MICR 3100/BIOL 3100 GENERAL MICROBIOLOGY, Fall 2018

CALIFORNIA STATE UNIVERSITY, LOS ANGELES
COLLEGE OF NATURAL AND SOCIAL SCIENCES
DEPARTMENT OF BIOLOGICAL SCIENCES

Class Schedule

<table>
<thead>
<tr>
<th>Course</th>
<th>Section</th>
<th>Date &amp; Time</th>
<th>Room</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>93878</td>
<td>01-LEC</td>
<td>TuTh 10:50 AM - 12:05PM</td>
<td>SH184</td>
<td>Hyunsook Park, Mohamed Maged Youssef</td>
</tr>
<tr>
<td>93879</td>
<td>02-LAB</td>
<td>Tu 8:00AM - 10:30AM</td>
<td>ASCL 229</td>
<td>Everardo Robles-Martinez</td>
</tr>
<tr>
<td>93880</td>
<td>03-LAB</td>
<td>Tu 2:00PM - 4:30PM</td>
<td>ASCL 229</td>
<td>Mohamed Maged Youssef</td>
</tr>
<tr>
<td>94810</td>
<td>04-LAB</td>
<td>Th 8:00AM - 10:30AM</td>
<td>ASCL 229</td>
<td>Gloria Preza</td>
</tr>
<tr>
<td>94811</td>
<td>05-LAB</td>
<td>Th 2:00PM - 4:30PM</td>
<td>ASCL 229</td>
<td>Mohamed Maged Youssef</td>
</tr>
</tbody>
</table>

Instructor Information

<table>
<thead>
<tr>
<th>Section</th>
<th>Instructor</th>
<th>Office</th>
<th>Office Hours</th>
<th>e-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Hyunsook Park</td>
<td>ASCL353</td>
<td>Wed 11:00am - 1:00pm</td>
<td><a href="mailto:hpark8@calstatela.edu">hpark8@calstatela.edu</a></td>
</tr>
<tr>
<td>01/03/05</td>
<td>Mohamed Maged Youssef</td>
<td>BIOS262</td>
<td>M/W/F 9:45 - 11:00am</td>
<td><a href="mailto:myousse7@calstatela.edu">myousse7@calstatela.edu</a></td>
</tr>
<tr>
<td>02</td>
<td>Everardo Robles-Martinez</td>
<td>Lib Palmer Wing 2097</td>
<td>W 12:00 - 2:00 pm</td>
<td><a href="mailto:eroble27@calstatela.edu">eroble27@calstatela.edu</a></td>
</tr>
<tr>
<td>04</td>
<td>Gloria Preza</td>
<td>ASCL 242</td>
<td>TBD</td>
<td><a href="mailto:gpreza@calstatela.edu">gpreza@calstatela.edu</a></td>
</tr>
</tbody>
</table>

Course Description

General Microbiology class includes fundamental biological principles and applications of microbes. Lecture introduces the structure, function, growth, nutrition, and genetics of various microorganisms, metabolism and biochemistry, microbial diversity and ecology, and applied and medical microbiology. Laboratory introduces basic microbiology techniques including aseptic techniques, microscopy, and basic microbial physiology tests and further explore more sophisticated microbiology experiments including quantitative culture of microorganisms, isolation of antibiotic producers, and several medical microbiology experiments. Lecture 3 hours per week: laboratory 2 1/2 hours per week.

Prerequisites: BIOL 1200 and CHEM 1110

Course Objectives/Outcomes

Upon successful completion of this course, students will be able to:
1. Demonstrate the understanding of fundamental biological principles of microbes.
2. Demonstrate the understanding of the structure, function, growth, and metabolisms of microbes.
3. Demonstrate the understanding of microbial evolution, diversity and their role in the ecosystem.
4. Demonstrate the understanding of human microbiota, microbial pathogenesis, and host defense mechanisms.
5. Perform basic microbiology techniques including aseptic techniques, microscopy, and basic microbial physiology tests.

