

Exam Dates and Other Information Are Subject to Change!

Molecular Biology - BISC 320L

Fall 2024

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 and Staff: Irene Chiolo, Ph.D., Associate Professor (chiolo@usc.edu)
Carolyn Phillips, Ph.D., Associate Professor (cphil@usc.edu)
Eric Noakes, M.S., Instructional Laboratory Manager (enoakes@usc.edu)

Office hours: Chiolo Mondays 2:30-4:30 PM in RRI 221 (9/16-10/28)
Phillips Mondays 2:30-4:30 PM in RRI 304B (8/26-9/9, 11/4-12/2)

Textbook: Molecular Biology – Principles of Genome Function, Craig et al., 2nd or 3rd 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

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. **Labs do not meet the first week of classes!**

Learning Objective: An understanding at a molecular level of the most fundamental processes of cellular life in terms of the genetic material, its expression, duplication, and maintenance. 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. The knowledge gained in this course is considered foundational for most advanced courses in genetics, biochemistry, cell biology, etiology of cancer and other genetically-determined disease states and conditions, virology and immunology, and the list goes on.

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

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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 8/26-30	Chap 1, 2, 19.1, 19.2 – Phillips lectures	Genomes and the flow of Biological Information “Central Dogma”, Biological molecules
Week 2 9/2-9/6	Chap 2 and 3 9/2 is Labor Day	Biological molecules Chemical Basis of Life
Week 3 9/9-9/13	Chiolo starts lecturing 9/11 Chap 4 and 14.6, 14.7, 14.9, and Chap 5	Cell Cycle, Chromosome structure and function
Week 4 9/16-20	Chap 6	DNA Replication
Week 5 9/23(Mon)	Chap 6 and 19.3, 19.4, 19.8	DNA Replication, DNA Sequencing, Polymerase Chain Reaction (PCR)
Week 5 9/25(Wed)	Midterm 1 (Wednesday 9/25). You <u>must</u> take each midterm in the lecture period in which you are registered.	
Week 5 9/27(Fri)	Chap 7 - Chiolo continue lecturing	Chromosome Segregation
Week 6 9/30-10/4	Chap 15	Types of DNA damages and repair pathways (MMR, Direct reversal, BER, NER, TLS)
Week 7 10/7-10/11	Chap 15, 16 10/10-10/11 is Fall Break	Cellular responses to DNA damage, DSB repair, Homologous Recombination
Week 8 10/14-10/18	Chap 16 and 19.13	Homologous Recombination, techniques to study HR repair, HR intermediates, HR proteins, meiotic recombination
Week 9 10/21-10/25	Chap 17	Transposons, site-specific recombination, VDJ recombination
Week 10 10/28(Mon)	Chap 17 Cont.	
Week 10 10/30(Wed)	Midterm 2 (Wednesday 10/30). You <u>must</u> take the midterm in the lecture period in which you are registered.	
Week 10 11/1(Fri)	Chap 8 - Phillips resumes lecturing	Transcription
Week 11 11/4-11/8	Chap 8, 9	Transcription, Regulation of transcription
Week 12 11/11-11/15	Chap 10 11/11 is Veterans Day	RNA splicing, RNA editing
Week 13 11/18-11/22	Chap 10, 11	Translation and the ribosome
Week 14 11/25-11/29	Chapter 11 11/27-29 is Thanksgiving Break	Translation

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Week 15 12/2-12/6	Chap (12, 13)	(regulation of translation, RNA processing)
12/16	Final Exam – Monday 12/16 4:30-6:30PM Note that the final exam is NOT held on the regular time and date in the course catalogue	

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Statement on Academic Conduct and Support Systems

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 Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call
engemannshc.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 – 24/7 on call
engemannshc.usc.edu/rsvp

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086
equity.usc.edu, titleix.usc.edu

Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

Bias Assessment Response and Support - (213) 740-2421
studentaffairs.usc.edu/bias-assessment-response-support

Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776
dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710
studentaffairs.usc.edu/ssa

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Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.