

**NREM 301: Natural Resource Management
Spring 2012 – Lecture Syllabus
Hours: MWF 9:30 – 10:20am, Sherman 111**

INSTRUCTORS

Dr. Greg Bruland
Associate Professor
Sherman 223
Phone: 956-8901
Email: bruland@hawaii.edu

Dr. Creighton Litton
Assistant Professor
Sherman 240
Phone: 956-6004
Email: litton@hawaii.edu

TEACHING ASSISTANT

Ryan Long
M.S. Graduate Student
Sherman 202
Phone: 956-6707
Email: rcl@hawaii.edu

HOURS

Lectures:	MWF	9:30 – 10:20am	Sherman 111
Lab:	F	1:30 – 5:20pm	*See the 301L course syllabus
Office (GB):	R	8:30 – 9:30am	Sherman 226
Office (CL):	T	2:00 – 3:00pm	Sherman 240
Office (RL):	M	10:30 – 12:00 noon	Sherman 202

COURSE WEBSITES

- www.ctahr.hawaii.edu/brulandg/
- www.ctahr.hawaii.edu/littonc/

PREREQUISITES

- NREM 210
- CHEM 151+L or higher
- BIOL 172+L or concurrent

COURSE DESCRIPTION & OBJECTIVES

This course highlights the biological and physical science aspects of natural resource management at local, national, and global scales. Topics covered will include resource management of soil, water, forests, wetlands, coasts and wildlife. This is an intermediate-level course designed to introduce key concepts and topical areas in natural resources and environmental management, covering the following areas:

- Hawaiian resource management: historical/current issues and practices
- Soil basics, including soil physical and chemical properties and soil taxonomy
- Soil erosion by water and by wind, and the USLE equation
- Water conservation and quality
- Spatial analysis tools in natural resource management (GIS, GPS)
- Basic ecological principles & their application to natural resource management
- Forest ecology and management
- Coastal ecology and management
- Global change biology (climate change, land-use change, etc.)
- Wildlife ecology and management
- Ecosystem goods and services

In each of the topical areas, students are expected to develop an understanding of biological, ecological, and physical principles and concepts, science background, and quantitative skills required to understand and manage natural resources, with emphasis on sustainable management.

GRADING ASSIGNMENTS

Mid-term Exam 1	25%
Mid-term Exam 2	25%
Final Exam	40%
*Participation	10%

* Participation is based on the student’s engagement in class activities, and includes attendance and active participation in class/group discussions. **If a student misses >5 classes unexcused, the student will receive a 0 for their participation grade. If a student misses ≥10 classes unexcused, the student will receive an F for their final course grade.** Being late to class by >10 min. will count as ½ an unexcused absence.

GRADING SCALE

A+	$x \geq 97$	B+	$90 > x \geq 87$	C+	$80 > x \geq 77$	D+	$70 > x \geq 67$
A	$97 > x \geq 93$	B	$87 > x \geq 83$	C	$77 > x \geq 73$	D	$67 > x \geq 63$
A-	$93 > x \geq 90$	B-	$83 > x \geq 80$	C-	$73 > x \geq 70$	F	$x < 60$

READING ASSIGNMENTS

There is no course textbook. Reading assignments for each lecture will consist of a selected reading(s). As these readings are subject to change, students will be provided a copy of the selected readings. Reading assignments are to be completed prior to the corresponding lecture.

Hawaiian Resource Management

Ziegler, A. C. 2002. Polynesian ecology (Ch. 25). In *Hawaiian Natural History, Ecology, and Evolution*. University of Hawaii Press. pp.321-338.

Soil Basics

Singer, M. J., and Muns, D. N. 2006. *Soils, an Introduction*. Chap. 1 pp.1-14.

Soil Erosion

Singer, M. J., and Muns, D. N. 2006. *Soils, an Introduction*. Chap. 14 pp.354-384.

Water Conservation & Quality

Chiras, D. D., Reganold, J. P., and Owen, O. S. 2005. Managing water resources sustainably (Ch. 10) & Water pollution (Ch. 11). In *Natural Resource Conservation: Management for a Sustainable Future (9th ed.)*. Prentice-Hall. pp.219-298.

