

BIOL 3200: Introductory Genetics (3 credit hours). CRN # 21979
Valdosta State University, Biology Department, College of Science & Math
Spring 2023: Laboratory Syllabus

Instructor: Dr. John G. Phillips (he/him): (Office: BC 2210):
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Lecture Times: **Mondays and Wednesdays: 3:30am–4:45pm – Bailey Science Center 1023**

Office (Student) hours **Tuesdays 1:45 PM – 2:45 PM** **Wednesday 2:30 PM – 3:30 PM**
Or by appointment (please send an email to my valdosta.edu account with “appointment” in the subject line and I will accommodate as time permits).

Course Description: 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.

Pre- or Corequisites: BIOL 1107, 1107L, BIOL 1108, 1108L, and MATH 1112 or MATH 1113

Course Outcomes: Upon completion of this course the student should be able to:

- 1) Comprehend the basic terminology & principles of modern Mendelian Transmission Genetics from cellular meiosis to phenotype in the organism and relatedness to other sub-fields of genetics: **(BO2, BO3, GE4, GE7)**.
- 2) Extend upon basic Mendelian principles the understanding of chromosomal inheritance and how genes are regulated in an organism and quantified for a species within a population **(BO2, BO4, & GE4)**.
- 3) Solve basic and more complex Mendelian genetics in the form of ratios/probabilities, chi-square test, pedigrees, and quantitative population genetic problem sets **(BO1, BO4, BO5, GE3, GE5 & GE7)**.

VSU Biology Department Objectives:

- **BO1.** Develop and test hypotheses, collect and analyze data, and present the results and conclusions in both written and oral format used in peer-reviewed journals and at scientific meetings.
- **BO2.** Describe the evolutionary process responsible for biological diversity, explain the phylogenetic relationships among the other taxa of life, and provide illustrative examples.
- **BO3.** Demonstrate an understanding of the cellular basis of life.
- **BO4.** Relate the structure and function of DNA/RNA to the development of form and function of the organism and to heredity.
- **BO5.** Interpret ecological data pertaining to the behavior of the individual organism in its natural environment; to the structure and function of populations, communities, and ecosystems; and to human impacts on these systems and the environment.

VSU General Educational Outcomes relevant to this course: “Students will...”

- **GE3.** Use computer and information technology when appropriate.
- **GE4.** Express themselves clearly, logically, and precisely in writing and in speaking, and they will demonstrate competence in reading and listening.
- **GE5.** Demonstrate knowledge of scientific and mathematical principles and proficiency in laboratory practices.
- **GE7.** Demonstrate the ability to analyze, to evaluate, and to make inferences from oral, written, and visual materials.

Required Materials:

1) Benjamin A. Pierce. *Genetics Essentials: Concepts & Connections*. 2021. 5th Ed. W.H. Freeman & Company. ISBN-13 # 978-1-319-24492-7 OR 4rd Ed. ISBN-13 # 978-1-4641-9075-9 (very similar at least for a few years).

2) Access to Achieve online for practice problems and quizzes. Day 1 program: 9781319427726.

Lecture Schedule: (subject to change per professor's discretion)

Week	Date	Topic
1	Jan. 9, 11	Chapter 1 - Course introduction and objectives; Introduction to genetics, historical & societal perspectives
2	Jan. 16, 18	MLK Week- NO Monday class! Wednesday: Mitosis, Meiosis and The Development of Gametes
3	Jan. 23, 25	Chapter 2 - Chromosomes and Cellular Reproduction; Mendelian Transmission Genetics
4	Jan. 30, Feb. 1	Chapter 3 - Extensions & Modifications of Mendelian Genetics
5	Feb. 6, 8	Catch-up & Review. Wednesday, February 8th - Exam #1
6	Feb. 13, 15	Chapter 5 - Gene linkage, Recombination, and mapping on Chromosomes
7	Feb. 20, 22	Chapter 8 - DNA & Chromosomal Structure
8	Feb. 27, Mar. 1	Chapters 9&10 - DNA Replication; RNA Transcription
9	Mar. 6, 8	Chapter 11 Protein Translation & the Genetic code; Wednesday, March 8th - Exam #2
10	Mar. 13, 15	Spring Break – NO CLASSES
11	Mar. 20, 22	Chapter 12 - Gene Regulation in Prokaryotes vs. Eukaryotes
12	Mar. 27, 29	Chapter 13 - Gene Mutations & Transposons
13	Apr. 3, 5	Chapter 17 - Quantitative Genetics
14	Apr. 10, 12	Chapter 18 - Population Genetics
15	Apr. 17, 19	Monday April 17th – Exam #3; Chapters 14&15 Biotechnology and Molecular Techniques
16	Apr. 24, 26	Chapter 16 - Cancer Genetics Wednesday, Apr. 26th - Final Exam Review
17	May 4th	FINAL EXAM: 2:45–4:45

Graded Course Components: Final grades will be based on participation and performance on lecture exams, homework, quizzes, and a final exam (see grade calculation & distribution below). **There are no make-up or late assignments accepted**, UNLESS a student notifies Dr. Phillips within 24 hours with an excused absence

Three Lecture Exams & Final (each 25%, up to 75%): Students will be tested on their comprehension or application of 1) lecture/reading material, 2) listed textbook chapter: comprehension, application/challenge questions & “try problems”, and 3) assigned homework problem sets prior to each exam (below). There are three Lecture Exams (25% each) & one cumulative Final Exam (25%). **The lowest exam score will be dropped.** Typical format includes multiple choices, true/false, and problem solving. Students must bring their student ID card, and must clearly write their name, student ID, and each chosen answer on their original exam copy. This exam copy must be returned to the instructor after each exam and serves as the final record for exam grading.

