MICR 140L GENERAL MICROBIOLOGY LABORATORY

2 Credits (CRN 60136)
TR 10:00 – 11:50 am, Hale Imiloa 106

INSTRUCTOR: Teena Michael PhD
OFFICE: Hale Palanakila 142
OFFICE HOURS: In-person meeting by appointment only
Zoom meeting, R, 12:00 – 1:00 pm or TBD
https://hawaii.zoom.us/j/6461207364
Meeting ID: 646 120 7364
Passcode: Endospore

TELEPHONE: (808) 236-9114 EMAIL: teena@hawaii.edu
EFFECTIVE DATE: Fall 2021

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai‘i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide the Ko‘olau region of O‘ahu and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

CATALOG DESCRIPTION

Laboratory course illustrating fundamental techniques and concepts of microbiology, such as microscopic observations, aseptic transfer, microorganism classification and identification, environmental factors influencing microbial growth, biochemistry of microorganisms, ecological microbiology, and medical microbiology. This course is designed to complement MICRO 130. Primarily for students in nursing, dental hygiene, biotechnology, ethnopharmacognosy, and nutrition.

Requirement course satisfies:

• DY for AA in Liberal Arts
• Elective for AS in Natural Sciences
• Required course for Certificate of Achievement in Agripharmatech

Activities Required at Scheduled Times Other than Class Times

• Read assigned lab materials prior to class sessions.
• Make a pre-lab outline or flow chart that shows what materials you will use (brief) and methods you will carry out. This outline or flow chart should be added to your lab assignment reports.
• Complete lab quizzes, assignments, and reports and final lab report on Unknowns.
STUDENT LEARNING OUTCOMES

As a result of taking this course, students can expect to attain the following outcomes:

1. Operate equipment used in microbiology laboratory
2. Prepare growth media
3. Perform aseptic transfer
4. Identify microorganisms using morphological and physiological tests
5. Follow biosafety procedures
6. Produce lab reports using the standard scientific format

COURSE TASKS, ASSESSMENT AND GRADING

Course Tasks

- You will demonstrate knowledge and understanding of the theories and principles of microbiology laboratory methods in the following topic areas: microscopy (use of the microscope, slide preparation, staining, and analysis of results), classification of microorganisms (bacteria, and fungi), aseptic culture methods (media preparation, aseptic transfers, isolation and culture maintenance), environmental influences (e.g., temperature, ultraviolet light, antiseptics, disinfectants, and antibiotics), biochemical activities of microorganisms (e.g., fermentation, nitrate reduction, hydrogen sulfide production, dehydrogenase activity, urease activity, exoenzyme activity, etc.), ecological microbiology (e.g., analyses of coliforms from natural waters), and isolation/identification of microorganisms.

- You will also demonstrate the acquisition of microbiology laboratory skills by (1) the establishment and proper maintenance of stock cultures throughout the semester and (2) the identification of bacterial unknowns.

Lab Participation

- Attendance of the scheduled virtual labs and face-to-face labs is mandatory. Students will be graded on attendance, practice of lab safety, and quality of lab assignments.

Lab Preparation

- For all labs you will need to know basics of what you will learn in terms of information, concepts and hands-on skills before you join virtual class or in person classes. This will give each of us organization and preparation to learn.
- You do not NOT need to know everything before class! But do know what you need to know and also focus on what you do know and what you do NOT yet know!
- Please do not walk into class asking what we are going to do today? While it is always good to be curious-it is also always good to be prepared!

Assignments

- For each lab you are required to submit a brief report that will include 1) The title and objective of the lab; 2) background (over all and for specific components); 3) lab results; 4) brief discussion of your findings and 5) questions about lab procedures, and analysis of the problems that you encountered and 6) one question you discovered in the process of the lab that could (!) become a research project at some point! Each assignment is due before the next lab starts! Include your pre-lab outline or flow chart.
• **Quizzes**
  - Quizzes will be given throughout our lab to help both with preparation for lab and with understanding the results and potential significance of your work. Guidelines will be given!

• **Exams**
  - There are one midterm exam and one final exam, and the test dates are planned in the course weekly schedule.
  - The format of exams includes multiple choice, fill-in-the-blank, matching, short answer question and (when possible) hands-on work. Worksheets in the style of the exams will be given for each exam. All work that you carry out including brief reports and quizzes will prepare you for doing well on the Exams.

• **Scientific Lab Report for the UNKNOWNS**
  - A full scientific laboratory report is expected at the end of semester (16 December 2021 latest), which should contain following sections, *Title, Introduction, Materials and Methods, Results and Discussion* for *your unknown*. The series of steps you follow in determining the identities of your unknown bacteria will incorporate the information and skills you have gained in our course and that information can be the basis for your lab report.

**Grading**

• **Late Work**
  - Students are expected to complete and submit assignments/quizzes/exams before designated due dates. Late work will be accepted with a penalty, which is a 10% grade point deduction for each day following the deadline. For example, if your assignment (max. 20 points) is one day late, the highest grade you can get is 18.
  - Due to the difficulty situations caused COVID-19 pandemic, a request for a deadline extension and/or a waiver of the penalty may be considered by the instructor on a case-by-case basis.

• **Extra Credit**
  - Extra-credit opportunities will depend on assessment results from assignments, quizzes and midterm exams. If there are any significant deficiencies across the class in certain concepts or techniques, specific assignments will be given and extra credits will be offered.

