FORMAT 6

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REQUEST FOR CORE ORAL INTENSIVE DESIGNATOR

SUBMITTED BY:

Department	Biology & Wildlife	**College/School**	College of Natural Science and Mathematics
Prepared by	Tamara Harms	**Phone**	474-6117
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See http://www.uaf.edu/uafgov/faculty/cd for a complete description of the rules governing curriculum & course changes.

1. COURSE IDENTIFICATION:

Dept	BIOL	**Course #**	476	**No. of Credits**	3

COURSE TITLE	Ecosystem Ecology

Existing Course	476	**New Course Pending Approval***	476O

***Must be approved by appropriate Curriculum Council.)**

2. EMPHASIS DESIRED: (See Guidelines for Oral Intensive Designator)

Group (medium or large class)	x
Public (medium or large class)	
Public (small class)	
Public (large class) "O/2"	

3. CURRENT CATALOG DESCRIPTION AS IT APPEARS IN THE CATALOG: including dept., number, title and credits

Focus on the biological and physical principles that govern functioning of terrestrial ecosystems. Emphasis on how plants, animals and microorganisms control the movement of water, carbon and nutrients through ecosystems. Discussion of how changes in these processes have altered global cycles of carbon, water and nutrients and sustainability of the world's ecosystems. Prerequisites: BIOL F271 or BIOL F239 or permission of instructor. (3+0)

JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize course designator applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the course is not compromised as a result.

I propose to convert Ecosystem Ecology to an Oral-Intensive course. The proposed change is motivated by a need for students to gain skill in oral presentation and discussion of scientific results. These are key skills for ecosystem ecologists in academic, non-governmental organization, and management settings.

The changes will enhance the course, and give students appropriate credit for full participation in discussions and presentations. First, students will receive instruction in effective leadership and participation in scientific discussions, and repeated practice with these skills and techniques. Fifteen percent of the grade for the course will be based on leadership of the discussion session. Feedback will be provided in the discussion planning stage and following the discussion session. The grade for this assignment will be based upon generation of a discussion plan including discussion questions and small group activities; performance during the discussion session; and a post-discussion summary to describe the major conclusions of the discussion, and self-evaluation of discussion leadership. Second, students will collaborate to produce a synthetic research presentation that includes results from individual research projects. Instructor feedback will be provided following an informal presentation of individual results at mid-term, and the full group presentation will be evaluated for individual and group performance. The group oral presentation will constitute 10% of the grade in the course.

The attached syllabus must clearly reflect the following basic elements for the ORAL COMMUNICATION emphasis requested. Please note them directly on the syllabus, using the corresponding letter. (See Guidelines in this manual.)

GROUP (medium or large class)	**(Regularly enrolling at least 12 students)**
A	**15% of the final grade based on oral communication**
B	**1 ongoing, integrated group project with 5-8 students**
C	**2 presentations (minimum of 5 minutes per member)**
D	**Question & Answer period for both presentations**
E	**Group and Individual grading**
F	**Instructor Evaluation/Feedback on all presentations**

PUBLIC (medium or large class)	**(Regularly enrolling at least 12 students)**
A	**15% of the final grade based on oral communication**
B	**3 presentations (minimum of 5 minutes each)**
C	**Question & Answer period for both presentations**
D	**Instructor Evaluation/Feedback on all presentations**

PUBLIC (small class)	**(Regularly enrolling less than 12 students)**
A	**15% of the final grade based on oral communication**
B	**2 presentations of 20 minutes with Question & Answer or**
	3 presentations of 10 minutes with Question & Answer
C	**Instructor Evaluation/Feedback on all presentations**

PUBLIC (large class) "O/2"	**(Regularly enrolling 20 or more students)**
A	**7.5% of the final grade based on oral communication**
B	**1 presentation (minimum of 5 minutes), and**
C	**1 presentation of 8-10 minutes with Question & Answer**
D	**Instructor Evaluation/Feedback on all presentations**

APPROVALS:

Signature, Chair, Program/Department of:	Biology and Wildlife.	Date: Sept 24, 2012
Signature, Chair, College/School Curriculu Council for:	CNSM	Date: 9/28/2012
Signature, Dean, College/School of:	CNSM	Date: 10/2/12

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

Signature, Chair, Senate Core Review Committee	Date:

Ecosystem Ecology
Biology 476 (3 credits)
Spring 2013

Instructor: Tamara Harms
Office: 120 Arctic Health Research Building
Email: tkharms@alaska.edu
Office hours:

Prerequisites: BIOL 271 (Introductory Ecology), COMM 131 or 141

Course materials

Textbook: Chapin, F.S., III, P.A. Matson, and H.A. Mooney. 2011. Principles of Terrestrial Ecosystem Ecology. 2nd edition. Springer-Verlag, New York. The text is available on the internet

Chapters as assigned from: Schlesinger, W.H. 2007. Biogeochemistry: An Analysis of Global Change. 2nd edition. Academic Press. Available on Blackboard

Peer-reviewed papers: As assigned for discussion sessions. Available on Blackboard

Course description

Ecosystem ecology is the scientific study of the interactions, including feedbacks, among organisms and the non-living environment. The first part of the course provides an introduction to the ecosystem concept and the historical development of the field. Next, we survey the environmental factors (e.g., climate and soils) that govern ecosystem processes. We then discuss the major ecosystem processes and mechanisms driving them. Finally, we integrate this information to consider ecosystem services, sustainability, and responses of ecosystems to global change.

