

# EVR6320 – Principles of Natural Resource Management

## Spring 2009

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### Instructor:

Dr. Kelly Chinners Reiss

Office: Phelps Lab, Room 116

Office Hours: Wednesday 9:30-11:30 am

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Phone: (352) 392-2425

### Class Meeting Schedule:

T 3<sup>rd</sup> period, 9:35 am – 10:25 am

Benton Hall (BEN), room 328

R 3<sup>rd</sup>-4<sup>th</sup> periods, 9:35 am – 11:30 am

Chemical Engineering (CHE), room 316

### Course Texts

Charles, A (2001) Sustainable Fishery Systems, Blackwell Science, Malden, MA, USA

McPherson, G.R. and S. DeStefano (2003) Applied Ecology and Natural Resource Management, Cambridge University Press

Other readings available on E-Learning

### Course Description:

This course provides a synthesis and overview of the principles of natural resource management. The primary objective of the course is to provide students with a broad understanding of natural resource management across many fields (e.g., soils, water, forests, fish and aquatic resources, etc.) organized using a systems perspective. Natural resource management can be defined as a set of principles and practices that organize and trade-off the use of resources for human consumption in a manner that does not compromise the ability of the managed environment to provide other essential services. At the center of this definition are the concepts of sustainability and stewardship. The course will consist of readings and case studies with an emphasis on systems-scale thinking and the identification/implementation of principles. Adaptive management concepts (systemic learning at the large scale) will be introduced as an organizational theme. A common thread throughout will be discussion of political/economic/cultural realities that may constrain or modify natural resource management strategies.

### GRADES

Assignment	Percentage	Grading Scale:	
Weekly Responses	25%	90 – 100 = A	88 – 89 = B+
Student Led Units	25%	80 – 87 = B	78 – 79 = C+
NRM Plan	25%	70 – 77 = C	68 – 69 = D+
Final Exam	25%	60 – 67 = D	<60 = E

### Weekly Responses (WRs) – 25%

This exercise is meant to enhance understanding of the material while providing a written record of course content, which should be useful in further studies and/or the final exam. WRs also provide the instructor insight into the complexity of reading materials, thoughts/concerns of students, considerations of student background in understanding course topics, and progress on understanding course content.

Each week students will be required to submit short written responses for weekly reading assignments that will be posted to the discussion board on E-Learning in the form of a journal entry. Each week will begin a new discussion topic for student response.

**Submissions to E-Learning should be posted by 3 pm on Wednesdays each week.**

Through these weekly responses students will have a continuous written record of course materials.

Discussion postings are meant to be brief. Postings may range from week to week and from individual to individual. Ideas for posts include a presentation of the “take home message” and how it applies to natural resource management, presentation of past experiences that echo reading content or examples, relevance of readings or class discussion to student research (past, present, or future), or other comments. There are no strict guidelines; however, students are encouraged to use the discussion board to further understand, question, and synthesize course material. Grades will be assigned according to the Course Grading Scheme for Written Assignments.

### **Student Led Units - 25%**

The intent of the student led units is to actively involve students in classroom discussion of assigned reading materials and to allow students the opportunity to select additional readings (within broad weekly topic guidelines) for development of an understanding of the principles of natural resource management. Further, this exercise is intended to integrate current research into course content. It allows students to actively participate in selection of course content, and necessitates participation of all students in course discussions.

Each student will be assigned 2 weeks to select reading materials and lead the class in discussion (dependent on final class enrollment). For each subject unit, students will select 1-2 key readings for the class to read and discuss based on student developed discussion questions and relevance to course topics. The typical class schedule should take the form of:

- 2 Periods: Lecture style presentation by instructor/guest lecturer of basic concepts falling under main topic heading. While it is described as a ‘lecture style,’ it is meant to introduce students to each topic while initiating thoughtful discussion for each topic. This will include an integration of the assigned readings posted on the course schedule including select journal articles and course texts.
- 1 Period: Student led discussion of student selected paper(s). This will be initiated by a presentation by the student of the selected reading(s) followed by class discussion questions for class response. Visual aids are at the discretion of the student, but a review of locator maps, background supporting materials for location or resource, data tables, important figures, etc., may be pertinent to the discussion.

