

PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS

**GENERAL BIOLOGY I
BIOL 1110**

Class Hours: 3.0

Credit Hours: 4.0

Laboratory Hours: 2.0

Revised: Spring 2011

Catalog Course Description:

Chemical basis of life; cell structure and function, including energy metabolism; cell division; DNA and gene regulation; Mendelian and molecular genetics; evolution. Course includes 3 hours of lecture and 2 hours of laboratory applications each week.

Entry Level Standards:

Must be eligible for enrollment in English 1010 and college level math.

Prerequisites:

None

Corequisites:

Students enrolled in lecture must be registered for the corequisite laboratory during the same semester.

Textbook(s) and Other Reference Materials Basic to the Course:

Biology: Volume I. 10th edition. Sylvia S. Mader. McGraw-Hill. 2010. The text is required, and the student should take the text to each lecture and laboratory session.

General Biology 1110 Laboratory Manual. Cengage Publishing, 2010. This laboratory manual is a custom publication for Pellissippi State. You will need the laboratory manual for each lab exercise. You will be required to record data in the manual and submit pages from the manual to your instructor for grading

I. Week/Unit/Topic Basis:

Week	Topic
1	Unit I: Molecules of Life Lecture: Chapter 1: A View of Life Lab: No Labs
2	Lecture: Chapter 2: Basic Chemistry Lab: Exercise 1: Microscopy
3	Lecture: Chapter 3: The Chemistry of Organic Molecules, Chapter 6: Metabolism Lab: Exercise 2: Carbon Compounds

- 4 Test or Tests from Unit I (chapters 1-3, 6)- 100 points
Begin Unit II: The Cell and Cellular Processes
Lecture: Chapter 4: Cell Structure and Function
Lab: Exercise 3: What Determines Metabolic Reaction Rates?
- 5 Lecture: Chapter 5: Membrane Structure and Function
Lab: Exercise 4: Cell Structure and Plasma Membrane Function
- 6 Lecture: Chapter 7: Photosynthesis
Lab: Exercise 5: Photosynthesis
- 7 Test or Tests from Unit II (chapters 4,5,7)- 100 points
Begin Unit III: : Glycolysis/Cellular Respiration and DNA
Lecture: Chapter 8 : Cellular Respiration
Lab: Laboratory Practical Exam
- 8 Lecture: Chapter 12: Molecular Biology of the Gene
Lab: Exercise 6: Fermentation and Cellular Respiration
- 9 Lecture: Chapter 13: Regulation of Gene Activity, Chapter 14: Biotechnology and Genomics
Lab: Exercise 7: DNA Isolation and Structure.
- 10 Test or Tests from Unit III (chapters 8,13,14,16)- 100 points
Begin Unit IV: Mitosis, Meiosis and Genetics
Lecture: Chapter 9: The Cell Cycle and Cellular Reproduction, Chapter 10: Meiosis
Lab: Exercise 8: Cell Division
- 11 Lecture: Chapter 11: Mendelian Patterns of Inheritance
Lab: Exercise 9: Inheritance of a Single trait.
- 12 Lecture: Chapter 11: Mendelian Patterns of Inheritance
Lab: Exercise 10: Mendel's Principle of Independent Assortment.
Test or Tests from Unit IV (chapters9-12)- 100 points
- 13 Begin Unit V: Evolution
Lecture: Chapter 15: Darwin and Evolution, Chapter 16: How Populations Evolve
Lab: Exercise 11 : Evolution, Migration and Natural Selection
- 14 Unit V: Evolution
Lecture: Chapter 17: Speciation and Macroevolution Chapter 18: The Origin and History of Life.
Lab: Lab Practical II
- 15 Unit V Assessment/Comprehensive Final Exam Period
No Labs

II. Course Goals*:

The course will:

- A. This course will expand student understanding of the basic unit of life (the cell), and its complexity and diversity. V.3, V.4
- B. This course will extend student understanding of the basic principles of heredity and how they relate to inheritance of traits in humans. V.3, V.4

- C. This course will guide students toward understanding the structure and function of DNA as a repository of genetic information and how mutations of the DNA affect cellular function. IV.5, V.3, V.4, V.5
- D. This course will expand student understanding of how natural selection, mutations, genetic drift, migration and non-random mating affect the frequency of genes from generation to generation (evolution). V.3, V.4, V.5, VI.4
- E. This course will enhance student knowledge of the importance of biological cycles and the interdependence that results from these cycles (i.e. the carbon cycle: autotrophs-->heterotrophs-->autotrophs). V.3, V.4
- F. This course will guide students toward enhanced critical thinking skills. I.1, V
- G. This course will enhance effective use of process skills related to observing, measuring, classifying, communicating and inferring. VI.6, V.1, V.2
- H. This course will guide students toward effective interpretation of biological information and evaluation of its validity. I.1, I.6, I.7, V.1, V.2, V.3, VII.