Oral-Intensive (O) Course

This course is designated as Oral-Intensive (O). Oral activities in this course will follow these rules:

-A minimum of 15% of the graded work in the O course will be based on effectiveness of oral communications

-Students will receive intermediate instructor assistance in developing presentational competency

-Students will use their communication competency across the span of the semester, not just in a final project

-Students will receive instructor feedback on the success of their efforts at each stage of preparing their presentations

Specific requirements that meet the O requirement:

1) Lead and participate in discussions of scientific literature. The instructor will provide lecture material on effective scientific discussions and engage students in generating an outline of discussion leadership and participation strategies. Students will receive input from the instructor on individual discussion agendas prior to leading the discussion, and a written evaluation following submission of a discussion summary by the student.

2) Students will present a collaborative summary of a semester-long laboratory experiment. Each student will be responsible for presenting an informal, individual summary of mid-term results, and a final group presentation will synthesize individual results with contributions from each student.

Objectives

–Describe the major ecosystem processes and the factors influencing process rates (in written and oral forms)
–Apply the scientific method to ecosystem problems
–Analyze ecosystem processes using quantitative methods
–Read, analyze, and discuss scientific literature

Instructional methods
Class periods will include lectures, discussions, problem sets, and short written exercises. I will establish an atmosphere that encourages interaction. Your participation will contribute to the success of the course.

Grades and assignments
Participation in class discussions/activities 10% **(D)**
Discussion leadership 15% **(A, C, F)**
Decomposition lab report 15%
Decomposition group presentation 10% **(A, B, C, D, E, F)**
Midterm 25%
Final 25%

Assignments turned in after due dates will receive reduced credit.

The instructor reserves the right to modify the final grade in consideration of notable progress demonstrated by an individual, or unforeseen and extenuating circumstances. In such cases, extra credit assignments and/or makeup work may be assigned at the discretion of the instructor.

Student responsibilities
1) Participate in class sessions. Full participation will require completion of all assigned readings before class.

2) Lead discussion of scientific papers as assigned. Responsibilities of discussion leaders include **(E, F)**:
   –Submit a planned agenda for the discussion 1 week before the in-class discussion.
   –Meet with the instructor to modify the agenda at least 1 day prior to the discussion session. These meetings must be *scheduled at least 1 week in advance.*
   –Submit a written synopsis of the discussion that includes: a) the key points or issues that emerged during the discussion, and b) a self-evaluation of discussion leadership. *Due within 1 week* of the discussion session.

3) Contribute to class research project **(B)**
   –Each individual will design and complete laboratory or field based work studying an aspect of decomposition and soil respiration
   –Students will report on preliminary results in class Apr 9 **(C)**. A question & answer session will follow each presentation **(D)**. Students will receive instructor feedback following presentations, which is to be incorporated into the final presentation **(F)**.
   –Students will collaborate to produce a final group presentation, synthesizing results from all experiments **(B)**. Each student will present during the final session **(C),** with grades assigned individually and for the entire group **(E)**. A question & answer period will follow, with questions from the instructor and guest panelists **(D, F)**.

4) Communication
   –Check Blackboard site frequently. All course announcements and assignments will

be posted on Blackboard
–Read and respond to UAF email in a timely fashion
–Include BIOL 476 in the subject line in all email correspondence with instructor

Student Code of Conduct

The UAF code of conduct details expectations of graded student work and is available at http://www.uaf.edu/catalog/current/academics/regs3.html. Collaboration on exams and lab reports is not allowed in this course. The code of conduct states that "students will not represent the work of others as their own." In this course this includes the work of other students, as well as plagiarism of the published work of other authors. Plagiarism is grounds for course failure. An explanation of plagiarism and how to properly cite sources are available from UAF libraries: http://www.uaf.edu/library/instruction/handouts/Plagiarism.html. http://www.uaf.edu/library/instruction/handouts/Citing.html

UAF Policies Disabilities Services

The University of Alaska Fairbanks is committed to providing equal access for students with disabilities. The Office of Disability Services implements the Americans with Disabilities Act (ADA) and insures that UAF students have equal access to the campus and course materials. The instructor will work with the Office of Disabilities Services (208 Whitaker, 474-5655) to provide reasonable accommodation to students with disabilities. If you have a physical or learning disability, please advise us in writing of any special consideration necessary by the beginning of the second class.