Electronic copies of student selected reading material(s) and discussion questions must be posted to the E-Learning discussion board no later than the Wednesday prior to the start of the assigned Student Led Unit. If students select reading materials that are not available in electronic format, arrangements can be made (in advance) to scan these resources into electronic format for educational purposes if less than 10% of a published work is requested, without violating copyright policy. Please contact the instructor for help, if necessary.

Papers will be selected at the discretion of students with approval of the instructor and should reflect the current published literature spanning from 2004-2009. Older papers will be considered on a case by case basis, as the general idea is to encourage students to focus on the current state of knowledge on natural resource management topics. Student led units will be graded based on completeness of summary of materials, depth of discussion questions, and overall organization. A hand out describing "How to Lead a Discussion Session" will be distributed in class.

### **Natural Resource Management Plan (NRMP) - 25%**

The purpose of the Natural Resource Management Plan (NRMP) is to encourage students to integrate what they learn through course lectures and readings into an application of the principles of natural resource management. Students are encouraged to pay special attention to guest lectures for insight into ideas in research and planning. For example, some guest lectures may address fire ecology, invasive species management, ecotourism, community involvement, etc. Real world examples of management plans will be available through E-Learning for student review.

Students will be divided into groups and each group will be responsible for developing a comprehensive NRMP for a property of their choice. This will allow groups to focus on areas specific to common research interests, resource use, or to explore new areas around the world. If groups find they are having difficulty finding an acceptable location for their management plan project, they are encouraged to consult the instructor as soon as possible for ideas. Some class time will be devoted for initial discussion and planning of this project.

Each group will be responsible for preparing a paper presenting their NRMP and a formal presentation to the class at the conclusion of the semester. Presentations should be organized in a Power Point format and submitted to E-Learning prior to the scheduled presentation time. The benefit of using Power Point will be the ability to clearly show examples of the selected areas for the NRMP and also to outline key concepts of the plan. This exercise is intended to enhance students' presentation skills, including clear articulation of scientific detail, development of visual aids, and public speaking. Presentations will be peer evaluated during class. NRMPs (both the written version and the presentation) will be graded based on following guidelines (see additional handout), details of planning, likelihood of implementation and realistic planning, creativity, and thoroughness of description.

**Final Exam - 25%**

This course will culminate with a final exam administered through E-Learning with the intent to help synthesize the broad array of information presented throughout the semester. The essay style exam will allow each student the opportunity to reconsider course resources (i.e., lecture materials, readings, weekly responses, etc.) and to organize the information in a useful and productive manner. Evaluation of final exams will be based on completeness in addressing question(s), thoroughness of answers, depth of understanding, contemplation of subject matter, creativity, and synthesis of course materials. It is anticipated that experience writing Weekly Responses, adequate notes from readings and discussions, and lecture materials will aid in answering the final exam question(s).

**University of Florida Policy on Academic Honesty**

As a result of completing the registration form at the University of Florida, every student has signed the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."

**Software Use:**

All faculty, staff and students of the University are required to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

**UF Counseling Services**

Resources are available on-campus for students having personal problems or lacking clear career and academic goals, interfering with their academic performance. The resources include:

1. University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling.
2. Student Mental Health, Student Health Care Center, 392-1171, personal counseling.
3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual counseling.
4. Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

