Brain and Behavior Syllabus
V55.0306
Professor Mike Hawken
Spring 2003

Week 1
INTRODUCTION

Tues 1/21 Introduction and History of Neuroscience
Reading: Chapter 1, pp 2-21

Thurs 1/23 Neuroscience - Fundamentals of investigating behavior and the brain: experimental design

Week 2

Lab  Introduction to the Laboratory/Developing a Hypothesis - Lab 1

Tues 1/28 Human behavior and consciousness
Reading: Handout

CELLS AND SYNAPSES

Thurs 1/30 Neurons and Glia - Cells and synapses, structure, properties, cell types
Reading: Chapter 2, pp 25-56

Week 3

Lab Organization of the Brain I: Sheep Brain - Lab 2

Tues 2/4 Electrical Properties - resting potential, synaptic transmission, integration, graded potentials, action potential
Reading: Chapter 3, pp 57-85

Thur 2/6 Quiz #1
Synaptic transmission; neurotransmitters, receptors
Reading: Chapter 4, pp 87-115

Week 4

Lab Organization of the Brain II: Build Your Own Human Brain – Lab 3
STRUCTURE AND DEVELOPMENT

Tues  2/11  Evolution and Brain Development
       Reading: Chapter 6, pp 149-175

Thur  2/13  Growth, Growth Factors/Regression
       Reading: Chapter 7, pp 177-210

Week 5

Lab  President's Day - No Lab Class

PERCEPTION AND ACTION

Tues  2/18  General Principles of Sensory & Motor Systems
       Reading: Chapter 8, pp 213 - 217; Chapter 11, pp 323-328

Thurs  2/20  Quiz # 2
          Vision - the visual brain, visual perception and seeing
          Reading: Chapter 10, pp 281-321

Week 6

Lab  Neuronal Visualization - Lab 4

Tues  2/25  Audition - auditory brain and hearing; balance - vestibular system
          Reading: Chapter 9, pp 247-269

Thurs  2/27  Touch, Pain, Taste and Smell
          Reading: Chapter 8, pp 216-245; Chapter 9 pp 269-279

Week 7

Lab  Mid-term Exam Review

Tues  3/4  Motor Systems I: Muscles, motor units, reflexes
          Reading: Chapter 11, pp 323-359

Thurs  3/6  Mid-term Exam

Week 8

Lab  Neuronal Recording: Extracellular Action Potentials in the Cockroach
          Somatosensory System – Lab 5
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<th>Day</th>
<th>Date</th>
<th>Activity</th>
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<tr>
<td>Tues</td>
<td>3/11</td>
<td>Motor Systems II: Control of movements; walking, eye and head movements</td>
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<td><em>Reading: Chapter 11, pp 323-329</em></td>
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<td><strong>SEXUAL BEHAVIOR AND RHYTHMS</strong></td>
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<td>Thurs</td>
<td>3/13</td>
<td>Sexual Behavior</td>
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<td><em>Reading: Chapter 12, pp 363-398</em></td>
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<td><strong>Week 9</strong> 3/17 - 3/21 Spring Break</td>
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<td><strong>Week 10</strong> Lab</td>
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<tr>
<td>Tues</td>
<td>3/25</td>
<td>Neuroendocrinology - chemical control of temperature, fluids and eating</td>
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<td><em>Reading: Chapter 13, pp 399-432</em></td>
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<td>Thurs</td>
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<td>Quiz #3</td>
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<td>Sleep and Waking rhythms, dreaming, and cycles controlled by the brain</td>
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<td><em>Reading: Chapter 14, pp 433-465</em></td>
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<td><strong>Week 11</strong> Lab</td>
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<td><strong>DRUGS AND ADDICTION</strong></td>
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<td>Drugs and Behavior</td>
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<td><em>Reading: Chapter 4, pp 95-115</em></td>
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<td>Thurs</td>
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<td>Drugs and the Brain</td>
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<td><strong>Week 12</strong> Lab</td>
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<td><strong>COGNITIVE SYSTEMS</strong></td>
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<td>Tues</td>
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<td>Learning and Plasticity - developmental processes and adult learning</td>
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<td><em>Reading: Chapter 17, pp 537-570</em></td>
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<td>Thurs</td>
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<td>Quiz #4</td>
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<td>Learning and Memory - cellular and molecular mechanisms</td>
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<td><em>Reading: Chapter 18, pp 571-605</em></td>
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Week 13

Lab

Tues 4/15 Language and Cognition
Reading: Chapter 19, pp 607-642

EMOTIONAL SYSTEMS AND MENTAL DISORDERS

Thurs 4/17 Emotion and Motivation
Reading: Chapter 15, pp 469-501

Week 14

Lab

Tues 4/22 Monitoring brain activity in humans - functional imaging, PET and fM
Reading: Handout

Thurs 4/24 Quiz # 5
Mental Disorders I
Reading: Chapter 16, pp 503-534

Week 15

Lab

Tues 4/29 Functional Disorders of the Brain

Thurs 5/1 Mental Disorders II

Week 16

5/5 Last day of spring term classes

5/7 Spring term Final exams begin