*Roman numerals after course objectives reference goals of the Biology program. (Career Program Goals and General Education Goals are listed

http://www.pstcc.edu/departments/curriculum_and_instruction/syllabi/)

III. Expected Student Learning Outcomes*:

Students should be able to:

1. Classify organisms into one of the Domains and Kingdoms of living things based on characteristics such as cell type, cell number, and means of nutrition. A, F, G
2. Identify the structure and reactivity of the atom related to bonding and the formation of biological compounds. A, F
3. Describe the four classes of organic compounds. A, F, G
4. Describe the structure and function of parts of the eukaryotic cell. A
5. Compare and contrast photosynthesis and cellular respiration. E
6. Describe the structure of DNA. C, F
7. Describe the role of DNA in protein synthesis and cellular control. C, F, H
8. Recall key events in the discovery of DNA as the basis of heredity. C, F
9. Work standard Mendelian genetics problems. B, F
10. Work problems with multiple alleles and sex-linked traits. B, F
11. Explain the main bodies of evidence, which support evolution. D, F, H
12. Explain the mechanisms by which evolution occurs. D, F, H
13. Use dichotomous keys to identify unknown organisms and report data using graphs. G, F, H

14. Locate biologically related material in the ERC and on the WWW. Evaluate biological information they read about or see on TV. H, F
15. Interpret and draw conclusions from graphically presented data. G, F

* Capital letters after Expected Student Learning Outcomes reference the course goals listed above.

IV. Evaluation:

A. Testing Procedures: 75% of grade

Each lecture unit will be evaluated using one or more tests totaling 100 points. Exams will be a mix of discussion questions and objective questions. There are no makeup lecture tests. There will be a comprehensive final for the course worth 100 points. The comprehensive final may be used to take the place of one missed exam if there is evidence of a valid and reasonable excuse. The comprehensive final exam score may also be used to replace the lowest unit exam score if all exams were attempted. The additional 50 points associated with lecture will be earned by doing a variety of activities determined by your instructor.

Students will receive one grade for General Biology 1110. The total number of points on which your grade will be based is 865. In lecture, you may accumulate as many as 650 points, which constitutes about 75% of the grade. In lab, you may accumulate as many as 215 points, which constitutes about 25% of the grade.

B. Laboratory Expectations: 25% of grade

1. Students are expected to go to the appropriate laboratory for which they are enrolled and complete the assignments in a timely manner. Laboratory work will not be accepted late.
2. Students are expected to dress appropriately for the laboratory to minimize the possibility of the spread of contamination and risk to personal safety. No open-toed shoes are allowed, and garments that cover the legs are recommended. Students are required to report to their laboratory instructor any concern for personal safety or injury sustained during various exercises.
3. Students are encouraged to work cooperatively together to complete the exercises in a timely fashion but not to plagiarize notebook work nor to communicate during the practical.
4. During and after each lab exercise, students are required to complete the post-laboratory report. These post-laboratory reports will be collected and graded on 5 randomly selected dates. Each graded set of post laboratory report questions will be worth 12 points. Post-laboratory reports will not be accepted late.
5. Students are required to read the scheduled lab exercise before coming to class
6. Students will write a formal scientific paper dealing with a lab exercise selected by the instructor. The report will include an introduction, methods and materials, results, conclusion, and bibliography. A draft version of the formal report must be turned into the by the 10th week. The draft must have text information in ALL 5 sections, data, references, and be typed. The instructor will not grade the draft, but will make suggestions for improvement to be incorporated into the final paper. The final laboratory report will be due the 12th week and is worth 40 points. Failure to turn in a draft version will reduce the possible points that can be earned for the paper from 40 to 30.
7. Students may be expected to complete computer simulations of selected laboratory exercises on their own time periodically during the semester. Students will purchase a CD-ROM with these programs and can use their home computer or the computers in the open laboratory on any campus.
8. Drink, food or any form of tobacco is not allowed in the classroom or laboratory.

C. Field Work:

Students may be required to read supplemental articles or papers on reserve in the library.

D. Other Evaluation Methods:

See instructor for specific information when warranted.

E. Grading Scale:

Grading Scale (out of a total 865 possible points)

90-100%	(778-865 points)	A
87-89%	(752-777 points)	B+
80-86%	(692-751 points)	B
77-79%	(666-691 points)	C+
70-76%	(604-665 points)	C
60-69%	(519-603 points)	D
0-59%	(0-518 points)	F

Point Distribution

<u>Lecture tests and assignments</u>		<u>Laboratory</u>	
Unit 1	100 points	Post Laboratory Reports	60 points (5x12)
Unit 2	100 points	Formal Scientific Paper	40 points
Unit 3	100 points		
Unit 4	100 points	Lab Practical- Midterm	40 points
Unit 5	100 points	Final	40 points
Assignments	50 points	Assignments	<u>35 points</u>
Final	<u>100 points</u>		
TOTAL	650 points	TOTAL	215 points

V. Policies:

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of the Learning Division, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of the Learning Division. Consistent tardiness and excessive absenteeism may lower the final grade

B. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared

by another person or agency that sells term papers or other academic materials to be presented as one's own work.

- Taking an exam for another student.
- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
- Any of the above occurring within the Web or distance learning environment.

C. Accommodations for disabilities:

Students who need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 127, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at www.pstcc.edu/departments/swd/.

D. Other Policies:

- Classroom disruptions during lecture or laboratory, any form of communication during testing, or any other form of behavior that may prove distracting to others will not be tolerated and may lower the final grade.
- Students are expected to work on biology related materials and participate in meaningful discussion where time permits.
- Visitors are not allowed in the classroom or the laboratory.

LABORATORY SUBSTITUTION POLICY:

There maybe a time during the semester that you will not be able to attend your regularly scheduled laboratory section. Since attendance is so critical to your laboratory grade, we do have a policy that will allow you to attend an alternate lab section ONE time during the semester. Lab substitution is only allowed in the case of an emergency and with adequate approval.