

BIOL 3301 sec. 010 & 020

GENETICS



Instructor: Dr. Laurel Fohn, MD, PhD

Email: laurel.fohn@angelo.edu

Phone: 486-6644

Office: 107 Cavness Science Building

Office Hours: As posted on Blackboard and office door and by appointment.

Office hours will predominantly be virtual via telephone or Blackboard Collaborate.

Course Information

Class Meeting Times: Section 010- MWF 11-11:50; Section 020- MWF 12-12:50

Course Description

This course is taught assuming it is the student's *first* upper level biology course. It is a general genetics course & therefore examples from all major life forms are included, but special emphasis will center on human genetics. Areas to be emphasized: classical transmission genetics, cytogenetics, and molecular genetics with an overview of/ introduction to modern applications/ research/ transitions in the field of genetics.

Overall Goals:

- ✓ Expand one's knowledge of genetic facts and terminology
- ✓ Introduce basic genetic principles and theories
- ✓ Improve one's ability to apply genetic knowledge to problems & situations

Prerequisite Courses

Credit for Biology 1306/1106 and 1307/1107, or Biology 2323/2123 and 2324/2124, with a grade of "C" or better.

Prerequisite Skills

Accessing Internet websites, using ASU Library resources, ASU email and ASU Blackboard, using Respondus Lockdown Browser and Monitor, and proficiency with Microsoft Word and/or PowerPoint are expectations of the course.

Student Learning Outcomes

Upon completion of this course, students will be able to:

- be familiar with terminology used in genetics
- be able to evaluate genetic crosses and analyze outcomes
- be able to analyze pedigrees and make logical predictions
- be able to understand the mechanisms of genetic change and their role in subsequent generations
- be able to understand the flow of genetic information from DNA to expressed traits
- be able to understand concepts related to modern applications of genetics in biology and medicine

For Departmental, State, and Accreditation purposes this course will assess:

Biology Department Learning Goal #2 – *Student will show an ability to demonstrate comprehensive, specialized knowledge in the various sub-disciplines of the biological sciences.* This will be accomplished by assessing the above outcomes. Each major exam will include a section addressing at least one of the above learning outcomes.

Course Delivery

This course is predominantly face-to-face with roughly 20% of the course delivered online only via Blackboard. The online component is important for some exams, homework assignments and learning resources and supplemental materials. The face-to-face component comprises most of the course and is where most information will be conveyed, Top Hat points earned, and some exams taken.

To maintain academic quality while accommodating social distancing/ isolation/ quarantine needs this semester, this course will combine face-to-face teaching with livestream remote instruction. The goal is to provide face-to-face instruction to students who want and are eligible to be on campus, while also allowing students who may need to learn remotely to participate via virtual class sessions as often as possible. When you are not in the physical class, you will attend live remote sessions at the same time as our scheduled course. You will also be expected to complete coursework via Blackboard. Some sessions will require in person attendance (particularly some exams). Please refer to this [Health and Safety web page](#)¹ for updated information about campus guidelines as they relate to the COVID-19 pandemic.

Required Texts and Materials

B. A. Pierce, "Genetics: A Conceptual Approach". W.H. Freeman and Co. 6th Edition.

Technology Requirements

To successfully complete this course, students need to purchase access to Top Hat. Some of you may have purchased four-year or year-long enrollment in the past for another course. If not, semester access may be purchased through the bookstore.

To utilize Top Hat, students will need to bring a charged mobile device/ laptop/ smart phone to each class.

Students will also need to have access to Blackboard through Angelo State University.

Access to some exams and quizzes will be through **Respondus Lockdown Browser** and will be video recorded via **Respondus Monitor**. Respondus requires a **desktop computer or laptop (not a Chromebook) and a webcam and microphone**. For best results, use an ethernet cable to connect to your Internet source instead of relying on Wifi. Refer to the Blackboard course for Respondus installation instructions.

Lectures will be live-streamed and virtual office hours will occur via Blackboard Collaborate (which requires a web cam if you want to be seen and microphone or phone to be heard).

