

Windward Community College
Outline of Course Objectives
BIOL 124L (CRN 60429) Environment & Ecology Lab
Fall 2015
Thursday 1-3:45

INSTRUCTOR: Michelle Smith

EMAIL: miliefsk@hawaii.edu

OFFICE: Imiloa 136

OFFICE HOURS: MTWR 11-11:30, M 4-5

Lab Location: Imiloa 106

CREDITS: 4 (3 hours lecture); (2 hr 45 minutes lab)

INSTRUCTOR'S WEB PAGE FOR Labs: <http://www.wcc.hawaii.edu/facstaff/miliefsky-m/>

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.

DESCRIPTION

Companion laboratory class to BIOL 124, Environment and Ecology. This class, providing hands-on experiences in the laboratory and in the field, enhances the student's understanding of basic environmental science and ecological concepts presented in BIOL 124. (3 hours lab).

RECOMMENDED PREPARATION:

Ability to use a computer.

RECOMMENDED BASIC SKILL LEVELS:

Reading level of text(s): college level.

Computer: internet searches, email, excel, word, powerpoint

Activities Required at Scheduled Times Other Than Lab Times

On occasion, student will have to complete laboratories as homework.

PREREQUISITES

Prior or concurrent enrollment in BIOL 124 or consent of instructor.

Concepts or Topics

- Collecting Data, Making Measurements, Descriptive Statistics and Presenting Data
- The Properties of Water

- Environmental Factors Affecting Organisms
- Population Growth
- Soils
- Agriculture and Aquaculture
- Habitat Restoration
- Watersheds
- Water Quality Assessment
- Coral Reef Survey

Skills or Competencies

- Maintain a laboratory notebook that adequately documents laboratory and field activities
- Collect quantitative measurements and make calculations using the metric system.
- Calculate averages and standard deviations.
- Present quantitative data in the form of tables and graphs in the proper format using EXCEL.
- Draw figures illustrating observations and present these figures in the proper format.
- Write summaries of laboratory and field activities, documenting these activities and demonstrating an understanding about the significance of the results.
- Use common instruments of the biologist to make measurements and observations: rulers, scales, graduated cylinders, dissection tools, microscopes, spectrophotometers, etc.
- Use water quality instrumentation to measure the pH, oxygen concentration, salinity, conductivity, temperature, light extinction, and turbidity of the water.
- Carry out a controlled experimental study investigating how environmental factors influence living organisms
- Survey a coral reef using Reef Check Hawai'i methods.
- Describe importance of Hawaiian habitat restoration efforts.

REQUIREMENTS COURSE SATISFIES:

- This class may satisfy the Windward Community College Associate in Arts Degree and the University of Hawai'i baccalaureate diversification requirement for a Natural Sciences laboratory class (DY).
- This class may partially satisfy requirements for the Windward Community College Academic Subject Certificate in Bio-Resources and Technology, Bio-Resources Development and Management Track.
- This class may partially satisfy requirements for the University of Hawai'i Marine Option Program Certificate as a marine-related course.

COURSE GOALS

The primary goal of this laboratory/fieldtrip course is to provide the student with the hands-on experiences and skills that enhance the student's understanding basic biology and it's relationship to today's society as presented in the lecture companion course. A further goal is for the student to achieve an understanding of application of the scientific method in understanding the study of the oceans.

LEARNING RESOURCES

No textbook will be used in this laboratory course. Descriptions of laboratory assignments and activities will be made available as downloadable files at the course website:

www.wcc.hawaii.edu/facstaff/miliefsky-m/

- 3-ring (3inch) binder for handouts describing specific laboratory/field activities and assignments
- Field book
- Access to a computer

STUDENT LEARNING OUTCOMES

The student learning outcomes for the laboratory are:

1. Use the scientific method of inquiry to investigate environmental phenomena.
2. Apply the concepts learned in BIOL 124 to an experimental and hands-on observational setting.
3. Collect, reduce, and interpret biological data.
4. Prepare written objective reports describing and interpreting experimental and observational results.
5. Demonstrate the use of some of the standard tools of the environmental scientist, such as microscopes, scales, spectrophotometers, various environmental meters, and basic statistical procedures.
6. Apply the standard analytical procedures needed to study the environment, such as soil analyses, water quality determinations, stream bioassessments, and quantitative resource inventories.
7. Conduct experiments that evaluate how environmental factors affect living organisms.

There will be no lab make-ups.

COURSE OBJECTIVES

The student will demonstrate the acquisition of basic laboratory and field research skills and knowledge relevant to biology and society. These skills and knowledge include the following areas:

- the scientific method of inquiry, providing examples of its use, and demonstrating this method through written reports and summaries of class laboratory activities;
- the collection, reduction, interpretation, and presentation of scientific data in the form of laboratory/field reports and summaries;
- the use of some of the standard tools of the scientist, such as microscopes, computers, and other analytical tools;
- integration of basic biological principles with the techniques learned by completing specific assignments.

