BOT 205 Ethnobotanical Pharmacognosy

04

M,W 10:00 am – 12:30 pm (60127)

INSTRUCTOR: Ingelia White Ph.D.
OFFICE: Imiloa 102
OFFICE HOURS: M,W 9:00 am – 10:00 am or by appointment
TELEPHONE: 236 - 9102
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

A study of medicinal plants of Hawaii and their characteristics, plant extraction, isolation and identification of their chemical constituents for possible uses in pharmaceuticals or in their natural state; and bioproduct manufacturing. This course is designed to train students for careers in plant and medical biotechnology. Lecture and laboratory/field work course (3 hrs. lect.; 3 hrs. lab.).

REQUIREMENT COURSE SATISFIES:

AT WCC:

- AA Lib Arts (DB, DY)
- Certificate of Achievement in Agripharmatech: Ethnopharmacognosy

AT UHM:

- Bachelor of Science Degree Program in Plant and Environmental Biotechnology. Accepted as an elective for the following specializations: Plant Biotechnology, General Biotechnology, and Environmental - Microbial Biotechnology.

Activities Required Other Than Class Times:

Preparing home assignments, conducting lab/field observations, collecting data and writing lab reports.

STUDENT LEARNING OUTCOMES

1. Discuss theories and principles in the study of medicinal and nutritious plants
2. Discuss ethics, intellectual property rights and conservation of traditional knowledge
3. Perform Laboratory activities: plant extraction, distillation, bioassay tests, chemical analysis for possible uses in nutraceutical products
4. Produce lab reports using the standard scientific format

COURSE CONTENT

COURSE GOALS:

Upon completion of this course, you should have basic understanding and technical competency in identifying medicinal plants, analyzing their pharmaceutical and nutritional values; and manufacturing plant-based products.

COURSE OBJECTIVES:

You will demonstrate knowledge and understanding of theories and concepts of diet-health care and diseases, ethics and researcher behavior, intellectual property rights, and conservation of traditional knowledge; laboratory/field methods in medicinal plant identification, and plant collection for bioassay and biochemical analysis.

COURSE TASKS

The evaluation of the student's achievement of course objectives will be based upon lecture, laboratory and field participation, laboratory reports, research project presentations, and examinations as described below:

Lecture and Laboratory/field participations (25 points)

You will actively participate in all lectures and lab/field activities at the Bioprocessing Medicinal Garden Complex (BMGC). Because of the difficulties in setting up laboratory material, students missing a regularly scheduled lab activity cannot be given an alternative assignment. Failure to participate in a scheduled laboratory session, will result in a 5 point deduction for each session missed. Students missing more than 3 three-hour lab sessions will not receive credit for the course.

Laboratory Reports (100 points)

You will complete a total of three written formal laboratory reports. Each lab report consists of modules assigned for specific lab periods. Lab reports must be completed and turned in one week after completion of the lab.

Research Project- class presentation (25 points)

Special group projects will be discussed and approved by the instructor.

Examinations (200 points)

You will take two non-cumulative examinations throughout the semester. No make-up exams will be given, except for illness, for which a doctor's slip is required. A make-up exam will only be given on your first day back to class.

METHOD OF GRADING:

The assignment of points are described as follows:

Lecture, lab/field participations in all sessions	25 points
Cumulative lab reports	100 points
Research project (class presentation)	25 points
2 Exams	200 points
Total	350 points

Letter grades will be assigned as follows:

A…….90% or above in total points.
B…….80 – 89.9% of total points.

C…….65 – 79.9% of total points.
D…….55 – 64.9% of total points.
F…….below 55% of total points/informal/incomplete official withdrawal from the 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. Failure to satisfactorily make up incomplete work within the appropriate time period will result in a grade change for "I" to 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/N in writing by March 20, 2014 (see catalog).
NC…….below 65% of total points; this grade only available under the CR/N option (see above and see Catalog).
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 without a "W" Grade (February 3, 2014). Last day to withdraw with a "W" Grade (March 20, 2014) (see catalog).
Waiver of minimum requirements for specific grades will be given only in unique situations at the instructor's discretion.

