



UNIVERSITY of HAWAII®

## **WINDWARD** COMMUNITY COLLEGE

### **MICR 140L GENERAL MICROBIOLOGY LABORATORY**

2 Credits (CRN 63106)

TR, 10:00 – 11:50 am, Hale Imiloa 106

**INSTRUCTOR:** Hongwei Li  
**OFFICE:** Hale Imiloa 107  
**OFFICE HOURS:** Thursday 12:00 – 1:00 pm  
Any other time meet in-person or via Zoom by appointment  
**TELEPHONE:** (808) 236-9104  
**EMAIL:** hli@hawaii.edu  
**EFFECTIVE DATE:** Fall 2022

#### **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.

#### **Activities Required at Scheduled Times Other Than Class Times**

- Read assigned lab materials prior to class sessions.
- Write lab reports in a scientific format.

#### **Requirement course satisfies:**

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

#### **STUDENT LEARNING OUTCOMES**

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

- Operate equipment used in microbiology laboratory
- Prepare growth media
- Perform aseptic transfer
- Identify microorganisms using morphological and physiological tests

- Follow biosafety procedures
- Produce lab reports using the standard scientific format

### COURSE TASKS

- Class attendance is mandatory. **There will be no make-up labs given unless approved in advance.**
- Demonstrate knowledge and skills of basic microbiology laboratory.
- Participate in group-based projects.
- Complete exams/quizzes/homework assignments and review study guides

### ASSESSMENT TASKS AND GRADING

#### Assessments

- **Lab Participation**  
You are required to actively participate in all lab activities, and expected to work, as an individual or in groups, safely and efficiently in the laboratory. You will be graded via Laulima Weekly Engagement based on laboratory attendance, level of participation, lab work completed, Forum responses, and datasheets or assignments submitted.
- **Lab Report**  
One full laboratory report will be assigned, which should contain following sections, *Title, Introduction, Procedure, Results, and Discussion/Conclusion.*
- **Pre-lab quizzes**  
Prior to attending each lab, you will be required to go over the lab material on Laulima (e.g., lab manuals, videos, reading materials, etc.) of that lab in order to be prepared for each lab. Pre-lab quizzes are due the day before each lab session (except for Lab 1). All pre-lab quizzes are on Laulima and open book.
- **Exams**  
There are three exams (two midterms and one final) in total, and the format of exams includes Multiple Choice, Fill-in-the-blank, Matching, short answers, and hands-on practical tests. Make-up midterm exams will be permitted only when there is a legitimate excuse (such as illness or emergency; doctor's note is required).
- **Group Project**  
Students are required to work in instructor-assigned groups to do research on a selected topic, write a full lab report, and give a presentation in class.

#### Grading

Laboratory Participation (Weekly Engagement)	200	points
Lab Report	50	points
Pre-lab Quizzes	150	points
Exams (3)	300	points
Group Project	50	points
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Total	750	points

- Grading is based on the percentage of total points earned. Final Grades will be assigned as follows:

A	90 – 100%	B	80 - 89%	C	70 - 79%
D	60 - 69%	F	Below 60% of total points		

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 his or her control. It is **your 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

- Lab materials: <https://laulima.hawaii.edu/>
- Reference Lab Manuals: OER Commons (<https://www.oercommons.org/>)
  - Klamm's Microbiology Laboratory Manual (<https://www.oercommons.org/courses/klamm-s-microbiology-laboratory-manual/view>)
  - Laboratory Exercises in Microbiology: Discovering the Unseen World Through Hands-On Investigation (<https://www.oercommons.org/courses/laboratory-exercises-in-microbiology-discovering-the-unseen-world-through-hands-on-investigation>)
  - General Microbiology: BIOL 240 Lab Manual ([https://www.oercommons.org/courses/biol-240-lab-manual-final\\_2019-pdf](https://www.oercommons.org/courses/biol-240-lab-manual-final_2019-pdf))

## 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, [royinouye@hawaii.edu](mailto:royinouye@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:

Jojo Miller, Confidential Advocate  
 Phone: (808) 348-0663  
 Email: [advocate@hawaii.edu](mailto:advocate@hawaii.edu)  
 Office: Hale Kāko'o 110

Desrae Kahale, Mental Health Counselor & Confidential Resource  
 Phone: (808) 235-7393

Email: dkahale3@hawaii.edu  
Office: Hale Kāko‘o 101

Karen Cho, Deputy Title IX Coordinator  
Phone: (808) 235-7404  
Email: kcho@hawaii.edu  
Office: Hale ‘Alaka‘i 120

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/](http://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: Alakai 121  
Phone: 808-235-7422  
Email: wccaa@hawaii.edu

### LAB SCHEDULE

Date	Lab Topic
Week 1	Lab 1 Introduction and lab safety Lab 2 Compound microscope Preparing a wet mount & Phase-contrast microscopy
Week 2	Lab 3 Ubiquity of microorganisms and cultural characteristics of bacteria Lab 4 Aseptic techniques / Bacterial culture transfer
Week 3	Lab 5 Preparation of smears and simple staining Lab 6 Gram staining
Week 4	Lab 7 Capsule and endospore staining Lab 8 Acid fast staining / Lab review
Week 5	Lab 9 Preparing and dispensing media /Sterilization <b>EXAM 1 (09/22/2022, Lab 1-8)</b>
Week 6	Lab 10 Plate streaking and pure culture Lab 11 Serial dilution of bacterial culture and plating & Bacterial counts in foods
Week 7	Lab 12 Spectrophotometry and determination of bacterial growth Lab 13 Effect of oxygen, temperature and UV radiation on bacterial growth
Week 8	Lab 14 Effect of disinfectants, antiseptics and antibiotics on bacterial growth

	Lab 15 Biochemical activities of microorganisms (exoenzymes, carbohydrate fermentation, urea test, nitrate reduction test, oxidase test)
Week 9	Lab 16 Bacterial transformation / Lab review <b>EXAM 2</b> (10/20/2022, Lab 9-16)
Week 10	Lab 17 Scientific methods / Group projects Lab 18 Fungi and Protozoa
Week 11	Lab 19 Bacteria of the skin and throat Lab 20 Bacteria of the mouth /Dental caries susceptibility
Week 12	Lab 21 Bacteria of the intestinal tract Group projects & identification of unknown bacteria
Week 13	Lab 22 Enzyme-linked immunosorbent assay (ELISA) Group projects & identification of unknown bacteria
Week 14	Group projects & identification of unknown bacteria
Week 15	Group projects & identification of unknown bacteria
Week 15	Group Project Presentation <b>FINAL EXAM</b> (12/13/2022, 10:00 am - 12:00 pm, Lab 17-22)

(Please note that this schedule is subject to change)