Molecular Biology - BISC 320L

Fall 2017

COURSE SCHEDULE INCLUDING EXAM DATES ARE SUBJECT TO CHANGE!

Lectures are in THH 101: MWF 11:00 a.m.-11:50 a.m., and MWF 12:00 p.m.-12:50 p.m.

Faculty: Oscar Aparicio, Ph.D., Professor (oaparici@usc.edu)
Irene Chiolo, Ph.D., Assistant Professor (chiolo@usc.edu)
Airek Mathews, Instructional Laboratory Manager (airekmat@usc.edu)

Office hours: Aparicio Mondays 2:30-4:30 PM in RRI 221 (8/24-9/30, and 11/2-12/2)
Chiolo Mondays 2:30-4:30 PM in RRI 221 (10/2-10/31)

Textbook: Molecular Biology – Principles of Genome Function, Craig et al., 2nd edition
Readings from these texts are assigned on the lecture schedule. It is important to read the assignments prior to the corresponding lectures.

The course grade will be based upon **400** possible points:

100 pts	Midterm #1
100 pts	Midterm #2
100 pts	Lab
100 pts	Final Exam (non-cumulative)

In case a midterm exam must be missed for legitimate reasons, discuss the situation with the course instructor **prior** to the exam, if possible. There is no extra credit offered for the course. Final letter grades are assigned on a curve, determined entirely by the total number of points earned on lecture exams and in the laboratory portion of the course. *No make-up exams will be given in this course*. If you miss a midterm due to illness, you must present a valid medical excuse to the laboratory director within one week of the missed exam. If you have a valid excuse, your exam score will be determined by prorating scores of the remaining two exams. Rules governing exams are given in more detail in your Student Contract, which is also posted on the class website: https://blackboard.usc.edu

Lab Sections: See separate syllabus and lab manual.

Course Objectives: The student will learn the structure and function of biological macromolecules, in particular nucleic acids (DNA and RNA) and proteins and how these molecules act to copy, express and accurately transmit genetic information. The course focuses on mechanisms of: DNA replication, transcription, translation (protein synthesis) and the genetic code, DNA repair, recombination and DNA rearrangements. Techniques used to study molecular biology are presented in the context of these major biological mechanisms.

Lectures: It is important to attend all of the lectures during the course and to take good notes for study. Prior to attending each lecture, it is important to have read the assigned readings in the textbook. However, many of the lectures will contain new and additional information that is not in the textbook. Examinations will be based mainly on information given in the lectures. In studying for examinations, complete and accurate lecture notes are of prime importance. The lecture slides posted on the course Blackboard site (https://blackboard.usc.edu) may contain material that is not in the lectures and the lectures will often contain additional information that is not conveyed in the slides. Lecture attendance is essential. It may be necessary to make some adjustments in the syllabus during the semester.

Date	Reading assignment	Topics covered
Week 1 8/21-25	Chap 1, 2, 19.1, 19.2	Genomes and the flow of Biological Information "Central Dogma", Biological molecules
Week 2 8/28- 9/1	Chap 2 and 3	Biological molecules Chemical Basis of Life
Week 3 9/6-8	Chap 4 and 14.9, and Chap 5 9/4 is Labor Day	Cell Cycle, Chromosome structure and function
Week 4 9/11-15	Chap 6	DNA Replication
Week 5 9/18-22	Chap 6 and 19.3, 19.4, 19.8 Chap 7	DNA Replication, DNA Sequencing, Polymerase Chain Reaction (PCR), Chromosome Segregation
Week 6 9/25	**Midterm 1 (9/25). You must take each midterm in the lecture period in which you are registered.**	
Week 6 9/27-29	Chap 8	Transcription
Week 7 10/2-6	Chap 8 and 9	Transcription, regulation of transcription, gene silencing
Week 8 10/9-13	Chap 10	RNA processing, splicing, editing, RNA-binding domains
Week 9 10/16-20	Chap 11 and 12	Translation and the ribosome, regulation of translation
Week 10 10/23-27	Chap 12 and 13	Regulation of translation, regulatory RNAs, small RNAs, long non-coding RNAs
Week 11 10/30	**Midterm 2. You must take the midterm in the lecture period in which you are registered.**	
Week 11 11/1-3	Chap 15	Types of damages and repair pathways (MMR, Direct Reversal, BER)
Week 12 11/6-10	Chap 15	Types of damages and repair pathways (NER, TLS), cellular responses to DNA damage, DSB repair
Week 13 11/13-17	Chap 16 and 19.13	Homologous recombination
Week 14 11/20	Chap 16	Regulation of Homologous Recombination, HR proteins, meiotic recombination,
Week 15 11/27- 12/1	Chap 17	Transposons, site-specific recombination, VDJ recombination
TBD	**Final Exam -**	

Statement on Academic Integrity.

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. SCampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: http://www.usc.edu/dept/publications/SCAMPUS/gov/. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: http://www.usc.edu/student-affairs/SJACS/.

Statement For Students With 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 Dr. Matthews as early in the semester as possible. DSP is open Monday-Friday, 8:30 to 5:00, (213) 740-0776, https://dsp.usc.edu/