Instructor: Ronda L. Jacobs  
Office: LR 202B

Office Hours: by appointment

Phone: (301) 934-7596  
Fax: (301) 934-7699  
Email: rondaj@csmd.edu

Course Meeting Times: Mondays & Wednesdays 3:00-5:50 pm OR 6:30-9:20 pm

Credit Hours: 1

Prerequisites: BIO 2010 taken in the same or a previous semester

Required Textbooks:  
A Photographic Atlas for Microbiology Laboratory, 3rd Edition, by Leboffe & Pierce

Course Description: Students study representative groups of microorganisms including: protozoa, bacteria, and fungi. They also learn culturing, staining, and various biochemical procedures used to identify microorganisms. These procedures are then used to identify unknown bacteria. Students also learn how microbial growth is physically and chemically controlled.

Course Objectives: The successful student, upon completion of the course, will:
1. be familiar with the major groups of fungi, algae, protozoa, and bacteria including cyanobacteria
2. be familiar with the structures of representative fungi, algae, and protozoa
3. be familiar with the different shapes and arrangements of bacteria
4. be able to perform and evaluate a Gram staining technique
5. be able to perform and evaluate special staining techniques
6. be familiar with the preparation of culture media used to grow bacteria
7. be able to isolate bacteria in a pure culture using the streak plate technique
8. be familiar with the use of different culture media to grow and help identify bacteria
9. be able to perform biochemical tests to identify unknown bacteria
10. be able to outline methods used to determine the effectiveness of chemical and physical methods to control the growth of microorganisms
11. describe the Kirby Bauer Disk Diffusion test used for microbial sensitivity to antibiotics

Student Evaluation: Student evaluation will consist of practical exams and identification of several unknown samples.
Exam Information:
There will be three laboratory exams and one cumulative final exam. You will be tested on your ability to perform, identify, and evaluate techniques used within the laboratory setting. Laboratory exams will have both written and practical components, the written portion coming directly from laboratory data and exercise questions.

Make-Up Exam Policy:
For valid reasons (e.g., hospital stay, job related travel, illness, etc.), you may be excused from taking ONE exam at the scheduled time. To do this, you must discuss with me the reason for being excused, obtain permission, and make arrangements to take the make-up exam. NOTE THAT THIS PRIVILEGE WILL ONLY BE EXTENDED TO YOU ONCE. You must take the exam within one week of the originally scheduled time.

YOU WILL RECEIVE A GRADE OF ZERO (0) FOR ANY EXAM IN WHICH YOU:
1. failed to notify me within 24 hours of missing that exam
2. failed to make up the exam at the scheduled time

Make-up laboratory exams can only be scheduled during normal laboratory times. This means you will be taking the exam with another lab section.

Unknown Identification: These assignments are explained in the laboratory manual.

Grading:
Grading Scale: The grading scale is based on a point system. You have the ability to earn a possible 410 points.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Laboratory Exams (50 points each)</td>
<td>150</td>
</tr>
<tr>
<td>Cumulative Final Exam</td>
<td>100</td>
</tr>
<tr>
<td>Morphology Study</td>
<td>10</td>
</tr>
<tr>
<td>Mixed Culture Isolation</td>
<td>10</td>
</tr>
<tr>
<td>Throat Unknown</td>
<td>15</td>
</tr>
<tr>
<td>Immunological Unknown</td>
<td>25</td>
</tr>
<tr>
<td>Virtual Unknown</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>410</td>
</tr>
</tbody>
</table>

Grade Record Sheet:

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra Credit</td>
<td></td>
</tr>
<tr>
<td>Exam 1 50 points</td>
<td></td>
</tr>
<tr>
<td>Exam 2 50 points</td>
<td></td>
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<tr>
<td>Exam 3 50 points</td>
<td></td>
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<tr>
<td>Final Exam 100 points</td>
<td></td>
</tr>
<tr>
<td>Morphological Study 10 points</td>
<td></td>
</tr>
<tr>
<td>Mixed Culture 10 points</td>
<td></td>
</tr>
<tr>
<td>Throat Unknown 15 points</td>
<td></td>
</tr>
<tr>
<td>Immune Unknown 25 points</td>
<td></td>
</tr>
<tr>
<td>Virtual Unknown 100 points</td>
<td></td>
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</tbody>
</table>

Average = Total points earned/total points possible

<table>
<thead>
<tr>
<th>Total Points Earned</th>
<th>Percentage</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>369-410</td>
<td>90-100%</td>
<td>A</td>
</tr>
</tbody>
</table>
Attendance: Attendance is absolutely required for laboratory. If you miss a laboratory, you should contact me immediately. You are then responsible for any work assigned and for scheduling and taking make-up exams. Instructors are under no obligation to help students make up missed laboratories. Also, be on time for lab; instructions and demonstrations are given at the beginning of laboratory and will not be repeated.

A grade of “FX” will be given at midterm and at the end of the semester if you fail to attend four classes (they do not have to be consecutive) AND are failing the course. The grade will appear on the transcript and equate to an “F” in the grade point calculation.

