

Introductory Genetics
BIOL 3200(5200), Section A (3 credit hours)
Summer Session I 2024

Class Time/Location: MTWRF 11:00 AM- 1:50 PM, BC 2022

Instructor: Dr. Cristina Calestani
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Office hours:

Tuesday-Thursday 2 PM – 4:30 PM.
Or by appointment outside office hours (please send me an email to my valdosta.edu account).

Pre-Requisites: MATH 1112 or MATH 1113, BIOL 1107 and BIOL 1108 with a grade of C or better or permission of instructor.

Course Description (as stated in the Undergraduate Catalogue):

A survey of modern genetics, including Mendelian modes of heredity, extensions and variations on Mendelian genetics, chromosomal inheritance and variation, molecular properties of genes, and basic quantification of genetic diversity at the population level.

Course Learning Outcomes

This course learning outcomes support the achievement of the Department of Biology Educational Outcomes 1 through 5, and the VSU General Education Outcomes 3, 5, and 7. By the end of this course the students will be able to:

1. Demonstrate knowledge and comprehension of terminology and basic principles of genetic inheritance at the level of individuals and populations (Biology outcomes 1 through 5; VSU outcomes 3 and 5)
2. Demonstrate comprehension of how genetic variability is produced, maintained, or lost, and predict the consequences on individuals, populations and ecosystems (Biology outcomes 2, 3, 4 and 5; VSU outcomes 3 and 5)
3. Demonstrate comprehension and predict the outcomes of possible interactions between genetic and environmental factors. (Biology outcomes 1, 3, 4 and 5; VSU outcome 3 and 5)
4. Apply basic principles of inheritance to predict the outcome of genetic crosses and mating by using basic probability rules and statistical methods (Biology outcomes 1, 3 and 4, VSU outcome 3 and 5)
5. Analyze genetic data to infer the mode of inheritance of genetic traits (Biology outcomes 1, 3 and 4; VSU outcome 3, 5 and 7)
6. Evaluate the probability/risk of inheritance of genetic traits/diseases as applied to human health, plant, and animal breeding. (Biology outcomes 1, 3 and 4; VSU outcome 3, 5 and 7)
7. Describe and demonstrate comprehension of the basic molecular and cellular mechanisms regulating genetic inheritance (Biology outcome 3 and 4; VSU outcomes 3 and 5)
8. Relate the structure and function of DNA/RNA to the development of form and function (phenotype) of the organism (Biology outcomes 3 and 4; VSU outcomes 3 and 5)
9. Demonstrate comprehension of experimental approaches used to test specific hypothesis in classical, population and molecular genetics (Biology outcome 1, 2, 3, 4, 5; VSU outcomes 3 and 5)

Textbook

Genetics Essentials, 5th edition, by Benjamin A. Pierce. Editor, MacMillan Learning

ATTENDANCE

Attendance is mandatory. According to the Valdosta State University's policy, a student who misses or does not participate in more than 20% of the scheduled course could be subject to receiving a failing grade in the course.

Students need to sign an attendance sheet before the beginning of class. Participation will be evaluated based on the completion of in-class activities.

Exceptions to the Attendance Policy

- 1) **Emergencies beyond students' control** (i.e. illness, car accident, court appearance etc.). The student must notify the instructor as soon as possible, preferably within 24 hours. The student must provide written documentation to the instructor. It is the instructor's prerogative to accept the excuse or not.
- 2) **Students participating in authorized activities as an official representative of the University** (i.e., athletic events, delegates to regional or national meetings or conferences, participation in university-sponsored performances). The student must provide written confirmation from a faculty or staff advisor to the course instructor not fewer than 10 days prior to the date for which the student will be absent from the class, except in the case of short notice events. Written confirmation and explanation of short notice events must be provided to the instructor as soon as possible.
- 3) **Students with Military Obligations** that require their absence from class may seek an exemption from the class attendance policy. Students requesting an exemption should provide their military orders to the college Associate Dean, along with a request for an exemption prior to the start of the first week of classes. Working with the appropriate college Associate Dean, the student's instructors are contacted and made aware of the request for an exemption. The instructor will carefully consider all such requests and base their decision upon the course attendance policies and the student's ability to catch up on missed course materials upon return.
- 4) **Religious Observances:** The University permits students, faculty, and staff to observe those holidays set aside by their chosen religious faith. It is the responsibility of those who wish to be absent to make arrangements in advance with the instructor.