Geographic Information Systems (GIS)

Bolstad, P. 2005. Data Model (Ch. 2). In *GIS Fundamentals: A First Text on Geographic Information Systems (2nd ed.)*. Eider Press, Minnesota. pp.25-65.

Global Positioning System (GPS)

Bolstad, P. 2005. The Global Positioning System (Ch. 5). In *GIS Fundamentals: A First Text on Geographic Information Systems (2nd ed.)*. Eider Press, Minnesota. pp.159-186.

Ecological Principles for Natural Resource Management

Chiras, D.D. and Reganold, J.P. 2010. Natural Resource Conservation: Management for a Sustainable Future. 10th ed. Benjamin Cummings. pp. 50-85

Forest Ecology & Management

Smith, D.M., Larson, B.C., Kelty, M.J. and Ashton, P.M.S. 1997. The Practice of Silviculture: Applied Forest Ecology. John Wiley & Sons, Inc. pp. 3-19.

Coastal Ecology & Management

Mann, K.H. 2000. *Ecology of Coastal Waters with Implications for Management (2nd Edition)*. Chap. 2-5, pp.18-78 & Chap. 16, pp.280-303.

Global Change and Natural Resource Management

Vitousek, P.M. 1994. Beyond global warming: Ecology and global change. *Ecology* 75, 1861-1876.

***Additional & alternative readings may be assigned during the course of the semester**

POLICIES

- Students are fully responsible for obtaining copies of readings, lecture notes, and handouts, and for keeping track of assignments, due dates, and grades.
- **If a student has >5 unexcused absences, the student will receive a 0 for their participation grade.**
- **If a student has ≥10 unexcused absences for the semester, the student will receive an F for their final grade in the course.**
- Being late by >10 min. will count as ½ of an unexcused absence
- Late submissions and/or makeup exams will only be accepted for the following cases:
 - 1) Emergency cases (e.g., illness, family emergencies); these require prior approval by the instructor, where possible, and a doctor's note, a copy of student's itinerary, etc.
 - 2) Absences due to illness without a doctor's note require students to contact the instructors before or within 24 hours of missed event (i.e., report due, exam, or lab).

ACADEMIC INTEGRITY

Students are expected to act with the utmost integrity. The *University of Hawai'i at Mānoa Student Conduct Code* (http://studentaffairs.manoa.hawaii.edu/policies/conduct_code/) defines cheating and plagiarism as follows:

Cheating includes but is not limited to giving or receiving unauthorized assistance during an examination; obtaining unauthorized information about an examination before it is given; submitting another's work as one's own; using prohibited sources of information during an examination; fabricating or falsifying data in experiments and other research; altering the record of any grade; altering answers after an examination has been submitted; falsifying any official University record; or misrepresenting of facts in order to obtain exemptions from course requirements.

Plagiarism includes but is not limited to submitting, in fulfillment of an academic requirement, any work that has been copied in whole or in part from another individual's work without attributing that borrowed portion to the individual; neglecting to identify as a quotation another's idea and particular phrasing that was not assimilated into the student's language and style or paraphrasing a passage so that the reader is misled as to the source; submitting the same written or oral or artistic material in more than one course without obtaining authorization from the instructors involved; or "drylabbing," which includes obtaining and using experimental data and laboratory write-ups from other sections of a course or from previous terms.

If you ever have any questions about what constitutes fair academic play, please come and talk to the instructors or the TA! Cheating or plagiarism will result in an F for your final grade in the course. It may also lead to other serious academic repercussions beyond this course (see *Student Conduct Code*).

ACCOMMODATIONS FOR DISABILITIES:

If you feel you need reasonable accommodations because of the impact of a disability, please: (1) contact the KOKUA Program (V/T) at 956-7511 or 956-7612 in room 013 of the QLCSS; and (2) speak with one of the instructors privately to discuss your specific needs. We will be happy to work with you and the KOKUA Program to meet your access needs related to your documented disability.

