BOT 205 Ethnobotanical Pharmacognosy
04
M,W 1:30 pm – 4:15 pm (60052)

INSTRUCTOR: Ingelia White Ph.D.
OFFICE: Imiloa 102
OFFICE HOURS: M,W 10:00 am – 12:00 noon
TELEPHONE: 236-9102
EFFECTIVE DATE: Spring 2009

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College is committed to excellence in the liberal arts and career development; we support and challenge individuals to develop skills, fulfill their potential, enrich their lives, and become contributing, culturally aware members of our community.

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

REQUIREMENT COURSE SATISFIES:
AT WCC:
AA Degree Natural Science requirement for a Biological Science (Natural Science Group 1) and fulfills lab requirement. It also partially fulfills requirements for the Academic Subject Certificate in Bio-Resources and Technology (Plant Biotechnology Program).

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 at Scheduled Times Other Than Class Times:
You have to do lab/field observations, collect data and write 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, analysis of chemical constituents for possible uses in pharmaceuticals and 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 bioactive compounds and manufacturing bioproducts.

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, collection and biochemical analysis of medicinal plants of Hawaii.

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 participation (100 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 (300 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 (100 points)
You should produce one of the following two options:

1). Special Topics
   • Conduct research projects on special topics throughout the semester.
   • Submit lab reports in scientific format.

2). Written Family Interview Report
   • Conduct a set of interviews with some family members about traditional medicine and health care in a specific area (eg. Kahalu’u, or Waimanalo, or Waikiki or Manoa etc.).
   • Write an original paper of at least eight typed pages about the above interviews including the following parts: introduction (literature review), interview method, results, discussion, researchers’ background, photos and references cited.
   • Papers should follow the format of Economic Botany or the Journal of Ethnopharmacology.
   • Paper topics must be discussed with the instructor and be selected by you by mid-February and completed by mid-April. No late work will be accepted.
Examinations (400 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:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture, lab/field participation</td>
<td>100</td>
</tr>
<tr>
<td>Lab reports</td>
<td>300</td>
</tr>
<tr>
<td>Research project (class presentation)</td>
<td>100</td>
</tr>
<tr>
<td>2 Exams</td>
<td>400</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>900</strong></td>
</tr>
</tbody>
</table>

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 or informal or incomplete official withdrawal from 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 the end of the 10th week of classes (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 after the third week and prior to the end of the 10th week of classes (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.
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.

LEARNING RESOURCES


The following books are no longer printed. Handouts (parts of some chapters only) will be distributed:

Other reading assignments will be provided in class or accessed through the internet.
## BOT 205 Course Schedule
### Spring 2009
**Instructor:** Ingelia White Ph.D

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Reading</th>
<th>Lecture</th>
<th>Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan.12</td>
<td>White</td>
<td>Introduction; Bioprocessing Medicinal Garden Complex</td>
<td>BMGC, plant ID</td>
</tr>
<tr>
<td></td>
<td>Jan. 14</td>
<td>Sumner C1</td>
<td>History of medical ethnobotany</td>
<td>Biosafety lab practice</td>
</tr>
<tr>
<td>2</td>
<td>Jan. 21</td>
<td>handouts</td>
<td>History of pharmaceutical and herbal products in USA</td>
<td>Plant extraction (water)</td>
</tr>
<tr>
<td>3</td>
<td>Jan. 26</td>
<td>handouts</td>
<td>Ethnopharmacology of Polynesian medicinal plants</td>
<td>Tonic making</td>
</tr>
<tr>
<td></td>
<td>Jan. 28</td>
<td>handouts</td>
<td>Ethnopharmacology of Polynesian medicinal plants</td>
<td>Filtering/bottling the tonic</td>
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<tr>
<td>4</td>
<td>Feb. 2</td>
<td></td>
<td></td>
<td>BMGC</td>
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<tr>
<td></td>
<td>Feb. 4</td>
<td></td>
<td></td>
<td>Tea/soap preparation</td>
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<tr>
<td>5</td>
<td>Feb. 9</td>
<td>handouts</td>
<td></td>
<td>Tea/soap making</td>
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<tr>
<td></td>
<td>Feb. 11</td>
<td>White</td>
<td>Video (The Hawaiian Art of Healing), class presentation</td>
<td>Tea tasting &amp; soap wrapping</td>
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<tr>
<td>6</td>
<td>Feb. 18</td>
<td>handouts</td>
<td>Video (Green Medicines), Diets and health care</td>
<td>Plant extract-rot evaporator</td>
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<tr>
<td>7</td>
<td>Feb. 23</td>
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<td></td>
<td>Coagulation test</td>
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<td>8</td>
<td>Feb. 25</td>
<td></td>
<td></td>
<td>Essential oil distillation</td>
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<tr>
<td></td>
<td>Mar. 2</td>
<td>handouts</td>
<td>Concepts of health and disease</td>
<td>Essential oil distillation</td>
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<tr>
<td></td>
<td>Mar. 4</td>
<td>handouts</td>
<td></td>
<td>Lotion/cream making</td>
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<tr>
<td>9</td>
<td>Mar. 9</td>
<td></td>
<td>Video (The Jungle Pharmacy)</td>
<td>Wine making</td>
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<tr>
<td></td>
<td>Mar. 11</td>
<td>handouts</td>
<td></td>
<td>Bioassay tests</td>
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<tr>
<td>10</td>
<td>Mar. 16</td>
<td></td>
<td>Test review, class presentation</td>
<td>Bioassay test continued</td>
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<tr>
<td></td>
<td>Mar. 18</td>
<td></td>
<td><strong>Midterm</strong></td>
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<tr>
<td>12</td>
<td>Mar.30</td>
<td></td>
<td>Media preparation for bioassay tests</td>
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<td></td>
<td>Apr. 1</td>
<td></td>
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<tr>
<td>13</td>
<td>Apr. 6</td>
<td>Sumner C2</td>
<td>Field methods for study of medicinal plants</td>
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<td></td>
<td>Apr. 8</td>
<td>White</td>
<td>Documentation/collection of medicine. plant specimens</td>
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<tr>
<td>14</td>
<td>Apr. 13</td>
<td>White</td>
<td>Food pharmacy</td>
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<td></td>
<td>Apr. 15</td>
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<td>Ethnobotanical interview techniques</td>
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<td>15</td>
<td>Apr. 20</td>
<td>Sumner C4</td>
<td>Informed consent and human research</td>
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<td></td>
<td>Apr. 22</td>
<td>Sumner C5</td>
<td>Primary and secondary metabolic pathway</td>
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<tr>
<td>16</td>
<td>Apr. 27</td>
<td>Robbers C3-6</td>
<td>Complex polysaccharides, Lipids - steroids</td>
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<tr>
<td></td>
<td>Apr. 29</td>
<td>Robbers C1-2</td>
<td>Introduction to pharmacognosy; Pharmacobiotechnology</td>
<td></td>
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<tr>
<td>17</td>
<td>May. 4</td>
<td>Robbers C8-11</td>
<td>Phenylpropanoids, alkaloids, proteins, antibiotics</td>
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<tr>
<td></td>
<td>May. 6</td>
<td>Robbers C12</td>
<td>Biologic &amp; immunomodulators</td>
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<td>Sumner C9</td>
<td>Conservation &amp; intellectual property rights</td>
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<tr>
<td>18</td>
<td>May. 11</td>
<td></td>
<td><strong>Final Exam</strong></td>
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**Holidays:** Jan. 19, Feb. 16; Spring Recess: March 23 - 27.