

Texas A&M University-Texarkana
Fall Semester, 2011
BIOL 402 – Cell and Molecular Biology

Wednesdays, 5:30 pm-9:10 pm, SCIT 203

Instructor Nurul Alam, Ph. D.

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Course Website: www.tamut.edu Go to Web Courses (Blackboard)

Office Hours

Mondays: 4:00-5:30 pm; Tuesdays: 3:00 pm-4:00 pm; 5:30-8:30 pm; Wednesdays: 4:00 pm-5:30 pm; Thursdays: 1:00 -4:00 pm; Other times by appointment only. Please call or e-mail.

Catalog Description

A study of the molecular aspects of the cell and cell organelles, including basic facts, concepts and problems in modern biology. Prerequisites: Two semesters of biology.

Textbook

Required : Molecular Biology 5e, Robert F. Weaver, Mc Graw Hill publishers, ISBN: ISBN:9780073525327.

Course Objectives

The primary objective of this course is to examine the basic biological structures at the molecular, macromolecular, organelle, cell, tissue, organ and the whole organism levels to illustrate the intimate relationship between cellular structures and their functions. Attention will be focused upon molecular approaches to DNA function and enzyme processes that dominate the physiological processes of the cell. The laboratory is a cohesive blend of traditional investigations of basic concepts such as cell size and diffusion, and modern molecular techniques used by clinical, pharmaceutical, industrial, and academic researchers. After taking this course the student should have an understanding of the following concepts:

- Terminologies relevant to cell and molecular biology biological laboratory
- Principles of experimental laboratory research and proper reporting techniques
- Molecular cloning methods and tools for studying genes and gene activity
- Methods of quantification, computation, and measurement
- Recognize major cell structures and their functions
- Molecular nature of genes
- Role DNA and RNA in the process of protein synthesis
- DNA-Protein interactions

Methods of Instruction

- Lecture, Demonstration and simulation
- Internet/Web/Blackboard
- Animation/Interactive videos
- Outside assignments
- Class discussion
- Laboratory work

Disability Accommodations

Students with disabilities may request reasonable accommodations through the A&M-Texarkana Disability Services Office by calling 903-223-3062.

Academic Integrity

Academic honesty is expected of students enrolled in this course. Cheating on examinations, unauthorized collaboration, falsification of research data, plagiarism, and undocumented use of materials from any source constitute academic dishonesty and may be grounds for a grade of 'F' in the course and/or disciplinary actions. For additional information, see the university catalog.

Statement on email usage

Upon application to Texas A&M University-Texarkana an individual will be assigned an A&M-Texarkana email account. This email account will be used to deliver official university correspondence. Each individual is responsible for information sent and received via the university email account and is expected to check the official A&M-Texarkana email account on a frequent and consistent basis. Faculty and students are required to utilize the university email account when communicating about coursework.

Drop Policy

University Drop Policy: To drop this course after the 12th class day, a student must complete the Drop/Withdrawal Request Form, located on the University website (<http://tamut.edu/Registrar/droppingwithdrawing-from-classes.html>) or obtained in the Registrar's Office. The student must submit the signed and completed form to the instructor of each course indicated on the form to be dropped for his/her signature. The signature is not an "approval" to drop, but rather confirmation that the student has discussed the drop/withdrawal with the faculty member. The form must be submitted to the Registrar's office for processing in person, email Registrar@tamut.edu, mail (P. O. Box 5518, Texarkana, TX 75505) or fax (903-223-3140). Drop/withdraw forms missing any of the required information will not be accepted by the Registrar's Office for processing. It is the student's responsibility to ensure that the form is completed properly before submission. If a student stops participating in class (attending and submitting assignments) but does not complete and submit the drop/withdrawal form, a final grade based on work completed as outlined in the syllabus will be assigned

We will use Blackboard to post various course materials and your grades. The information below will help you use Blackboard effectively

Student Technical Assistance

- Solutions to common problems and FAQ's for your web-enhanced and online courses are found at this link:
<http://www.tamut.edu/webcourses/index.php?pageid=37>
- If you cannot find your resolution there, you can send in a support request detailing your specific problem here:
<http://www.tamut.edu/webcourses/gethelp2.php>
- Blackboard Helpdesk contacts:

Office hours are: Monday - Friday, 8:00a to 5:00p
Kevin Williams (main contact) 903-223-1356 kevin.williams@tamut.edu
Frank Miller (alternate) 903-223-3156 frank.miller@tamut.edu
Nikki Thomson (alternate) 903-223-3083 nikki.thomson@tamut.edu

Student Participation

Participation Policy: 'Blackboard' will be used as the course platform for announcements, course materials, and grading.

Course Etiquette: Proper academic conduct is expected of the students when interacting online with other class members or with the instructor.

Lecture and Laboratory Rules

Attendance will be taken daily, either by students signing an attendance sheet or by the roll being called verbally. Each lecture will begin with announcements (if needed) followed by a brief review of information from, and/or questions about, the previous lecture. The roll will be taken immediately after the review, usually no more than 5 minutes into the class period.

Important: Cell Phones: Cell phones are to 'turned off' or 'turned to vibrate' during both lecture and laboratory and during all tests and exams. No exceptions!

Course Evaluation and Grading

Four lecture exams each worth 100 points will be given. Exams will be multiple choice and problem-solving format incorporating concepts and activities introduced in class. Make-up exams may be made available in the event that the instructor receives notification prior to the scheduled examination time. Quizzes, structured in a variety of ways, will be given throughout the semester. There may also be unannounced pop-quizzes, some homework assignments, class projects, journals, and take-home exams.

Average of quizzes, homework, and assignments.....	100 points
Average of lab attendance & activities, lab report/exam	200 points
Four lecture exams (3X100)	400 points

Total 700 point

Grading scale:

≥90% A
80% - <90% B
70% - <80% C
65% - <70% D
≤65% F

Lecture and Lab Schedule

The classroom lecture-discussion-lab topics will follow the order in which they appear in textbook. The following schedule is subject to slight modifications at any time during the semester. The exact date of each of the four exams will be announced not later than one week before the exam.

I. INTRODUCTION

1. A brief history: Introduction to Cell and Molecular Biology (Handout and Ch 1)
2. Cell Structure and Function (Handout)
3. Molecular nature of genes (Ch 2)

4. Gene Function (Ch 3)

(Exam 1)

II. METHODS IN MOLECULAR BIOLOGY

5. Molecular cloning methods (Ch 4)

6. Molecular tools for studying genes (Ch 5)

III. TRANSCRIPTION IN PROKARYOTES

7. Transcription in Bacteria (Ch 6)

(Exam 2)

8. Fine control of bacterial Transcription (Ch 7)

9. DNA protein interactions (Ch 9)

IV. TRANSCRIPTION IN EUKARYOTES

10. Eukaryotic RNA polymerase and their promoters (Ch 10)

11. Transcription Factors (Ch 11)

(Exam 3)

IV. POSTTRANSCRIPTIONAL EVENTS

12. Messenger RNA processing (Ch 14-15)

IV. TRANSLATION

13. Mechanisms of translation (Ch 17-18)

IV. DNA REPLICATION and RECOMBINATION

14. DNA Replication – basic mechanisms (Ch 20)

(Exam 4)