

BISC 411- Cell Biology

Spring 2018

This course will explore the current understanding of basic cellular processes. It is geared towards advanced Biological sciences majors who have taken BISC 320. The course will be divided into two parts. In the first part of the course, Prof. Liman will examine transport across cell membranes, and cell signaling. Where possible we will discuss how cellular processes are important at the level of the tissue and of the organism, both in normal physiology and in disease states. In the second part of the course, Prof. Arnold will concentrate on synthesis, processing and trafficking of proteins. A major component of the course will be the discussion of original research papers, each of which directly addresses a topic that is discussed in the lectures.

Lecturers: Don Arnold RRI 204B Ph: 821-1266 Fax: 821-1818
darnold@usc.edu Office Hours:

Emily Liman HED 301 Ph: (213) 821-1454
liman@usc.edu Office Hours: Mon 4-5 PM

Textbook: Molecular Cell Biology, sixth edition; Lodish, Berk, Zipusky, Matsudaira, Baltimore, and Darnell; Freeman Publishing, 2008.
Other readings will be distributed.

Lecture: 11:00-12:20 TTh. SGM 601

Teaching Assistant None

Grading: This course will be graded on a curve depending on the total number of points earned. The maximum points for different components of evaluation are as follows. The final will cover only the material in the second half of the class (non-cumulative)

Midterm	100 points
<u>Final Exam</u>	<u>100 points</u>
Course Total	200 points

General Policies:

Format of exams: Multiple choice, fill-in-the-blank and short answer.

Midterm Makeup. There will be no midterm make-ups. If you miss a midterm you will need to submit a doctor's certificate attesting to the fact that you were too sick to take the exam within 1 business day of when the exam was scheduled. If a valid doctor's note is submitted, your final grade will be determined entirely on the basis of your score on the final exam, scaled accordingly.

Use of Pencil on Exam: If you use pencil on an exam, we will accept the exam, but we will not allow re-grading in the event of a dispute.

Re-grading of exams: Correct answers will be discussed during the TA session following the exam. If questions regarding grading arise, students should return their exam to the TA within a week after the exams are returned. The entire exam will be re-graded, and all decisions will be final.

Disabilities. Students requesting academic accommodations based on a disability are required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP when adequate documentation is filed. Please be sure the letter is delivered to Drs. Arnold or McKemy as early in the semester as possible. DSP is open Monday-Friday, 8:30-5:00. The office is in Student Union 301 and their phone number is (213) 740-0776.

Academic Conduct: Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu/> or to the *Department of Public Safety* <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems: A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information*

<http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

Disclaimer: It may be necessary to make some changes in the syllabus during the semester.

BISC 411 Schedule of Lectures

Date	Lecturer	Topic	Reading
09-Jan	Arnold	Techniques for Studying Cells, Organelles of the Eukaryotic Cell	Chapter 9
11-Jan	Arnold	Secretory Pathway	Chapter 12
16-Jan	Arnold	Secretory Pathway II	Chapter 12
18-Jan	Arnold	Paper 1 Presley et al.	
23-Jan	Arnold	Insertion of Proteins into the Membrane/Nuclear Import/Export	Chapter 12
25-Jan	Arnold	Paper 2 Kalderon et al	
30-Jan	Arnold	Protein Modifications/ Signals involved in targeting of proteins	Chapter 10
1-Feb	Arnold	Paper 3 Folsch et al.	
6-Feb	Arnold	Receptor-mediated Endocytosis	Chapter 13
8-Feb	Arnold	Vesicular Traffic/Synaptic Vesicles	Chapter 13
13-Feb	Arnold	Paper 4 Weber et al.	
15-Feb	Arnold	Actin and Microtubules	Chapter 16
20-Feb	Arnold	Paper 5 Lewis et al.	
22-Feb	Arnold	Kinesin and Myosin	Chapter 16
27-Feb	Arnold	Review	Arnold
1-Mar	Midterm Exam		Midterm Exam
06-Mar	Liman	Techniques for Studying Cells II	Section 9.2
08-Mar	Liman	Membrane transport, pumps, symporters	Chapter 11.1-11.6
13-Mar	Spring Break		
15-Mar	Spring Break		
20-Mar	Liman	Membrane potential, co-transporters and epithelial transport	Chapter 11.1-11.6
22-Mar	Liman	Ion channels, structure function and diversity	Chapter 23.2
27-Mar	Liman	Paper 1: Jentsch paper (K ⁺ channels and disease)	
29-Mar	Liman	The nerve impulse and synaptic transmission	Chapter 23.3
03-Apr	Liman	Paper 2: Diesseroth paper (Channel rhodopsin)	
05-Apr	Liman	Cell Signaling I	Chapter 15
10-Apr	Liman	Paper 3: Zuker paper (InaD)	
12-Apr	Liman	Sensory Signaling I	
17-Apr	Liman	Paper 4: Caterina paper (capsaicin receptor)	Chapter 23.4
19-Apr	Liman	Sensory Signaling II	Chapter 23.4
24-Apr	Liman	Paper 5: Liman paper (taste)	
26-APR	Liman	Review	
08-May		Final Examination	