Course Description:

Number and Title:

BIOL 3250L (CRN 20681)
Introductory Microbiology Laboratory

Credit Hours:

1.0 Semester credit hours (0-3-1)

Catalog Description:

Laboratory experiences which address topics including, sterile technique, microscopy, identification of micro-organisms, microbial metabolism, and microbial genetics.

Course prerequisite and co-requisite:

Co/Prerequisite: BIOL 3250

Note: Due to the corequisite nature of BIOL 3250 and BIOL 3250L, if you withdraw from one of these two courses, you must withdraw from the other also.

Computer Requirement:
• Each CSU student is required to have ready access throughout the semester to a notebook computer that meets faculty-approved hardware and software requirements for the student's academic program. Students will sign a statement attesting to such access. For further information on CSU's Official Notebook Computer Policy, please go to http://www.clayton.edu/hub/itpchoice/notebookcomputerpolicy.

Technology Requirement:

• Mastering Microbiology is required for this course. It come bundled with the lecture textbook at the bookstore or can be purchased separately. Since it comes with an Etext you would not have to purchase the hard textbook unless you wanted to do so.

In-class Use of Student Notebook Computers:

• Student notebook computers will be used periodically in the classroom in this lab course and the student will be expected to use their notebook computer to complete classroom assignments and to communicate with the instructor via email. You are expected to check your email daily. This will be a means in which the instructor communicates with you about course assignments.

Email Requirement:

You must be able to send and receive e-mail using the Clayton State University e-mail system using Outlook™.

GeorgiaVIEW Desire2Learn (Online Classroom) and Mastering Microbiology:

• Most course content (PowerPoints, Quizzes, assignments, reviews, etc.) will be posted to Desire2Learn (GeorgiaVIEW) or Mastering Microbiology. You should plan to log in daily!
• You can gain access to D2L, by signing on to the SWAN portal and selecting "D2L" on the top right side. If you experience any difficulties in D2L, please email or call The HUB at TheHub@mail.clayton.edu or (678) 466-HELP. You will need to provide the date and time of the problem, your D2L username, the name of the course that you are attempting to access, and your instructor's name.

Student and Instructor Responsibilities:

We are in this together, guys. We both have many responsibilities related to this course. I have listed my expectations of you below and have listed expectations of a good instructor (which I hope to be) below as well. Let’s make certain that we BOTH remember our responsibilities. I will let you know (in private) if you are not meeting my
expectations if you agree to meet with me (in private) to let me know if I am not meeting yours.

**Student Responsibilities**  
Take NOTES from reading material AND from lecture material. Don’t just download the PowerPoints and call it a day.

Turn in assignments on time and take quizzes on time.

**Buy the lab book (and read it)!**

Come to class on time and ready to learn.

Respect others around you by not being distracting (social media, cell phones, talking in class, etc.).

Communicate professionally and respectfully to the instructor and/or to other students with whom you are working.

Ask questions when appropriate and come to office hours when additional help is needed. If you hit a road block in life, which is affecting school talk to your instructor early! She may have some good advice!

Remain engaged in activities. If you are having a bad day and cannot keep up then consider recording the lessons.

<table>
<thead>
<tr>
<th><strong>Responsibilities of a Good Instructor</strong></th>
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<tbody>
<tr>
<td>Act professionally and never ever humiliate a student!</td>
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<tr>
<td>Maintain a learning environment that allows students to participate, be engaged in the material, and ask questions when appropriate.</td>
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<tr>
<td>Provide feedback to students on their success and provide feedback to students when they are not successful or not adhering to their responsibilities.</td>
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<tr>
<td>Make deadlines CLEAR in GAVIEW.</td>
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<tr>
<td>Listen with an open mind! Everyone makes mistakes so evaluate any error a student feels you made. Correct errors you make.</td>
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<tr>
<td>Offer help and resources when a student asks.</td>
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<tr>
<td>Communicate professionally and respectfully to your students and let students know if you have to cancel class or office hours for any special reason (in GAVIEW and/or email).</td>
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<tr>
<td>CHALLENGE your students to do their best! Don’t be tempted to water it down!</td>
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</table>
Course Learning Outcomes:

Upon completing BIOL 3250L the student should be able to...