FINAL CAVEAT

All material on this syllabus is subject to change at the discretion of the instructors to suit the needs of the course.

COURSE SCHEDULE

Week No.	Date	Lecture (MWF 9:30 – 10:20am)	Lab Exercise* (F 1:30 – 5:20pm)
1	1/9 (M)	Introductions, Syllabus	Introduction – Lab Overview / Grouping
	1/11 (W)	Hawaiian Resource Management	
	1/13 (F)	Hawaiian Resource Management	
2	1/16 (M)	<i>No Class: Martin Luther King Jr. Day</i>	Basic Properties of Hawaiian Soils
	1/18 (W)	Soil Basics	
	1/20 (F)	Soil Basics	
3	1/23 (M)	Soil Basics	Measuring Soil Erosion Parameters
	1/25 (W)	Soil Erosion	
	1/27 (F)	Soil Erosion	
4	1/30 (M)	Soil Erosion	Predicting Soil Erosion by Water
	2/1 (W)	Water Conservation & Quality	
	2/3 (F)	Water Conservation & Quality	
5	2/6 (M)	Water Conservation & Quality	Honouliuli Water Treatment & Recycling (Field Trip)
	2/8 (W)	Watershed Hydrology & Management (or TBA)	
	2/10 (F)	- <i>Catch up day**</i> -	
6	2/13 (M)	Mid-term I	Manoa Stream Water Quality Assessment (Field Trip)
	2/15 (W)	GIS & GPS	
	2/17 (F)	Ecological Principles for Natural Resource Mgt.	
7	2/20 (M)	<i>No Class: President's Day</i>	Global Positioning System (GPS) and Geographic Information System (GIS)
	2/22 (W)	Ecological Principles for Natural Resource Mgt.	
	2/24 (F)	Ecological Principles for Natural Resource Mgt.	
8	2/27 (M)	Ecological Principles for Natural Resource Mgt.	<i>No Lab</i>
	2/29 (W)	Ecological Principles for Natural Resource Mgt.	
	3/2 (F)	Ecological Principles for Natural Resource Mgt.	
9	3/5 (M)	Forest Ecology & Management	Forest Measurements (Field Trip)
	3/7 (W)	Forest Ecology & Management	
	3/9 (F)	Forest Ecology & Management	
10	3/12 (M)	Forest Ecology & Management	Forest Inventory and Analysis
	3/14 (W)	Forest Ecology & Management	
	3/16 (F)	Forest Ecology & Management	
11	3/19 (M)	Invasive Weed Management (or TBA)	Hawai'i Institute of Marine Biology (Field Trip)
	3/21 (W)	- <i>Catch up day**</i> -	
	3/23 (F)	Mid-term II	
Spring Recess (3/26 – 3/30)			
12	4/2 (M)	Coastal Ecology & Management	<i>No Lab: Good Friday</i>
	4/4 (W)	Coastal Ecology & Management	
	4/6 (F)	<i>No class: Good Friday</i>	
13	4/9 (M)	Coastal Ecology & Management	CTAHR Student Research Symposium
	4/11 (W)	Coastal Ecology & Management	
	4/13 (F)	Coastal Ecology & Management	
14	4/16 (M)	Coastal Ecology & Management	Global Change Biology
	4/18 (W)	Global Change & Natural Resource Mgt.	
	4/20 (F)	Global Change & Natural Resource Mgt.	
15	4/23 (M)	Global Change & Natural Resource Mgt.	<i>No Lab</i>
	4/25 (W)	Wildlife Ecology & Management	
	4/27 (F)	Wildlife Ecology & Management	
16	4/30 (M)	Ecosystem Goods & Services (or TBA)	
	5/2 (W)	- <i>Catch up day**</i> -	
Final Exam: Monday, May 7, 9:45 – 11:45am			

* Lab exercises are listed for convenience. See the NREM 301L course syllabus for details.

** *Catch up days* are for catching up on uncovered material and, time permitting, reviewing for exams, but are not “off days” (i.e., attendance is expected, and will be recorded).