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Office Hours: Tuesday 11-12; Wednesday 2-4; Friday 10-11; and by appointment

Date	Room	Topic	Readings (see details below)	Assignment*
Feb. 17 Lecture	BSS 211	Membrane potential, Nernst Equation, Goldman Equation	<i>Current Flow in Neurons</i> , <a href="#">AND</a> <i>Shepard Membrane Potential</i> , <a href="#">OR</a> <i>The Nerve Impulse</i> p. 1- 7 <a href="#">or</a> <i>Instant Notes in Neuroscience</i> p. 15-18 <a href="#">OR</a> <i>Nerve &amp; Muscle</i> p. 28-40 <a href="#">OR</a> Purves et al. <i>Neuroscience</i> (see below).	
Feb. 22 Lecture	BSS 211	Patch clamping	Purves et al. <i>Neuroscience</i> (see below) <a href="#">AND</a> <i>The Nerve Impulse</i> p. 10-20 <a href="#">AND</a> <i>Nerve &amp; Muscle</i> p. 57-58 <a href="#">OR</a> <i>Instant Notes in Neuroscience</i> p. 26-28	
Feb. 22 Laboratory	BSS 416	<i>NeuroDynamix</i> simulations of membrane potential & patch clamping	Handout on <i>Moodle</i>	Question set
Feb. 24 Lecture	BSS 211	Voltage clamping	Purves et al. <i>Neuroscience</i> (see below) <a href="#">AND</a> <i>The Nerve Impulse</i> p. 25-30 <a href="#">AND</a> <i>Nerve &amp; Muscle</i> p. 47-57	
Mar. 1 Lecture	BSS 211	Voltage clamping		
Mar. 1 Laboratory	BSS 416	<i>NeuroDynamix</i> simulations of voltage clamping	Handout on <i>Moodle</i>	Question set
Mar. 3 Lecture	BSS 211	Oscillators and Central Pattern Generators	Purves et al. <i>Neuroscience</i> (see below) <a href="#">AND</a> Marder & Calabrese (1996) (on <i>Moodle</i> )	
Mar. 8 Lecture	BSS 211	Introduction to <i>SWIMMY</i> : A simulation of a complex neural circuit	Handout on <i>Moodle</i>	
Mar. 8 Laboratory	BSS 416	<i>SWIMMY I</i> : Introduction and synaptic transmission	Handout on <i>Moodle</i>	Question set

Date	Room	Topic	Readings (see details below)	Assignment*
Mar. 10 Lecture	BSS 211	Modulation of Neuronal Circuits	Nusbaum & Beenakker (on <i>Moodle</i> )	
Mar. 22 Lecture	BSS 211	Neural Circuit Analysis using <i>SWIMMY</i>	Handout on <i>Moodle</i>	
Mar. 22 Laboratory	BSS 416	<i>SWIMMY II</i> : Circuit Analysis	Handout on <i>Moodle</i>	Circuit diagram & explanation

\* Laboratory assignments are due one week following the exercise.

Accessing ONCORES readings (use lower case for User ID & password)

User ID: oncores

Password: relax

- *Current Flow in Neurons* Appendix A from *Principles of Neural Science* edited by E.R. Kandel, J.H. Schwartz & T.M. Jessell. Available on Reserve in the Library or via *ONCORES*.
- *Shepard Membrane Potential* Chapter 4 of *Neurobiology* by G.M Shepard. Available on Reserve in the Library or via *ONCORES*.
- *The Nerve Impulse* by F. Bezanilla. Available as a PDF document on the *Moodle* web site.
- *Instant Notes in Neuroscience* by A. Longstaff. Available as an *ebRARY* book. Link on the *Moodle* web site.
- *Nerve & Muscle* by R.D. Keynes and D.J. Aidley. Available as an *ebRARY* book. Link on the *Moodle* web site.
- *Neuroscience 2<sup>nd</sup> Edition* edited by D. Purves, G.J. Augustine, D. Fitzpatrick, L.C. Katz, A-S LaMantia, J.O. McNamara, & S.M. Williams. This is an electronic version of the text available at the National Center for Biological Information (NCBI). A link is provided on the *Moodle* site. See below for accessing particular topics.

*Neuroscience* by Purves et al. is a bit of a pain to use, but contains enough useful information to be worth it. The link is to the 2<sup>nd</sup> edition from 2001; the current edition is the 4<sup>th</sup> edition. The link on *Moodle* will take you to the NCBI site for the text. Unfortunately, you can’t just browse through the text, you have to search for particular terms. This search will return various sections that contain some information about the topic. The easiest way to get to a particular section is to search for the section title (the Table of Contents is displayed on the text’s home page). Below are the section titles for particular lecture dates.

### February 17 (all from Ch. 2)

Electrical Potentials Across Nerve Cell Membranes  
 How Ionic Movements Produce Electrical Signals  
 The Forces that Create Membrane Potentials  
 Electrochemical Equilibrium in an Environment with More Than One Permeant Ion  
 The Ionic Basis of the Resting Membrane Potential

### February 22 (from Ch. 4)

Ion Channels Underlying Action Potentials

**February 24, March 1**

Ionic Currents Across Nerve Cell Membranes (from Ch. 3)

Ion Channels Underlying Action Potentials (from Ch. 4)

The Diversity of Ion Channels (from Ch. 4)

Principles Derived from Studies of the Neuromuscular Junction (from Ch. 7)

**March 3**

Spinal Cord Circuitry and Locomotion (from Ch. 16)

Thalamocortical Interactions (from Ch. 28)