Excused students will be given reasonable opportunities to complete assignments and exams or given compensatory assignment(s) if needed. The student is responsible for all material presented in class and for all announcements and assignments. When possible, students are expected to complete these assignments before their absences.

ASSESSMENTS

Grading weight

Attendance and participation	5%
Practice Problem Sheets	10% (for completion)
Self-Reflection of Learning 1	3% (for completion)
Self-Reflection of Learning 2	2% (for completion)

Online Quizzes 10% (for correctness; 3 attempts, highest grade)

Exams 1-4 70%

In-class activities (extra-credit) 25 points maximum

Final grade calculation:

$[(\text{Attendance points} \times 0.05) + (\text{Exam points} \times 0.70) + (\text{Practice Problems} \times 0.1) + (\text{Online Quizzes points} \times 0.01) + (\text{Self-Reflection 1-2 points} \times 0.05) + \text{Extra-credit points}] \times 100$

Grade Distribution	
Letter	Percentage
A	90 - 100%
B	80 - 89%
C	70 - 79%
D	60 - 69%
F	≤ 60%

NOTE: Graduate students enrolled in BIOL 5200 will have additional assignments and adjusted grading scale in a supplementary syllabus.

Exams

Exams will be taken during class time and must be turned in by the scheduled end of class.

Grades will be posted on Blazeview.

- All exams are based on lecture material (powerpoints slides, in-class activities), assigned textbook readings, the practice problem assignments and the online quizzes posted on Blazeview. **To succeed in this course attendance and practice problems completion and review are absolutely essential.**
- Exams questions are multiple choice, true/false, matching.
- If you fail to attend one of the exams for any reason, you must provide documented evidence (e.g. from doctor, police, etc.) that circumstances beyond your control prevented you from taking the exam. Failure to provide reasonable evidence will result in a grade of 0 for the exam. Makeup exams will be administered at any time during the semester at the discretion of the instructor.
- If you arrive late for an exam, you will be allowed to take the exam. However, you must turn in the exam copy at the regular scheduled end of the class. You will not be allowed extra time unless a documentable emergency has occurred.
- After each exam, students are strongly encouraged to review it with the instructor and, if need it, discuss a plan to improve learning and exam performance. You can review an exam during office hours or upon appointment. Exams will not be returned to students.
- **Any student attempting to copy, take pictures or steal a hard-copy of a test, at any time during the semester, will receive an automatic F for the entire course and face disciplinary action for student misconduct.**

Practice Problem Sheets

Practice problems are posted on Blazeview in the Content folder. Students need to complete these assignments in handwriting and showing their full work for the problem-solving component.

Students will turn in a hard copy of the practice problem sheets in class. Due dates will be communicated by the instructor in class and on Blazeview.

Online quizzes

- Online quizzes are a self-assessment tool and are posted on Blazeview. Students should take the quiz after studying the lecture material and completing the problem sheets.
- The instructor will communicate to the class and on Blazeview the quiz schedule.
- You will have **3 attempts**. The highest quiz grade will be considered. Each quiz question will have only one correct answer. The quiz questions and the order of the multiple answers will be randomized for each attempt, meaning that you might have different questions at each attempt. Note that opening a quiz window without answering will count as one attempt and will receive a grade of zero.
- If you miss a quiz, you must provide documented evidence (e.g. from doctor, police, etc.) that circumstances beyond your control prevented you from taking a quiz during the time it was open. Failure to provide reasonable evidence will result in a grade of 0 for the quiz. Makeup quizzes will be administered at any time during the semester at the discretion of the instructor.

Self-Reflection of Learning

After exam 1 and 2, students will take a survey to reflect on which study strategies worked or not for that exam. The self-reflection will include the development of a plan to improve study strategies and overcome obstacles. You can earn the points listed above by completing each self-reflection. By the deadline, students need to upload the self-reflection file on Blazeview (click on Assessments, select Assignments).

Extra-credits (25 pts max)

These points will be added to the student's total points for the course before calculating the percentage grade. Extra-credit points can be earned by completing the in-class activities.

Privacy Act (FERPA): The Family Educational Rights and Privacy Act (FERPA) prohibits the public posting of grades in any manner that would disclose a student identity. No grades can be given over the phone or over email because positive identification can't be made. All the grades will be posted on Blazeview.