Required Course Materials


Lab Manual MICR3100/BIOL3100 General Microbiology Lab manual (Compiled by Microbiology Faculties at CSULA, Hard copy is available at the University bookstore and bookmart, electronic copy is available on Moodle).
**Course Policies**

**Attendance:** Students are responsible for all material presented in class, including announcements about changes in course procedures. There will be several active learning activities during class without prior announcement and will be incorporated to class performance. **There will be absolutely no make up for any missed class activities.** A fair calculation for the time required for this class should take into account the need to spend at least 2 hours of independent study for each class hour. Exam content will draw heavily from lectures. For laboratory, attendance is more strictly enforced and there will be point deduction for missing lab. Laboratory attendance is a course requirement. If you are late more than 10 min for the lab, **5 points** will be deducted. If you are absent from lab without satisfactorily justified and documented reason, **10 points** will be deducted.

**No Make-up Examinations:** Missed events will be set as “0 points” unless satisfactorily justified with supporting documentation (e.g. doctor’s note). Students are responsible to obtain the missed information from their team mates and through self-study. There will be no make-up instruction.

**Laboratory Requirements:** Students are required to wear a lab coat and closed toe shoes, and must have a notebook and writing supplies. Gloves will be provided when needed. Students with latex allergy must contact the instructor without delay. Students without a lab coat cannot participate and the affected lab section will be recorded as missed. **An incomplete grade will be issued if more than 2 labs have been missed.**

**Reading Materials:** The Lecture Readings are from *Microbiology: An Evolving Science 4e, 3rd is acceptable*. The lecture topics, including chapter sections to read, are listed on the Schedule page. It is highly recommended that you read the material before the lecture in order to have a complete understanding of the topics being presented. Reading assignment will be assessed by weekly online activity. Student resources are available through the following link: [http://www.wwnorton.com/college/biology/mbio/](http://www.wwnorton.com/college/biology/mbio/). The Lab Readings are from the laboratory manual. **Read Lab manual and review Pre-lab video before coming to each class.** You must have lab coat and closed toe shoes in order to stay in the laboratory. Repeated failure to follow laboratory rules (including house keeping and safety rules) will result in point deductions.

**Assignments and Grading Policy**

Assignment due dates will be notified on Canvas (and will be announced in class. An overall assignment, tests, and participation grade will be given based on the completeness and care evident in your homework and your test grades. Periodic quizzes/class activities will be given in class or on Moodle and email notice will be sent as soon as they are available. **There will be no make up for missed activities/assignments/quizzes.** Take advantage of time, study partners, email, and office hours to study your notes, objectives, and practice problems, and to complete your assignments well. **Late submission will be subjected to point deduction.**

**Online Activities:** Lecture homework and Lab quizzes will be given via Canvas and the timeline of each activity will be given by the instructors. You will be given three attempts for the lecture activity and two attempts for the lab quizzes. **No make up will be given for missed activities and quizzes.**

**Smartwork5 Lecture Homework:** To begin the online lecture activity, click the Smartwork5 Chapter 1 homework link and you will be asked to register for the Smartworks. If you do not need access to the ebook, you may register using the “free 180-day trial access” option. Once you register and sign in, you should be able to work on the online activity.

Please follow the steps in this video: [https://youtu.be/hK1kc5_Gmh8](https://youtu.be/hK1kc5_Gmh8). If you have questions about how to use Smartwork5, such as which browser to use, where to see your grade, or how to answer questions, you can view helpnotes with screenshots here: [http://wworton.knowledgeowl.com/help/smartwork5-students](http://wworton.knowledgeowl.com/help/smartwork5-students). Please note that it can take up to 24 hours for the grade that you earn in an assignment to fully report to your course gradebook.