MODE OF INSTRUCTION

The previously described objectives will be achieved through the aid of the following learning activities:

- Active participation in laboratory and field activities;
- Laboratory lecture and demonstrations;
- Multimedia presentations;
- Internet-assisted activities and assignments;
- Data collection using instruments and measurement tools;
- Computer-assisted data collection activities;
- Recording and interpreting results from laboratory and field activities;
- Written reports and/or summaries of laboratory activities;
- Homework assignments

ASSESSMENT TASKS AND GRADING

Your grade will be based on your attendance, participation and performance on the laboratory assignments given throughout the semester. Each lab is a reflection on what is covered in lecture. Labs are due one week after activity date.

ATTENDANCE (5%): Attendance is mandatory. Be aware that since this is the only BIOL 101 lab it will be impossible to make up a lab with another instructor. Each unexcused absence will result in a deduction of 0.5%.

PARTICIPATION (5%):

This includes participating in all laboratory and field activities and working cooperatively within your group. You are also responsible for assisting in loading equipment, caring for equipment and cleaning up the lab or after a field activity. In addition, you will be responsible for printing out all handouts and bringing them with you to lab.

PRE-Lab QUIZ (10%)

A pre-lab quiz will be given at the beginning of each lab, except when there is a field trip, in order to ascertain your preparation in reading for that day's lab assignment.

ASSIGNMENTS (80%): Each lab or field activity will have a writing assignment that will need to be turned in the following class time. Each day it is late there will be a deduction of 5 points off the total grade of the assignment. The latest I will accept it will be the next lab time.

Grading:

Attendance	5%
Participation	5%
Pre-lab Quiz	10%
Assignments	80%
	<hr/>
	100%

A ----- 90% or above in total points

B ----- 80-89% of total points

C ----- 65-79% of total points

D ----- 55-64% of total points

F ----- Below 55% of total points; also informal or incomplete official withdrawal from course.

STUDENT RESPONSIBILITIES

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

Students are expected to participate in all laboratory and field activities and complete all course assignments on time.

Students are expected to be prepared in advance when they arrive to class. Being prepared includes the following: having already read text materials (e.g., textbook readings and handouts) assigned for that day's activities, bringing required work materials (e.g., lab notebook, textbook, handouts, writing supplies, etc.), and having completed any assigned pre-lab tasks; it also includes appropriate dress for field activities such as Waihe'e Tunnel or Fishpond studies (rain or shine).

Any changes in the course schedule, such as examination dates, deadlines, etc., will be announced ahead of time in class. It is the student's responsibility to be informed of these changes.

It is also the student's responsibility to be informed about deadlines critical to making registration changes (e.g., last day of erase period and last day for making an official withdrawal).

Other reading assignments may be found on reserve in the library or may be provided in class.

The student should understand that BIOL 124L is a challenging course. Thus BIOL 124L requires much time and serious dedication.

ADDITIONAL INFORMATION

- If you are a minor, please advise the instructor. Grades or any other personal information on the education performance of a minor will not be distributed to parents or legal guardians without the student's consent/presence.
- If the instructor's office hours do not work with your schedule, please e-mail or call to set up an appointment.
- This schedule and activities in this course are subject to change.
- "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."

UH POLICY ON EMAIL COMMUNICATION

The electronic **communications policy** adopted in December 2005 establishes the University of Hawai'i **Internet service** as an official medium for communication among students, faculty, **and staff**. Every member of the system has a hawaii.edu address, and the **associated username** and password provide access to essential Web announcements and email. You are hereby informed of the need to regularly log in to UH email and **Web services** for announcements and personal mail. Failing to do so will **mean missing** critical information from academic and program advisors, instructors, **registration** and business office staff, classmates, student organizations, **and others**.

This Syllabus is subject to change, when appropriate.

LABORATORY AND FIELD ACTIVITIES

Students enrolled in BIOL 124L are advised that certain required course activities are inherently dangerous and may require normal physical abilities. Students are therefore required to read about the inherently dangerous activities described below. In addition, students must read and demonstrate knowledge of their responsibilities while engaged in these activities.

Some students may have physical conditions that restrict their participation in certain laboratory activities. Respiratory ailments, certain allergies, and pregnancy may be among these conditions. Students exhibiting any of these conditions, or any other condition that may be impacted adversely by participation in the activity, should consult a physician.

INHERENTLY DANGEROUS ACTIVITIES

Students in the science laboratory may be exposed to chemicals (e.g., formaldehyde, organic solvents, acids, and other caustic chemicals), chemical fumes, laboratory equipment and supplies (e.g., scalpels, razor blades, glass slides, coverslips, and electrical equipment), toxic or irritating properties of living and dead animals and other materials necessary to laboratory activities of this or other laboratory classes. Other possible hazards include broken glass on the floor or counters, combustible materials (e.g., bunsen burner gas), and slippery spills.

