quiz Scores: 10 quizzes (10 points each) = 100 points
Lab exercises 5 worksheet sets (10 points each) = 50 points

Total = 400 points

A 93 - 100%  A- 90 - 92%
B+ 87 - 89%  B 83 - 86%
B- 80 - 82%
C+ 77 - 79%
C 70 - 76%
D 60 - 69%
F < 60%*

The exams will cover any and/or all lecture material, laboratory exercises, and reading assignments.

Student learning objectives (SLOs)

1) Understand the various processes of exchange and transport across the cell membrane.
2) Understand resting membrane potential and the basis of excitability.
3) Understand signal transduction and receptor function.
4) Understand the functions and general organization of the nervous system.
5) Describe the organization of the 5 sensory systems.
6) Describe the hierarchical organization of the motor system.
7) Understand the principles of synaptic integration.

Last day to drop without permission: 2/4

Last day to drop without a serious and compelling reason: 2/18
Tentative Lecture Schedule (additional reading will be assigned in class)

1 Introduction to the Nervous System Kandel. Chapters 1 and 2.

2 Membrane Channels and Signaling Kandel. Chapter 6.


5 Action Potential II

6 Neurons as Conductors: Propagation of the Action Potential Kandel. Chapter 8. Exam 1

7 Electrical and Chemical Synaptic Transmission Kandel. Chapter 10.


10 Biochemistry of Synaptic Transmission Kandel. Chapter 15. Exam 2

11 Learning and Memory I Kandel. Chapter 62.

12 Learning and Memory II Kandel. Chapter 63.

13 From Genes to Structure to Behavior Kandel. Chapters 3 and 17.

14 Nervous System Development I Kandel. Chapter 52.


16 Axon Guidance I Kandel. Chapter 54.

17 Synapse Formation Kandel. Chapter 55.

18 Fine-Tuning Synaptic Connections Kandel. Chapter 56. Exam 3


20 Vision II Kandel. Chapter 26

21 Hearing Kandel. Chapters and 30 and 31.

22 Olfaction and Other Sensory Systems Kandel. Chapter 32.


24 Higher Order Cognitive Function Kandel. Chapters 60 and 61. Cumulative Final Exam; Wed. May 16 10:00 – 11:50