If you have any questions about your grades contact Norton support at support.wwnorton.com and include the name of the assignment and your instructor’s name.
PERFORMANCE EVALUATION

**Lecture: 500 points**

- 120 Smartwork5 Homework
- 20 Case study (EVLIS)
- 10 Symbiosis report
- 100 Exam 1 (Bring Scantron Form No: 882-E)
- 100 Exam 2 (Bring Scantron Form No: 882-E)
- 150 Final (comprehensive) Examination (Bring Scantron Form No: 882-E)

**Laboratory: 350 points**

- 100 Online Post Lab Quizzes
- 60 Formal Laboratory Report (2 X 30 pts, Bacterial Growth Curve, Bacterial Identification)
- 10 Microbiome presentation
- 30 Thought Question Check (2 pts X 15 chapters)
- 50 Lab Midterm (includes written portion and practical portion)
- 100 Comprehensive Final Examination (includes written portion and practical portion)

Make sure you learn how to submit your assignments electronically in Moodle. The instructors will not accept assignments submitted as hard copy or by email. Do not wait until the last moment to submit your work since Moodle is sometimes nonoperational. **Late work will not be accepted.**

**Grades:**

Based on the % points achieved out of the total achievable points the students can earn:

- **A** 92 - 100%
- **A-** 88% - 91%
- **B+** 84% - 87%
- **B** 80% - 83%
- **B-** 76% - 79%
- **C+** 73% - 75%
- **C** 69% - 72%
- **C-** 65% - 68%
- **D+** 61% - 64%
- **D** 56% - 60%
- **D-** 51% - 55%
- **F** below 50%

In borderline cases (passing/non-passing or grade levels), participation and performance in lecture and laboratory will be considered for the final grade.

**DROP POLICY:** The drop policy established by the university will be strictly followed. After the no record drop deadline, students may drop a course only for “serious and compelling reasons”. Failing a course is not an acceptable reason for withdrawal. Acceptable documentation is required verifying the reason for the withdrawal. See the Schedule of Classes for information.

**INCOMPLETE GRADE POLICY:** Incomplete grades can only be assigned when the majority of the coursework has been completed (essentially all work except the final exam), and the student is passing the course (grade of C or better). The submission of an Incomplete Grade Form is required.

**COMPUTER/INTERNET REQUIREMENTS** Students are expected to participate actively in the course using CSULA learning management system, **Canvas.** You will need to have an up-to-date browser, operating system and some additional software on your computer to take this class. Check the **ITS helpdesk** link for student resources. Some of the documents in this course will be available to you in PDF form. If you do not have Adobe Acrobat Reader software on your computer, you can download it by going to **Adobe.com.** This class will be in CETL Tech classroom equipped with up-to-date workstation and projection systems for multiple electronic devices, including connectors to laptops, and other portable devices. Students are encouraged to bring laptops or personal electronic devices for class lecture and activities.
Please refer to this syllabus for all course procedural questions. This syllabus is subject to change. If a change is made, the professor will immediately notify the class and post a revised syllabus.

**COURSE COMMUNICATION**

**OFFICE HOURS** To ensure that you will be seen promptly during office hours, arrange an appointment with me by email in advance. Drop-ins are fine, but if I am already meeting with another student you may have to wait. If you put in the effort required, you should learn a lot from this course. If you are having trouble, or are not learning what you hoped to learn, talk to me. I benefit from your feedback.

**INTERACTION WITH INSTRUCTOR** The Instructor will make every effort to communicate frequently with students through announcements and postings within the Moodle site. Post any questions or comments you have about the course content and/or requirements in the *Muddiest Point* forum. Peer response to those questions are highly recommended and counted toward class participation. Questions of a more personal nature can be sent to the Instructor via email. As a student, you should expect to receive feedbacks and responses to postings within 48 hours. The Instructor will post an announcement alerting the students if he or she will be unavailable for more than a day.

**EMAIL** All emails pertaining to the course must come from your CSULA email account. E-mail correspondence with the professor must be professional. Now is the time to start practicing for the job market, graduate school applications, business correspondence, etc. When you send a sloppy, unpunctuated e-mail (e.g., from your iPhone), you are conveying a message of non-professionalism, laziness, and indifference; this will hurt you dearly in the professional world. Having the discipline to write professional correspondence will benefit you!

