

Botany 130 lecture/lab
Plants in the an Environment CRN 61100

4 units Hale 'Imiloa 101

MW 2:30 – 5:00 pm

INSTRUCTOR: Teena Michael PhD
OFFICE: Hale 'Imiloa 130
OFFICE HOURS: M & W 9:45 to 10:45 in Hale `Imiloa 101
and other times by appointment
TELEPHONE: (808) 236-9116 **EMAIL: teena@.hawaii.edu
EFFECTIVE DATE: Spring 2016

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawaii 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

Introduction to the evolution of plant communities and species of Hawaiian ecosystems; ecological interactions; observations, identification and systematics of native and introduced flora. Lecture/laboratory/field trip course. (3 hours lecture, 3 hours laboratory).

Activities Required at Scheduled Times Other than Class Times

- Class field trips and Saturday morning field trips (each field trip replaces one regular lab/class) will be offered and you will need to write reports on 5 total
- Preparation for class! Read assigned chapters or hand outs before class
- Form groups and develop projects based on your interests.

REQUIREMENT COURSE SATISFIES:

AT WCC: (<http://windward..edu/Courses/BOT130/>)

- [Associate in Arts - Biological Sciences \(DB\)](#)
- [Associate in Arts - Natural Sciences Lab \(DY\)](#)
- CA Agripharmatech: Ethnopharmacognosy (Elective)
(http://windward..edu/Academics/Agripharmatech_CA/)

STUDENT LEARNING OUTCOMES

The student learning outcomes for the course are:

- 1) Discuss geological history of the Islands and natural history of plants in Hawaii.
- 2) Discuss the arrival, establishment, major evolutionary trends and adaptive radiation of some of the surviving native species.
- 3) Discuss natural and human-mediated changes in the ecosystems, plant succession, and interaction between native and introduced species of plants.
- 4) Discuss botanical terminology for use in identifying native plants.

COURSE CONTENT

Concepts or Topics

- Discuss groups of plants associated with coastal and dry to wet forest habitats in ; learn about various locations throughout the islands where relicts of these plant communities are still preserved
- Learn about basic plant anatomy including functions of structures and their adaptive ecological evolution
- Evolution in ecosystems: involving the role of volcanism, dispersal, plant-animal interactions and variations of rainfall (climate)
- Discuss techniques used to investigate prehistoric plant communities and the role of humans and the organisms they introduced in altering the landscape (in both the past and present-day)

Skills or Competencies

1. Given background knowledge of a plant specimen's origin, growth habit and other defining characteristics, *be able to identify its scientific and Hawaiian names.*
2. Use basic taxonomic characters to *differentiate between related species & genera.*
3. Be able to identify locations in the Hawaiian Islands where various native plant communities are still relatively intact.
4. Understand the role of the Pacific trade winds in shaping the distribution of plant communities in .

COURSE TASKS

Our class will incorporate presentations, discussion, videos, field trips, guest speaker(s), projects and presentations with service learning as an option.

Field Trips

Our field trips will be during class and specified Saturdays throughout the semester and are designed to enhance your learning of plants that are found in distinct Hawaiian environments. Field trip exercises will be developed for each excursion that will give focus to the specific environments and the plants as well as their ecological and evolutionary interactions/roles. I highly recommend you bring a cell phone or camera to capture images and video.

Attendance and participation during class and field trips is essential for learning Native plants.

Transportation to field trips is the responsibility of the student.

Projects

Student projects are part of our course and will be discussed in class. I encourage you to come to class with ideas on what you want to master and we will discuss projects right away. I encourage you to create photographs and/or movies that you can use in the presentation of your projects.

- 1) Lobeloid, Silversword, Ohia species or other endemic an Plant
 - What are the family characteristics of the species you choose?
 - What characterizes the plant in terms of its vegetative and reproductive characters?
 - Who or what pollinates you plant?
 - How have (and/or do) an people use the plant?
- 2) Add information on the an Ecosystem for your plant. Or use this topic for your final project. You will present two projects!
 - What are the basic geology and environmental characteristics of the ecosystem?
- 3) Final Group Project

ASSESSMENT TASKS AND GRADING

Class presentations, movies, group exercises, field trips and worksheets will be resources for you to succeed on the exams.

Worksheets in the style of the exams will be added along with presentations to Laulima (Resources).

Add your work to Drop Box of Laulima.