## EVR6320 Readings

- Altieri, MA (2002) Agroecology: The science of natural resource management for poor farmers in marginal environments. *Agriculture, Ecosystems, and Environment* 93:1-24
- Armitage, DR, R Plummer, F Berkes, RI Arthur, AT Charles, IJ Davidson-Hunt, AP Diduck, NC Coublesday, DS Johnson, M Marschke, P McConney, EW Pinkerton, EK Wollenberg (2008) Adaptive co-management for social-ecological complexity. *Frontiers in Ecology and the Environment* 6(online first)
- Berkes, F (2004) Rethinking community-based conservation. *Conservation Biology* 18(3): 621-630
- Bundy, A, R Chuenpagdee, S Jentoft, R Mahon (2008) If science is not the answer, what is? An alternative governance model for the world's fisheries. *Frontiers in Ecology and the Environment* 6(online first) DOI: 10.1890/060112
- Chan, KMA, MR Shaw, DR Cameron, EC Underwood, GC Daily (2006) Conservation planning for ecosystem services. *PLOS Biology* 4(11): e379. DOI: 10.1371/journal.pbio.0040379
- Charles, A (2001) *Sustainable Fishery Systems*, Blackwell Science, Malden, MA
- Conway, D, E Allison, R Felstad, M Goulden (2005) Rainfall variability in East Africa: Implications for natural resources management and livelihoods. *Philosophical Transactions of the Royal Society* 363:49-54 DOI: 10.1098/rsta.2004.1475
- Cooke, SJ, IG Cowx (2006) Contrasting recreational and commercial fishing: searching for common issues to promote unified conservation of fisheries resources and aquatic environments. *Biological Conservation* 128:93-108
- Cork, S, D Shelton, C Binning, R Parry (2001) A framework for applying the concept of ecosystem services to natural resource management in Australia. Third Australian Stream Management Conference August 27-29, 2001. Rutherford, I, F Sheldon, G Brierley, C Kenyon, eds. Cooperative Research Center for Catchment Hydrology, Brisbane, Australia. Pp. 157-162
- Euliss, Jr., NH, LM Smith, DA Wilcox, BA Browne (2008) Linking ecosystem processes with wetland management goals: charting a course for a sustainable future. *Wetlands* 28(3):553-562
- Folke, C, S Carpenter, B Walker, M Scheffer, T Elmqvist, L Gunderson, CS Holling (2004) Regime shifts, resilience, and biodiversity in ecosystem management. *Annual Review of Ecology, Evolution, and Systematics* 35: 557-581
- Houck, O (2003) Tales from a troubled marriage: science and law in environmental policy. *Science* 302: 1926-1929
- Lal, R (2007) Soil science and the carbon civilization. *Journal of the Soil Science Society of America* 71:1425-1437
- Leslie, HM, AA Rosenberg, J Eagle (2008) Is a new mandate needed for marine ecosystem-based management? *Frontiers in Ecology and the Environment* 6(1): 43-48
- McCauley, DJ (2006) Selling out on nature. *Nature* 443:27-28
- McPherson, GR, S DeStefano (2003) *Applied Ecology and Natural Resource Management*, Cambridge University Press
- Milner-Gulland, EJ, EL Bennett, SCB 2002 Annual Meeting Wild Meat Group (2003) Wild meat: the bigger picture. *Trends in Ecology and Evolution* 18(7):351-357
- Olsson, P, C Folke, T Hahn (2004) Social-ecological transformation for ecosystem management: the development of adaptive co-management of a wetland landscape in southern Sweden. *Ecology and Society* 9(4): 2 [online] URL: <http://www.ecologyandsociety.org/vol9/iss4/art2>
- Price, LL (2007) Locating farmer-based knowledge and vested interests in natural resource management: the interface of ethnopedology, land tenure and gender in soil erosion management in the Manupali watershed, Philippines. *Journal of Ethnobiology and Ethnomedicine* 3:30 DOI: 10.1186/1746-4269-3-30
- Stringer, L (2008) Can the UN Convention to Combat Desertification guide sustainable use of the world's soils? *Frontiers in Ecology and the Environment* 6 (online first) DOI: 10.1890/070060
- Westermann, O, J Ashby, J Pretty (2005) Gender and social capital: the importance of gender differences for the maturity and effectiveness of natural resource management groups. *World Development* 33(11): 1783-1799
- Yang, HS (2006) Resource management, soil fertility and sustainable crop production: experiences of China. *Agriculture Ecosystems and Environment* 116: 27-33

## Guidelines for Discussions of Current Literature

The purpose of your presentation is more to *lead a discussion* than to inform or report. This is important . . . don't take the groups time making lengthy reports. Strive to aggregate the publication into its essence. What is the main point of the paper?

