

PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS

MICROBIOLOGY
BIOL 2130

Class Hours: 3.0

Credit Hours: 4.0

Laboratory Hours: 4.0

Revised: Fall 2010

Catalog Course Description:

An introductory course in microbiology dealing with bacteria, fungi, yeast and viruses to include discussions of cell structure, identification, taxonomy, metabolism, genetics, resistance, infection, disease, and immunity. Course includes three hours of lecture and four hours of laboratory applications each week.

Entry Level Standards:

High school biology; students are expected to read and write at the college level.

Prerequisites:

BIOL 1110 or BIOL 2010 or CHEM 1010 or CHEM 1110

Textbook(s) and Other Course Materials:

Bauman, Robert W., *Microbiology With Diseases by Body System*, Second Edition, 2009. Pearson-Benjamin Cummings. ISBN 0-321-51341-X. Cost approx \$180.00 (Hard copy or electronic version is acceptable)

Leboffe, Michael J. and Pierce, Burton E. *Microbiology Laboratory Theory and Application*, 2nd edition, Morton. ISBN 0-89582-705-0. Cost approx \$60.00. Lab Manual must be **new**. Data sheets from used lab manuals will **NOT** be given grades.

I. Week/Unit/Topic Basis:

Week	Topic
1	A Brief History
2	Cell Structure and Function
3	Microscopy, Staining and Classification
4	Microbial Nutrition and Growth Exam I
5	Microbial Nutrition and Growth cont.
6	Controlling Microbial Growth in the Environment
7	Controlling Microbial Growth in the Body
8	Microbial Metabolism Exam II

- 9 Microbial Metabolism cont.
- 10 Microbial Genetics
- 11 Recombinant DNA **Exam III**
- 12 Characterizing & Classifying Viruses, Viroids, Prions
- 13 Characterizing & Classifying Viruses, Viroids, Prions cont.
- 14 Infection, Infectious Diseases & Epidemiology **Exam IV**
- 15 **Comprehensive Final**

II. Course Goals*:

The course will

- A. Provide a working knowledge of basic staining and culturing techniques and concepts. V.1, V.2
- B. Expand the student's familiarity with prokaryotic and eukaryotic characteristics. V.3, V.4
- C. Enhance understanding of microbial metabolism and growth. V.3, V.4
- D. Provide a means for learning to classify microorganisms. V.3, V.4
- E. Expand the students understand the epidemiology, pathogenicity and drug treatment of specified microbial organisms. V.4
- F. Provide an opportunity for group interaction and problem solving.
- G. Expand their knowledge of the principles of immunology and applied microbiology. V.3, V.5, V4
- H. Enhance the students ability to read and apply critical thinking to topics in the field of microbiology V.1, V.5
- I. Guide them in becoming familiar with resources available on recent research and current information in the library in the field of microbiology. VII.3, VII.4, VII.5
- J. Provide students with the opportunity to collect and utilize data in graphs and reports. VII.2
- K. Provide opportunities to become comfortable with communication in the field of microbiology and particular the areas that apply to Allied Health. VII.1

* Roman numerals after Coarse Goals refer to goals of the Natural and Behavioral Sciences Department.

III. Expected Student Learning Outcomes*:

The student will be able to:

- 1. Locate and evaluate related scientific information in the ERC and on the World Wide Web. I
- 2. Use related equipment and tools for making biological measurements and observations. A

3. Use internet course list serve to share information pertaining to the course with classmates. H
4. Collect data, generate graphs and tables of the collected data, summarize the data, draw conclusions from the data, and apply these conclusions to related situations. J
5. Read and critique scientific writings. I
6. Develop a vocabulary that allows them to communicate more effectively with their health care providers as well as in preparing for health care professions. K
7. Participate in laboratory exercises which develop teamwork, problem solving skills and data analysis. F, J
8. Utilize skills and procedures developed in the laboratory to design and implement a plan to identify unknown microorganisms. D
9. Identify microbes through the use of cultures and staining techniques. A
10. Describe procaryotic cell characteristics as they relate to organism identification. B
11. Understand microbe metabolism and growth and their controlling factors. C
12. Describe genetic operations within microbes and application of these operations as they apply to technology. H
13. Understand the mechanisms of classifying microbes and viruses, bacteria, protists, fungi, and helminths. D
14. Recognize the ramifications of drug action and treatment for specified microbes. E

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Lecture Expectations:

Testing Procedures: 51% (500 points)

Lecture assignments consist of 4 exams worth 75 pts. each (300 pts total); a comprehensive final exam worth 100 pts; 5 abstracts worth 10 pts. each (50 pts.); and other assignments as indicated by the instructor (50 pts).