Achieve Online Assignments (15%): Registration of Achieve for Genetics Essentials will be announced in class along with a revised syllabus. All online assignments in this course will be due at the start of the next class UNLESS OTHERWISE SPECIFIED BY THE INSTRUCTOR

Participation (10%): Class will often begin with a student driven “GENETICS IN THE NEWS!” segment and/or a participation quiz aimed at reinforcing past lessons or gauging understanding of upcoming topics. Students are also expected to participate during in-class activities designed to enhance understanding of the course material.

Mid-term, or in-progress grades: The instructor is required to submit in-progress grades prior to mid-term (**March 2nd, 2023**). In theory, a mid-term grade is necessary for students to assess how they are doing in class by midterm. In this course, at this date students will have feedback on several exams and in-class participation. Students will be assigned an overall average grade at this point on the normal scale of A-F viewable on Banner. Students receiving a grade of “D” or lower should therefore carefully evaluate their option of dropping this course by midterm without academic penalty. The deadline for withdrawal is listed in Banner about a week later. *NOTE: Some significant graded components for this class won’t be due until after mid-term grades are submitted. Therefore, poor performers will have the ability to improve upon these grades, while high performers are ill-advised to rest upon their laurels.

Notes on grading & studying: Students should note that a grade of "A" in this course represents an exemplary command of the material covered. To obtain this grade of excellence, it is recommended that students study daily and answer all “practice chapter questions” associated with the course material. The concept summaries, important terms, comprehension, application, and occasional challenge questions found accompanying each chapter are all helpful for study. Plus, the solutions and problem-solving manual will help you learn how to solve genetics problems or concepts quickly. If you read the text, attend lecture, and do all the homework you should do well in this course. The instructor reserves the right to curve grades based on overall class performance at the end of the semester. If time allows, your instructor may provide post-exam reviews in lecture. If needed, an out-of-class pre-exam study session may be scheduled per the instructor’s discretion.

Biology Tutoring: The Academic Success Center (ASC) at Valdosta State University is located in the Odum Library and is available to all students. The ASC provides free peer tutoring in core curriculum courses, including biology, chemistry, math, writing, and foreign languages. The SSC also provides free professional academic advising and on-campus job information in one location. Call 333-7570 to make an appointment or visit the website: www.valdosta.edu/asc.

Attendance Policy: Students arriving late to lab or leaving early may be counted as present, but the student must discuss the absence with the professor that day after/during/before class. Absences resulting in >20% of missed time (i.e., six classes) may result in an automatic grade of F per University policy. Full absence regulations are available in the online catalog at <http://catalog.valdosta.edu/undergraduate/academic-affairs/>

Class Conduct:

1. Please arrive on time.
2. Please come prepared for lecture each week (i.e., taking notes, being ready to participate, etc.)
3. Cell phones are not to be used in class. **This means no texting during class. Cell phone use during an exam will result in a failing grade for that exam.**
4. 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.

Academic Integrity: Any student cheating or plagiarizing will be penalized by receiving a zero for the assignment and will be reported to the dean of students. Refer to the Student Code of Ethics in the VSU Student Handbook.

Student identification: Students should always have their VSU student identification card. To verify the identification of students officially enrolled in the course, it is the instructor's prerogative to request official student photo identification cards at any time during lecture or during exams.

Privacy Act (FERPA): The Family Educational Rights and Privacy Act (FERPA) prohibit the public posting of grades by social security number or in any manner personally identifiable to the individual student. No grades can be given by email or over the telephone, as positive identification cannot be made by this manner. Grades will be posted through Blazeview course website.

Access Office: Students requesting classroom accommodations or modifications due to a documented disability must contact the Access Office for Students with Disabilities located in the Farber Hall. The phone numbers are 245-2498 (V/VP) and 219-1348 (TTY) or visit the website or email access@valdosta.edu.

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 sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, 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: the Director of the Office of Social Equity, titleix@valdosta.edu, 1208 N. Patterson St., Valdosta State University, Valdosta, Georgia 31698, 229-333-5463.

COVID-19 related policy: As the Blazer Creed articulates, members of the VSU community are expected to live by the high standards of civility, integrity, and citizenship and embrace their responsibility as a member of the Blazer community. In recognition of this responsibility, and in response to the best available science and current guidance from the Centers for Disease Control and Prevention and the Georgia Department of Public Health, while face coverings are no longer required, individuals are strongly encouraged to continue wearing a face covering indoors. **Unvaccinated individuals are strongly encouraged to get vaccinated. Vaccines remain available at no cost for all members of the university community by appointment at Student Health Services. For COVID Vaccines, please call ahead for an appointment at 229-333-5886.**

Campus Gun Carry Statement (HB 280): If you choose to carry and concealed weapon on campus, you are responsible for knowing and following the law. Refer here for FAQ: valdosta.edu/administration/finance-admin/police/campuscarry/

General Silliness: While I would be overjoyed if every student would read this far into the syllabus, I expect the majority of you will not. Therefore, I will give one bonus point to any student who randomly emails me an awesome photo of their favorite organism (animal, plant, fungi, etc.) within the first two weeks of class. With the scientific name of said organism in the subject line.

SOI Statement: At the end of the term, all students are encouraged to complete an online Student Opinion of Instruction survey (SOI) that will be available through SmartEvals. Students will receive an email through their VSU email address when the SOI is available (generally at least one week before the end of the term). SOI responses are anonymous to instructors/administrators. Before final grade submission, instructors will not be able to see any responses, but they can see the percentage of students who have or have not completed their SOIs. While instructors will not be able to see student names, an automated system will send a reminder email to those who have yet to complete their SOIs. Students who withdraw or drop a course will also be sent invitations to complete the Dropped Course Survey. Complete information about the SOIs, including how to access the survey, is available on the SOI Procedures webpage.