

LECTURE SYLLABUS

BIOL 4301 Cell Biology Spring 2017

Instructor:	Dr Sean P. Graham	Office Hours:	MWF 11am-12pm, T-Th 2-3pm
Lectures:	T-Th 9:30-10:45am WSB 101	Office phone:	432-837-8084
Laboratory:	none	Email:	sean.graham@sulross.edu
Office:	WSB 221		

Course Description:

The Cell is the fundamental unit of life. In fact, most biologists and philosophers consider the origin of life itself was the origin of the cell. This course will focus on the molecular aspects of cell structure and function. It will therefore serve as a review and elaboration on topics that the student has probably already been exposed to in introductory courses and genetics classes. Additionally, key metabolic pathways (glycolysis, aerobic respiration, and photosynthesis) introduced in other classes will be elaborated upon in this course in attempt to encourage mastery of these important topics. However, the course will also focus on detailed descriptions of cellular and organelle structure and function, which will likely be entirely new for some students. Therefore, the course will heavily involve all 6 of the program learning objectives developed by the biology program (see below).

Recommended Books/materials (NOT REQUIRED):

1. *The Cell: A Molecular Approach, 6th ed.* (or later editions). (2013).

Exams & Grading: The table below illustrates the grading for this course. I do not give comprehensive exams. Note that I have greatly simplified your grading. The course is very straight-forward. Doing well on three exams, and attendance, are necessary for success. **IT'S UP TO YOU TO STAY ON TASK AND STUDY FOR THE EXAMS!**

3 lecture exams @ 100 pts ea	300
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Total Credit	300 points
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A 90 — 100%	B 80 — 89%	C 70 — 79%	D 60 — 69%	F 0 — 59%
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Attendance is mandatory. To encourage attendance, I don't post the lectures on blackboard. You need to show up and take notes. I will not waste class time calling roll because you are all adults. However, this will be a small class and I will notice when you are missing. **If you miss more than six times I'll drop you from my roll.** I determine this with impromptu, unannounced student sign-ins. **DO NOT MISS EXAMS** unless you have a **documented**, university-approved excuse (hospitalization, etc.), and I need to hear about this **BEFORE THE DAY OF THE EXAM.** Otherwise you're out of luck.

Course Objectives. At the end of the semester, students should be able to:

1. Understand the evolutionary origin of cells and eukaryotic organelles
2. Develop mastery the basic organic macromolecules.
3. Understand how cells self-replicate: the flow of genetic information, replication, transcription, and translation.
4. Master the processes of cell metabolism: glycolysis, aerobic respiration, and photosynthesis.
5. Understand and recognize cell structure and organelle structure.

Program Learning Outcomes (PLOs) for Biology:

1. Demonstrate an understanding of evolution by natural selection.
2. Demonstrate an integration of environmental awareness into everyday modern life.
3. Understanding how to incorporate molecular biology into the study of the whole organism.
4. Demonstrate utilization of various field techniques toward addressing scientific questions in the discipline.
5. Conduct basic laboratory experiments utilizing standard observational strategies.

Tentative schedule (subject to change)		week of
Week	Topic	
1	Origin of the cell	17-Jan
1		
2	A tour of the cell	24-Jan
2	The composition of cells	
3	Cell metabolism	2-Feb
3	Cellular genomes	
4	DNA replication	7-Feb
4	Transcription	
5	Translation	14-Feb
5	First test 16 Feb	
6	The nucleus	21-Feb
6	Protein transport	
7	Bioenergetics and metabolism	28-Feb
7		
8	Cytoskeleton and cell movement	7-Mar
8	The plasma membrane	
Spring Break		March 13-17
9	Cell walls and cell interactions	Spring Break
10	Cell signaling	21-Mar
10		
11		28-Mar
11	Second test 30 March	
12	The Immune System I: Innate immunity	4-Apr
12		
13	The Immune System II: Adaptive Immunity	11-Apr
13		
14		18-Apr
14	The Cell cycle	
15	Cancer	25-Apr
15		
16	Last day of class for us 3 May	2-May
		May 3, last day of classes
	Final exam (not cumulative)	

Students with any learning disabilities will be provided with accommodations. If you would like to request such accommodation because of a physical, mental, or learning disability, please contact the ADA coordinator at 837-8203, FH 112.