Schedule

Jan 17 (Thurs)
- -Course mechanics
- -Problem-solving
- -Introduction to C cycle and decomposition

Jan 22 (Tues)
- -How to read scientific papers
- -Structure and goals of scientific discussions
- -Discussion: Decomposition, Hobbie 1996
- *Reading: p. 151-175 in Chapin et al., Hobbie 1996 Ecological Monographs*

Jan 24 (Thurs)
- -Field trip to various West Ridge sites
- -Design decomposition experiments

Jan 29 (Tues)
- -Ecosystem concept and history
- -Construct litterbags, begin experiments
- *Reading: p. 3-13 in Chapin et al.*

Jan 24 (Thurs)
- -Climate, atmosphere, and ocean circulation
- -Discussion: history and development of the ecosystem concept, Tansley, Gleeson, and Clements
- *Reading: Excerpts from Tansley, Gleeson, and Clements*

Jan 29 (Tues)
- -Climate, atmosphere, and ocean circulation
- -Weigh litterbags
- *Reading: p. 18-45 in Chapin et al.*

Jan 31 (Thurs)
- -Energy balance
- Reading: *p. 71-77 in Chapin et al.*

Feb 1 (Fri): Drop deadline

Feb 5 (Tues)
- -Lithosphere: state factors, soils
- -Weigh litterbags
- *Reading: p. 46-67 in Chapin et al.*

Feb 7 (Thurs)
- -Hydrologic cycle
- -Discussion: Chronosequence approach, Vitousek & Farrington
- *Reading: p. 77-96 and 350-354 in Chapin et al., Vitousek & Farrington 1996 Biogeochemistry*

Feb 12 (Tues)
- -Metabolism
- -Productivity

Reading: p. 97-150 in Chapin et al.

Feb 14 (Thurs)
-Decomposition
-Discussion: trophic effects on whole ecosystem metabolism, Schindler et al.
Reading: p. 151-175 in Chapin et al., Schindler et al. 1997 Science

Feb 19 (Tues)
-Carbon cycle
-Weigh litterbags
Reading: p. 358-382 in Schlesinger,

Feb 21 (Thurs)
-Nitrogen cycle
Reading: p. 197-215 in Chapin et al.,

Feb 26 (Tues)
-N cycle
-Small watershed approach
Reading: p. 383-396 in Schlesinger

Feb 28 (Thurs)
-N cycle
-Discussion: small watershed approach, Likens et al.
Reading: Likens et al. 1970 Ecological Monographs

Mar 5 (Tues)
-P cycle
-Weigh litterbags
Reading: p. 215-219 in Chapin

Mar 7 (Thurs)
-Midterm

March 11-15: Spring break

Mar 19 (Tues)
-P cycle
Reading: p. 396-401 in Schlesinger

Mar 21 (Thurs)
-Other elements: S, Fe, K
Mar 26 (Tues)
-Stoichiometry
-Weigh litterbags
Reading: Elser et al. 2000 Ecology Letters

Mar 28 (Thurs)
-Stoichiometry
-Discussion: ecological stoichiometry, Cross et al.
Reading: Cross et al. 2003 Ecology Letters

Apr 2 (Tues)
-Succession
-Weigh litterbags
Reading: p. 281-304 in Chapin et al.

Apr 4 (Thurs)
- -Succession
- -Discussion: Vitousek & Reiners
- *Reading: Vitousek & Reiners 1975 Bioscience*

Apr 9 (Tues)
- -Ecosystem services
- -Preliminary analysis of decomposition data

Apr 11 (Thurs)
- -Sustainability
- -Discussion: ecosystem services, Foley et al.
- *Reading: Foley et al. 2005*

Apr 16 (Tues)
- -Resilience
- -Informal summaries of preliminary decomposition results
- *Reading: p. 356-369 in Chapin et al.*

Apr 18 (Thurs)
- -Socio-ecological systems
- -Discussion: regime change, Scheffer et al.
- *Reading: Scheffer et al. 2001*

Apr 23 (Tues)
- -Global change and ecosystem processes: nutrient loading
- -Final litterbag and soda lime weigh-in

Apr 25 (Thurs)
- -Global change and ecosystem processes: temperature
- -Statistical analysis of decomposition data

Apr 30 (Tues)
- -Global change and ecosystem processes: seasonality
- -Discussion: ocean acidification, Hoegh-Guldberg et al.
- *Reading: Hoegh-Guldberg et al. 2007 Science*

May 2 (Thurs)
- -Decomposition presentation
- -Recap and review

May 7-10: Final exams
- -Decomposition lab report due