Student Responsibilities:

1. Read each laboratory exercise before coming to lab. Pop quizzes may be given at the beginning of laboratory to ensure that you have read the assigned material prior to class.
2. Proper spelling, grammar, and punctuation are expected. All exams and assignments are required to have correct spelling and proper use of grammar or points will be deducted. Scientific names of organisms should be underlined.
3. You are responsible for the care of microscopes and equipment. It is also your responsibility to return materials to their proper place and to maintain an orderly lab. Points will be deducted from your grade if I found your equipment dirty or lab bench disorderly at the end of lab.
4. Turn in your lab assignments at the beginning of class as directed. No late assignments will be accepted. If you miss class, email or fax the assignment to me.
5. All assignments must be typed.
6. All assignments are to be completed on an individual basis unless specified otherwise. If you copy the work of another student or work with another student to complete an assignment, it will be considered plagiarism and you will both receive a grade of zero on that assignment. I will also submit a Student Judicial Complaint Form.
7. Turn off all cell phones and pagers before entering class. Students are not allowed to make cell phone calls in the classroom or out in the hallway. They are extremely disruptive to fellow students and the instructor.
8. No children and/or visitors are allowed in classrooms or labs. No exceptions.
9. You are responsible for coming to me to schedule a make-up exam. See “Make-up Exam Policy” on page 2 for details.
10. Students that are disrespectful or uncivil to one another or to the instructor will be warned twice for this behavior and removed from the roster on the third offense.
11. Always bring your textbooks and laboratory manuals to class. You may also want to bring colored pencils with you for drawings.

<table>
<thead>
<tr>
<th>328-368</th>
<th>80-89%</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>287-327</td>
<td>70-79%</td>
<td>C</td>
</tr>
<tr>
<td>246-286</td>
<td>60-69%</td>
<td>D</td>
</tr>
<tr>
<td>245 and below</td>
<td>Below 60%</td>
<td>F</td>
</tr>
</tbody>
</table>
**Academic Misconduct:**

No form of dishonesty, including cheating and plagiarism, will be tolerated. A grade of zero (0) will be given for any exam, assignment, etc. on which the student cheated or used plagiarized material. **Remember that plagiarism is copying from another person's work. This includes work of another student.** In addition, I will complete a Student Judicial Complaint Form for handling academic integrity violations and the student is subject to disciplinary action, as stated in the CSM Student Handbook. Please be aware that all exams, homework assignments, and laboratory exercises are to be completed independently unless otherwise indicated.

**Audit Information:** Students may not audit laboratory. If you wish to withdraw, you must do so by July 19.

**General Education Statement:**

We consider "general education" to be a body of values, skills, and knowledge to which all graduates with A.A. degrees should be exposed and for which we may determine certain levels of competency. These values, skills, and knowledge are representative of a common body of educational experiences that we view as vital for enabling our graduates to make rational decisions in an increasingly complex society.

In taking a science course, the student can reasonably expect to be exposed to many of the following values, skills and categories of knowledge. The student should keep in mind that not every value, skill, or category of knowledge will be met in every science course. For a more thorough listing of general education goals, the student is referred to the college catalog.

**Values:**

**Intellectual Values**
Graduates should:
1. prize academic integrity and honesty
2. recognize the importance of academic skills
3. recognize the value of education as more than job training
4. respect the right to have dissenting views for which there is evidence
5. value skepticism toward both tested and untested ideas and theories
6. respect objectivity, rigorous analysis of evidence, and unbiased research

**Personal/Social Values**
Graduates should be able to:
1. accept responsibility for their behavior
2. appreciate honesty, integrity, and loyalty

**General Education:**

**Reading**
Graduates should be able to:
1. read college level material including texts, laboratory reports, and journals
2. define or interpret unfamiliar words
3. identify the main components and the supporting evidence
4. synthesize information and concepts gained from reading

Writing
Graduates should be able to:
1. write complete sentences, proof read and edit, and punctuate and spell in standard English
2. conceive ideas, select materials, and organize contents effectively for a purpose
3. write a unified, coherent academic essay, correct in structure and mechanics, which supports a clear, limited thesis

Observations
Graduates should be able to conduct careful, thoughtful observations of objects and phenomena in nature, society, science, and art.

Learning
Graduates should be able to:
1. set study goals and priorities to attain stated course objectives
2. prepare for different types of examinations and evaluation
3. adapt to a variety of methods of instruction
4. locate and use resources outside of the classroom
5. ask pertinent questions
6. accept constructive criticism and learn from it
7. apply appropriate theories to solve problems

Speaking
Graduates should be able to:
1. express their needs and expectations clearly
2. ask and answer questions effectively
3. organize and present ideas and feelings in language appropriate to the situation and audience

Listening
Graduates should be able to:
1. interpret, analyze, and evaluate spoken messages
2. identify the main and subordinate ideas in spoken messages
3. follow spoken instructions

Interpersonal Communication
Graduates should be able to engage in constructive discussion.