Communication

Faculty will respond to email and/or telephone messages within 48 hours during working hours Monday through Friday. Weekend messages may not be returned until Tuesday.

Written communication via email: All private communication will be done exclusively through your ASU email address and Blackboard. Check frequently for announcements and policy changes. In your emails to faculty, include the course name and section number in your subject line.

Virtual communication: Office hours and/or advising may be done with the assistance of the telephone or Blackboard Collaborate.

Grading

Evaluation and Grades

Course grades will be determined as indicated below.

Exams:

- **Three lecture exams and one comprehensive final exam** (all exams 100 pts each)
- **Exam dates:** Feb. 18 (Friday); March 30 (Weds); April 29 (Fri); **Comprehensive Final Exam is May 9 (Mon 1-3 PM)** for the 12:00 section; **May 11 (Wed 10:30 am-12:30 pm)** for the 11:00 AM section.
- **Exam format:** Each exam will be composed of a mixture of question types with a majority being multiple choice and the remainder being matching, short answers, definitions, problems, true-false, etc.

Grading System

Course grades will be dependent upon completing course requirements and meeting the student learning outcomes.

You have the opportunity to take 4 exams. Additionally, there will be **the equivalent of a fifth exam made up of homework assignments and in class activities (100 points)**. Your best 3 exam scores plus your homework score will be totaled to determine your grade. No make-up exams are given in this class. If you miss one exam, that one will be the low score dropped. It is possible to skip the final if you are satisfied with your point totals after the 3 exams and your homework/participation grade. The final is comprehensive.

The following grading scale is in use for this course:

- A = 360-400 points
- B = 320-359 points
- C = 280-319 points
- D = 235-279 points
- F = Fewer than 235 points

Attendance and Top Hat/ Homework Points

Roll will be taken at each class meeting and in class activities, pre-dominantly using Top Hat and Homework assignments will be given. Homework must be done in legible handwriting and turned in as assigned. No late homework will be accepted. Top Hat points will be earned during class. If not in attendance (live-stream or in person) the Top Hat points will not be able to be earned. There will be approximately 5 additional Top Hat points available throughout the semester, such that 2 absences due to unforeseen circumstances will not negatively affect the Top Hat/ attendance portion of your grade, but (near) perfect attendance may result in slight bonus.

Drop/ Withdrawal Policy:

The last day a student may drop/withdraw from class is **Thursday, April 28, 2022** (ie. these students will receive a W on their transcript). Any student remaining on the official role after this date will receive a grade.

Approximate chronology of lecture topics

- Weeks #1-2: Intro to genetics; genetics history and major contributions (Mendel, Darwin and others), course overview; genetic terminology. (Chapters 1-2).
- Weeks #3-8: Concepts of transmission genetics (Chromosomes, cell cycle, Mitosis & meiosis; Segregation & Independent Assortment; Punnett Squares; Pedigrees). (Chapters 2, 3, 6, 8 with highlights from ch. 4,5 & 11). Mechanisms of Variability (Independent assortment, crossing over, mutation, epigenetics) (Chapters 6, 7, 8). Inheritance/ Pedigrees. Sex Determination/Differentiation/ X-chromosome dosage (Ch 4,5)
- Weeks #8-13: DNA & Molecular Genetics- central dogma; replication; transcription; translation; regulation of expression (Chapters 10-16); Mutation and DNA repair (Ch 18).
- Weeks #14-15 – Selections from: Immunogenetics; Genetics of developmental biology (Ch 22); Cancer genetics; Biotechnology; Emergence of Epigenetics/ Genomics (Ch.5, 11, 21, 23); Evolution/ Evo-Devo and mutations (Ch 25 & 26).

