

# **Intro to Neural Science**

## **NEURL-UA 100 (001) – Neural Science**

## **BIOL-UA 100 (001) - Biology**

Prof. Paul Glimcher  
4 Washington Place, 809

### **Lectures**

Monday and Wednesday 2:00pm-3:15pm  
Meyer 122

### **Recitations:**

002: Monday	4:55pm-6:10pm	7E12 129
003: Tuesday	4:55pm-6:10pm	7E12 123
004: Wednesday	4:55pm-6:10pm	7E12 129
005: Thursday	4:55pm-6:10pm	7E12 LL27
006: Friday	11:00am-12:15pm	194 Mercer 201

### **TA:**

Long Sha
Long Sha
Adrienne Santiago
Will Adler
Adrienne Santiago

### **Graduate Teaching Assistants**

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### **Texts**

Required:  
Neuroscience: Exploring the Brain. Bear, Connors and Paradiso.  
(Fourth edition – *or* – *Third edition*)

Recommended as a background text for those who find the main text too intense:  
Biological Psychology. Rosenzweig, Breedlove and Leiman. Sinauer Associates.

Recommended as advanced reading for those who find the main text not intense enough:  
Fundamental Neuroscience. Squire et al. Academic Press.

## Grading

### Exams:

Midterm I 25%

Midterm II 25%

Final Exam 50%

Date and Time of Final:

Monday, December 21st from 2PM-3:50PM.

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## Course Syllabus

### *PART 1: Cellular and Molecular Foundations of Neuroscience*

#### Week 1

Sept 2 (Wednesday): Historical Foundations of Neuroscience

Readings: Chapter 1 (either edition)

No Recitations This Week: **First Week of Classes**

#### Week 2 (No Class Monday – Labor Day)

Sept 8 (Wednesday): The Cells of the Nervous System, Introduction to Potentials

Readings: Chapter 2 (either edition)

In Class Exercise: Flash Cards

**Recitations This Week: There will be Recitations Tues -> Friday**

**(We know this stinks for Monday! But wait, it gets worse.)**

#### Week 3

Sept 14 (Monday): **Rosh Hashana**, No Lecture. (Not again? oy vay!)

Sept 16 (Wednesday): The Resting Potential, Introduction to the Action Potential

Readings: Chapter 3 (either edition)

In Class Exercise: Question Sheet

**Recitations This Week: There will be Recitations Monday -> Friday**

**For Monday, this will be the first class.**

**People observing Rosh Hashana, try to go to one of the other recitations for just this week**

Recitation Goal: Understanding the Resting Potential

#### Week 3 (it gets better from here – mostly)

Sept 21: The Action Potential, The Refractory Period, Conduction Velocity

Readings: Chapter 4 (either edition)

In Class Exercise: Conduction Velocity

Sept 23: The Action Potential II

Readings: Chapter 4, continued (either edition)

Recitation Goal: Understanding the Action Potential, The Refractory Period and Conduction Velocity

#### **Week 4**

Sept 28: Basics of Synaptic Transmission

Readings: Chapter 5

Sept 30: Neurotransmitters and Drugs

Readings: Chapter 6

Recitation: **Sheep Brain Dissection, wear ‘workclothes’**

#### **Week 5**

Oct 5: Neuroanatomy

Readings: Chapter 7 in both editions but focus on the first section of the chapter, “Gross organization” and the appendix.

Recitation Goal: **Review for Midterm I**

**Exam Covers Sept 2 – Oct 5 Lectures and Readings**

Note: You are free to attend any recitations you want this week.

We will also schedule additional recitations before the exam!

Recitations after the exam won’t be held

#### **Oct 7: Midterm I**

### ***PART 2: Sensory and Motor Neuroscience***

#### **Week 6**

Oct 13: (Tuesday – but officially a “Monday” at NYU):

Chemical Senses, Sensory Transduction, The Function of Sensation.

Readings: Chapter 8 (either edition)

Additional Reading: “The Molecular Logic of Smell” and “Making Sense of Taste”

Scientific American Articles from Website

Oct 14: Vision 1, The Eye

Readings: Chapter 9

In Class Exercise: The Blindspot

Recitation Goal: Understanding the basics of sensory coding: Transduction, Encoding, Pathways, Topographic Maps and Receptive Fields. *People in the Tuesday Recitation are encouraged to*

*attend one of the other recitations. Both the Monday and Tuesday recitations will meet on Tuesday – if you can make it. Room Location for ‘Tuesday’ to be announced. (Sorry about that, but what choice do we have?)*

## **Week 7**

Oct 19: Vision 2, Low Level Cortex

Readings: Chapter 10

Oct 21: Vision 3, High Level Cortex and Perceptual Experience

Readings: “Vision A Window On Consciousness” Sci Am Article from Website

Recitation Goal: Understanding the Visual System

## **Week 8**

Oct 26: The Auditory System

Readings: Chapter 11 up to page 375 in 3<sup>rd</sup> Edition. Chapter 11 up to page 403 in 4<sup>th</sup> Ed.

Additional Reading: “Listening With Two Ears” Sci Am Article from Website

In Class Exercise: Frequency Limits

Oct 28: The Touch System

Readings: Chapter 12

In Class Exercise: Discrimination Thresholds

Recitation Goal: Understanding All General Principles of Sensory Systems

## **Week 9**

Nov 2: Movement 1

Readings: Chapter 13

Nov 4: Movement 2

Readings: Chapter 14

Recitation Goal: **Review for Midterm II**

**Exam Covers Oct 13 – Nov 4 Lectures and Readings**

Note: You are free to attend any recitations you want this week.

## **Week 10**

**Nov 9: Midterm II**

**Midterm II, covers Part 2 of Class only. Oct 13 – Nov 4 Lectures and Readings.**

### ***Part 3: Cognitive Neuroscience***

Nov 11: Drugs and the Autonomic Nervous System

Readings: Chapter 15

#### **Week 11**

Nov 16: Development in the Nervous System (Paul may be away)

Readings: Chapter 23, also Chapter 7 – the section labeled: *Understanding CNS Structure Through Development*.

Nov 18: Learning and Memory: Structure and Anatomy

Readings: Chapter 24

Recitation Goal: Understanding Development and Memory

#### **Week 12**

Nov 23: Learning and Memory: Molecular Biology

Readings: Chapter 25

Nov 25: TBA

*Thursday and Friday are Thanksgiving Break*

***No Recitations This Week***

#### **Week 13**

Nov 30: Emotion I

Readings: Chapter 18

Dec 2: Emotion II

Readings: Additional Reading by LeDoux on Website

Recitation Goal: Understanding Emotion and Molecular Memory/LTP!

#### **Week 14**

Dec 7: Neurobiology of Language

Readings: Geschwind Article on Website

Dec 9: Neurobiology of Decision

Readings: 'Tahoe 5' Article on website

**Recitation Goal: Review for Final Exam – Final is Cumulative but stresses CogNeuro**

## **Week 15**

Dec 14: The Neurobiology of Love

Readings: No Readings

In Class Exercise: To Be Determined...

## **Dec 21: Final Exam**