- Identify microorganisms and/or properties of organisms using various methods.
- Describe the physiology and growth requirements of some bacteria.
- Properly use a microscope to observe microorganisms up to 1000X magnification.
- Solve complex problems using research methods in microbiology.
- Properly stain bacterial cultures using the acid fast stain, Gram stain and endospore stain.
- Properly perform the aseptic technique and how to apply it to a variety of laboratory techniques.
- Use pure culture and selective techniques to enrich for and isolate microorganisms.
- Control the growth of bacteria using antimicrobial agents.
- Estimate the number of bacteria in a sample using direct and indirect methods.
- Use appropriate microbiological and molecular lab equipment and methods.
- Practice safe microbiology, using appropriate protective and emergency procedures.
- Document and report on experimental protocols, results and conclusions.

Program Learning Outcomes:

- Explain the biological core concepts: evolution; structure and function; information flow, exchange, and storage; pathways and transformations of energy and matter; and systems.
- Formulate hypotheses and collect, evaluate and interpret scientific data to solve problems in biological science and supporting fields.
- Apply quantitative reasoning, modelling and simulations, and laboratory skills to answer questions in the biological sciences.
- Relate knowledge of the other sciences, including computer and social sciences, to biological concepts and skills.
- Communicate ideas to others outside the sciences and the ability to collaborate with other disciplines.
- Identify and describe the impact of biological science on the environment and society.

Teacher Education Policy:

The content of this course syllabus correlates to education standards established by national and state education governing agencies, accrediting agencies and learned society/ professional education associations. Please refer to the course
correlation matrices located at the following website

http://www.clayton.edu/arts-sciences/teachered/standardsoutcomes

**Conceptual Framework:**

The mission of the Teacher Education Unit is to prepare professional educators who engage in *reflective practice* and who are *competent, caring, committed, collaborative, culturally responsive,* and prepared to teach diverse learners in an ever-changing society. For the complete CSU Teacher Education Unit Conceptual Framework, follow the link below.

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**Term:**

Spring Semester 2016

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**Instructor:**

Dr. Michelle Furlong  
Office: Lakeview Science and Discovery Center 135L  
phone: (678) 466-4778  
e-mail: MichelleFurlong@mail.clayton.edu  
internet: http://faculty.clayton.edu/mfurlong

**Office hours:** [click here](#). It is important to make an appt. if you want to meet with me outside of office hours (just see me after class and we can schedule it).
Class Meetings:

Classroom: Lakeview Discovery and Science Center 142

Class Times: T 12:35 pm - 3:25 pm

Text Information:


Mastering Microbiology (required)

Evaluation:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Practical 1</td>
<td>25%</td>
</tr>
<tr>
<td>Practical 2</td>
<td>35%</td>
</tr>
<tr>
<td>Skills test</td>
<td>10%</td>
</tr>
<tr>
<td>Quizzes given in Mastering Microbiology or GA View (80% of all quizzes count; 20% of your lowest grades are dropped).</td>
<td>20%</td>
</tr>
<tr>
<td>Project Report</td>
<td>10%</td>
</tr>
<tr>
<td>Totals</td>
<td>100%</td>
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Grading:
Mid-term Progress Report

Due to the relatively small number of laboratory reports that will have been returned by mid-term, no mid-term grade will be reported for this course. Students making unsatisfactory progress will be contacted individually by the instructor before mid-term.

The last day to withdraw without academic accountability is Friday, March 4, 2016.

Course policies:

General Policy
Students must abide by policies in the Clayton State University Student Resource Handbook, and the Basic Undergraduate Student Responsibilities.

