BIO 431.001 Molecular Biology
Spring 2016
MWF 11:00 – 11:50 Miller Science 137

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**Office Hours:** S202  
TR 11:00 - 12:00  
W 1:00 – 3:00  
F 10:00 – 11:00  
Or by appointment

Text and Materials: Lewin’s Genes XI, Krebs, Goldstein and Kilpatrick

Course Requirements:
D2L Quizzes for each Chapter
Take Home Exams – 4 (Due by 9:00 am on: 2/16, 3/10, 4/14 and 5/11)

Course Content (Tentative Schedule):

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<th>Chapter</th>
<th>Topic</th>
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<td>4</td>
<td>The Interrupted Gene</td>
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<td>The Content of the Genome</td>
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<td>Genome Sequences and Gene Numbers</td>
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<td>Clusters and Repeats</td>
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<td>Chromosomes</td>
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<td>The Replicon</td>
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<td>Extrachromosomal Replicons</td>
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<td>13</td>
<td>Bacterial Replication is Connected to the Cell Cycle</td>
<td>2/12-15</td>
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<td>DNA Replication</td>
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<td>Homologous and Site Specific Recombination</td>
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<td>Repair Systems</td>
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<td>Transposable Elements and Retroviruses</td>
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<td>Somatic Recombination and Hypermutation</td>
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<td>RNA Splicing and Processing</td>
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<td>mRNA Stability and Localization</td>
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<td>Catalytic RNA</td>
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<td>Translation</td>
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<td>Using the Genetic Code</td>
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<td>The Operon</td>
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<td>Eukaryotic Transcription Regulation</td>
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<td>Epigenetic Effects are Inherited</td>
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<td>Regulatory RNA</td>
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Grading Policy:
Weekly Quizzes, 10 pts. each  
Participation  
Exam 1  
Exam 2  
Exam 3  
Exam 4  
TOTAL

Grading Scale:
A = 540 to 600 Points (90% to 100%)  
B = 480 to 539 Points (80% to 89%)  
C = 420 to 479 Points (70% to 79%)  
D = 360 to 419 Points (60% to 69%)  
F = less than 360 Points (less than 60%)
Participation Policy:
Participation points will be calculated based on attendance and peer evaluation. Attendance will be taken via sign in sheet at the start of each class period. **Students that arrive after the sign in sheet has been taken up will be counted absent for the entire class period.** Students will work in groups during discussion exercises throughout the semester. Participation points will be calculated based on instructor and peer evaluations conducted throughout the semester.

Academic Integrity:
Academic Integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations on an assigned exercise; and/or (3) helping or attempting to help another in the act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one’s own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at [http://www.sfasu.edu/policies/academic_integrity.asp](http://www.sfasu.edu/policies/academic_integrity.asp)

**ANY act of academic dishonesty will result in receiving a grade of F for the course and will be reported to the student’s dean.**

Quiz and Exam Policy:
The D2L quizzes will be available after watching the video content for that chapter and will be due prior to the in-class discussion.

The four major exams will be in take home format. Each question should be answered on a separate page as completely as possible in Essay format, with proper references. Exams will be due electronically (via D2L) no later than 9:00 am on the indicated due dates.

Withheld Grades Semester Grades Policy:
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

Make-up Work:
Make-up work will only be given to students with University excused absences. Make-up work will not be given to students that have absences in excess of three weeks (excused or unexcused). Students must provide notification within 48 hours of their return to classes in order to receive make-up work. Make-up exams will be given during the week before finals.

Students with disabilities:
To obtain disability related accommodations and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, Room 325, 468-3004/ 468-
1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided.

**Student Counseling Center:**
Rusk Building 3rd Floor
(936) 468-2401
Email: counseling@sfasu.edu
The Student Counseling Center is available free of charge to students and is staffed with professional therapists to meet a variety of needs. All interactions with the Student Counseling Center are guaranteed confidential. Licensed Counselors are available from 8:00a.m.-5:00p.m. Monday-Friday. The department is closed on certain holidays, Spring Break and Winter Break when the university is closed. If you are in need of assistance after hours or on the weekend please call: University Police: (936)468-2608 or MHMR Crisis Line: (800)392-8343. If the situation is life threatening please dial 911.

**Conduct:**
According to the SFASU General Bulletin “a student enrolling in the university assumes an obligation to conduct himself/herself in a manner compatible with the university’s function as an educational institution.” The following policies will be strictly enforced:
- Students are to arrive on time and stay for the entire class period.
- Students are not to hold private side conversations
- Reading unrelated publications is not allowed.
- Use of cellular phones, for any reason, will not be tolerated.
Students who exhibit unacceptable classroom behavior will be counted as absent.

**Course Description:**
Three semester hours, three hours lecture per week. Structure, function and organization of DNA, DNA replication, the transcription and translation of RNA. Mechanisms of gene expression and regulation.

**Program Learning Outcomes:**
Each of the student learning outcomes listed above address the Biology Department Program Learning Outcomes as follows:

- #1 Demonstrate a good knowledge base in biological concepts and be able to integrate knowledge with critical thinking skills to become problem solvers. Knowledge base will include: levels of complexity (molecular/cellular through population/communities/ecosystems); biological principles and processes.
- #6 Career building, demonstrate preparation for future career and educational goals utilizing the knowledge and training during their academic program by: awareness of personal competencies (strengths and weaknesses) and an understanding of professional and ethical behavior.

**Student Learning Outcomes:**
Knowledge and Understanding:
Students understanding will be evaluated with a combination of comprehensive exams using objective, essay and problem solving questions, and periodic problem sets to develop critical thinking skills. Students who successfully complete Molecular Biology will:
- Be able to describe qualitatively and quantitatively, both types of nucleic acids and the processes by which they are produced and maintained
- Be able to describe, in detail, all steps involved in the production and delivery of proteins
- Be able to describe, qualitatively, the structure of pro- and eukaryotic genomes and perform quantitative calculations relating to the evolution of DNA sequence groups