Chemistry 474: Neurochemistry  
CRN: 39000

Instructor: Dr. Kelly Drew  
Office/office hrs: 104 Irving I, MWF 10-12:00  
Telephone: 474-7190  
e-mail: kdrew@alaska.edu  
fax: 474-6967

Lecture: MWF 3:30-4:30, Reichardt Room 165  
Homework: Assignments posted on course schedule are due at the beginning of the next class unless otherwise indicated. **Late HW is not accepted.**  
Home-work make-up: Attend neuroscience seminars. A write-up about a seminar will substitute for one HW assignment (peer-reviews of selected articles). Up to 3 HW assignments can be substituted by a seminar write-up.

Course Description: Course will cover basic and applied aspects of interneuronal signaling of specific neurotransmitter systems. Lectures will be based on chapters from assigned text as well as recent and historical literature relevant to these topics. Basic concepts introduced in lectures will be applied through guided discussion of original research papers. Students will learn to prepare “peer reviews” of selected papers.

Prerequisite: BIOL F115 and CHEM F322; and PSY F335, or BIOL B417 or CHEM F470

Course objectives

Lectures, exams and quizzes will focus on the following objectives for each neurotransmitter/neuromodulator discussed.

- Know functions and diseases associated with neurotransmitter/neuromodulator
- Recognize structure activity relationships and structural similarities between endogenous neurotransmitter, agonists and antagonists.
- Be able to address detailed mechanisms of neurochemical transmission
- Synthesis
- Storage
- Regulated release
- Receptor subtypes and effectors
- Termination of effect
- Know basic neurochemical anatomy of transmitter system

(Homework) Students will be guided by the instructor through critical evaluation of peer-reviewed papers to achieve the following objectives:

- Know how to decipher a scientific paper
- Know how to interpret data presented in formats typical of scientific papers
- Know how to critically evaluate experimental design, graphical representation of data and conclusions drawn from data shown and defend one’s own interpretation of the data.
- Know how to prepare a peer-review of a submitted manuscript when invited by a journal’s editor.

(Thinking like a neurochemist group project assignment) Students will be guided through oral presentations of original research towards the following objectives:

- Become familiar with data bases and original literature related to a topic of interest in neurochemistry
- Know effective techniques for oral presentation of original research
- Know effective techniques for optimizing positive group dynamics and productivity as a team player and as a group leader.

Text: Basic Neurochemistry: Molecular, Cellular and Medical Aspects by George J. Siegel (Editor), 8th edition (if you can get it). Otherwise 7th edition should suffice.

Other Required Reading: Original research and review articles to be assigned.
Exams and quizzes will typically consist of a subset of review questions provided in class. See schedule for when homework is due. Permission to hand-in HW via e-mail may be arranged in advance and will not be accepted without prior arrangements. **Late homework will not be accepted** unless arrangements are made before the homework is late. There will be no make-up exams or quizzes except under **extreme** circumstances. If such circumstances arise notify Dr. Drew (474-7190) **before** the scheduled time of the exam. If a make-up exam is approved it must be completed within 1 week of the original exam. Any student suspected by the instructor of cheating on a quiz or exam may be assigned a course grade of F; course drop forms will not be signed in these cases. The letter grades assigned will be **based on the overall performance of the class** but will usually be in the range 90-100=A, 80-90=B, 70-79=C, 60-69=D, and below 60 is failing.

Late homework will not be accepted unless arrangements are made before the homework is late. Students with a physical or learning disability are required to identify themselves to Mary Matthews (x 7043) in the Disability Services office, located in the Center for Health and Counseling. The student must provide documentation of the disability. Disability Services will then notify Prof. Drew of special arrangements for taking tests, working homework assignments, and doing lab work.

**Assignments for Chemistry 474**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>2 Exams (100 pts ea.)</td>
<td>200 pts</td>
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<tr>
<td>3 Quizzes or 2 quizzes + optional (25 pts ea.)</td>
<td>75 pts</td>
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<tr>
<td>Presentations of original research papers</td>
<td>75 pts</td>
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<tr>
<td>Comprehensive final exam</td>
<td>100 pts</td>
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<tr>
<td>Homework (10 pts ea.) + 10 peer review</td>
<td>~150 pts</td>
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