

LECTURE SYLLABUS

BIOL 4301 Cell Biology Spring 2019

Instructor:	Dr Sean P. Graham	Office Hours:	T-Th 9-11 am, F 11-12
Lectures:	T-Th 11:00-12:15am 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.

Student Learning Outcomes (SLOs) 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

	Date	Topic	
<i>Week 1</i>			
Lecture 1	Jan 22	Syllabus; origin of the cell	
Lecture 2	Jan 24		
<i>Week 2</i>			
Lecture 3	Jan 29	A brief tour of the cell	
Lecture 4	Jan 31		
<i>Week 3</i>			
Lecture 5	Feb 5	The composition of cells	
Lecture 6	Feb 7	Cell metabolism	
<i>Week 4</i>			
Lecture 7	Feb 12		
Lecture 8	Feb 14	DNA replication	
<i>Week 5</i>			
Lecture 9	Feb 19	Transcription & Translation	
EXAM	Feb 21	Exam 1	
<i>Week 6</i>			
Lecture 10	Feb 26	The nucleus	
Lecture 11	Feb 28	Protein transport	
<i>Week 7</i>			
Lecture 12	Mar 5	Cytoskeleton and cell movement	
Lecture 13	Mar 7		
<i>Week 8</i>			
Lecture 14	Mar 12	The plasma membrane	
Lecture 15	Mar 14	cell walls and cell interactions	
<i>Spring Break</i>			
No Lecture	Mar 19	No classes – Spring break March 18-22	
No Lecture	Mar 21	No classes – Spring break	
<i>Week 9</i>			
Lecture 16	Mar 26	Cell signaling	
Lecture 17	Mar 28		
<i>Week 10</i>			
Lecture 18	Apr 2	Tissues	
EXAM	Apr 4		
<i>Week 11</i>			
Lecture 19	Apr 9	The cell cycle	
Lecture 20	Apr 11		
<i>Week 12</i>			
Lecture 21	Apr 16	Cancer	
Lecture 22	Apr 18		
<i>Week 13</i>			
Lecture 23	Apr 23	The Immune System I: Innate immunity	

Lecture 24	Apr 25		
<i>Week 14</i>			
Lecture 25	Apr 30	The Immune System II: Adaptive Immunity	
Lecture 26	May 2		
<i>Week 15</i>			
Lecture 27	May 7	Last day of class	
No Lecture	May 9	No classes – Dead Day	
<i>Week 16</i>			
EXAM		May 13 10:15-12:15 Exam III	

Note – Lecture topics are subject to change according to course interest, organization, and timing constraints, however the exam dates will remain the same.

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