BIOLOGY 4302/5302
CELL MOLECULAR BIOLOGY
COURSE SYLLABUS

INSTRUCTOR: **Blake Bextine, Ph.D.**
Assistant Professor in Biology
Office – SCI 107; 903-566-7323
Office hours – **MWF** 10-11 am or by appointment
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REQUIRED TEXT: ***Molecular Biology of the Cell (4nd edition),*** **Alberts et al.**

COURSE DESCRIPTION:

This course provides an overview of the molecular basis to cell structure and function.

COURSE OBJECTIVES: Biology 4302/5302 is an upper division course that investigates the molecular basis for cellular function and assumes prior exposure to Cell Biology (Biol 3334) or an equivalent introductory course in cellular biology. The course will build on the concepts introduced in Biol 3334 and compliments the introductory course by providing a more thorough presentation of some of the major aspects of cellular functioning. In addition, this upper level course will also cover new material beyond the scope of the introductory class. Students may find that prior exposure biochemistry is beneficial. The required textbook is *Molecular Biology of the Cell (4nd edition),* Alberts et al.

1. Our understanding of cell biology has grown rapidly over the last two decades fuelled by the ever evolving technological world. The information upon which this understanding and knowledge is based is growing exponentially. This rapid expansion in knowledge has been made possible by the development of new experimental techniques, particularly in recombinant DNA technology, monoclonal antibody production, cell culture and organismal cloning. In combination, these techniques have allowed any desired segment of DNA to be isolated, purified, transferred and sequenced and have enabled the gene products to be purified, identified and localized within the cell. The first objective of this class is to recognize these advancements in technology and understand their effects on cell biology.

2. Many of the long held biological axioms concerning genetics, differentiation, structure, development and even taxonomy have been dismissed or disproved by these powerful "definitive" techniques. Consequently, any attempt to portray or study cell biology as a encyclopedic compilation of facts is doomed from its conception since many of the "facts" are constantly evolving or being proved incorrect. The second objective of this class will be to understand the current status of molecular biology knowledge.

3. Therefore, the course will approach this field by exploring a series of basic questions which will provide a conceptual framework for dealing with our evolving understanding of cells. We will also discuss some of the classic experiments which served to define and answer some of these questions and examine some of the more recent and current experiments which provide a basis for our present understanding of how cells function at the molecular level. In these discussions on cellular organization we will stress the importance of understanding underlying mechanisms.

GRADING POLICY: The final grade will be determined as follows:

Three (3) lecture exams will each be worth **20%** of the total grade and given periodically throughout the semester. Exam questions will be taken from lecture and supporting material from text. **10%** of the final grade will come from participation in a **Friday class discussions.** The **final exam** will be comprehensive and worth **30%** of the final grade. Bonus pop quizzes will be given during the course.

Letter grades will be assigned according to the following scale:

A = 90-100	D = 60-69
B = 80-89	F = below 60
C = 70-79	

EXAM MAKE-UP POLICY:

If a student is unable to take an exam when scheduled, a make-up exam will be arranged **ONLY** if the instructor is notified **IN ADVANCE**. Students who fail to make appropriate arrangements will receive a grade of "0" for the exam missed. There will be no exceptions.

GENERAL:

Students should prepare ahead for lectures by reading the listed chapters. If a subject is completed with class time remaining, then the next scheduled lecture will commence immediately.

Questions over lecture material are welcomed during office hours (or by appointment), or if more convenient, they can be directed to me either by phone or e-mail. **Please do not hesitate to ask questions!**

NOTE: If you have disability, including a learning disability, for which you request an accommodation, please contact Ida MacDonald in the Disability Support Services offices so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodation must provide documentation of his/her disability to the Disability Support Services counselor. For more information, call or visit the Student Services Center located in the University Center, Room 111. The telephone number is 566-7079 (TDD 565-5579).

Grade Replacement
If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to file an intent to use grade forgiveness will result in both the original and repeated grade being used to calculate your overall grape point average. A student will receive grade forgiveness (grade replacement) for only three (undergraduate student) or two (graduate student) course repeats during his/her career at UT Tyler. (2006-08 Catalog, p. 35)

Week*	Topic	Chapter
1	Introduction to the cell	1, 2
2	Biosynthesis and the role of proteins	2, 3
3	Protein Structure and Function (No Class M)	3 (and additional reading)
4	DNA Structure	4
5	DNA Structure and Function	5
6	DNA Function (Test 1 – Friday Sept. 28)	6
7	Gene Expression	7
8	Gene Expression, Protein Sorting	7, 12
9	Protein sorting	12, 13
10	Review or Catch up (Test 2 – Friday Oct. 26)	Review Chapter 10
11	Cell Membranes, Intracellular Traffic	10, 11
12	The Cytoskeleton	16,
13	The Cell Cycle	17
14	Molecular Techniques, history and future (Thanksgiving WF)	8 (and additional reading)
15	From Genomics to Proteomics, the all inclusive science (Test 3 Nov 30)	Handout on Blackboard
16	Catch up week	
17	Optional Review - **Comprehensive Final**	Friday December 14, 8AM

***M and W will be Lecture Days and on F we will discuss and paper on the subject.**