Exams: The four exams will be non-cumulative, although students are expected to retain basic information acquired in previous chapters. Exams will consist of a **possible** combination of multiple choice, matching, short answer, true or false and essay questions. Make-up exams are at the discretion of the lecture instructor. The final exam will be conducted in the classroom on the assigned final exam day. The final exam is **not** optional!

Abstracts: Students will write abstracts of current articles pertaining to microbiological issues covered in the course, following guidelines discussed in class (see handout "Instructions for Abstract Assignments") Due dates will be announced by the lecture instructor.

Late Assignments: Assignments must be turned in **before** class starts on the day they are due. Any assignment turned in late will have 20% deducted from the overall grade. Assignments will **not** be accepted after the end of the day (11:55 p.m.) they are due without

permission from the instructor.

B. Laboratory Expectations:

Testing procedures: 49% (485 points)

Participation in laboratory exercises is mandatory. Unless otherwise indicated, all laboratory work is to be done individually. Laboratory assignments points are broken down as follows: laboratory exercises, handouts, quizzes and any other assignments made by the instructor (310 points), practical exams (100 points), and unknown identification (55 points). The remaining 20 points will be based on attitude, teamwork, technique, lab safety, effort, following directions and showing up on time.

Students must come to the laboratory **prepared**. Preparation includes, but is not limited to: 1) reading exercises in advance, 2) turning in completed assignments 3) bringing lab manual, prep sheets and Sharpie to class, 4) and wearing lab coat and safety glasses. Students **MUST** wear a full length lab coat in lab at all times!! Lab coats must be in a zipped lock plastic bag when brought to class and taken out of class in a zipped lock plastic bag. Students supply their own laboratory coat, safety glasses, rubber gloves if desired and permanent sharpie. Short lab jackets and short sleeved lab coats are **not** acceptable. **No** food, drink, shorts or open-toed/open-heeled shoes are allowed in lab. **No one not** appropriately dressed, with a lab coat in a plastic zip lock bag **will be allowed in lab**.

Laboratory exercises: Exercises will be graded on completeness (including following directions), neatness, and accuracy. Students will receive **no credit** for a lab (or the portion of a lab) they miss. See instructor's handouts for additional information.

Practical Exams: Laboratory practical exams will consist of a set of stations. Stations may contain slides, culture plates, equipment or data from previous labs. Each station will have one or more questions based on the materials present. Sample stations and review sessions will be provided in lab before each practical.

Unknown Identification: Students will receive a broth containing **two** organisms which must be isolated and identified. Students will design and utilize **a flow chart** of stains and biochemical tests to identify these organisms. The **flow chart** used during identification, **a daily log**, as well as a typed **exercise report** will be submitted for this assignment.

Missed labs: Due to the nature of the microbiology labs, missed labs **cannot** be made up. If a student misses one day out of the two days an exercise is being worked on in lab, the students may use a lab partner's data or set-up in order to do an Exercise Assignment/Report but the student will only receive a **maximum of half credit** for the data sheets. Arrangements can be made to complete the laboratory during another laboratory section in **doing the same lab**. There are **ABSOLUTELY NO** make-ups of laboratory practical exams **after** the end of the Lab Practical period!

Late Assignments: Assignments must be turned in **before** class starts on the day they are due. Any assignment turned in late will have 20% deducted from the overall grade. Assignments will **not** be accepted after the end of the day (11:55 p.m.) they are due without permission from the instructor.

C. Field Work:

N/A

D. Other Evaluation Methods:

N/A

E. Grading Scale:

The final grade will be based on accumulation of points from both lecture and lab (985 points).

883-985 points	90% - 100%	A
852-882 points	87% - 89%	B+
783-851 points	80% - 86%	B
753-782 points	77% - 79%	C+
685-752 points	70% - 76%	C
586-684 points	60% - 69%	D
585 and below	59% and below	F

VI. Policies:

A. Attendance Policy:

PSCC expects students to attend all scheduled instructional activities and to be on time. The teacher should be notified if the student knows she/he is going to be late or absent. Points will be taken off for coming in late. Students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. If a student is absent from class, it is the student's responsibility to make up the missed material prior to the next class period.

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

Upon discovery of a student's participation in academic misconduct, the instructor will meet with the offending student with evidence of the misconduct. In addition to other possible disciplinary sanctions that may be imposed, the instructor has the authority to assign either (1) an F or zero for the assignment or (2) an F for the course.

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:

Cell Phone Usage: Use of cell phones in the classroom is inconsiderate and disruptive. If cell phones must be brought into the classroom, they need to be turned off or on silent mode and stored out of sight in backpacks or bags.

Class Room Behavior: The Lecture/Lab Instructor will provide additional information on "do's and don'ts" in classrooms and labs including use of computers during class.