PHYSIOLOGICAL PSYCHOLOGY (NS/PY 363)

Fall, 2010  
Lecture: 8:00 MWF  
Lab: 1-4 T or W

Mr. John E. Kelsey  
Office: Pettengill 359  
Phone: 786-6184  
Office Hours: 9-10:30 T Th and by appointment

Ms. Tina Rioux  
Office: Carnegie 410  
Phone: 786-8267  
Office Hours: 10-11:30 M & W and by appointment

REQUIRED TEXT:  

Sept. 9  
**Introduction:** What is physiological psychology? (Ch. 1)

**Basics:** Neuronal Transmission, Psychopharmacology, and Neuroanatomy

11  
a. The neuron and axonal conduction (Ch. 2, 28-53; Ch. 15, 549-550; Fields, 2006)
14  
b. Synaptic transmission: EPSPs, IPSPs, and synaptic integration (Ch. 2, 53-67)
16  
c. Neuropharmacology (Ch. 4, 102-114; Ch. 5, 160-165)
16  
d. Psychopharmacology
18  
(1) Acetylcholine and Alzheimer's disease (Ch. 4, 114-118; Ch. 15, 534 & 543-548; Wolfe, 2006; Oddo et al., 2004)
23  
(2) Dopamine, Parkinson's disease, Huntington’s disease, and schizophrenia (Ch. 4, 118-121; Ch. 8, 287-289; Ch. 15, 537-543)
25  
(3) Norepinephrine and depression (Ch. 4, 121-123)
29  
(4) Serotonin, glutamate, GABA, peptides, cannabinoids, and nucleosides (Ch. 4, 123-133; Kemp & McKernan, 2002; Redila & Chavkin, 2008; Kelsey et al., 2009)

29-30 (Lab)  
e. Neuroanatomy (Ch. 3; Ch. 5, 139-150)

30  
**FIRST EXAM**

Oct. 2  
**Input and Output:** Sensory and Motor Systems (Rosenzweig et al., 2005, 216-228)
5  
a. Vision: Anatomy and coding (Ch. 6, 169-192; Ch. 5, 151-153)
9  
b. Audition (Ch. 7, 212-234; Rauschecker & Shannon, 2002)
12  
c. Somesthetic senses (Ch. 7, 237-249; Basbaum & Julius, 2006; Manzke et al., 2003)
14  
d. Taste and smell (Ch. 7, 250-261)
16  
e. Motor systems (Ch. 8; Ch. 15, 548-549; Miesenböck, 2008; Gradinaru et al., 2009)

19*  
**SECOND EXAM**

**Motivation**

26  
a. Water intake (Ch. 12, 400-409)
28  
b. Food intake (Ch. 12, 409-438; Badman & Flier, 2005)
Nov. 2  
c. Sexual behavior and sex differences (Ch. 10, 330-359; Kimchi et al., 2007; Cahill, 2005)
6  
d. Reinforcement and addiction (Ch. 13, 461-464; Ch. 18; Nestler & Malenka, 2004; Deroche-Gamonet et al., 2004; Redila & Chavkin, 2008; Siegel et al., 1982; Rollema et al., 2007)
11  
e. Sleep and arousal (Ch. 9; Rasch et al., 2007)

13  
**Excitotoxicity, Strokes, Recovery of Function, Transplants, Growth Factors, and Neurogenesis** (Ch. 15, 527-532; Kemp & McKernan, 2002; Kraft, 2005; Lindvall & Kokaia, 2009; Gage, 2003; Specter, 2001; Bischofberger, 2007)

18  
**THIRD EXAM**

**Learning and Memory**

20  
a. Habituation and associative learning (Ch. 13, 439-465; Kandel, 2001; Tsien, 2000)
30  
b. Memory (Ch. 13, 465-484; Ch. 15, 546; Riedel et al., 1999; Lee et al., 2004; Shema et al., 2007)
Mental Illness and Stress

Dec.  4  a. Depression (Ch. 16, 572-584; Blier & de Montigny, 1998; Airan et al., 2007)
    7  b. Schizophrenia (Ch. 16, 554-571; Javitt & Coyle, 2004; Conn et al., 2008)
   11  c. Fear, anxiety, stress, health, and autism (Ch. 11; Ch. 17; Han et al., 2009; Bechara et al., 1995; Ramachandran & Oberman, 2006)

    17  FINAL EXAM AT 8:00 A.M.

TENTATIVE LAB SCHEDULE

Week  1  (9/14) Ethics of animal (and human) research (Ch. 1, 23-24; Bowd, 1980; Gallistel, 1981; Siegel et al., 1982; Airan et al. 2007)
Week  2  (9/21) Psychopharmacology project: Use of EXCEL and RefWorks; Discussion of final projects
Week  3  (9/28) Neuroanatomy lecture; Analysis of psychopharmacology project (continued)
Week  4  (10/5) Sheep brain dissection and rat brains; **Choose Final Project**
Week  5  (10/12) Use of stereotax; Demonstration of brain lesion (Ch. 5, 134-139)
Week  6  (10/19) **NO LAB** (October break)
Week  7  (10/26) Neurosurgery for final project
Week  8  (11/2) Neurosurgery for final project: Work on final project
Week  9  (11/9) Work on final project
Week 10  (11/16) Work on final project
Week 11  (11/30) Histology (Ch. 5, 139-150) and data analysis
Week 12  (12/7) Neuroanatomy; **FINAL PROJECT DUE ON DECEMBER 11**

*I will be out of town on November 19, but we will still have the exam.*

GRADING PROCEDURE

The following percentages will be given to each assignment in computing your final grade.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Exam</td>
<td>17%</td>
</tr>
<tr>
<td>Second Exam</td>
<td>10%</td>
</tr>
<tr>
<td>Third Exam</td>
<td>17%</td>
</tr>
<tr>
<td>Quizzes and Lab and Class Participation</td>
<td>14%</td>
</tr>
<tr>
<td>Final Lab Project</td>
<td>17%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

RESERVED READINGS


