Introductory Genetics
BIOL 3200(5200), Section A (3 credit hours), Spring Semester 2019

Lecture (BC 1023): Tuesday and Thursday 3:30 pm – 4:45 pm

Instructor: Dr. Cristina Calestani
Office: BC 2085
Phone: (229) 333-7175
Email: ccalestani@valdosta.edu

Office hours:

Tuesday 10:00 am- 12:00 pm
Wednesday 3:00 pm- 5:00 pm
Or by appointment (please send me an email to my valdosta.edu account with "appointment" in the subject line).

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, 4th edition, by Benjamin A. Pierce. Editor, W.H. Freeman & Company.

Additional required material
Clicker NXT Device & Turning Account-1Year (Turning Technologies).

ASSESSMENTS

The course assessments will consist of four exams, in-class activities and online quizzes.
Exams will be taken during class time and must be turned in by the scheduled end of class. The fourth exam will be a comprehensive final. In-class activities will be assessed by using Clickers.

Photo identification is required for all exams.

Exam grades will be posted on Blazeview.

- All exams are based on lecture material (powerpoints slides, in-class activities), assigned textbook readings, and the problem sheets posted on Blazeview.
  If you do not attend class on a regular basis and if you do not complete the problem sheets you will be at a significant disadvantage.

- Exams questions are multiple choice, true/false, matching and some short written answers.

- 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 paper at the regular scheduled end of the class. You will not be allowed extra time unless a documentable emergency has occurred.

- The final exam grade (exam 4) can replace the lowest grade of exams 1, 2 or 3. This applies only to exam 4; no other exam can replace the lowest grade. If exam 4 is used to replace a lower grade for test 1, 2, or 3, the grade for exam 4 will count twice in the final grade calculation. Exam 4 cannot be used to replace a missed test.

- Exam 4 will always count in calculating the final grade.

- After each exam, students are strongly encouraged to review it. You can review an exam during office hours. 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.**

Extra-credit up to a maximum of 25 points will be offered
These points will be added to the student total points for the course before calculating the percentage grade. Extra-credit points can be earned by answering the in-class clicker questions and the weekly online timed quizzes posted on Blazeview.

a) In-class activities (**15 points max**) will consist of questions or problems presented during lecture. Students' answers will be recorded in class by using clickers and the grade will be posted on the Blazeview Gradebook.
There will be a total of 75 clickers questions delivered by the end of the semester, meaning that each correct clicker answer will count as 0.2 points. Note that what is posted on Blazeview is the number of correct answers. In order to calculate your clicker grade, you need to multiply the number of correct answers by 0.2. There will be no make-ups for the in-class activities.

b) Online quizzes (10 points max)

- **A new quiz will be posted on Blazeview weekly, starting from Friday January 25**. Quizzes will be open at 1pm on Friday and will be closed at 11:59 pm on Sunday of the following week (9 days later). Each quiz will have questions on the material covered in class during that week (the two classes covered before the new quiz).

- There will NOT be new quizzes offered on each Friday following a test and during the last week of class. The Instructor will communicate to the class any change to the quiz schedule.

- You will have 2 attempts. 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. After you select your answer remember to click on SAVE. 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. Malfunction of your home computer is NOT an acceptable excuse. You can take the quizzes from one of the many computers available to students in campus. 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.

Grading

Test 1	100 points
Test 2	100 points
Test 3	100 points
Test 4	100 points
Total	400 points

Extra-credit In-Class Clicker Questions	15 points
Extra-credit Online Quizzes	10 points

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

Final grade: (Test points + Extra-credit points)/400

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

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 turned off or 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.

Title IX Statement: Valdosta State University (VSU) is committed to creating a diverse and inclusive work and learning environment free from discrimination and harassment. VSU is dedicated to creating an environment where all campus community members feel valued, respected, and included. Valdosta State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including pregnancy status, sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, national origin, disability, genetic information, or veteran status, in the University's programs and activities as required by applicable laws and regulations such as Title IX. The individual designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination policies is the University's Title IX Coordinator: Maggie Viverette, Director of the Office of Social Equity, titleix@valosta.edu, 1208 N. Patterson St., Valdosta State University, Valdosta, Georgia 31608, 229-333-5463.

Access Statement: Students with disabilities who are experiencing barriers in this course may contact the Access Office for assistance in determining and implementing reasonable accommodations. The Access Office is located in Farbar Hall. The phone numbers are 229-245-2498 (V), 229-375-5871 (VP) and 229-219-1348 (TTY). For more information, please visit VSU's Access Office or email: access@valdosta.edu.

TENTATIVE LECTURE SCHEDULE:

Lecture	Date	Topic	Textbook Readings 4nd ed.
1	Jan 15	**Introduction to the Course**	
2	Jan 17	**Introduction to Genetics**	Chapter 1; Chapter 2 pp.17-20
3	Jan 22	**Mitosis, Meiosis and The Development of Gametes**	Chapter 2 pp. 20-35
4	Jan 24	**Chromosome Variation**	Chapter 6
5	Jan 29	**Basic Principles of Heredity**	Chapter 3 pp.44-60
6	Jan 31	**Basic Principles of Heredity**	Chapter 3 pp.44-60
7	Feb 5	**Genetic Pedigrees**	Chapter 3 pp. 63-65; Chapter 4 pp. 81, 84-86, 87-88
8	Feb 7	**Extensions and Modifications of Basic Principles**	Chapter 4 pp.76-81, 86-87
9	Feb 12	**Extensions and Modifications of Basic Principles**	Chapter 4 pp.88-93
10	Feb 14	**Review Problem Sheets**	
--	Feb 19	**EXAM 1**	**Lecture 2-10**
11	Feb 21	**Extensions and Modifications of Basic Principles**	Chapter 4 pp.93-99
12	Feb 26	**Linkage Recombination and Eukaryotic Gene Mapping**	Chapter 5 pp.117-128
13	Feb 28	**Linkage Recombination and Eukaryotic Gene Mapping**	Chapter 5 pp.129-140
14	March 5	**Quantitative Genetics**	Chapter 17 pp. 461-474
15	March 7	**Population and Evolutionary Genetics**	Chapter 18 pp. 485-499
16	March 12	**Population and Evolutionary Genetics**	Chapter 18 pp. 485-499
17	March 14	**Review Problem Sheets**	
--	March 19	**SPRING BREAK-NO CLASS**	
--	March 21	**SPRING BREAK-NO CLASS**	
--	March 26	**EXAM 2**	**Lecture 11-17**
18	March 28	**DNA: the Chemical Nature of the Gene** **DNA Replication**	Chapter 8 pp. 215-217-232 Chapter 9 pp. 243-257
19	April 2	**Transcription and RNA Processing**	Chapter 10 pp.269-287, pp. 289-291
20	April 4	**Translation**	Chapter 11 pp. 299-311
21	April 9	**Control of Gene Expression in Prokaryotes**	Chapter 12 pp. 319-333
22	April 11	**Control of Gene Expression in Eukaryotes**	Chapter 12 pp. 334-341
23	Apr 16	**Review Problem Sheets**	
--	Apr 18	**EXAM # 3**	**Lecture 18-23**
24	Apr 23	**Molecular Genetic Analysis and Biotechnology**	Chapter 14 pp. 387-412
25	Apr 25	**Genomics and Proteomics**	Chapter 15 pp. 419-435
26	Apr 30	**Cancer Genetics**	Chapter 16 pp. 443-457
27	May 2	**Review Problem Sheets**	
--	Friday-May 10	**FINAL EXAM 2:45 pm-4:45 pm**	**Lecture 2-27**