Make-up for exams is permitted for emergencies or illness accompanied with a doctor's note; and must be completed within one week of the scheduled exam date. *There are no make-ups for the Final Exam!*

Grades

Exam 1	100 points
Exam 2	100
Final Exam	125
Field trips	100
Project 1 Native species & ecosystem	25
Project 2 Final Project	25
Exercises & Movie Reflections	100
<u>Herbarium 10 Species</u>	<u>50</u>
	625 points

Service Learning

I encourage you to *volunteer* at a Restoration site as part of Service Learning. Full participation (20 hours/semester) will result in an A grade for one exam (but you must take the exam and earn a C or better) as well as an opportunity to apply theory to practice and contribute to the perpetuation of the sites and all associated with it.

Each Service Learning activity *can count as one of your 5 required field trips. Activities that I propose are on Saturdays. There are other options—see me.

See calendar on the following site for options. Some are included in our syllabus.

<http://servicelearning.socialsciences.edu/pages/mina.html>

Grading

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), given at the INSTRUCTOR'S DISCRETION 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 from "I" to the contingency grade identified by the instructor (see catalog).

CR (credit), 60% or above in total points. See catalog for specifics and calendar for dates. NC (no credit) will be assigned for a grade below 60% of total points. The NC grade will not be used as an alternative grade for an "F". Last day to withdraw with "W" grade is March 29, 2016.

LEARNING RESOURCES

Carlquist, S.J. 1970 - 1980 editions. : A Natural History. Pacific Tropical Botanical Garden.

White, I. 2013. Ethnopharmacognosy Series 4: Pharmaceutical and Nutraceutical Values of Spanish Needle - Plant Based Products and Recipes. University of Hawaii - Windward Community College.

Additional Texts/Resources

Harrington, H.D. How to Identify Plants. Ohio University Press.Lincoln, N. K. 2009.

Amy Greenwell Garden Ethnobotanical Guide To Native Hawaiian Plants.

Sohmer, S.H. & R. Gustafson. 1987 or 1996. Plants and Flowers of . University of Press.

Gustafson, R., Herbst, D. & P. Rundel. 2014. Hawaiian Plant Life: Vegetation and Flora. . University of Hawaii Press.

Mueller-Dombois, D., Jacobi, J., Boehmer H. & J. Price. Ohi'a Lehua Rainforest; Born Among Hawaiian Volcanoes, Evolved in Isolation. 2012. University of Press.

Websites (not a comprehensive list!)

<http://www.botany.edu/faculty/carr/natives.htm>

<http://www.Hawaiiannativeplants.com/>

<http://nativeplants.edu/>

<http://www.honolulumagazine.com/Honolulu-Magazine/February-2012/The-First-Hawaiians-Native-Plants/>

<http://wildlifeof.com/flowers/>

- SEE PARTICULARLY NATIVE PLANTS AND FAMILIES

- <http://wildlifeof.com/flowers/category/native-status/native-plants/>

- <http://wildlifeof.com/flowers/category/plant-family/>

<http://www.to-com/oahu/gardens/hoomaluhia botanicalgardens.php>

<http://www1.honolulu.gov/parks/hbg/kcbg.htm>

<http://www1.honolulu.gov/parks/hbg/>

<http://www.marinelifephotography.com/flowers/flowers.htm>

<http://www.bishopmuseum.org/podcasts/>

<http://servicelearning.socialsciences.hawaii.edu/adoptdetails.html>

Additional Information

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 to succeed in this class. Ann Lemke can be reached at 235-7448, lemke@.edu, or you may stop by Hale 'Akoakoa 213 for more information.

Nondiscrimination and Affirmative Action

The University of Hawaii is committed to a policy of non-discrimination on the basis of race, sex, age, religion, color, national origin, ancestry, disability, marital status, arrest and court record, sexual orientation, or veteran status in all of its programs, policies, procedures, or practices.

This policy covers admission and access to, participation, treatment and employment in University program and activities.

