Botany 130 lecture/lab
Plants in the Hawai'ian Environment CRN 63163
4 units Hale 'Imiloa 101
MW 8:30 – 11:00 am

INSTRUCTOR: Teena Michael PhD
OFFICE: Hale 'Imiloa 107
OFFICE HOURS: T & R 2:00 to 3:30, 4:00 to 5:30 and by appointment
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EFFECTIVE DATE: Spring 2015

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 Hawai'ians, 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 Hawai'ian 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.

REQUIREMENT COURSE SATISFIES:

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

- Associate in Arts - Biological Sciences (DB)
- Associate in Arts - Natural Sciences Lab (DY)
- CA Agripharmatech: Ethnopharmacognosy (Elective)
  (http://windward.hawaii.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 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 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 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 Hawai'ian names*.

2. Use basic taxonomic characters to *differentiate between related species & genera*.

3. Be able to identify locations in the Hawai'ian 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 plants that are found in distinct Hawai'ian 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 Hawai'ian Plant (15 points)
   - 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) Hawai'ian people use the plant?
2) An Hawai'ian Ecosystem
   - What are the basic geology and environmental characteristics of the ecosystem?
   - What are 3 (or more) plants that you would find there?
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 Endemic	20
Project 2 Ecosystem	20
Project 3 Final Project	35
Exercises & Movie Reflections	75
Herbarium 20 Species	100
	675 points

Service Learning
I encourage you to *volunteer* at a Hawai'ian/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.
http://servicelearning.socialsciences.hawaii.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 31, 2015.

LEARNING RESOURCES

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

Additional Texts/Resources

Lincoln, N. K. 2009. Amy Greenwell Garden Ethnobotanical Guide To Native Hawai'ian Plants.

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

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

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

Websites (not a comprehensive list!)

http://www.botany.hawaii.edu/faculty/carr/natives.htm
http://www.Hawai'iannativeplants.com/
http://nativeplants.hawaii.edu/
http://www.honolulumagazine.com/Honolulu-Magazine/February-2012/The-First-Hawai'ians-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/hoomaluhiabotanicalgardens.php
http://www1.honolulu.gov/parks/hbg/kcbg.htm
http://www1.honolulu.gov/parks/hbg/
http://www.marinelifephotography.com/flowers/flowers.htm

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 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

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 2015 Botany 130 Lecture/Lab SCHEDULE

Date	Lecture Topic	Textbook Chapter(s)
Jan 12	Introduction to Plants & Environments & Class!	
	http://hawaii.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.hawaii/plate-tectonics-the-hawai699ian-archipelago/ Plant Identification (1)	
14	Plants & Environments DNA, Phenotype & Evolution *What is the Hawai'ian environment?* Movie: How the Earth Was Made Plant Organs—Characters for identification (1) Collect & Classify	1 pp. 1-63
19	HOLIDAY	
21	*What is the Hawai'ian environment?* Geology of the Hawai'ian Islands Movie: Rivers of Fire http://hawaii.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.dateflows/dating-lava-flows-on-mauna-loa-volcano-hawai699i/ Plant Organs—Characters for identification (2)	1 pp. 1-63
26	*What is the Hawai'ian environment?* Climate of the Hawai'ian Islands	2 pp. 63-80
	http://hawaii.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.newland/how-did-life-emerge-here/ Plant Identification (2)	
28 & Feb 2	*What are Hawai'ian biological phenomena?* Dispersal to Island Environment	3 – 4 pp. 81-122
	http://hawaii.pbslearningmedia.org/resource/fdeb580d-5b77-4f73-bff1-3f9a8494044d/life-on-fire-fauna-and-volcanoes/ Movie: Strangers in Paradise Plant Identification (3)	
Feb 4	*What are Hawai'ian biological phenomena?* Problems with Island Existence	3 – 4 pp. 81-121
	Movie: Islands Within Islands Within Islands.	
9	***EXAM 1***	
11	*What are Hawai'ian biological phenomena?* Adaptations to Island Environment Native Plant Presentations Day 1 Movie: Adaptative Radiation of the Silversword Alliance Plant Identification (4)	5 – 6 pp. 122-156
16	HOLIDAY	
18	*What are Hawai'ian biological phenomena?* Arborescence in Hawai'ian Plants Native Plant Presentations Day 2	
23	Loss of Dispensability & Competitiveness in Hawai'ian Plants Plant Identification (5)	5 – 6 pp. 163-179
25	Hoomaluhia Native Plants Field trip	
March 2	Introduction to Ecosystems, Communities & Geographic Zones	14-19
4	Coastal Strand	14 pp. 267-300
	Movie: Living Jewels	

9	Field Trip Makapu'u & 'Davis' Beach OR no class and 14 March Field Trip	
11	Exam 2	
16	Dry Forest & Shrubland *Lowland Ecosystems Movies: Saving Kahuku & Water of Life Plant Identification (6)	15 pp. 275-300
18	Field Trip Field Trip Koko Crater OR no class and 21 March Field Trip	
23 & 25	HOLIDAY	
30	Mesic & Wet Coastal Forest, Mixed Mesic & Montane Plant Identification (6) Native Plant Presentations Day 1	16 – 17 pp. 300-345
April 1	Ecosystem Plant Presentations Day 2	
6	Alpine & Bogs Movies: Mauna Kea: Temple Under Siege & First Light Mauna Kea	18 – 19 pp. 345-374
8	*Guest Speaker TBA*	
13	Alteration of Native Hawai'ian Vegetation Movies: People of the land & Miconia threatens Maui	Handouts
15	Conservation in Hawaii	
20	Field trip Na Pohaku & Ho'omaluhia Botanical Gardens or TBA	
22	The Northwest Hawai'ian Islands & Plants in Marine Ecosystems	
27	PLANT ID Lab	
29	Group Projects	
May 4	Group Projects	
6	Final Review & Pa'ina	
13	**FINAL EXAM 8:30-10:30**	

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!

Have a great semester!