**NETIQUETTE** When posting on the discussion boards and chat rooms it is important to understand how to interact with one another online, netiquette. You can read more about the rules of netiquette at [http://www.albion.com/netiquette/index.html](http://www.albion.com/netiquette/index.html)

**HELPFUL STUDENT RESOURCES**

**TECHNICAL RESOURCES** Information on CSULA technical support resources for students: [http://www.calstatela.edu/cetl/technical-support-resources](http://www.calstatela.edu/cetl/technical-support-resources)

**STUDENT SUPPORT SERVICES** Information on CSULA student support resources for students: [http://www.calstatela.edu/cetl/student-support-resources](http://www.calstatela.edu/cetl/student-support-resources)

**ACADEMIC SUPPORT SERVICES** Information on CSULA academic support resources for students: [http://www.calstatela.edu/cetl/academic-support-resources](http://www.calstatela.edu/cetl/academic-support-resources)

**MOODLE MENTOR SITE** Information for students on how to be a successful online student and how to use Moodle: [http://www.calstatela.edu/moodlementor](http://www.calstatela.edu/moodlementor)

**COURSE & UNIVERSITY POLICIES**

**STUDENT HANDBOOK**

Information on student rights and responsibilities, academic honesty, standards of conduct, etc., can be found in Schedule of Classes for the current quarter ([http://www.calstatela.edu/classschedule/](http://www.calstatela.edu/classschedule/)) under Policies and Procedures.
DROPPING AND ADDING
Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Students should be aware of the current deadlines and penalties for adding and dropping classes:
https://get.calstatela.edu/Registrar.htm.

AMERICANS WITH DISABILITIES ACT (ADA)
Reasonable accommodation will be provided to any student who is registered with the Office of Students with Disabilities and requests needed accommodation. For more information visit the website at http://web.calstatela.edu/univ/osd/atlc.php.

ACADEMIC HONESTY/ PLAGIARISM
Students are expected to read and abide by the University’s Academic Honesty Policy, which can be found at http://www.calstatela.edu/academic/senate/handbook/ch5a.htm as well as in the current Schedule of Classes. Students who violate this policy will be subject to disciplinary action, and may receive a failing grade in the course for a single violation. All cell phones and other electronic devices are to be turned off during the exams.

Many incidents of plagiarism result from students’ lack of understanding about what constitutes plagiarism. However, you are expected to familiarize yourself with Cal State L.A.’s policy on plagiarism. All work you submit must be your own scholarly and creative efforts. Cal State L.A. plagiarism as follows: “At Cal State L.A., plagiarism is defined as the act of using ideas, words, or work of another person or persons as if they were one’s own, without giving proper credit to the original sources.”
## COURSE OUTLINE

