

LECTURE SYLLABUS

BIOL 4301 Cell Biology Spring 2020

Instructor:	Dr Sean P. Graham	Office Hours:	MWF 950-1030, T-Th 4-6pm
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.

Marketable Skills:

- 1) Ability to organize, analyze, and interpret data.
- 2) Proficiency in using presentation software.
- 3) Experience in managing time and meeting deadlines.
- 4) Ability to speak effectively and write concisely about scientific topics.
- 5) Experience in the development of professional email correspondence.

TENTATIVE SCHEDULE

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

Lecture 25		The Immune System II: Adaptive Immunity	
Lecture 26			
<i>Week 15</i>			
April 28		Last day of class	
<i>Week 16</i>			
EXAM		MONDAY May 4, 2020 8-10am 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.

Sul Ross State University (SRSU) is committed to equal access in compliance with Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the Student’s responsibility to initiate a request. Please contact me, Ms. Rebecca Greathouse Wren, M.Ed., LPC-S, Director/Counselor, Accessibility Services Coordinator, Ferguson Hall (Suite 112) at 432.837.8203; mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas 79832. Students should then contact the instructor as soon as possible to initiate the recommended accommodations.