PELLISSIPPI STATE COMMUNITY COLLEGE
Master Syllabus

GENERAL BIOLOGY I
BIOL 1110

Class Hours: 3.0 Credit Hours: 4.0
Laboratory Hours: 2.0 Revised: Fall 2012

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.

Entry Level Standards:

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

Prerequisites: None

Co requisites:

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

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

Biology: Concepts and Investigations. 2nd edition. Marielle Hoefnagels. McGraw Hill. 2012. The text is required, and the student should take the text to each lecture and laboratory session. Volume I of this textbook will be used for Biology 1110 and Volume II will be used for Biology 1120. Students may purchase the custom split version from the Pellissippi State Bookstore.

General Biology 1110 Laboratory Manual. 2nd edition. Hayden-McNeil Publishing. 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:

<table>
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<th>Week</th>
<th>Topic</th>
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| Week 1 | Unit I: Molecules of Life
Lecture: Chapter 1: The Scientific Study of Life
Lab: Introduction to Microscopy Exercise 1 |
| Week 2 | Lecture: Chapter 2: The Chemistry of Life (sections 2.1-2.4)
Lab: Organic Molecules, Exercise 2 |
| Week 3 | Lecture: Chapter 2 cont.—section 2.5, and Chapter 4: The Energy of Life
Lab: Protein Structure; Enzymes and Metabolic Rates Exercise 3a and 3b
**Test or Tests from Unit I (chapters 1, 2, 4)- 100 points** |
| Week 4 | Begin Unit II: Cells and Energy Exchange
Lecture: Chapter 3: Cells
Lab: Cell Diversity: Structure and Function. Exercise 4 |
| Week 5 | Lecture: Chapter 5: Photosynthesis.
Lab: Photosynthesis. Exercise 5 |
Week 6  
Lecture: Chapter 6: How Cells Release Energy  
Lab: Fermentation and Aerobic Cellular Respiration. Exercise 6  
**Test or Tests from Unit II (chapters 3, 5, 6)- 100 points**

Week 7  
Begin Unit III: DNA, Protein Synthesis and Viruses  
Lecture: Chapter 7: DNA Structure (sections 7.1, 7.2, 7.3) Chapter 8 section 8.2 DNA Replication.  
Lab: Laboratory Practical I  
**Week 8**  
Lecture: Chapter 7: DNA Structure and Gene Function (sections 7.4-7.11)  
Lab: NO LABS (fall semester- fall break)  
**Week 9**  
Lecture: Chapter 15: Viruses  
Lab: RFLP DNA Fingerprinting and The Structure of DNA Exercise 7a and 7b  
**Test or Tests from Unit III (chapters 7, 8.2, and 15)- 100 points**

Week 10  
Begin Unit IV: Mitosis, Meiosis and Genetics  
Lecture: Chapter 8: DNA Replication, Mitosis and the Cell Cycle  
Begin-Chapter 9: Sexual Reproduction and Meiosis  
Lab: Cell Division: Mitosis and Meiosis, Exercise 8  
**Week 11**  
Begin-Chapter 10: Patterns of Inheritance  
Lab: Inheritance of a Single Trait. Exercise 9  
**Week 12**  
Lecture: Chapter 10: Patterns of Inheritance cont.  
Lab: Inheritance of Two Traits. Exercise 10  
**Test or Tests from Unit IV (chapters 8, 9, 10)- 100 points**

Week 13  
Begin Unit V: Evolution  
Lecture: Chapter 11: The Forces of Evolutionary Change  
Lab: NO LABS (fall semester- Thanksgiving)  
**Week 14**  
Lecture: Chapter 11: The Forces of Evolutionary Change  
Chapter 12: Evidence of Evolution  
Lab: Population Genetics and Evolution, Exercise 11.  
**Week 15**  
Lecture: Chapter 13: Speciation and Extinction,  
Chapter 14: Origin and History of Life.  
Lab: Laboratory Practical II  
**Test or Tests from Unit V (chapters 11-14)- 100 points**

**Comprehensive Final Exams are to be administered based on the final exam schedule.**

II. Course Goals*:  

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.I, 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

III. Expected Student Learning Outcomes*:
The student will 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


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


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

*Letters after performance expectations reference the course objectives 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 mandatory comprehensive final for the course worth 100 points. Failure to take the comprehensive final will forfeit any bonus points earned during the semester. 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 75% of the grade. In lab, you may accumulate as many as 215 points, which constitutes 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, and you must have attended the lab for which you are submitting work.
2. Students are expected to dress appropriately for the laboratory to minimize 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 lab work nor 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 in mid-semester as announced by your instructor. 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 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. Drinks, food, and tobacco products are prohibited 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%  (779-865 points) A
87-89%  (753-778 points) B+
80-86%  (692-752 points) B
77-79%  (666-691 points) C+
70-76%  (606-665 points) C
60-69%  (519-605 points) D
0-59%  (0-518 points) F
# Point Distribution

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<thead>
<tr>
<th>Unit</th>
<th>Lecture tests</th>
<th>Laboratory</th>
<th>Assignments</th>
</tr>
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<tbody>
<tr>
<td>Unit 1</td>
<td>100 points</td>
<td>Post Laboratory Reports</td>
<td>60 points (5x12)</td>
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<tr>
<td>Unit 2</td>
<td>100 points</td>
<td>Formal Scientific Paper</td>
<td>40 points</td>
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<tr>
<td>Unit 3</td>
<td>100 points</td>
<td>Lab Practical</td>
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<tr>
<td>Unit 4</td>
<td>100 points</td>
<td>Midterm</td>
<td>40 points</td>
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<tr>
<td>Unit 5</td>
<td>100 points</td>
<td>Final</td>
<td>40 points</td>
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<tr>
<td>Assignments</td>
<td>50 points</td>
<td>Assignments/Quizzes</td>
<td>35 points</td>
</tr>
<tr>
<td>Final</td>
<td>100 points</td>
<td>TOTAL</td>
<td>215 points</td>
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<tr>
<td>TOTAL</td>
<td>650 points</td>
<td>TOTAL</td>
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## VI. 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 Academic Affairs, 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 Academic Affairs.

### 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.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

### 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 [http://www.pstcc.edu/sswd/](http://www.pstcc.edu/sswd/).

### 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 and/or result in removal from the course. Cell phones must be in the off or vibrate mode and should not be visible during class time. 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 may be 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. You must inform your regular instructor, and obtain permission and documentation from the substituting instructor showing that you attended an alternate lab.