GENETICS – BIOL 3306
FALL 2019

Instructor: Dr Sean P. Graham
Office: WSB 221, *Phone:* 432-837-8084, *E-mail:* sean.graham@sulross.edu
Office Hours: T-Th 3:30-6pm Fri 2-5pm & by appointment

Lecture: 11-1215 T-TH | WSB 101

Text: Genetics: From Genes to Genomes. Hartwell et al. (4th Ed). (NOT REQUIRED!)

Course description: Genetics is the secret of life: how living things self-perpetuate. The course will be a largely historical overview of the development of our understanding of this process from the earliest experiments on peas to the modern era of gene editing using CRSPR.

Student Learning Outcomes:

The biology student graduating with a BS in Biology should be able to:

SLO1 demonstrate an understanding of basic biological concepts, including but not limited to evolution via natural selection, cell theory, and the role and function of DNA.
SLO2 demonstrate utilization of various field techniques toward addressing scientific questions in the specific discipline. These field techniques can include, but are not limited to, plant collection and processing, various animal collection techniques, ecological surveying and sampling, and biodiversity indexing.
SLO3 use biological instrumentation to solve biological problems using standard observational strategies.
SLO4 develop writing skills by summarizing and critiquing recent relevant biological literature.

Student Learning Objectives for this Course: In addition to focusing on SLO1 above, the student will be able to understand the principles of the heredity and develop an in depth understanding and appreciation of the processes of evolution, including classical Mendelian genetics, molecular genetics, and epigenetics.

Attendance: Attendance is mandatory and the key to achieving a good grade in this class. Students missing more than 6 lectures will be dropped from the class as per university policy and receive an F in the course. Arrangements for excused absences must be made beforehand. Exams missed for any reason must be made up within one week of the original exam date, but the reason for the absence must adhere to the university's acceptable absences policy (they must be documented family or health emergencies).

Ethical Conduct: Cheating and or plagiarism will not be tolerated and will be dealt with according to university policies. This includes quizzes—turn in your own work or else.

Grading:

There will be three lecture exams, each of equal contribution to the student grade, amounting to 75% of the grade for the course. Exams will cover the lecture material immediately preceding the exams *i.e.*, there will be no comprehensive final exam. The remaining 25% of the grade comes from assignments and quizzes.

	Weighting
Exam I	100
Exam II	100
Exam III	100
Assignments & Quizzes	100
TOTAL	400 pts

Grades: A 90 – 100% **B** 80 – 89% **C** 70 – 79% **D** 60 – 69% **F** 0 – 59%

Class schedule (subject to change):

	Date	**Topic**	**Textbook Chapter**
Week 1			
Lecture 1	Tuesday, August 27	Introduction: Genetics, the Secret of Life	1
Lecture 2	Thursday, August 29	Mendel's principles	2
Week 2			
Lecture 3	Tuesday, September 3	Mendel's Principles	2
Lecture 4	Thursday, September 5	Extensions of Mendelian Genetics	3
Week 3			
4Lecture 5	Tuesday, September 10	Chromosomes	4
Lecture 6	Thursday, September 12	Chromosomes	4
Week 4			
Lecture 7	Tuesday, September 17	Mitosis & Meiosis	4
Lecture 8	Thursday, September 19	Linkage & Recombination	5
Week 5			
Lecture 9	Tuesday, September 24	Mapping	5
EXAM	**Thursday, September 26**	**Exam I**	
Week 6			
Lecture 10	Tuesday, October 1	DNA	6
Lecture 11	Thursday, October 3	Special DNA lab Day!	6
Week 7			
Lecture 12	Tuesday, October 8	What is a gene?	7
Lecture 13	Thursday, October 10	Gene expression	8
Week 8			
Lecture 14	Tuesday, October 15	Gene expression	8
Lecture 15	Thursday, October 17	Genomes	10
Week 9			
Lecture 16	Tuesday, October 22	Genomes	10
EXAM	**Thursday, October 24**	**EXAM II**	
Week 10			
Lecture 17	Tuesday, October 29	Gene Movement	12-13

Lecture 18	Thursday, October 31	Chromosomal Rearrangements	12-13
Week 11			
Lecture 19	Tuesday, November 5	Prokaryotic genetics	14
Lecture 20	Thursday, November 7	Gene regulation	15-16
Week 12			
Lecture 21	Tuesday, November 12	Gene regulation	15-16
Lecture 22	Thursday, November 14	Mutation and Cancer	17
Week 13			
Lecture 23	Tuesday, November 19	Mutation and Cancer	17
NO CLASS	**Thursday, November 21**	**Thanksgiving break**	
Week 14			
Lecture 24	Tuesday, November 26	Developmental Genetics and Biotechnology	18
Lecture 25	Thursday, November 28	Variation and Selection	19
Week 15			
Lecture 26	Tuesday, December 3	Variation and Selection	19
NO CLASS	Thursday, December 5	**No classes – Dead Day**	
Week 16			
FINAL EXAM	**Monday, December 9**	(1015-1215) **Exam III**	

Note – Lecture topics are subject to change according to course interest, organization, and timing constraints.

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.