MICRO 140 GENERAL MICROBIOLOGY LABORATORY
2 Credits
TTH, 3:30 – 5:10 pm

INSTRUCTOR: Erin Yafuso
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OFFICE: Imiloa 119
OFFICE HOURS: Thursday 2 – 3 pm (or by appointment)
TELEPHONE: 236-9107
EFFECTIVE DATE: Fall 2011

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 O‘ahu’s Ko‘olau 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 and nutrition.

WCC: AA (DY), ASC in Plant Biotechnology

Activities Required at Scheduled Times Other Than Class Times
1. Read assigned Modules prior to class sessions
2. Write lab reports in scientific format (see Lab Report Outline)

STUDENT LEARNING 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

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 attached sheet detailing the inherently dangerous activities of this course and sign the appropriate U.H. Assumption of Risk and Release and Medical Consent forms.

You are expected to attend all laboratory sessions and participate in all activities, working in groups, and complete all course assignments on time.

You are expected to be prepared in advance when you arrive at class. Being prepared includes the following: having already read text materials (e.g., lab manual: discussion part, and handouts) assigned for that day’s activities; and bringing required work materials (pen, colored pencils, lab manual). **You also need to purchase a lab coat, a goggle, masks and gloves.**

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.

HOW TO SUCCEED IN THIS CLASS

Understanding microbiology involves understanding many difficult concepts and vocabulary from many science disciplines, not just knowing facts. You should know that the details of these concepts are important. In addition, you will be introduced to hundreds of new words. In some cases, words that are familiar to you in a context other than biology will be introduced to you. However, you will need to understand and use these terms in a biological context.

You should take careful pre-lab notes and read the corresponding material in the lab manual (especially the Discussion part), and handouts. As soon as possible (best if you do it the same day), copy your notes filling in gaps and missing information by referring to the handouts and textbooks. You should carefully review these rewritten notes as often as possible.

ASSESSMENT TASKS AND GRADING
The evaluation of the student’s achievement of the course objectives will be based upon laboratory participation, the ability to do microorganism cultures, the ability to identify microorganisms, laboratory reports, and examinations as described below (see Embedded Assessment hand-out).

**Laboratory Participation**

Participation in lab activities is essential to learning research practices in a biological laboratory. Working in groups, preparing and participating, is key for learning proper laboratory work ethic. Safely is important! Learning and practicing safety at all times is vital to individual responsibility and success in a laboratory course. Missing three classes will automatically result in a 10 point deduction.

**Laboratory Reports**

Laboratory reports are important in understanding the scientific methods. Laboratory reports will include brief introduction, purpose, methods*, results and concluding remarks. Lab reports should include diagrams or drawings of colony morphology (shapes, margins, elevations) on agar plates, microbial shapes through microscopic observations, bacterial growth patterns in liquid cultures, hemolysis and chromogenesis results. Aseptic technique will also be evaluated in your lab results section and contamination will result in a 1 point automatic deduction.

*Keep lab reports in a folder, and turn in on exam days worth 25 points per collection a total of 100 points.*

**Identification of Bacterial Unknowns**

Using methods learned in this course (e.g., colony characteristics, cellular characteristics, differential staining and growth in differential), you will identify different kinds of unknown bacteria worth 30 points.

**Exams**

There are four exams worth 80 points each to assess your knowledge and understanding of previous laboratory activities and practices. * Format of exams: multiple choice, fill in the blank, and essay or short answer.

Make-up for exams are permitted for emergencies or illness accompanied with a doctor’s note and to be completed no later than two weeks of the exam date.

*There will be no make-ups for the Final Exam!!!
METHOD OF GRADING

The assignment of points will be as described by the following protocol:

<table>
<thead>
<tr>
<th>Task</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab reports (4)</td>
<td>100</td>
</tr>
<tr>
<td>Bacteria identification (1)</td>
<td>30</td>
</tr>
<tr>
<td>Examinations (4)*</td>
<td>320</td>
</tr>
<tr>
<td>Total</td>
<td>450</td>
</tr>
</tbody>
</table>

Letter grades will be assigned as follows:

- **A** - 90% or above in total points.
- **B** - 80-89% of total points.
- **C** - 70-79% of total points.
- **D** - 50-69% of total points.
- **F** - Below 55% of total points; or incomplete official withdrawal from course.
- **I** - Incomplete; given at the **INSTRUCTOR’S OPTION** when you are unable to complete a small part of the course because of circumstances beyond your control. It is your responsibility to make up 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).
- **CR** - 65% or above in total points; you must indicate the intent to take the course as **CR/NC** in writing by October 25, 2011 (see catalog).
- **NC** - Below 65% of total points; for MICRO 140, this grade is only available under the **CR/NC** option (see above and see catalog); the NC grade will not be used as an alternative grade for an “F”.
- **N** - **NOT GIVEN BY THIS INSTRUCTOR EXCEPT UNDER EXTREMELY RARE CIRCUMSTANCES** (e.g., documented serious illness or emergency that prevents you from officially withdrawing from the course); never used as an alternative for an “F” grade;
- **W** - Official withdrawal from the course is October 25, 2011 (see catalog).

Waiver of minimum level of achievement will be given only in unique situations at the instructor’s discretion. Students involved in academic dishonesty will receive an “F” grade for the course.
“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”.

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**LEARNING RESOURCES**


Hand-outs will be provided