

**Syllabus**Labs meet in Rebstock 112, **Tuesdays** or **Wednesdays** 9:00a.m.-6:00 p.m.

Date	Rotation	Team						Assignments due
		A	B	C	D	E	F	
Aug. 25/26	Lectures & Demos	Membranes and instruments: Measuring passive properties of neurons						
Sept. 1/2	Lectures & Demos	Cells, circuits and instruments: Measuring active properties of neurons						
Sept. 8/9	Experiment I: Electric fish						Data Collection Plan 1, Homework 1, Quiz	
Sept. 15/16	Expt. II: Frog sciatic						DCP 2	
Sept. 22/23	Expt. III: Human Demo: Frog tectum						DCP 3, Homework 2, Lab practical	
Sept. 29/30	Expt. IV	Limulus	Crayfish	Rat	DCP 4			
Oct. 6/7					Homework 3			
Oct. 13/14					Manuscript draft 1			
Oct. 20/21	NO CLASS						Think about neurons	
Oct. 27/28	Expt. V	Crayfish	Rat	Limulus	DCP 5, Manuscript 1			
Nov. 3/4					Peer review 1			
Nov. 10/11					Manuscript draft 2			
Nov. 17/18	Expt. VI	Rat	Limulus	Crayfish	DCP 6, Manuscript 2			
Nov. 24/25	NO CLASS						Give thanks	
Dec. 1/2							Peer review 2	
Dec. 8/9							Manuscript draft 3	
Dec. 15/16	Finals week						Manuscript 3	

URL: [www.nslc.wustl.edu/courses/bio404/bio404.html](http://www.nslc.wustl.edu/courses/bio404/bio404.html)

Username: bio404 Pwd: spike

**Individual assignments**

1.	Data Collection Plans 1-6 (10 points each)	60 points
2.	Homework 1 (Questions 1-18)	25
3.	Quiz	20
4.	Lab practical	90
5.	Homework 2—Figures and legends from Expt. I (Electric Fish)	50
6.	Homework 3—Figures and legends from Expt. II (Frog Sciatic)	100
7.	Peer reviews 1- 2 (75 points each)	150
8.	First authorship	30
9.	Effort	25

**Team assignments**

1.	Manuscript Drafts 1-3 (50 points each)	150
2.	Manuscripts 1-3 (100 points each)	300
<b>Total</b>		<b>1000</b>

**BIO 404 Schedule 2009****Rebstock 112****Day 1      Passive Properties of The Neuronal Membrane: Resting**

9:00-9:30	Lecture #1:	The fast and tiny world of neurophysiology: A sense of scale
9:30-10:00	Lecture #2:	Modeling neurons as membrane compartments
10:07-11:00	Hands-on:	Intro to computer simulation: The membrane
11:07-12:00	Break	
12:07-1:00	Lecture #3:	Multicompartment model and equilibrium potentials
1:07-2:00	Lecture #4:	Electrodes, amplifiers and multimeters
2:07-6:00	Hands-on:	Computer Sim 1 and Electronic Sim 1: Resting potential

*Read pp. 1-17 of lab manual and the papers listed on p. 11. Answer questions 1-4 (Homework 1).*

**Day 2      Active Properties of the Neuronal Membrane: Responding**

9:00-10:00	Lecture #5:	The Action potential
10:07-11:00	Lecture #6:	Oscilloscopes, stimulators and sample rates
11:07-11:30	Lecture #7:	Synaptic potentials
11:30-6:07	Hands-on:	Computer Sim 2 and Electronic Sim 2: Action potential

*Answer questions 5-6 on pp. 15-17 in the lab manual (Homework 1).*

**Day 3      Experiment I**

9:00-4:00	<i>Turn in Homework 1 and Data Collection Plan 1</i> Record from electric fish
4:15-4:45	Quiz

*Answer questions in the lab manual (Homework 2)*

**Day 4      Experiment II**

9:00-6:00	<i>Turn in Data Collection Plan 2</i> Record from the frog sciatic nerve
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*Answer questions in the lab manual (Homework 3)*

**Day 5      Experiments III**

	<i>Turn in Data Collection Plan 3 and Homework 2</i>
9:00-12:00	Human EMG [Teams A-C]
9:00-12:00	Just noticeable weights, prism goggles, and hands-on human brains [Teams D-F]
12:00-1:00	Lunch
1:00-4:00	Human EMG [Teams D-F]
1:00-4:00	Just noticeable weights, prism goggles, and hands-on human brains [Teams A-C]
4:00-4:30	Break
4:30-5:15	Lab practical and frog tectum
5:15-6:00	Lab practical and frog tectum

**Days 6-14      Experiments IV-VI**

9:00-6:00	Record neural responses in crayfish, horseshoe crabs, rats and humans
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