University Attendance Policy
Students are expected to attend and participate in every class meeting. Instructors establish specific policies relating to absences in their courses and communicate these policies to the students through the course syllabi. Individual instructors, based upon the nature of the course, determine what effect excused and unexcused absences have in determining grades and upon students’ ability to remain enrolled in their courses. The university reserves the right to determine that excessive absences, whether justified or not, are sufficient cause for institutional withdrawals or failing grades.

Course Attendance Policy
Attendance is expected for all class periods. Attendance is required for quiz and examination periods. Any absence must be accompanied by a written excuse from a doctor or other competent authority.

Missed Work: Attendance is expected for all class periods. Attendance is required for examination and quiz periods. Any absence must be accompanied by a written excuse from a doctor or other competent authority.

- Without excuse, a grade of zero points will be assigned for any missed work, INCLUDING PRACTICALS.
- If a valid excuse is provided you will be excused from the practical and your other practical will count at a higher percentage (60%). A MAKE UP PRACTICAL WILL NOT BE GIVEN UNDER ANY CIRCUMSTANCES.
• If you miss more than one practical with excused absences, then you will receive a zero and should probably drop or consider a hardship withdrawal if you qualify for one (see academic catalog).

• There are no make-up quizzes. They will be opened in Mastering Microbiology or GA View the Friday before the next lab period and will be closed right before lab starts. You can drop 20% of your lowest quizzes.

• Assignments are due on time. 10% will be deducted each day from any assignment turned in late. If an assignment is up to 24 hours late then you lost 10%. If an assignment is 25-48 hours late then you lost 20% and if it is 49-72 hours late then you will lose 30%. If an assignment is over 72 hours late then it will NOT BE ACCEPTED and you will receive a zero. Assignments can be emailed if you cannot make it to campus, but this should not be a regular practice. Expect to print your own assignments and turn them in. Only use email for your assignments if you are unable to make it to campus to turn it in.

Academic Dishonesty
Any type of activity that is considered dishonest by reasonable standards may constitute academic misconduct. The most common forms of academic misconduct are cheating and plagiarism. All instances of academic dishonesty will result in a grade of zero for the work involved. All instances of academic dishonesty will be reported to the Office of Community Standards. Judicial procedures are described in the Student Resource Handbook (Procedures for Adjudicating Alleged Academic Conduct Infractions beginning on page 16).

Plagiarism Detection Software.
Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. You should submit your papers in such a way that no identifying information about you is included.

Disruption of the Learning Environment
Behavior which disrupts the teaching–learning process during class activities will not be tolerated. While a variety of behaviors can be disruptive in a classroom setting, more serious examples include belligerent, abusive, profane, and/or threatening behavior. A student who fails to respond to reasonable faculty direction regarding classroom behavior and/or behavior while participating in classroom activities may be dismissed from class. A student who is dismissed is entitled to due process and will be afforded such rights as soon as possible following dismissal. If found in violation, a student may be administratively withdrawn and may receive a grade of WF.
A more detailed description of examples of disruptive behavior and appeal procedures is provided at:

http://www.clayton.edu/Portals/5/DisruptiveClassroomBehavior.pdf

Writing Assistance
The Writers’ Studio 224 is located in the A&S building, room 224. There you can talk with trained writing consultants about your writing projects. They are available to work with you
at any stage of your paper, from generating ideas to organizing your paper to understanding how to format it correctly. The service is free; you may drop in and wait for a consultant or sign up for a regular appointment. But remember: you, not your consultant, are ultimately responsible for the quality and content of the papers you submit.

Aside from meeting with consultants one-with-one, you can also participate in writing workshops. In these workshops, faculty and consultants will guide you in discussions and activities important to academic writing topics. You will be identify, analyze, integrate, and synthesize writing principles through a series of writing exercises. Remember that we are here to collaborate with you as you develop your own experiences as a student-writer.

