Natural Science II: Brain and Behavior
V55.0306 (001)
Prof. Paul Glimcher
4 Washington Place, 809

Lectures
Monday and Wednesday 2:00pm-3:15pm
Silver 207

Labs
002: 11:00am-12:40pm Tuesday Silver 201 (Annemike Schoute)
003: 1:00pm-2:40pm Tuesday Silver 201 (Amos Bloomberg & Jackson Liu)
004: 3:00pm-4:40pm Tuesday Silver 201 (Ermanda Siregar & Suma L Sangisetty)
005: 5:00pm-6:40pm Tuesday Silver 201 (Ermanda Siregar & Suma L Sangisetty)
006: 9:00am-10:40am Wednesday Silver 201 (Amos Bloomberg & Jackson Liu)
007: 11:00am-12:40pm Wednesday Silver 201 (Annemike Schoute)

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Graduate Teaching Assistants
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Suma L Sangisetty
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Texts
Required:

(Either the third or fourth editions, not the second!)
Lab Manual, available at the bookstore

Grading

Exams:
Midterm I 25%
Final Exam 50%

Laboratory
Quizzes 5%
Lab Reports 20%

Course Syllabus

Week 1
From Aristotle to Descartes and on to Sherrington and Cajal.
Readings: Chapter 1 (both editions)

Lab: No Lab, First Week

Week 2
Sept 13 Anatomy of Nervous System I: Cells
Readings: Chapter 2, 3rd ed. first half, 4th ed. second half

Sept 15 Anatomy of the Nervous System II: Gross Anatomy
Readings: Chapter 2, 3rd ed. second half, 4th ed. first half

Lab: The Scientific Method
Readings: Lab manual, Lab 1, handed out in lab

Week 3
Sept 20 Neurophysiology I: Ionic Batteries and Passive Conduction

Sept 22 Neurophysiology II: The Action Potential
Readings: CD-ROM, Chapter 3, Do all exercises and study guides under:
"Electrical Signals are the Vocabulary of The Nervous System

Lab: Sheep Brain Dissection
Readings: Lab manual, Lab 2
Week 4
Sept 27 Neurophysiology III: Synapses and Circuits

Sept 29 Psychopharmacology I: Neurotransmitter Systems

Lab: Build Your Own Brain
Readings: Lab Manual, Lab 3

Week 5
Oct 4 Psychopharmacology II: Drugs

Oct 6 Hormones in General

Lab: Microscopic analysis of the Neuron
Readings: Lab manual, Lab 4

Week 6
Oct 11 Specific Hormonal Systems

Oct 13 Evolution of the Brain and Behavior
Readings: Chapter 6 (both editions)

Lab: Electronic Conduction Lab
Readings: Lab manual, Lab 5

Week 7
Oct 18 Genetics and the Gross Anatomical Development of the Brain
Readings: Chapter 7, 3rd ed. pp 177-194; 4th ed. pp183-197 (bottom)

Oct 20 Experience and the Fine Structure of the Brain

Lab: Review for Midterm

Week 8
Oct 25 Midterm Exam

Oct 27 No Class
Lab: No Lab This Week

**Week 9**
Nov 1 General Principles of Sensory Systems: Pain and Touch
Readings: Chapter 8

Nov 3 Hearing and Vestibular Sensation

Lab: Sensory Perception I: Response Times in the Nervous System
Readings: Lab manual, Lab 6

**Week 10**
Nov 8 The Chemical Senses, Taste and Smell

Nov 10 Vision, The Sense We Really Understand: Retina to Cortex

Lab: Sensory Perception II: Structural Limits of Vision
Readings: Lab manual, Lab 7

**Week 11**
Nov 15 Vision, The Sense We Really Understand: The Cortex and Perception

Nov 17 Movement Control: Sherrington, Descartes and Simple Circuits

Lab Sensory Perception III: Somatic Sensation
Readings: Lab manual, Lab 8

**Week 12**
Nov 22 Movement Control II: Cortical Systems

Nov 24 Movement Control III: The Sociology of Science, A Case Study
Asanuma, Evarts and Georgopolus

Lab: Electrophysiology of the Roach Leg
Readings: Lab manual, Lab 9
Thanksgiving Vacation

Week 13
Nov 29 General Theories of Emotion
Readings: Chapter 15, Read it all but with an emphasis on 3rd ed. pp 469-483; 4th ed. pp 459-470

Dec 1 The Study of Fear
Readings: LeDoux Scientific American Article

Lab: Behavioral Studies: Rats in Open Field Environments
Readings: Lab manual, Lab 10

Week 14
Dec 6 Learning and Memory I: Memory Systems of the Brain
Readings: Chapter 17, emphasis on 3rd ed. pages 537-555; 4th ed. pages 523-539

Dec 8 Learning and Memory II: Hebb and LTP
Readings: Chapter 18, emphasis on 3rd ed. pages 571-589. 4th ed. pages 553-568. CD-ROM
Tutorial (3rd) 18.1; (4th) 18.2

Lab: Review for Final Exam

Week 15
Dec 13 The Neurobiology of Love
Readings: None

Dec 16 - 23: Final Exam Period