Behavior in the Classroom

It is assumed that all students will act in a mature manner in the classroom, showing consideration for their peers and the instructor. Any student who consistently distracts other students or the instructor will be removed from the course. **Cell phones must be set to silent mode in the classroom.**

Cheating or Plagiarism

Incidents of cheating or plagiarism will result in **an automatic F for the course and referral to the Office of Student Conduct for disciplinary action.** For VSU's Academic Integrity Code please see <http://www.valdosta.edu/administration/student-affairs/student-conduct-office/>

For VSU's Academic Honesty policies and procedure please see

<http://www.valdosta.edu/academics/academic-affairs/vp-office/academic-honesty-policies-and-procedures.php>

Learning Support

The Academic Support Center: The Academic Support Center provides free peer tutoring for most core courses and some upper-division courses. It also offers time management and study skills workshops as well as other learning support services.

Call 333-7570 to make an appointment, or visit the website: <https://www.valdosta.edu/asc/>

Odum Library provides a variety of services to assist classroom instruction, including library instruction, course reserves, and interlibrary loan. Please see <https://www.valdosta.edu/academics/library/> for further information.

Accommodations Statement

Students with disabilities who are experiencing barriers in this course may contact the Access Office (<https://www.valdosta.edu/student/disability/>) for assistance in determining and implementing reasonable accommodations. The Access Office is located in the University Center Room 4136, Entrance 5. The phone numbers are 229-245-2498 (V), 229-375-5871. For more information, please visit VSU's Access Office or email: access@valdosta.edu. To request reasonable accommodations for pregnancy and childbirth, contact Ms. Myia Miller, Title IX Compliance Officer, at maburden@valdosta.edu. Please note, you will be required to provide documentation from an appropriately licensed medical professional indicating the requested accommodations are medically necessary.

Non-Discrimination and Title IX Statement

Valdosta State University (VSU) upholds all applicable laws and policies regarding discrimination on the basis of race, color, sex (including sexual harassment and pregnancy), sexual orientation, gender identity or expression, national origin, religion, age, veteran status, political affiliation, or disability. The University prohibits specific forms of behavior that violate Title IX of the Education Amendments of 1972. Title IX of the Education Amendments of 1972 prohibits discrimination on the basis of sex in education programs and activities that receive federal funding. VSU considers sex discrimination in any form to be a serious offense. Title IX refers to all forms of sex discrimination committed against others, including but not limited to: sexual harassment, sexual assault, sexual misconduct, and sexual violence by other employees, students or third parties and gender inequity or unfair treatment based on an individual's sex/gender. The designated Title IX Coordinator for VSU is Ms. Selenseia Holmes. To view the full policy or to report an incident visit: <https://www.valdosta.edu/administration/student-affairs/title-ix/>

Lecture	Date	Topic	Due Dates
1	May 9	Mitosis, Meiosis and The Development of Gametes	
2	May 10	Chromosome Variation-Basic Principles of Heredity	
3	May 13	Basic Principles of Heredity-Genetic Pedigrees	
4	May 14	Extensions and Modifications of Basic Principles I-II	
---	May 15	In Class Review of Problem Sheets	Turn-in Practice Problem Sheets for Exam 1
5	May 16	Exam 1 (Lecture 1-3) Extensions and Modifications of Basic Principles III	
6	May 17	Linkage-Recombination-Gene Mapping	
7	May 20	DNA Replication and Transcription	
8	May 21	RNA Processing-CRISPR-Cas9-In Class Review Problem Sheets	Turn-in Practice Problem Sheets for Exam 2
9	May 22	EXAM 2 (Lecture 4-6) The Genetic Code and Translation	
10	May 23	Control of Gene Expression in Prokaryotes and Eukaryotes	
11	May 24	Quantitative Genetics-Population Genetics I	
--	May 27	Memorial Day-No Class	
12	May 28	Population Genetics II-In Class Review Problem Sheets	Turn-in Practice Problem Sheets for Exam 3
--	May 29	EXAM 3 (Lecture 7-9)	
--	May 30	In Class Review Problem Sheets	Turn-in Practice Problem Sheets for Exam 4
--	May 31 11:00 AM-1:00 PM	EXAM 4 (lecture 10-12 and selected problem-solving subjects from previous material*)	

BIOL 3200 Tentative Schedule Summer 2024

* Previous topics will be communicated in advance by the instructor.