Visit our website for more information: http://clayton.edu/writersstudio.

Other Policies

- The use of simple calculators is allowed for all practicals.
- All practicals are closed book.
- No student-produced "memory sheets" or note cards are allowed.

BIOL 3250L Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topics Covered</th>
<th>Reading and Handouts to download from GAView</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 12</td>
<td>Introduction to Lab and Safety Essentials</td>
<td>Lab Safety Manual pages 2-5; Laboratory handout 1 from D2L.</td>
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<tr>
<td></td>
<td>Microbes Everywhere</td>
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<tr>
<td>Jan. 19</td>
<td><strong>Lab 1</strong></td>
<td>Handout 1 from D2L Lab Manual pages 6-7, 14-19, 23-26, 28-41 and 62</td>
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<tr>
<td></td>
<td>Safety</td>
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<tr>
<td></td>
<td>What is asepsis?</td>
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<td></td>
<td>Media</td>
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<td></td>
<td>Aseptic Technique</td>
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<tr>
<td>Jan. 26</td>
<td><strong>Lab 2</strong></td>
<td>Handout 2 Lab Manual pages 42-47 and 60-61</td>
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<tr>
<td></td>
<td>Isolating Bacteria and selection media</td>
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<tr>
<td></td>
<td>Streak Plating technique</td>
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<tr>
<td></td>
<td>Colonial Morphology</td>
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<tr>
<td>Feb.  2</td>
<td>Continue practicing streak plating</td>
<td>Handout Lab 3 Lab Manual pages 74-86</td>
</tr>
<tr>
<td>Date</td>
<td>Activity</td>
<td>Additional References</td>
</tr>
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</table>
| Feb. 9 | **Lab 3** Brightfield Microscopy Phase Contrast Microscopy Bacterial Cellular Morphology Identifying Eukaryotic Microbes  
Practice Streak Plating  
**Lab 4 and 5** Smear Preparation Staining (Simple, Gram, Acid Fast and Spore stains)  
Handout Lab 4 AND Handout Lab 5  
Additional handouts on Gram, Acid and Spore Stains.  
Lab Manual pages 87-104 and 112-115 |                                                                     |
| Feb. 16| Catch up and Review for Lab practical 1 and skills test  
Catch up and Review for Lab practical 1 and skills test |                                                                     |
| Feb. 23| **Practical 1**: covers labs 1-5 and Safety Essentials  
Skills Test covers media pouring, aseptic technique, streak plating, smear making, staining and microscopy |                                                                     |
| March 1| Finish Lab 6  
**Lab 7** Temperature, Oxygen, pH and other optimal growth conditions  
4 handouts:  
Temperature Effects  
Oxygen Requirements  
Optimal Growth conditions  
Yeast lab |                                                                     |
| March 4th | **March 4th is the Last Day to withdrawal and receive a W.** |                                                                     |
| March 5-12 | Spring Break |                                                                     |
| March 15| Finish lab 7  
**Lab 6** Population Counts  
Handout Lab 6 Practice Problems  
Lab Manual pages 56-59 and 183-197 |                                                                     |
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>March 29</td>
<td>9: Experimental Design Discussion and Collaboration Lab 10 -Diagnostic Microbiology and S. aureus intro -Tutorial on pipettes -Isolate Staph from nose cultures on MSA PABA Derivatives Lab</td>
</tr>
<tr>
<td>April 5</td>
<td>Lab 9: Conduct PABA Experiments Lab 10: Choose isolated colony and subculture</td>
</tr>
<tr>
<td>April 12</td>
<td>Lab 9: Interpret results and discuss presentations Lab 10: PCR</td>
</tr>
<tr>
<td>April 19</td>
<td>Lab 10: Gel Electrophoresis Results and Discussion Lab 9: Make presentations to Organic II group</td>
</tr>
<tr>
<td>April 26</td>
<td>Practical II covers labs 6-10</td>
</tr>
</tbody>
</table>