Micro 140
General Microbiology CRN 63054
2 units Hale ʻImiloa 106
MTWR 4:00 – 6:05 pm

INSTRUCTOR:	Teena Michael PhD
OFFICE:	Hale ʻImiloa 130
OFFICE HOURS:	M 12:00 – 1:30 and other times by appointment
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EFFECTIVE DATE:	Summer 2018

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT
Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawaiʻi and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide Oʻahu's Koʻolau region 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.

COURSE SATISFIES (WCC):
- DY for AA in Liberal Arts
- Required course for CA Agripharmatech
- Elective for AS in Natural Sciences

Activities Required Other Than Class Times
- Read assigned Modules (discussion part) prior to class sessions
- Complete pre-lab assignments that both prepare your for lab and the write ups (reports) that follow
- Write lab reports in scientific format right after the module is completed (see Lab Report Outline)

STUDENT LEARNING 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, ASSESSMENTS 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, etc.), classification of microorganisms (e.g., bacteria, and fungi), aseptic culture methods (media preparation, aseptic transfers, isolation, culture maintenance, etc.), 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.

Student Responsibilities

- You should carefully review the sheet detailing the inherently dangerous activities of this course and *sign the appropriate UH Assumption of Risk and Release and Medical Consent forms.*
- You are expected to attend and prepare for all laboratory sessions and participate in all activities, working in a group, and complete all course assignments on time.
- You are expected to be prepared in advance when you arrive at class. Being prepared includes the followings: having already read text materials (e.g., lab manual: discussion part, and handouts) assigned for that day's activities and bring with you required work. Details of written pre-labs and reports will be provided and discussed at our first meeting.
- You also need to purchase a lab coat, a goggle, masks and gloves.
- The modules from the lab manual will be posted (no cost).
- Any changes in the course schedule, such as examination dates, deadlines, etc., will be announced ahead of time in class. It is your responsibility to be informed of these changes.

Assessments

- ***Laboratory Participation***

  You are required to actively participate in all lab activities, and expected to work in groups, safely and efficiently in the laboratory. You will be graded on laboratory attendance, level of participation, and performance in laboratory practices. Because of difficulties in setting up laboratory materials, some scheduled laboratory activities cannot be given an alternative assignment for making up if you miss those labs. Failure to participate in a scheduled laboratory session, or its approved make-up activity, will result in a **5 POINT DEDUCTION** for each session missed (without doctor's note or formal notification).

- ***Laboratory Reports***

  A laboratory report should contain following sections, *Title, Introduction, Procedure, Results,* and *Discussion/Conclusion*. The section *Results* may include diagrams or drawings of colony morphology (shapes, margins, elevations) on agar plates, microbial shapes through microscopic observations, bacterial growth patterns in liquid cultures, result from physiological tests. All reports are kept in a folder, must be completed after each lab session and turned in on exam days.

- ***Identification of Unknown Bacteria***
  Using methods learned in this course (e.g., colony characteristics, cellular characteristics, differential staining, features of growth and physiological reactions) to identify unknown bacteria.
- ***Microorganism Cultures***
  You will aseptically transfer and maintain cultures of bacteria using procedures learned in this laboratory course. Assessment will be based upon results of non-contaminated cultures at the end of the semester.
- ***Exams***
  There are a total of three written exams (three midterms and one final), and the format of exams includes Multiple Choice, Fill-in-the-blank, Matching and Essay. Make-up exam will be permitted only when there is a legitimate excuse (such as illness or emergency; doctor's note is required). ***No early or make-up exam for the final.***

Grading

Laboratory quizzes & participation	150 points
Cumulative lab reports with pre-labs	100
Bacteria identification (1)	50
Microorganism Cultures	50
Exams (3)	300
Total	650 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	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 his or her control. It is **your responsibility** 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 (see catalog).

LEARNING RESOURCES

Beisher, L., 1996. *Microbiology in practice*: *a self-instructional laboratory course.* 6th edition. HarperCollins Publishers, Inc., New York, New York.

Hand-outs: https://laulima.hawaii.edu/portal

DISABILITIES ACCOMMODATION STATEMENT

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 Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu, or you may stop by Hale 'Akoakoa 213 for more information.

Nondiscrimination and Affirmative Action

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Summer 2018 SCHEDULE

Date	Lab	Module/s
July 2	Introduction to Lab & Use of Balances	**1**
3	Use of Balances & Pipettes	1
4	Holiday	
5	Serological Pipettes & Media	8
9	Preparing & Dispensing Media, Ubiquity of Microorganisms	2,3, 9
10	Ubiquity of Microorganisms, Aseptic Transfer	9
11	Compound Light Microscopy Wet Mounts	4, 5
12	Compound Light Microscopy Bacterial Smears, Simple Stain	21, 22
16	Exam 1 & Lab Reports due	
17	Pour Plates	10
	Quebec Colony Counter	11
18	Gram Stain	23
19	Streaking and Cultural Characteristic of Bacteria	12, 13
23	Anaerobes & Microaerophils, Effects of Temperature	28, 29 &15
	Wine Making	
24	UV Radiation	30
25	Capsule & Endospore Stains	24, 25
26	Acid Fast Stain, Exoenzymes	27, 33
30	Exam 2 & Lab Reports Due	
31	Carbohydrate Tests, Fermentation Tubes	34
August 1	Nitrate Reduction Test, Urea Hydrolysis	35,36
2	Dental Caries Susceptibility 3-6 pipettes	53
6	Unknown Bacteria ID Day 1	56
	Intestinal Pathogens, *S. aureus* ID	49 - 51
7	Unknown Bacteria ID Day 2	56
	Effects of Disinfectants, antiseptics, antibiotics	31, 32
8	Unknown Bacteria ID Day 3	56
	Intestinal Pathogens	49 - 51
9	**FINAL EXAM 4:00 – 6:15 pm** & Lab Reports due	

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