

PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS

CELL BIOLOGY
BIOL 2110

Class Hours: 3.0

Credit Hours: 4.0

Laboratory Hours: 3.0

Revised: Fall 2010

Catalog Course Description:

This course is a study of basic biomolecules, cell structure and function, cellular respiration and photosynthesis, molecular genetics, cellular communication, cancer, and evolution of the cell. The course includes 3 hours of lecture and 3 hours of laboratory per week.

Entry Level Standards:

The student should have a good understanding of basic freshman biology and chemistry.

Prerequisites:

BIOL 1110 and 1120 and CHEM 1110 and 1120; or two years of high school biology and ACT natural science score of 26 or higher; or consent of instructor

Textbook(s) and Other Course Materials:

Tobin and Morel. *Asking about Cells*. 1997. Saunders Publishing.
McMahon. *Cell Biology lab Manual*. 2006. Tennessee Valley Publishing. (Must purchase new copy.)

I. Week/Unit/Topic Basis:

Week	Topic
1	Lecture: Chapter 1 - Introduction Lab: Critical Thinking, Reading Scientific Papers
2	Lecture: Chapter 2 - Chemistry Chapter 3 - Macromolecules
3	Lecture: Chapter 3 - Macromolecules Lab: Scientific Instrumentation, Acid-base Titration
4	Lecture: Exam I Chapter 4 - Enzymes Lab: Protein Structure, Plant Tissue Culture
5	Lecture: Chapter 4 - Energetics Lab: Measurement of Enzyme Activity
6	Lecture: Exam II Chapter 5 - Cells Lab: Enzyme Kinetics

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| 7 | Lecture: Chapter 6 - Membranes and Transport
Lab: Microscopic Observations, Normal vs. Cancer Cells |
| 8 | Lecture: Exam III
Chapter 7 - Intermediary Metabolism
Midterm Lab Exam |
| 9 | Lecture: Chapter 7 - Intermediary Metabolism
Lab: Bioremediation, Plant Tissue Culture |
| 10 | Lecture: Chapter 7 - Intermediary Metabolism
Chapter 8 - Photosynthesis
Lab: Hill Reaction in Isolated Chloroplasts |
| 11 | Lecture: Exam IV
Chapter 9 - Cell Reproduction
Lab: Student-designed Experiments, Genetic Manipulation |
| 12 | Lecture: Chapter 10 - Chromosomes & Meiosis
Chapter 13 - DNA
Lab: Student-designed Experiments |
| 13 | Lecture: Chapter 15 – Eucaryotic Gene Regulation
Chapter 19 - Chemical Signaling
Lab: Final Lab Exam |
| 14 | Lecture: Stem Cells; Cancer
Lab: Plant Tissue Culture, Discussion of Current Events in Cell Biology Research |
| 15 | Lecture: EXAM V |

II. Course Goals*:

- A. Develop a thorough understanding of the structure and function of the cell and all its parts. V3,4,5
- B. Develop a thorough understanding of the chemistry of the cell, including enzymatic action. V3,4
- C. Understand energy flow within the cell. V3,4
- D. Understand information flow within the cell, including current ideas on gene regulation. V3,4,5
- E. Understand current ideas on chemical signaling, stem cell research, and the development of cancer. V3,4,5
- F. Know how to read a scientific paper critically. V2,3
- G. Be able to plan and execute a scientific experiment. V1,2
- H. Understand the use of various laboratory techniques and equipment common to cell biology. V1

*Roman numerals after course objectives reference TBR's general education goals.

III. Expected Student Learning Outcomes*:

Students will be able to:

1. Engage in teamwork to facilitate cooperative learning. (E, F, G, H)
2. Approach problems both mathematically and verbally. (B, C, F, G, H)
3. Use critical thinking to solve problems. (B, C, D, E, F, G)
4. Use critical thinking to evaluate the scientific literature. (F, G)
5. Participate in laboratory research. (F, G, H)
6. Use cell-biology related technology. (F, G, H)
7. Have the solid foundation of knowledge in Cell Biology which is necessary for moving on to upper level biology courses and eventually to the job. (A, B, C, D, E)

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

IV. Evaluation:

A. Testing Procedures: about 66% of overall grade.

There will be 5 exams consisting of a mixture of essay and multiple choice questions. Each test is worth 1/5 of the overall lecture grade. The final exam is not comprehensive.

Any student missing an exam without a valid, documented excuse will receive a 0 on that exam. Valid excuses include severe illness, death in the family, jury duty, and military service. The instructor should be notified by phone ahead of time, if possible, and a written excuse will be required.

B. Laboratory Expectations: about 37% of overall grade.

The lab grade will be determined from lab reports, scientific paper writeup, and two exams. Labs may not be made up. Late writeups will be docked 10% per weekday.

C. Field Work:

N/A

D. Other Evaluation Methods:

N/A

E. Grading Scale:

90 - 100 = A	60 - 69 = D
80 - 89 = B	below 60 = F
70 - 79 = C	Pluses will be given when warranted.

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.

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/.