

**Course Syllabus**  
**Chemistry 674**  
**Membrane Biochemistry and Biophysics**  
**Spring 2009**

**Course Name:** Chem 674: Membrane Biochemistry and Biophysics. (3 credits)  
**Prerequisites:** Chem 451, Chem 456 and Chem 461 or equivalent or permission.

**Location:** Reichardt Building Room 165.

**Meeting Time:**

**Instructor:** Dr. Marvin Schulte

**Office Hours:** 10:15AM – 12:00PM MWF (other times by appointment).

**Office:** Department of Chemistry and Biochemistry  
Reichardt Room 184.

**Research:** Arctic Health Research Building Rooms 227-228.

**Phone:** 907 474-5237

**E-mail:** ffmks@uaf.edu

**Text and Reference Materials:**

**Primary text:**

**Membrane Structural Biology: With Biochemical and Biophysical Foundations**

**Author: Mary Luckey**

**Cambridge University Press**

**ISBN: 9780521856553**

**Publication Date: 3/17/2008**

**Primary Literature and review articles will be assigned as appropriate.**

**Course Description:**

Biophysical and biochemical processes involved in membrane mediated events. These include the chemical characteristics of membrane lipids and proteins, families of membrane proteins, ion channels, excitability and membrane fusion.

### **Course Goals:**

1. Develop an understanding of the basic biophysical processes that are involved in membrane mediated events and the different families of proteins classified as membrane proteins.
2. Use these basic concepts to formulate hypothesis, interpret experimental data and propose meaningful experimental approaches to solving current questions in membrane biophysics.

### **Learning Outcomes**

1. Identify the primary functional components and chemical characteristics of cell membranes.
2. Correlate the physical properties of cell membranes and membrane proteins with their role in cell function.
3. Describe the processes of exocytosis and membrane fusion.
4. Identify the types and characteristics of integral membrane proteins present in cell membranes.
5. Describe mathematically and conceptually the basis of excitability in cells.
6. Prepare a review of a current research area in Membrane Biochemistry and Biophysics.
7. Present the results of a study identified in the primary literature and address criticisms of the study identified by other students or the instructor.

### **Instructional Methods:**

The course will be taught using multiple instructional methods. These methods will include lecture, group discussion and oral presentations with an associated critical discussion. Student written reviews will be used to provide the opportunity for students to probe specific research avenues more deeply.

Typically, a course topic will begin with an introductory lecture/discussion led by the Instructor. The basis for this initial discussion will be drawn from the assigned text or material provided. The discussion will then be followed by a student presentation of a key research paper in the topic area and a class discussion of relevant review or primary articles.

## **Course Policies:**

### **Attendance:**

Due to the dependence on group activities and discussions, students are expected to attend class regularly. Students are expected to participate actively and will receive a participation score as described under evaluation.

### **Exams:**

Two exams will be given and will constitute 50% of the course grade. Makeup exams will be allowed only with pre-approval of the instructor or with an acceptable, documented reason. Acceptable reasons for makeup exams include severe illness, family emergencies or other unavoidable events including dangerous weather conditions and car accidents. The format of makeup exams will be at the discretion of the instructor.

### **Plagiarism Policy:**

Plagiarism is defined as the use of another's intellectual property without correct citation of the author. Intellectual property includes all electronic, spoken or print media. Students are expected to cite all sources used in oral and written presentations. Cases of plagiarism will be dealt with severely with the **minimum penalty** being a grade of 0 for the assignment in question. Severe cases may be referred to the Department Chair or Dean.

**Late Work:** All assignments are due when indicated in the class schedule. No late work will be accepted except in the case of illness or emergency.

## **Evaluation:**

Students will be evaluated in four key areas:

Knowledge (exam grades), Written and Oral Presentation and Class Participation.

Final grades will be calculated as follows:

Exams:	50% (Midterm exam: 25%, Final Exam: 25%)
Literature Review:	20%
Literature Presentation:	20%
Class Participation:	10%

Participation will be calculated based on an average daily score assigned to each student.

Written and Oral presentations will be scored as follows:

Content:	20%
Organization:	20%
Presentation:	20%
Language skills:	20%
Quality of Discussion:	20%

A detailed scoring sheet will be provided to students when oral and written presentations are assigned.

**Support Services:**

Support services will be provided by the University of Alaska Library system, online resources and the instructor. Additional services are available through Student Support Services (<http://www.uaf.edu/sssp/>) at UAF.

**Disabilities Services:**

We will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide accommodations for students with disabilities. If you have a disability and require special assistance, please contact the instructor as soon as possible. Students with disabilities must provide a written statement indicating any special requirements that will be necessary as early in the semester as possible (preferably within the first week).

**Department Policy on Cheating:**

The Chemistry & Biochemistry Department Policy on Cheating is: *“Any student caught cheating will be assigned a course grade of F. The student’s academic advisor will be notified of this failing grade and the student will not be allowed to drop the course.”*