During field activities students face risks such as accidents while in route to and from field destinations, falling out of boats, slipping on wet surfaces, stepping on sharp objects, large waves, strong currents, and dangerous marine life.

RESPONSIBILITIES OF STUDENTS IN THE LABORATORY

1. Students should be familiar with safety procedures and take appropriate precautions at all times to insure the safety of every student in the lab.
2. Students should follow instructions carefully, especially when hazardous conditions occur or hazardous materials are being used.
3. Students should locate the placement of safety equipment and supplies in the laboratory: safety shower, eye wash station, fire extinguisher, and first aid kit. Students should understand the use of this equipment. Also note the locations of exits.
4. Anyone injured in the lab, should inform the instructor immediately and take immediate action to reduce the risk of further injury.
5. Students should familiarize themselves with the fire procedures. Extinguish small fires, but leave the building immediately should a major fire occur. Notify the appropriate authorities -- don't assume someone else remembered to do it. Meet

- with other students and your instructor outside the building before leaving so that an accurate headcount may be made.
6. Students should dress appropriately in the lab. Students may elect to supply their own gloves and protective aprons or laboratory coats. Some lab activities may require protective eyewear (provided for the activity by WCC).
 7. Students should report all hazardous conditions to the instructor immediately.
 8. Chemicals may be poisonous, corrosive, or flammable. No chemicals, even chemicals known to be safe, should be ingested, inhaled, or touched unless specifically directed to do so by your instructor.
 9. All organisms, living or dead, should be treated with care and respect. Avoid direct handling when possible.
 10. The safe use of specific equipment and tools (e.g., microscopes, slides, scalpels, and pipettes) will be demonstrated by the instructor during the laboratory sessions. Students should be sure they understand this usage.
 11. Students should clean up any supplies used and should return materials where they belong as instructed. Any material spilled should be cleaned appropriately. Report any hazardous spills or breakages.
 12. Broken glass and sharp metal waste should be placed only in those receptacles marked for such disposal -- do not put these materials in normal trash receptacles.
 13. Some chemical wastes may not be dumped into laboratory sinks. In such circumstances an appropriate container will be provided for this waste in the lab.
 14. Organic waste resulting from animal dissection activities should be disposed of in the appropriate receptacle, not the ordinary trash receptacles.
 15. After completing laboratory activities and clean up, students should wash their hands in the restroom to avoid spreading contamination and hazardous chemicals.
 17. The laboratory is a place for learning. Therefore, eating, drinking, and playing around is prohibited during the laboratory session. Students exhibiting unsafe or inappropriate behavior in the lab may be asked to leave and may be given an "F" grade for the course.

RESPONSIBILITIES OF STUDENTS IN THE FIELD

1. Field excursions may involve carpooling to field destinations. Drivers are expected to have valid Hawaii driver's licenses, drive safely, and follow all traffic laws. Passengers should not disturb drivers.

2. When in the field, students should use the buddy system. Partners should have comparable physical skills and should keep track of each other at all times.
3. Students should wear clothing appropriate for the activity and should anticipate all possible weather conditions. Land/shoreline activities require loose-fitting clothing that protects the extremities from sunlight and abrasions (note that this clothing may get wet). Footwear should allow stable walking on rough and/or slippery surfaces (slippers are not acceptable footwear). A hat and sunglasses are also highly recommended. For water activities, a wet suit, or long pants and sleeves, worn over swim suits, are recommended. Gloves and protective footwear are essential. Students should apply sunscreen to all exposed skin areas.
4. When looking under rocks or ledges, students should be prepared for encounters with dangerous marine animals, such as eels, lionfish, and sea urchins. Unless specifically instructed to do so, students should not touch any marine organism.
5. Students should familiarize themselves with potential hazards in an area before beginning an activity. Watch for large waves and dangerous currents. If conditions should become dangerous after the activity starts (e.g., waves pick up or dangerous marine life enters the area), the student should leave the area immediately. Students should inform the instructor immediately when dangerous conditions arise. A student should never feel compelled to do an activity that seems hazardous. A student should refuse to carry out an activity that exceeds his or her physical capabilities.
6. Anyone injured in the field, should inform the instructor immediately and take immediate action to reduce the risk of further injury. Before an activity begins, students will be informed of the location of the first aid kit (which will be taken on every excursion).
7. No one should operate a power boat without specific training. While in power boats, students should remain seated at all times. No power boat should be used without proper safety gear (i.e., first aid kit, life vests, oars, anchor, flares and other essential gear).
8. Consumption of alcoholic beverages is prohibited during any class activity, including field activities.