

Intro to Neural Science

V80.0100 (001) – Neural Science

V23.0100 (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	405 Silver
003: Tuesday	4:55pm-6:10pm	C-13 25W4th
004: Wednesday	4:55pm-6:10pm	407 Silver
005: Thursday	4:55pm-6:10pm	403 Silver

TA:

Brett Vintch
Brett Vintch
Kevin Jarrett
Kevin Jarrett

Graduate Teaching Assistants

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Texts

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

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

Grading

Exams:

Midterm I 25%
Midterm II 25%

Final Exam 50%

Course Syllabus

PART 1: Cellular and Molecular Foundations of Neuroscience

Week 1

Sept 9: Historical Foundations of Neuroscience

Readings: Chapter 1

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

Week 2

Sept 14: The Cells of the Nervous System, Introduction to Potentials

Readings: Chapter 2

In Class Exercise: Flash Cards

Sept 16: The Resting Potential, Introduction to the Action Potential

Readings: Chapter 3

In Class Exercise: Diffusion Demo at 2 Temperatures

Recitation Goal: Understanding the Resting Potential

Week 3

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

Readings: Chapter 4

In Class Exercise: Conduction Velocity

Sept 23: The Action Potential II

Readings: Chapter 5

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

Week 4

Sept 28: Yom Kippur, No Class

Note: Recitations will be held this week but you are free to attend any you want.

Sept 30: Basics of Synaptic Transmission

Readings: Chapter 5

Recitation Goal: **Review for Midterm I**

Exam Covers Sept 9 – Oct 5 Lectures and Readings

Week 5

Oct 5: Neurotransmitters and Drugs I
Readings: Chapter 6

Oct 7: Midterm I

Recitations: Monday and Tuesday Recitations open to all students for general review, Wednesday and Thursday Recitations Canceled.

PART 2: Sensory and Motor Neuroscience

Week 6

Oct 12: Neuroanatomy
Readings: Chapter 7

Oct 14: Chemical Senses, Sensory Transduction, The Function of Sensation Vision 1
Readings: Chapter 8
Additional Reading: “The Molecular Logic of Smell” and “Making Sense of Taste”
Scientific American Articles from Website

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

Week 7

Oct 19: Vision 1, The Eye
Readings: Chapter 9
In Class Exercise: The Blindspot

Oct 21: Vision 2, Low Level Cortex
Readings: Chapter 10

Recitation Goal: Understanding the Principles of Sensory Systems and the engineering problems they solve.

Week 8

Oct 26: Vision 3, High Level Cortex and Perceptual Experience
Readings: “Vision A Window On Consciousness” Sci Am Article from Website

Oct 28: The Auditory System
Readings: Chapter 11 up to page 375
Additional Reading: “Listening With Two Ears” Sci Am Article from Website
In Class Exercise: Frequency Limits

Recitation Goal: Understanding the Visual System

Week 9

Nov 2: The Touch System
Readings: Chapter 12
In Class Exercise: Discrimination Thresholds

Nov 4: Movement 1
Readings: Chapter 13

Recitation Goals: **Review for Midterm II**
Exam Covers Oct 12 – Nov 9 Lectures and Readings

Week 10

Nov 9: Movement 2
Readings: Chapter 14

Nov 11: Midterm II, covers Part 2 of Class only

Recitations: Monday and Tuesday Recitations open to all students for general review, Wednesday and Thursday Recitations Canceled.

Part 3: Cognitive Neuroscience

Week 11

Nov 16: Drugs and the Autonomic Nervous System
Readings: Chapter 15

Nov 18: Motivation and Reward
Readings: Chapter 16

Recitation Goal: Understanding the parasympathetic and sympathetic nervous systems

Week 12

Nov 23: Emotion I
Readings: Chapter 18

Nov 25: Emotion II
Readings: No Readings
In Class Exercise: Q&A

No Recitations This Week: **Thanksgiving Vacation**

Week 13

Nov 30: Development in the Nervous System
Readings: Chapter 23

Dec 2: Learning and Memory: Structure and Anatomy

Readings: Chapter 24

Recitation Goal: Understanding Development

Week 14

Dec 7: Learning and Memory: Molecular Biology

Readings: Chapter 25

Dec 9: Neurobiology of Sex

Readings: Chapter 17

In Class Exercise: To Be Determined...

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

Week 15

Dec 14: The Neurobiology of Love

Readings: No Readings

Dec 17 - 23: Final Exam Period