It may be helpful to do a little library search about the subject/author so that you have some background. Then frame your discussion around the following guidelines:

**First, state the main point of the paper.** Since the course participants should have read the paper, the object is to provide the group with a summary and refresher. Provide enough information as quickly as possible so they have a feel for the paper. This is like a "statement of the problem," it frames the paper and your discussion. Try to make points to frame your discussion from a natural resource management perspective. Are there important principles of natural resource management that can be identified?

**Second, provide something visual if this helps to make your case.** If the paper is about a place, perhaps photos or a map would be useful. Often the more real a subject matter is, the more relevant a discussion. If it helps, draw a systems diagram or other sketch to share with the group. This may help you organize your discussion points. It is important to identify the system boundary and describe the "plan of study." How did the author(s) approach the subject?

**Third, present the results of the paper.** Show or discuss some of the results of the reading. This may include a summary table, a figure, etc. Look for the main point of the reading. This is what the group should discuss. Often a reading will have several tables or figures and more than one main point. If there is time we may discuss all of them, but be prepared to discuss just one, so chose the main point that is of interest to you and to the course in general.

Up to this point, you have been doing all of the talking. Hopefully this has only taken 10-15 minutes. Now it is time for discussion.

**Fourth, bring up one or more points for discussion.**

"The very interesting thing about this reading is . . ."

"My understanding of how this topic was organized leads me to believe that . . ."

"Since I believe the system is organized as indicated in this diagram, I think the author(s) missed the boat as follows . . ."

"Since I believe that these are the most important factors governing this topic, I believe the author(s) were right on target measuring . . ."

You may even include a quote or two from the reading. Can you draw analogies between this reading and another? At this point it is important to stop presenting and start discussing . . . meaning that you should listen, offer guidance, but not control the discussion. Be prepared to expand your explanations if the group inquires. Also, be prepared to offer additional questions if the group runs out of steam.

## **Course Grading Scheme for Written Assignments\***

All assignments should be written and/or presented in grammatically correct English, using proper sentences, paragraphs, punctuation, etc. Writing should be succinct. An incoherent narrative will be considered an expression of faulty scientific reasoning. The evaluation of written work is holistic, with quality levels and criteria as stated below. Numbers are listed in parentheses beside each quality level, based on a grading scale of 100 points.

### *EXCEPTIONAL* (95 – 100 points)

The work goes well beyond the task assigned. It is impressive, unusually complete, and imaginative. Excellent use is made of the reference material cited within the paper or of examples cited. The scientific conclusions are clearly supported by data presented and there is evidence of originality in analysis. Reference material shows excellence with respect to both breadth and depth. Only outstanding submissions will be designated as Exceptional.

### *STRONG* (85 – 94 points)

The work fully engages the major scientific principles embodied in the topic. Data are good and/or well chosen to convey information. The scientific analysis makes good use of the data presented. The writing demonstrates a clear understanding of the fundamental issues of the topic being explored. Reference material is appropriate for the topic being discussed.

### *RESPECTABLE* (75 – 84 points)

A sensible approach to addressing the issues contained in the topic being explored is shown. The writing engages most of the appropriate scientific issues and principles. Some problems are evident: the choice of data or examples is correct, but incomplete; the scientific analysis, though generally correct, shows gaps; pertinent information may be missing. These omissions do not seriously hinder the usefulness of the work. Reference material is good but incomplete.

### *MARGINAL* (70 – 74 points)

The work partially engages the major scientific principles embodied in the topic being explored. The work generally relates to the assigned task, but gaps and problems are prominent and interfere with its effectiveness. Data or examples are poorly chosen and do not contribute substantially to the scientific analysis. The analysis has serious gaps. Reference material is shallow or only marginally appropriate.