Spring 2016 Botany 130 Lecture/Lab SCHEDULE

Date	Lecture Topic	Textbook Chapter(s)
Jan 11	Introduction to Plants & Environments & Class! http://pbslearningmedia.org/resource/ess05.sci.ess.earthsys./plate-tectonics-the-hawai699ian-archipelago/	
	Plant Identification What are characters that we use to identify plants?	
13	Plants & Environments Evolution <i>and</i> Plant Basics <i>What is the Hawaiian environment?</i> Plant Organs—Characters for identification Collect & Classify	1 pp. 1-63
18	HOLIDAY	
20	<i>Plant Basics and what is the Hawaiian environment?</i> ON CAMPUS FIELD/Garden Work	1 pp. 1-63
25	<i>What is the Hawaiian environment?</i> Botany Tissues & Organs, Form & Function. Geology of the Hawaiian Islands http://pbslearningmedia.org/resource/ess05.sci.ess.earthsys.dateflows/dating-lava-flows-on-mauna-loa-volcano-hawai699i/ Movie: Rivers of Fire	
27	<i>What is an environment?</i> Climate of the Hawaiian Islands http://pbslearningmedia.org/resource/ess05.sci.ess.earthsys.newland/how-did-life-emerge-here/ SPORE PLANTS & Evolution https://www.youtube.com/watch?v=sPXqB_qx5OE	2 pp. 63-80
Feb 1	Field Trip Hawaiian Ferns Nursery http://www.greenmagazinehawaii.com/outdoor_v2-3.html	
3&8	<i>Geology and Climate (see pages above)</i> <i>What are Hawaiian biological phenomena?</i> Problems with Island Existence http://pbslearningmedia.org/resource/fdeb580d-5b77-4f73-bff1-3f9a8494044d/life-on-fire-fauna-and-volcanoes/ Movie: Crucible of Life	3 – 4 pp. 81-122
10	<i>What are Hawaiian biological phenomena?</i> Adaptations to Island Environment	3 – 4 pp. 81-121
15	HOLIDAY	
17	EXAM 1	
20	Saturday Option: Ho'oulu 'Aina, Kalihi Valley Nature Preserve u/Kokua Kalihi Valley	
22	<i>What are Hawaiian biological phenomena?</i> Evolution Movie: Islands Within Islands Within Islands Plant Identification	5 – 6 pp. 122-156 163-179
24	Native Plant/Ecosystem Presentations Day 1	
29	Field Trip Hui Ku Maoli Ola Kaneohe Native Plant Nursery	
March 2	Introduction to Ecosystems, Communities & Geographic Zones Plant Identification	
5	Saturday Option: Halawa	

7	Native Plant/Ecosystem Presentations Day 2	
9	Ecosystems & Plant Identification & Evolution	
14	Coastal Strand & Dry Forest Movie: Living Jewels	pp. 267-300
16	Dry Forest & Shrubland *Lowland Ecosystems Movies: Saving Kahuku & Water of Life Plant Identification	15 pp. 275-300
19	Saturday Option: Nā Pōhaku o Hauwahine	
21&23	HOLIDAY	
28	Mesic & Wet Coastal Forest, Mixed Mesic & Montane Movie: The Rain Follows the Forest <i>**Last Day to Withdraw with a W 29 March!</i>	16 – 17 pp. 300-345
30	Alpine & Bogs Movies: Mauna Kea: Temple Under Siege & First Light Mauna Kea	18 – 19 pp. 345-374
April 4	EXAM 2	
6	NĀ PŌHAKU O HAUWAHINE http://www.ahahui.net/PROGRAMS/NaPohaku.html	
11	Conservation	
13	Pu'u Ma'eli'eli Kaneohe Pill Box	
18	Plant Identification & Herbarium	
20	Class Cancelled for Saturday field trip 4-23-16	
23	Saturday Double Field trip Koko Crater Botanical Garden AND Sandy Beach	
25	<i>Field Trip Na Pohaku OR</i> Plant Identification & Herbarium	
27	Alteration of Native an Vegetation Movies: People of the land & Miconia threatens Maui	Handouts
30	Ohia Forest Cohorts, Regeneration & Activism Group Projects	
May 2	Group Projects	
4	Group Projects (Individual and Group) (Northwest `ian Islands and Marine Ecosystems) & Pa'ina	
11	FINAL EXAM 2:30-4:30	

Note: The order of the topics will remain although the schedule may be modified as we proceed. I will announce any changes ahead of time. Field trip destinations may be modified as we proceed!

***For addition Service Learning Options (Saturday Options) we are welcome to be part of University of Hawai'i at Mānoa College of Social Science Program for Civic Engagement.*

See the site with schedule for each month:

<http://servicelearning.socialsciences.hawaii.edu/adoptdetails.html>

Have a great semester!