

BIOL 4351 Molecular Biology Spring 2016

Wednesdays 9:00 AM – 11:50 AM; Room: TBA

Prerequisite: Biochemistry I, Genetics, and/or equivalent

Instructor: M. Bazlur Rashid, Ph.D.
Office: Suite B3525
Office Hours: Wednesdays 1:00 – 2:00 PM, or by appointment
(Tel. 281-283-3756, rashid@uhcl.edu)
TA: pushparajc8486@uhcl.edu

Text Book: Molecular Biology 5th Edition
By Robert F. Weaver,
McGraw Hill 2012

Course Description:

The general principles of genetic activity at the molecular level e.g. what are gene, gene structure, how gene function is regulated, and the role of cis- and trans- elements on gene function.

Course Objective:

To understand basic principles of molecular biology e.g. mechanism of DNA replication, transcription, post-transcriptional events, and protein translation process in both prokaryotes and eukaryotes. We will also focus on the common techniques used by molecular biologists and/or biotechnologists.

Learning Outcome:

- (1) To identify the molecular components important for mediating processes involving nucleic acids.
- (2) To understand techniques used in molecular biology and how those experiments are used to comprehend processes occurring at the molecular level.
- (3) To apply your basic knowledge of the experiments used in molecular biology to interpret molecular data analysis
- (4) To design experiments such that questions in molecular biology can be answered after careful evaluation of the results.

Course Format:

Lecture format. You should also check Blackboard before every class for any relevant assigned lectures; you will be required to print out the lectures.

1. **Exams** will be based on class lectures. There will be **2 Exams** (Midterm and Final) over previous lecture topics each covering 35% of the final grade. Note: you will be asked to sit away from each other or reshuffle places during tests.

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- Quizzes:** There will be 6 quizzes each covering 6% of the final grade (5x6% = 30%). Quiz will be conducted at the beginning of the class. Worst quiz grade will be waived.
- Make up Exam/Quiz will be offered only to those who will serve valid excuses (e.g. Physician's note/ Employer's note). Make up test/quiz may be relatively difficult and different than actual ones and may comprise of only short essay type questions.
- Exam questions may be short-essay, fill-ins, yes/no, and multiple-choice types. Quiz will be only fill-ins, yes/no, and multiple-choice types.
- In order to do well in this course, the **relevant chapters from the book MUST BE READ** before the lecture to get the grasp of the problems and to ask for clarification of concepts when necessary.

WEBSITE: Blackboard

The class website is on Blackboard (<https://blackboard.uhcl.edu/webapps/login/>) listed under BIOL 4351-02.

Course Evaluation:

Midterm	35%
Final Exam	35%
Quizzes	30%

Grading Scale:

A	92+	A-	89- 91		
B+	85- 88	B	80- 84	B-	78- 79
C+	76- 77	C	70- 75	C-	68- 69
D+	66- 67	D	60- 65	D-	58- 59
F	<58%				

ACADEMIC INTEGRITY

HONESTY CODE: The Honesty Code is the university community's standard of honesty and is endorsed by all members of the University of Houston-Clear Lake academic community. It is an essential element of the university's academic credibility. It states: **I will be honest in all my academic activities and will not tolerate dishonesty.**

- The instructor assumes that the students' names on their submitted work imply compliance with this policy. See <http://uhcl.smartcatalogiq.com/en/current/Graduate-Catalog/General-Program-Requirements/Enrollment-and-Grading-Policies/Academic-Honesty-Policy>
- Students violating the code will be promptly reported to the dean and will have to sign a document admitting dishonesty: this document will be posted on their academic record.
- Accused students will **NOT** obtain letters of reference or opportunities for future TA/RA positions from your instructor.

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Students with Disabilities: Any individual registered with a disability that requires a special accommodation should inform the instructor. For questions or to register, contact the Disability Services office at 281-283-2626.

Incompletes and withdrawals: The last date to drop this course without a grade penalty is **April 12, 2016**. In accordance with UHCL policy, an incomplete grade (I) can only be assigned if the student is making satisfactory progress, but cannot complete the course for a documentable reason

Six (6) Drop Rule Limitations: - Students who entered college for the first time in Fall 2007 or later should be aware of the course drop limitation imposed by the Texas Legislature. Dropping this or any other course between the first day of class and the census date for the semester/session does not affect your 6 drop rule count. **Dropping a course between the census date (February 03) and the last day to drop a class for the semester/session will count as one of your 6 permitted drops.** You should take this into consideration before dropping this or any other course. Visit www.uhcl.edu/records for more information on the 6 drop rule (<http://prt1.uhcl.edu/portal/page/portal/AR/6droprule>) and the census date information for the semester/session.

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Tentative Schedule

January 20	INTRODUCTION Chapter 2 Chapter 3	- The Molecular Nature of Genes - An Introduction to Gene Function
January 27	Quiz 1 Chapter 4	- Molecular Cloning Methods
February 03	Chapter 4	- Molecular Cloning Methods (cont.)
February 10	Quiz 2 Chapter 5	-Molecular Tools for Studying Genes and Gene Activity
February 17	Chapter 6 Chapter 7	-The mechanism of transcription in bacteria -Operons: Fine Control of bacterial transcription
February 24	Quiz 3 Chapter 8 Chapter 9	-Major Shifts in Prokaryotic Transcription -DNA-Protein Interactions in Prokaryotes
March 02	Chapter 10 MIDTERM REVIEW	-Eukaryotic RNA Polymerases and Their Promoters
March 09	Midterm	2 hrs. (9:30 – 11:30 AM)
March 16	Spring break	<u>No class</u>
March 23	Chapter 11 Chapter 12	-General Transcription Factors in Eukaryotes -Transcription Activators in Eukaryotes
March 30	Quiz 4 Chapter 13	-Chromatin Structure and its Effects on Transcription
April 06	Chapter 14 Chapter 15	-Messenger RNA Processing I: Splicing -Messenger RNA Processing II: Capping and Polyadenylation
April 13	Quiz 5 Chapter 17 Chapter 18	-The Mechanism of Translation I: Initiation -The Mechanism of Translation II: Elongation and Termination
April 20	Chapter 20 Chapter 21	-DNA Replication, Damage and Repair -DNA Replication II: Detailed Mechanism
April 27	Quiz 6 Lecture Extra day/Review	
May 04	Final Exam	2 hrs. (9:30 -11:30 AM)