• **Final Grade Calculation**
  - Lab Participation: 50
  - Brief lab reports (10): 150
  - Quizzes (12): 150
  - Exams (2): 200
  - Unknown identification: 50
  - Scientific lab report (1): 50

  **Total: 650**

*Windward Community College is an equal opportunity, affirmative action institution.*
Students will receive a letter grade based on the following scale:

Letter Grades and Percentage Ranges
- A = 90-100%
- B = 80-89%
- C = 70-79%
- D = 60-69%
- F = 0-59%

I (incomplete) grade is given at the instructor’s option when a student has failed to complete a small part of a course because of circumstances beyond student’s control. It is the student’s responsibility to contact the instructor to make up the incomplete work with a minimum level (or better) of achievement. Failure to satisfactorily make up incomplete work within the appropriate time period will result in a grade change for “I” to the contingency grade identified by the instructor.

LEARNING RESOURCES
- No textbook is required. PDFs of select modules from the resource below (Beisher, 1996) will be placed in Laulima Resources and referred to in the class schedule.


- All lab materials, including lab procedures and handouts, video demonstrations, module PDFs, study guides, quizzes and exams will be posted on Laulima class site. [https://laulima.hawaii.edu/](https://laulima.hawaii.edu/)
DISABILITIES ACCOMMODATIONS
If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Accessibility Counselor to discuss reasonable accommodations that will help you succeed in this class. Roy Inouye can be reached at (808) 235-7448, royinouy@hawaii.edu, or you may stop by Hale Kāko‘o 106 for more information.

SEX DISCRIMINATION AND GENDER-BASED VIOLENCE RESOURCES (TITLE IX)
Windward Community College is committed to providing a learning, working, and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking.

If you or someone you know is experiencing any of these, WCC has staff and resources to support and assist you. To report an incident of sex discrimination or gender-based violence, as well as receive information and support, please contact one of the following:

Kaahu Alo, Student Life Counselor & Designated Confidential* Advocate for Students
Phone: (808) 235-7354
Email: kaahualo@hawaii.edu
Office: Hale ‘Ākoakoa 232
*confidentiality is limited

Desrae Kahale, Mental Health Counselor & Confidential Resource
Phone: (808) 235-7393
Email: dkahale3@hawaii.edu
Office: Hale Kāko‘o 101

Karla K. Silva-Park, Title IX Coordinator
Phone: (808) 235-7468
Email: karlas@hawaii.edu
Office: Hale ‘Ākoakoa 220

As a member of the University faculty, I am required to immediately report any incident of sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and I cannot guarantee confidentiality, you will still have options about how your case will be handled. My goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need.

For more information regarding sex discrimination and gender-based violence, the University’s Title IX resources and the University’s Policy, Interim EP 1.204, go to manoa.hawaii.edu/titleix/

ALTERNATE CONTACT INFORMATION
If you are unable to contact the instructor, have questions that your instructor cannot answer, or for any other issues, please contact the Academic Affairs Office:

• Location: Alaka‘i 121
• Phone: (808) 235-7422

Windward Community College is an equal opportunity, affirmative action institution.
LAB SCHEDULE

<table>
<thead>
<tr>
<th>WEEK</th>
<th>LAB TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8-24 &amp; 8-26</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>8-31 &amp; 9-2</td>
</tr>
<tr>
<td>3</td>
<td>9-7 &amp; 9-9</td>
</tr>
<tr>
<td>4</td>
<td>9-14 &amp; 9-16</td>
</tr>
<tr>
<td>5</td>
<td>9-21 &amp; 9-23</td>
</tr>
<tr>
<td>6</td>
<td>9-28 &amp; 9-30</td>
</tr>
<tr>
<td>7</td>
<td>10-5 &amp; 10-7</td>
</tr>
<tr>
<td>8</td>
<td>10-12 &amp; 10-14</td>
</tr>
<tr>
<td>9</td>
<td>10-19 &amp; 10-21</td>
</tr>
<tr>
<td>10</td>
<td>10-26 &amp; 10-28</td>
</tr>
<tr>
<td>11</td>
<td>Nitrate reduction test</td>
</tr>
<tr>
<td>11-2 &amp; 11-4</td>
<td>Urea hydrolysis</td>
</tr>
<tr>
<td>12</td>
<td>11-9 &amp; 11-11</td>
</tr>
</tbody>
</table>

*Windward Community College is an equal opportunity, affirmative action institution.*
<table>
<thead>
<tr>
<th>Date</th>
<th>Activities</th>
</tr>
</thead>
</table>
| 13-11-16 & 11-18 | Intestinal pathogens, *S. aureus* ID  
Enterobacteriaceae (intestinal gram  
negatives), Staph and Strep (potentially  
pathogenic gram positives)          |
| 14-11-23   | Begin Unknowns (1) Students will work alone to solve the identities of 2 bacteria  
using the tools and media provided!  
Handouts 49 – 51                       |
| 15-11-30 & 12-2 | Unknown bacteria ID (2 & 3)  
Effects of disinfectants, antiseptics,  
antibiotics on microbial growth via Kirby  
Bauer Disk Diffusion method  
Handouts 31, 32                       |
| 16-12-7 & 12-9 | Effects of disinfectants, antiseptics, antibiotics  
Completion and Final Prepartion (no prep)  
31, 32                                 |
| 12-14-2021 | FINAL EXAM 10:00 – 12:00 pm                                                 |

*Note: The schedule of activities/day may be modified as we proceed. I will announce any changes ahead of time. Have a great semester!*