Neural Mechanisms Controlling Movement

PS/NS-145/245

Winter, 2005

Instructor: Dr. Scott H. Chandler
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Department of Physiological Science
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Office Hours: Mon 3:45 -4:45pm or appt.

Course Description: A cellular and network analysis of the mechanisms responsible for production of movements such as locomotion and mastication. Students will be introduced to these topics through primary literature readings. Class participation is required and a working knowledge of basic cellular neurophysiology and neuroanatomy will be emphasized.

Prerequisites: PS-111A/ 180A, or NS101A/, Psych 115, PS 202 (Grad students) or consent of instructor

Lecture: M/W, 11-1pm, LaKrez 120: For graduate students, an additional 1hr of discussion section is required and will be arranged.

Required Text: Course reader is available at Course Reader Materials, 1141 Westwood Blvd.


Holiday: Jan 16, Feb 20

COURSE OUTLINE (flexible)

1/9  Introduction and Review: Principles of cellular neurobiology
1/11 Factors controlling neuronal discharge: intrinsic membrane properties
1/16 Holiday. No Class.
1/18 Factors controlling neuronal discharge: synaptic and circuit interactions
1/23 Neurobiology of Locomotion: Overview (QUIZ #1 25 Pts)
1/25 Introduction to Central Pattern Generator concept
1/30 CPG: spinal organization, networks, and models
2/1 CPGs: transmitters, pacemaker cells and intrinsic membrane properties
2/6 Supraspinal control of locomotion
2/8 EXAM (100 pts)
2/13 Con’t
2/15 Neuronal control of mandibular movement: Introduction and Anatomy of masticatory system
2/20 Holiday. No Class
2/22 Con’t
2/27 Reflex control of mastication (QUIZ #2 25 Pts)
3/1 CPG control of mastication: brainstem circuits
3/6 Con’t
3/8 Neurochemical initiation and control of mandibular movements
3/13 No class
3/15 con’t

3/16 or 17? make-up class or review if necessary

**Wed, 3/22 FINAL EXAM  11:30-2:30pm** (no early or late finals will be given, no exceptions)

**Evaluation (undergraduate only):**

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>Quizzes</td>
<td>50 pts</td>
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<tr>
<td>Exam</td>
<td>100 pts</td>
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<tr>
<td>Final</td>
<td>200 pts</td>
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<tr>
<td>Total</td>
<td>350 pts</td>
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**Graduate** students will be required to complete two short written take home assignments. *Undergraduate and graduate students will be evaluated separately.*

Examinations are closed book and talking, calculators and cell phones are not permitted. Any violation and the student will receive a “DR” grade and will be referred to the Dean of Students.

The final is **cumulative** with emphasis on the material covered since the midterm. **Class participation** will be considered in the final evaluation.

**READINGS** (will be assigned for each unit).

**Reference List** (tentative)

Delcomyn, F. Foundations of Neurobiology. Freeman and Co.1996 Pg389-399 **READER pg. 35**


Reichert, H. Introduction to Neurobiology, **READER pg. 51**

