MOLECULAR AND CELLULAR BIOLOGY  
BIOL 6830 – 901

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Course Organization:

BIOL 6830 Molecular and Cellular Biology is an online course, also called distance learning (DL). Course information can be accessed through the University of Toledo’s Blackboard 9.1 site (www.utoledo.edu/dl). You must be registered for the course and have a UTAD ID and password to log into the site. All course materials, except for the textbook, will be found within this site. Through this site you will also be able to communicate with me and other students in the class.

Prerequisite: Must be enrolled in one of the following levels: Graduate. Students who have received credit for either BIOL 6010 or BIOL 6090 cannot receive credit for BIOL 6830.

Required Text:

A free companion website accompanies the book at http://bcs.whfreeman.com/lodish7e/#t_800911___.

Learning Outcomes:

BIOL 6830 is a 4 credit hour graduate level course. Taking this course you should:

1) Become familiar with the fundamental concepts of molecular genetics. These include the properties of nucleic acids and basic molecular genetics mechanisms, such as transcription and generation of functional mRNA, decoding of mRNAs by tRNAs, translation of proteins at the ribosomes, and DNA replication and repair.
2) Become acquainted with basic molecular genetic techniques and how they are they have provided us with important information in our understanding of molecular genetics.
3) Gain a greater understanding of gene structure and the composition and structure of chromosomes.
4) Understand how gene expression is regulated at multiple levels, including transcriptional, posttranscriptional, and translational.
5) Develop a deeper understanding of cell structure and how it relates to cell functions.
6) Understand cell movement and how it is accomplished.
7) Understand how cells grow, divide, and die and how these important processes are regulated.
8) Understand cell signaling and how it regulates cellular functions. Also how its dis-regulation leads to cancer and other diseases.

**Important Dates:**

TBA

**Student Evaluation:**

There will be three exams during the semester and a comprehensive final. These will be proctored.

Each exam will consist of fill-in-the blank, matching, short answer, and essay questions.

The three exams during the semester will only cover new material (material covered since the last exam).

The final exam will be comprehensive and approximately 50% of the material will be new and 50% will be from topics covered from the start of the semester.

If an exam is missed, the instructor must be notified within 48 hours. Acceptable excuses include a death in the immediate family and documented illness of the student.

Make-up exams will be given at the discretion of the instructor.

**Grading:**

The breakdown of grades is shown below:

<table>
<thead>
<tr>
<th>Exam</th>
<th>Contribution to final grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam I</td>
<td>20% of final grade</td>
</tr>
<tr>
<td>Exam II</td>
<td>25% of final grade</td>
</tr>
<tr>
<td>Exam III</td>
<td>25% of final grade</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30% of final grade</td>
</tr>
</tbody>
</table>

**Grading Scale:**

Grade equivalents will be assigned as follows:

<table>
<thead>
<tr>
<th>% of available marks</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>92-100</td>
<td>A</td>
</tr>
<tr>
<td>89-91</td>
<td>A-</td>
</tr>
</tbody>
</table>
Schedule of Topics (Tentative):

Week 1  Chemical Foundations  Chapter 2
Protein Structure and Function  Chapter 3
Basic Molecular Genetic Mechanisms  Chapter 4

Week 2  Molecular Genetic Techniques  Chapter 5
**Exam I**
Genes, Genomics, and Chromosomes  Chapter 6
Transcriptional Control of Gene Expression  Chapter 7

Week 3  Post-Transcriptional Gene Control  Chapter 8
Biomembrane Structure  Chapter 10
Membrane Transport  Chapter 11

Week 4  **Exam II**
Cellular Energetics  Chapter 12
Moving Proteins into Membranes and Organelles  Chapter 13
Vesicular Traffic, Secretion, and Endocytosis  Chapter 14

Week 5  Microfilaments  Chapter 17
Microtubules and intermediate filaments  Chapter 18
Cells into Tissues  Chapter 20

Week 6  **Exam III**
Stem Cells, Cell Asymmetry, and Cell Death  Chapter 21
Cell Cycle  Chapter 19

Week 7  Signal Transduction and G protein-coupled receptors  Chapter 15
Signaling Pathways that control gene activity  Chapter 16
STATEMENT OF ACADEMIC DISHONESTY

Department of Biological Sciences

Academic dishonesty by students enrolled in undergraduate and graduate courses and programs offered by the Department of Biological Sciences will not be tolerated. Academic dishonesty includes but is not limited to:

1. Obtaining assistance from another individual during an examination.

2. Giving assistance to another individual during an examination.

3. The unauthorized use of study material or textbooks during an examination.

4. Changing answers on an examination after it has been returned and then submitting it for regarding.

5. Plagiarizing written assignments. Plagiarizing includes but is not limited to: a) Copying laboratory reports from previous years, b) copying or paraphrasing reports, term papers, or those prepared by other students, c) unauthorized collaboration in the preparation of reports, term papers, or theses, and d) use of another author’s materials without appropriate acknowledgement through quotation and citation.

6. Attempting to bribe or otherwise induce an instructor to alter either a grade or examination score.

7. Obtaining or attempting to obtain a copy of an examination prior to its administration.

In accordance with policies presented in The Student Handbook and The University Catalog, Instructors have the responsibility and right to report cases of alleged dishonesty to departmental, college, and university administrative units. Students involved in academic dishonesty may expect to receive a grade of F on specific assignments as well as in the course where the assignment was made. In addition, disciplinary action may be recommended through appropriate college and university disciplinary committees. Please consult your instructor for instructions on the implementation of this policy.