### Lecture Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Readings/Assignments</th>
</tr>
</thead>
</table>
| 1    | Introduction  
1. Microbial Life; origin and discovery | pp 1 - 36 |
| 2    | 2. Observing the Microbial Cell: Microscopy | pp 37-76 |
| 4    | 4. Bacterial Culture, Growth, and Development | pp 117 – 156 |
| 5    | 5. Environmental Influences and Control  
6. Viruses | pp 157 – 192  
pp 193– 234 |
| 6    | EXAM 1  
7. Genomes and Chromosomes | pp 235-272 |
| 7    | 8. Transcription and Translation  
pp 315 – 356 |
| 8    | 10. Molecular Regulation | pp 317 – 400  
pp 477-522 |
| 9    | 13. Energetics and Catabolism  
14. Respiration, Lithotrophy and Photolysis | pp 523-566 |
| 10   | 17. Origins and Evolution  
18. Bacterial Diversity | pp 645-688  
pp 689-734 |
| 11   | 18. Bacterial Diversity  
EXAM 2 | |
| 12   | 19. Archaeal Diversity  
20. Eukaryotic Microbial Diversity | pp735-772  
pp773-814 |
| 13   | 21. Microbial Ecology  
22. Microbes and Global Environment | pp 815-866  
pp 867-900 |
| 14   | FALL RECESS (HAPPY THANKSGIVING!) | |
| 15   | 23. Human Microbiota and Innate immunity | pp901-904 |
| 16   | 24. The Adaptive Immune Response  
27. Antimicrobial Therapy | pp941-988  
pp 1091-1132 |
| Final Week | Lecture Final Exam | 9:30-11:30 AM, December 13, 2018 |
# Laboratory Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Laboratory Exercises</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New Activity</strong></td>
<td><strong>Follow Up/Discussion</strong></td>
<td></td>
</tr>
<tr>
<td><strong>1 (8/20)</strong></td>
<td>Lab safety training/Introduction 1. Ubiquity of Microorganisms (1-1)</td>
<td></td>
</tr>
<tr>
<td><strong>2 (8/27)</strong></td>
<td>2. Transfer and Isolation Techniques (2-2) 4-quadrant streaking (2-3) motility agar (Demo, BSL2 strain)</td>
<td>(1-2) Ubiquity of microorganisms Quiz1</td>
</tr>
<tr>
<td><strong>3 (9/3)</strong></td>
<td>3. Microscopy (practice) – observation of sample slides, after use care</td>
<td>(2-2) Observation – quadrant streaking (2-3) observation - motility Quiz2</td>
</tr>
<tr>
<td><strong>4 (9/10)</strong></td>
<td>4. Staining of Microorganism (4-1) Simple staining (4-2) Gram staining</td>
<td>Check Thought Questions (Ex1-3)</td>
</tr>
<tr>
<td><strong>5 (9/17)</strong></td>
<td>5. Effects of the Environment on microbial growth (5-1 to 5-4) 6. Pipetting experiment (Assessment)</td>
<td>Quiz 3</td>
</tr>
<tr>
<td><strong>6 (9/24)</strong></td>
<td>7. Bacterial Growth Curve (Lab report1)</td>
<td>(5) Observation - Effects of the Environment on microbial growth Quiz 4</td>
</tr>
<tr>
<td><strong>8 (10/8)</strong></td>
<td>Lab Midterm (Ex 1 – 7)</td>
<td>(8) pGLO result analysis (9) Plaque count, data analysis Check Thought Questions (Ex4-7)</td>
</tr>
<tr>
<td><strong>9 (10/15)</strong></td>
<td>10. Identification of microorganisms using16s rDNA - DNA isolation (10-1) 11Antibiotic Producer from Soil - primary isolation (11-1)</td>
<td>Quiz 5</td>
</tr>
<tr>
<td><strong>10 (10/22)</strong></td>
<td>10-2. Amplification of 16S rDNA by PCR 11-2 Antibiotic Producer from Soil - Isolation of pure colony 12. Mycology-mycomount</td>
<td>(10-1) Discussion – Calculation of DNA concentration Quiz 6</td>
</tr>
<tr>
<td><strong>12 (11/5)</strong></td>
<td>10-4. Sequencing and BLAST analysis (lecture on Sequencing basic and online activity) 14. Microscopy - Blood leukocyte differentiation</td>
<td>(13) Follow up - Water contamination (11-3) Antibiotic Producer from Soil 4- evaluation Quiz 8</td>
</tr>
<tr>
<td><strong>13 (11/12)</strong></td>
<td>15. Antiseptics and Antimicrobials (observe the result next day)</td>
<td></td>
</tr>
<tr>
<td><strong>14 (11/19)</strong></td>
<td>FALL RECESS (HAPPY THANKSGIVING!)</td>
<td></td>
</tr>
<tr>
<td><strong>15 (11/26)</strong></td>
<td>16. Microbiome Presentation Final Exam Review</td>
<td></td>
</tr>
<tr>
<td><strong>16 (12/3)</strong></td>
<td>Lab Final Exam during Lab classes (written and Practical exam)</td>
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