

BIOLOGY 482: INTRODUCTION TO MOLECULAR GENETICS
FALL SEMESTER, 2018

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Contact Information

Course meets: Tuesdays, 4:30 - 7:10 pm in Exploratory Hall room L509.

Office hours: (Science & Technology campus): Fridays, 1 pm – 2 pm, Discovery Hall room 305.

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Course web site: lecture notes, study problems, etc. will be posted on Blackboard.

Course Aim and Prerequisites: This course is intended for advanced undergraduate students. It is focused on the structure and function of genes at the molecular level. Topics include the structure and function of chromatin, the regulation of gene expression in eukaryotes, and the modulation of these processes by cell signaling, embryonic development, and disease processes. The course prerequisites are BIOL 213 (Cell Structure and Function), and BIOL 311 (General Genetics). Additional background in courses such as Organic Chemistry (CHEM 313) and/or Biochemistry (BIOL 483) can be helpful but are not required.

Readings: Assigned readings are taken from the required text (*Gene Control* by David S. Latchman, 2nd edition, 2015) and are listed below in the class schedule.

Grading and Course Policies: There will be two midterm examinations (30% each) and one cumulative final examination (30%). The remainder of the grade (10%) will be based on student participation, which includes attendance and participation during class (relevant questions and comments).

Exams: Exam questions will be short answer and short essay questions, and will be similar in scope to the study questions posted each week on Blackboard. The lectures (and text chapters) that are covered in each exam are listed below in the class schedule. All exams are closed book.

Exam rules: Cell phone use of any kind (including texting) is not allowed during examinations. These and other Honor Code violations will result in a grade of zero for the exam. Excused absences from exams require permission from the instructor prior to the exam. Simply sending a unilateral e-mail or voice mail is not sufficient. Makeup examinations are not given in this course, unless prior arrangements have been made with (and approved by) the instructor, and unless the student agrees to take a different (and more difficult) version of the exam.

<u>Date</u>	<u>Lecture topic</u>	<u>Latchman text assignment</u>
August 28	Lecture 1: Levels of gene control	pp. 1-33
September 4	Lecture 2: Structure of chromatin	pp. 35-65
September 11	Lecture 3. Role of chromatin structure in gene control	pp. 67-107; 110-112.
September 18	Lecture 4. The process of transcription	pp. 115-157.
September 25	Lecture 5. Transcription factors and transcriptional control	pp. 159-199; 202-203.
October 2	Midterm Examination (covers lectures 1-5)	
October 9	Columbus Day recess (Mon classes meet on Tues; Tues classes do not meet)	
October 16	Lecture 6. Post-transcriptional processes	pp. 205-231.
October 23	Lecture 7. Post-transcriptional regulation	pp. 233-249; 252-281.
October 30	Lecture 8. Gene control and cellular signaling pathways	pp. 283-314.
November 6	Class does not meet (Society for Neuroscience meetings in San Diego)	
November 13	Lecture 9. Gene control in embryonic development	pp. 317-352.
November 20	Midterm Examination (covers lectures 6-9)	
November 27	Lecture 10. Control of cell-type-specific gene expression	pp. 355-386.
December 4	Lecture 11. Gene regulation and cancer	pp. 389-422.
December 11	Reading Days	
December 18	Final Examination (4:30 pm – 7:15 pm)	(covers lectures 1-11)