STUDENT RESPONSIBILITIES:
You are expected to participate in all lecture activities, and be prepared in advance when you 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. Any changes in the course schedule, such as field trip or examination dates, will be announced ahead of time in class. It is your responsibility to be informed of these changes.

LEARNING RESOURCES

White, I. 2009. Ethnopharmacognosy Series II: Pharmaceutical and Nutraceutical Values of Honohono Grass. Windward Community College. 52 pp.
White, I. 2013. Ethnopharmacognosy Series IV: Pharmaceutical and Nutraceutical Values of Spanish Needle. Windward Community College. 52 pp.

The following books are no longer printed. Handouts (parts of some chapters only) will be distributed:
Robbers, J., M. Speedie and V. Tyler. 1996. Pharmacognosy and Pharmacobiotechnology. Williams & Wilkins, Baltimore, MD.
Sumner, J. 2000. The Natural History of Medicinal Plants. Timber Press, Portland, Oregon.

My websites:
http://windward.hawaii.edu/people/Ingelia_White/
http://windward.hawaii.edu/Academics/Agripharmatech_CA/

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.

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.

BOT 205 Tentative Course Schedule, Spring 2014. Instructor: Ingelia White Ph.D

Date	Reading	Lecture	Laboratory*
Jan. 13	White	Introduction; Bioprocessing Medicinal Garden Complex	BMGC, plant ID
Jan. 15	Sumner C1	History of medical ethnobotany	Weeding, planting
Jan. 22	handouts	History of pharmaceutical and herbal products in USA	Biosafety lab practice
Jan. 27	handouts	Ethnopharmacology of Polynesian medicinal plants	nutraceutical class discussion
Jan. 29	handouts	Ethnopharmacology of Polynesian medicinal plants	Lab topic selection
Feb. 3	Sumner C2	Field methods for study of medicinal plants	Micropipettor exercise, dry run
Feb. 5	Sumner C3	Medicinal Plants in Nature	Plant extraction
Feb. 10	handouts	Asian medicinal plants	Bioassay test 1
Feb. 12	White	Video (The Hawaiian Art of Healing), class presentation	Bioassay test (continued)
Feb. 19		Video (Green Medicines), Diets and health care	
Feb. 24		Consepts of health and disease	plant drying, tea processing
Feb. 26	handouts		Tea tasting
Mar. 3		Video (The Jungle Pharmacy)	
Mar. 5		Microscope observation (anaerobic bacterial culture)	
Mar. 10	handouts	Etnobotanical Research	Liquid soap making
Mar. 12	handouts		Weeding, plant ID
Mar. 17		Test review	Soap bar making
Mar. 19		**Midterm**	
Mar. 31	Sumner C4	Informed consent and human research	BMGC
Apr. 2			Preparation for vit analysis
Apr. 7		Ethnobotanical interview techniques	Vit. B analysis
Apr. 9			Vit. B analysis (continued)
Apr. 14		Documentation/collection of medicine. plant specimens	
Apr. 16	White	Food pharmacy	value-added pasta
Apr. 21	Sumner C5	Primary and secondary metabolic pathway	Class presentation, BMGC
Apr. 23			Perfume making
Apr. 28	Robbers C3-6	Complex polysaccharides, Lipids - steroids	Class presentation
Apr. 30	Robbers C1-2	Introduction to pharmacognosy; Pharmacobiotechnology	Class presentation, BMGC
May. 5	Robbers C8-11	Phenylpropanoids, alkaloids, proteins, antibiotics	Class presentation
May. 7	RobC12/SumC9	Biologic/immunomodulators; Conserv/intellproperty rights	Class presentation, BMGC
May. 12		**Final Exam**	

*** Field work dates might be changed due to weather. Lab modules might change slightly based on previous lab results**