Miscellaneous information:

- [1] Powerpoints, when available, should be viewed only as an outline and therefore comprehensive note taking is recommended. You are welcome to audiotape any lecture to assist you in notetaking; however, videography/ photography is prohibited. Additionally, I intend to record lectures on Bb Collaborate.
- [2] Enter the Top Hat attendance code/ complete homework as assigned to show continued participation; excessive non-participation may be reported to the university administration
- [3] You are encouraged to ask relevant questions during lectures and during office hours (the earlier in the semester, the better!)
- [4] Everyone is responsible for maintaining an atmosphere of attentiveness (i.e. do not bring guests or food to class; do not visit during class lectures; silence cell phones; be on time to class)
- [5] In addition to the above items the following are also hints for achieving success in this course:
 - Pay attention to details
 - Know all examples presented in lecture and how to solve problems as

presented in lecture

- This course is information heavy, and thus lecture moves fast. The book is a valuable source of information- spend time reviewing it and solidifying concepts from lecture. The majority of exam questions will come from lecture discussions (based on the textbook) and assigned supplements
- Take seriously hints/suggestions/asides presented by the instructor
- Pay attention to exam reviews and take appropriate notes
- Although you will have to memorize information, a special emphasis is placed on applications of information to new situations.
- If under qualified to take this course, your attention to the preceding details should compensate for this
- If overqualified to take this course, you are at risk of losing concentration during lectures and missing some details that could cost you points on an exam

Student biography: Each student is requested to turn in a short biography including the following: name (if what I called from the roll is not what you prefer, please write your preference; include phonetics if I mispronounced your name); major; plans for the future, the approximate number of hours of college biology that you have taken & a brief summary of why you are taking this class. **The written portion is your first homework assignment (4 points) and is due on Blackboard by Friday, Jan 28, 2022. The second portion** of the assignment ensures your ability to use Respondus Lockdown Browser and consists of a brief self-introduction as will be described and is **also worth 4 points and also due on Blackboard by Friday, Jan 28, 2022**

General Policies Related to This Course

All students are required to follow the policies and procedures presented in these documents:

- [Angelo State University Student Handbook](#)²
- [Angelo State University Catalog](#)³

Academic Integrity

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university's [Statement of Academic Integrity](#)⁴ (Page 97).

Accommodations for Students with Disabilities

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the [Student Disability Services website](#).⁵

The instructor must receive a letter from Student Affairs describing the accommodations to be made at least one week prior to the assignments the student is requesting accommodation for. The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dr. Dallas Swafford
Director of Student Disability Services
Office of Student Affairs
325-942-2047
dallas.swafford@angelo.edu
Houston Harte University Center, Room 112

Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 [Grading Procedures](#)⁶ for more information.

Student Absence for Observance of Religious Holy Days

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 [Student Absence for Observance of Religious Holy Day](#)⁷ for more information.

Title IX at Angelo State University

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: [Incident Reporting Form](#)⁸

Face to Face: Mayer Administration Building, Room 210

Phone: 325-942-2022

Email: michelle.miller@angelo.edu

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

The Office of Title IX Compliance also provides accommodations related to pregnancy (such as communicating with your professors regarding medically necessary absences, modifications required because of pregnancy, etc.). If you are pregnant and need assistance or accommodations, please contact the Office of Title IX Compliance utilizing the information above.

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit the [Title IX website](#).⁹

Information About COVID-19

Please refer to ASU's [COVID-19 \(Coronavirus\) Updates](#)¹⁰ web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

Modifications to the Syllabus

This syllabus, including grade evaluation and course schedule, is subject to modification on potentially short notice based on developing circumstances.

¹ <https://www.angelo.edu/covid-19/returning-to-campus/health-and-safety.php>

² <https://www.angelo.edu/current-students/student-handbook/>

³ <https://www.angelo.edu/academics/catalog/>

⁴ <https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=97>

⁵ <https://www.angelo.edu/current-students/disability-services/>

⁶ <https://angelo.policystat.com/policy/10659448/latest/>

⁷ <https://angelo.policystat.com/policy/10659368/latest/>

⁸ <https://www.angelo.edu/incident-form>

⁹ <https://www.angelo.edu/title-ix>

¹⁰ <https://www.angelo.edu/covid-19/>