PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE  
MASTER SYLLABUS  

MICROBIOLOGY  
BIOL 2130

Class Hours: 3.0  
Credit Hours: 4.0  
Laboratory Hours: 4.0  
Revised: Spring 09

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. Three hours of lecture and four hours of lab per week.

Entry Level Standards:

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

Prerequisites:

BIOL 1110 or CHEM 1110 or CHEM 1010 or BIOL 2010

Textbook(s) and Other Course Materials:

Bauman, Robert W., Microbiology, Pearson-Benjamin Cummings. (Hard copy or electronic version is acceptable)

Leboffe, Michael J. and Pierce, Burton E. Microbiology Laboratory Theory and Application., 2nd edition, Morton.  
Lab Manual must be new. Data sheets from used lab manuals will NOT be given grades.

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A Brief History</td>
</tr>
<tr>
<td>2</td>
<td>Cell Structure and Function</td>
</tr>
<tr>
<td>3</td>
<td>Microscopy, Staining and Classification</td>
</tr>
<tr>
<td>4-5</td>
<td>Exam I, Microbial Nutrition and Growth</td>
</tr>
<tr>
<td>6</td>
<td>Controlling Microbial Growth in the Body, Lab Practical I</td>
</tr>
<tr>
<td>7</td>
<td>Controlling Microbial Growth</td>
</tr>
<tr>
<td>8</td>
<td>Exam II</td>
</tr>
<tr>
<td>9</td>
<td>Microbial Metabolism</td>
</tr>
<tr>
<td>10</td>
<td>Microbial Genetics</td>
</tr>
</tbody>
</table>
II. Course Objectives*:

A. Acquire a working knowledge of basic staining and culturing techniques and concepts. V.1, V.2
B. Be familiar with prokaryotic and eukaryotic characteristics. V.3, V.4
C. Understand microbial metabolism and growth. V.3, V.4
D. Be able to classify microorganisms. V.3, V.4
E. Understand the epidemiology, pathogenicity and drug treatment of specified microbial organisms. V.4
F. Read and apply critical thinking to topics in the field of microbiology. I.1, V.5
G. Become familiar with resources available on recent research and current information in the library in the field of microbiology. VII.3, VII.4, VII.5

*Roman numerals after course objectives reference goals of the university parallel program.

III. Instructional Processes*:

Students will:

1. Locate and evaluate related scientific information in the ERC and on the World Wide Web. Technological Literacy Outcome
2. Use related equipment and tools for making biological measurements and observations. Natural Sciences Outcome
3. Use internet course list serve to share information pertaining to the course with classmates. Technological literacy Outcome, Natural Sciences Outcome
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. Natural Sciences Outcome, Mathematics Outcome
5. Read and critique scientific writings. Communication Outcome, Natural Sciences Outcome
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. Transitional Strategies, Communication Outcome
7. Participate in laboratory exercises which develop teamwork, problem solving skills and data analysis. Active Learning Strategies, Natural Sciences Outcome, Mathematics Outcome
8. Utilize skills and procedures developed in the laboratory to design an implement plan to identify unknown microorganisms. Natural Sciences Outcome
Strategies and outcomes listed after instructional processes reference TBR’s goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

Upon successful completion of this course, the student should be able to:

1. Identify microbes through the use of cultures and staining techniques. A
2. Describe procaryotic cell characteristics as they relate to organism identification. B
3. Describe microbe metabolism and growth and their controlling factors. C
4. Describe genetic operations within microbes. H
5. Explain the mechanisms of classifying microbes and viruses, bacteria, protists, fungi, and helminths. D
6. Explain epidemiology. E
7. Explain pathogenicity and its causes. E
8. Describe drug action and treatment for specified microbes. E
9. Learn to read and abstract articles pertaining to microbiology. I, J
10. Learn to research and synthesize in written form current information in microbiology. I, J

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

V. Evaluation:

A. Testing Procedures: 500 points

Lecture assignments consist of 4 exams worth 75 pts. Each (300 pts); a final exam worth 100 pts; 5 abstracts, 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 last day of class. 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 by the time and date assigned by the instructor. 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.) without permission from the instructor.
B. Laboratory Expectations: 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 (315 points), practical exams (100 points), and unknown identification (55 points). The remaining 15 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 appropriately dressed, with a lab coat in a plastic bag will be allowed in lab.

Laboratory exercises: Exercises will be graded on completeness (including following directions), neatness, and accuracy. 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: During the final portion of the lab, students will receive a mixture 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. Additional information concerning the unknowns will be discussed in the lab.

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 Report but the student will only receive a maximum of half credit for the exercise. Arrangements can be made with the instructor to complete the lab during another laboratory section. Laboratory practical exams must be taken on the date announced. There are ABSOLUTELY NO make-ups of laboratory practical exams!

Late Assignments: Assignments must be turned in by the time and date assigned by the instructor. 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.) 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).
VI. Policies:

A. Attendance Policy:

PSTCC 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 134 or 126 or by phone: 694-6751 (Voice/TTY) or 539-7153. More information is available at www.pstcc.edu/departments/swd/.
D. Other Policies:

**Cell Phone Usage:** Use of cell phones in the classroom or lab is inconsiderate and disruptive. If cell phones are brought into the classroom or lab, they must be turned off or on silent mode and stored out of sight in backpacks or bags. Students are **not** excused for any reason to answer a call or to leave the room to answer a call **without permission of the instructor**.