### *WEAK* (60 – 69 points)

The work shows little depth. The effort is spotty with only fragmentary evidence of understanding the data, examples, and reference material in reporting on the subject. The analysis is grossly incomplete, and reference material is absent or inappropriate.

### *MINIMAL* (less than 60 points)

There is little or no meaningful effort in evidence. The approach taken is devoid of knowledge of the principles embodied in the topic being explored. Analysis is absent or shallow. No appropriate references are cited.

*\*Adapted from instructors at Kennesaw State University and Dartmouth College.*

**EVR6320 Principles of Natural Resource Management**  
**Course Schedule**

**Spring 09**

<b>Week</b>	<b>Day</b>	<b>Date</b>	<b>Period</b>	<b>Topic</b>	<b>Readings</b>
1	T	1/6/2009	3	Introductions	Berkes 2004; Cork et al 2001
	R	1/8/2009	3-4	1 - Course Overview	
2	T	1/13/2009	3	2 - Soil Resources	Lal 2007; Price 2007
	R	1/15/2009	3	2 - Soil Resources - cont.	
	R	1/15/2009	4	3 - Freshwater Resources	
3	T	1/20/2009	3	Student Led Unit -Soils	Conway et al 2005; Olsson et al 2004
	R	1/22/2009	3	3 - Freshwater Resources - cont.	
	R	1/22/2009	4	3 - Freshwater Resources - Jawitz	
4	T	1/27/2009	3	Student Led Unit - Freshwater	Chan et al 2006; Folke et al 2004
	R	1/29/2009	3-4	4 - Biological Resources - cont.	
5	T	2/3/2009	3	Student Led Unit - Biological	McPherson and DeStefano 2003 pgs. ix-47
	R	2/5/2009	3-4	5 - Forest Resources	
6	T	2/10/2009	3	Student Led Unit - Forest	McPherson and DeStefano 2003 pgs. 49-125; Milner-Gulland 2003
	R	2/12/2009	3-4	6 - Wildlife Resources	
7	T	2/17/2009	3	Student Led Unit - Wildlife	Alteri 2002; Westermann et al 2005; Yang 2006
	R	2/19/2009	3-4	7 - Agricultural Resources	
8	T	2/24/2009	3	Student Led Unit - Agricultural	Charles 2001 pgs. 9-21; 138-167
	R	2/26/2009	3-4	8 - Fishery Resources	
9	T	3/3/2009	3	Student Led Unit - Fishery	Charles 2001 pgs. 168-181; Cooke and Cowx 2006
	R	3/5/2009	3-4	8 - Fishery Resources - cont.	
<b>10</b>	<b>Spring Break No Class 3/9/09-3/13/09</b>				
11	T	3/17/2009	3	9 - Resource Sustainability	Charles 2001 pgs. 185-202
	R	3/19/2009	3-4	9 - Resource Sustainability - Humphrey	
12	T	3/24/2009	3	Student Led Unit - Sustainability	Charles 2001 pgs. 203-221; McPherson and DeStefano 2003 pgs. 127-142
	R	3/26/2009	3	9 - Resource Sustainability - Gordon	
	R	3/26/2009	4	9 - Resource Sustainability - cont.	
13	T	3/31/2009	3	Student Led Unit - Sustainability	Charles 2001 pgs. 222-276; McCauley 2006
	R	4/2/2009	3-4	10 - Approaches to NRM	
14	T	4/7/2009	3	Student Led Unit - Approaches	Armitage et al. 2008; Leslie et al. 2008
	R	4/9/2009	3	10 - Approaches to NRM - Evans	
	R	4/9/2009	4	10 - Approaches to NRM - cont.	
15	T	4/14/2009	3	11 - Policies of NRM	Charles 2001 pgs. 277-335; Houck 2003
	R	4/16/2009	3-4	NRM Plan Presentations	
16	T	4/21/2009	3	12 - Synthesis	Bundy et al. 2008 ; Euliss et al. 2008
17	W	4/29/2009		Final Exam Due by 7:30pm	