

Botany 130 lecture/lab
Plants in the Hawaiian Environment CRN 60257

4 units Hale 'Imiloa 101

MW 4:00 – 6:30 pm

INSTRUCTOR: Teena Michael PhD
OFFICE: Hale 'Imiloa 107
OFFICE HOURS: Friday 9:00 to 10:30 pm
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EFFECTIVE DATE: Spring 2014

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

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

- Saturday morning field trips (each field trip replaces one regular lab/class)
- Preparation for class! Read assigned chapters or hand outs before class
- Form groups and develop projects based on your interests.

STUDENT LEARNING OUTCOMES

The student learning outcomes for the course are:

- 1) Discuss geological history of the Hawaiian Islands and natural history of plants in Hawai'i.
- 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 Hawaiian plants.

COURSE CONTENT

Concepts or Topics

- Discuss groups of plants associated with coastal and dry to wet forest habitats in Hawaii; 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 Hawaiian ecosystems: involving the role of volcanism, dispersal, plant-animal interactions and variations of rainfall (climate)
- Discuss techniques used to investigate prehistoric Hawaiian 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 Hawaii.

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 on specified Saturdays throughout the semester and are designed to enhance your learning of Hawaiian 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.

Attendance and participation during class and field trips is essential for learning Native Hawaiian 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 really 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) Group project
- 2) Lobeloid or Silversword species
- 3) Craft or food Pa'ina

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 Lualima (Resources).

Add your work to Drop Box of Lualima.

GoogleDrive will be set up as an option for our class and your information on Hawaiian species and plant families can be added to this as a form of cooperative learning. I encourage you to work together in the field and the class—just not on the exams.

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 (cumulative)	125
Field trips	100
Project 1 Native Endemic	15
Project 2 Group	50
Project 3 Pa'ina	10
Movie Reflections	50
<i>Plant Species</i>	
PPT/Herbarium 50 Species	100
<u>Quizzes/Exercises</u>	<u>50</u>
	700 points

Service Learning

I encourage you to *volunteer* at a Hawaiian/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. I will announce options early in our semester.

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 20, 2014.

LEARNING RESOURCES

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

Additional Texts

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 Hawaii. Plants and Flowers of Hawaii. University of Hawai'i Press.

Websites (not comprehensive)

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

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

<http://nativeplants.hawaii.edu/>

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

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

- SEE PARTICULARLY NATIVE PLANTS AND FAMILIES

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

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

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

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

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

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

Additional Information

Nondiscrimination and Affirmative Action

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.

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 2014 Botany 130 Lecture/Lab SCHEDULE

Date	Lecture Topic	Textbook Chapter(s)
Jan 13	Introduction Plants & Environments DNA, Phenotype & Evolution http://hawaii.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.hawaii/plate-tectonics-the-hawai699ian-archipelago/ Movie: How the Earth Was Made Plant Organs—Characters for identification (1) Collect & Classify	
15	<i>What is the Hawaiian environment?</i> Geology of the Hawaiian Islands Plant Organs—Characters for identification (2) Movie: Rivers of Fire http://hawaii.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.dateflows/dating-lava-flows-on-mauna-loa-volcano-hawai699i/	1 pp. 1-62
20	HOLIDAY	
22	<i>What is the Hawaiian environment?</i> Climate of the Hawaiian Islands http://hawaii.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.newland/how-did-life-emerge-here/ http://hawaii.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.dateflows/dating-lava-flows-on-mauna-loa-volcano-hawai699i/ Plant Identification (1)	2 pp. 64-81
27	<i>What are Hawaiian biological phenomena?</i> Dispersal to Island Environment http://hawaii.pbslearningmedia.org/resource/fdeb580d-5b77-4f73-bff1-3f9a8494044d/life-on-fire-fauna-and-volcanoes/ Movie: Strangers in Paradise Plant Identification (2)	3 – 4 pp. 81-121
29	<i>What are Hawaiian biological phenomena?</i> Problems with Island Existence Movie: Islands Within Islands Within Islands.	3 – 4 pp. 81-121
Feb 3	EXAM 1	
5	<i>What are Hawaiian biological phenomena?</i> Adaptations to Island Environment Movie: Adaptative Radiation of the Silversword Alliance	5 – 6 pp. 122-156
10	NO CLASS → Saturday Field Trip	
12	Loss of Dispensability & Competitiveness in Hawaiian Plants	5 – 6 pp. 163-179
15 Sat	Hoomaluhia Native Plants Field trip	
17	HOLIDAY	
19	Native Plant Presentations and Invasive species	
24	Introduction to Ecosystems, Communities & Geographic Zones	

	Movie: Succession on Lava	
26	Coastal Strand	14 pp. 267-300
	Movie: Living Jewels	
29 Sat	Field Trip Makapu'u & 'Davis' Beach	
March 3	Exam 2	
5	NO CLASS → Saturday Field Trip	
10	Dry Forest & Shrubland *Lowland Ecosystems Movies: Saving Kahuku & Water of Life	15 pp. 275-300
12	NO CLASS → Saturday Field Trip	
14 Sat	Field Trip Field Trip Koko Crater	
17	Mesic & Wet Coastal Forest, Mixed Mesic & Montane	16 – 17 pp. 300-345
19	NO CLASS → Saturday Field Trip	
22	Field Trip TBD	
24 & 26	HOLIDAY	
31	Alpine & Bogs Movies: Mauna Kea: Temple Under Siege & First Light Mauna Kea	18 – 19 pp. 345-374
April 2	Guest Speaker TBA	
7	Alteration of Native Hawaiian Vegetation Movies: People of the land & Miconia threatens Maui	Handouts
9	Conservation in Hawaii	
14	NO CLASS → Saturday Field Trip	
16	The Northwest Hawaiian Islands & Plants in Marine Ecosystems	
19 Sat	Field trip Hui Kū Maoli Ola & Ho'omaluhia Botanical Gardens or TBA	
21	PLANT ID Practice	
23	PLANT ID Presentations	
28	Group Projects	
30	Group Projects	
May 5	Group Projects	
7	Final Review & Pa'ina	
12	FINAL EXAM 4:00-6:00	

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!

Have a great semester!