Reasoning
Graduates should be able to:
1. recognize valid and invalid reasoning
2. understand and use inductive and deductive reasoning
3. identify, define, evaluate, and solve problems
4. compare, contrast, and classify information and concepts
Categories of Knowledge:

Natural/Technological
Graduates should be able to:
1. understand methodologies of natural science
2. have a basic knowledge of local, national, and world geography
3. be familiar with how technology and human activities shape society and the environment
4. have a basic understanding of how the body functions and how to maintain health

Important Dates:

- June 14: First Day of Classes
- July 3-5: Independence Day Holiday—college closed
- July 19: Last Day to Withdraw (Cannot Audit Lab)
- Aug 16: Last Day of Summer II Classes

Disabled Student Policy:

If you have a disability (e.g. hearing or vision problems, dyslexia, etc) which might affect your performance in this class, please inform Glennis Daniels-Bacchus in the Student Success Center at (301) 934-7614. She will verify your status and provide appropriate accommodations and assistance.

Out-of-Class Assistance:

We are unable to have open lab hours in Microbiology laboratory because of safety issues. However, Kathleen Lauber has created excellent interactive tutorials of the laboratory material on her website. You are strongly encouraged to use these. Visit her website at http://www.itc.csmd.edu/bio/kathleen/index.htm and click on BIO 2010 Review.

Tutoring is available for those students needing additional help in mastering the material presented in the course. Please contact the Student Success Center at (301) 934-7657 or visit http://www.csmd.edu/StudentSuccess/Tutoring for more information. Also, I am available for students seeking help. You are strongly urged to ask me or the tutor any questions you have concerning course material.

Inclement Weather Policy:

Please call the college weather hotline at: 1-800-650-4023 or (301) 369-1999. Closures are also posted on the College website at www.csmd.edu.

Borderline Grading Policy:

Grades will not be curved. However, I reserve the right to give a student with a borderline numerical grade the higher or lower letter grade based on their overall performance in the class. Overall performance is based on behavior, skills development, class participation, academic progression, and attendance.
**Tentative Laboratory Schedule:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Laboratory Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/14</td>
<td>Introduction and Microbiology Safety and Exercise #1: Microscope</td>
</tr>
<tr>
<td>6/16</td>
<td>Exercise #2: Observation of Microorganisms</td>
</tr>
<tr>
<td>6/21</td>
<td>Exercise #3: Preparing Bacterial Media, Exercise #4: Ubiquity of Microorganisms, and Exercise #7: Aseptic Technique</td>
</tr>
<tr>
<td>6/23</td>
<td>Exercise #5: Morphological Study and Simple Stain, Exercise #6: Gram Stain, and Exercise #7 (continued); <strong>Morphological Study Due</strong></td>
</tr>
<tr>
<td>6/26</td>
<td>Exercise #9: Obtaining a Pure Culture and <strong>Laboratory Exam I</strong></td>
</tr>
<tr>
<td>6/30</td>
<td>Exercise #8: Other Staining Techniques, Exercise #19: Virtual Unknown, and Exercise #9 (continued)</td>
</tr>
<tr>
<td>7/5</td>
<td>Independence Day Holiday – no class</td>
</tr>
<tr>
<td>7/7</td>
<td>No class – Work on Virtual Unknown</td>
</tr>
<tr>
<td>7/12</td>
<td>Exercise #10: Parasitology and Exercise #9 (continued); <strong>Pure Culture Report Sheet Due</strong></td>
</tr>
<tr>
<td>7/14</td>
<td>Exercise #11: Staph/Strep and Exercise #12: Throat Culture Unknown</td>
</tr>
<tr>
<td>7/19</td>
<td>Exercises #11 and #12 (continued)</td>
</tr>
<tr>
<td>7/21</td>
<td>Exercise #13: Disinfectants, Exercise #12 (continued), and <strong>Laboratory Exam II</strong></td>
</tr>
<tr>
<td>7/26</td>
<td>Exercises #12 and #13 (continued); <strong>Throat Unknown Due</strong></td>
</tr>
<tr>
<td>7/28</td>
<td>Exercise #14: Antimicrobial Testing and Exercise #15: Hand Washing; <strong>Virtual Unknown Due</strong></td>
</tr>
<tr>
<td>8/2</td>
<td>Exercises #14 and 15 (continued)</td>
</tr>
<tr>
<td>8/4</td>
<td>Exercise #16: Yeasts and Molds and <strong>Laboratory Exam III</strong></td>
</tr>
<tr>
<td>8/9</td>
<td>Exercise #17: Blood Lab and Exercise #18: Immunological Testing</td>
</tr>
<tr>
<td>8/11</td>
<td>Laboratory and Virtual Unknown Review; <strong>Immunological Unknown Due</strong></td>
</tr>
<tr>
<td>8/16</td>
<td><strong>Cumulative Laboratory Final</strong></td>
</tr>
</tbody>
</table>

I RESERVE THE RIGHT TO MAKE ANY NECESSARY MODIFICATIONS TO THE SYLLABUS DURING THE COURSE OF THE SEMESTER.