Appendix VI.
Syllabi for MFR, SFM, and NREM Curricula

*Listed in alphabetical then numerical order
ESRM 200: Society & Sustainability
Winter 2015

Lectures: MW 2:30-4:20; BNS 117
Labs: WFS 105
Group AA: 11:30-1:20; Every other Wednesday
Group AB: 11:30-1:20; Every other Wednesday

Instructor
Stanley T. Asah
Anderson 201
206-685-4960; stasah@uw.edu
Office Hours: Wednesday 1:00-2:00pm or by appointment

Teaching Assistant:
Miku Lenentine
Wink 104
miku2@uw.edu
Office Hours: Wednesday 1:20-2:20pm

Course Description
Environmental problems are social problems—the state of the environment today is a product of what we do, including how we organize ourselves and act on environmental issues as individuals, institutions, and as a society. Our school is dedicated to bringing about a sustainable future by preparing you to become a leader in sustainable natural resource management. As part of that preparation, this course will help you explore the connections between humans and sustainability—both as a concept and in practice. We will examine how human actions affect environmental sustainability and how environmental changes, in turn, influence human actions. We will use the “lens” of sustainability to explore the connection between “big” issues like population, environment, food and energy, and personal lives and society. Our major goal is to examine the ramifications of individuals and society on sustainability.

Course Objectives
Upon completion of this course, you will be able to:
1. Conduct integrative analyses of societal causes and solutions to environmental problems.
2. Deliberate, synthesize and recommend action on sustainability issues in diverse-viewpoints settings.
3. Cultivate an enhanced sense of responsibility for your behavior toward the environment.

Tentative Units, Topics, and Schedule
Unit I: Week 1-4: Social Systems and Environmental Sustainability
1. Chapter 1: Human Systems, Environment, and Social Sciences (pp 1-43)
2. Sustainability: Meanings, and Local and National Initiatives

Unit II: Week 5-10: Our Footprint and Sustainability: Earth’s Vital Signals
1. Chapter 2: Humans and the resources of the earth: Sources & Sinks (pp 44-78)
2. Chapter 5: Population, environment & food. (pp 151-191)
3. Chapter 4: Energy and Society (pp 110-150)

Class Conduct
We will use a wide variety of strategies to capture your interest and optimize your learning. Notice that there are a series of course exercises; they are parts of whole, not separate entities.
Class activities will vary somewhat as we learn more about your learning style. Each week, we will engage in exercises that are analytic and interactive. Our goal is to have fun while interacting in various ways with course material and with each other. During the Monday and Wednesday class periods, we will explore the day’s topic, leaving time for questions and discussion. We will use various lecture and conversation formats.

**Personal Connections: We are part of the society-environment nexus.**
Class deliberations will explore your views on the social causes of and solutions to presented issues, and explore both incentives and constraints to the attainment of sustainability. We will focus on how and what we can and cannot do as individuals, and as members of our communities to contribute to sustainable solutions to natural environmental issues.

**Guest Speakers**
During some class sessions, we may have a guest speaker from the professional community. They may be an agency manager, an NGO (Non-Governmental Organization) representative, or a consultant. I have asked them to discuss an aspect of their work that is relevant to this class and to talk briefly, about how they got to where they are today. Beyond content, this will give you some perspective on future career possibilities. Each speaker will make a presentation or lead a discussion or in some other way offer content about some sustainability issue. After the speaker has concluded, and as necessary, Asah will offer a synthesis of the message that emerged from the speaker, tying them with the material discussed in class. You will then be encouraged to ask questions.

**Lab Sessions**
During the lab sessions, we will elaborate on issues discussed in class and reading assignments by exploring potential solutions to environmental problems via role-playing decision-making exercises (jigsaw puzzles). You will work in small groups to learn from and contribute to your peers’ learning. These exercises are designed to help deepen your analytic and problem solving skills relevant to sustainability. These sessions will occur on Wednesdays and depending on which session (AA first Wednesday, or AB second Wednesday) you signed up for; see tentative schedule for the days when you are expected to, or not, attend lab/quiz sessions.

**Learning Assessment**
**The 3X4 Card & Personal Connections**
One of the ways you will contribute to your own learning is by letting us know what you have learned in every class session. At the end of each session, you will turn in a provided 3X4 card with answers to the following questions: On one side of the card, tell us the most important thing you learned for that session, and what was unclear to you? This immediate feedback will help us improve our learning. On the other side of the card, you may be asked to answer questions about personal connections as described above. In addition to the reaction cards, you are expected to (i) complete a pre-course survey to help us better understand your learning goals, styles and time commitments, to help us better understand and structure the course to enhance your learning.

**Quizzes and Service Learning**
Quizzes will consist of short answers and multiple choice responses. There will be three quizzes; the one with the lowest score will be dropped and the average of the other two will count towards your final grade. There is a service learning option for the course. Those who participate
in service learning will take any two of the three quizzes; the better score of the two will count towards your final grade. Because you are allowed to drop one quiz, **THERE WILL BE NO MAKE-UP QUIZZES!**

**Jigsaws Puzzles**

It is widely understood that sustainability cannot be achieved without the tolerance and patience to listen to, understand and consider other viewpoints. The jigsaw is a role-playing exercise in which we debate different sides of an environmental issue and then come to consensus about how to address the issue. It begins with a position paper, presented to you at least a week prior, and concludes with a summary statement by 4-6 of you in a group. It will describe a problem with at least three conflicting viewpoints and approaches/roles (i.e., sections a, b, c, etc.). You will be assigned one of these roles. You are expected to write a one-page paper arguing for that role, irrespective of whether that role reflects your beliefs and values or not. The exercise is comprised of two sections; (i) a written one-page paper, which counts for 8 out of 10 total points, and is due in the **catalyst drop box** before the lab session, and (ii) a lab/quiz session exercise which counts for the remaining 2 points for that exercise. See Jigsaws for a detailed description of the exercises, and your assigned roles for each exercise.

**Term Paper**

The term paper will help you learn more about integrating course content, writing and communicating. You will be assigned permanent, term-long paper groups of 3-5 peers. Group members will acquire and provide support through peer writing. We have allotted time during quiz sessions devoted to group writing activities (see tentative Calendar). We will offer support and your paper outlines and drafts will be reviewed by your group members—your contribution to your group will count for 7.5/30 points for your final term paper score. See Term Paper guidelines for detailed description. Those who choose the Service Learning option are encouraged, but not required, to write their term paper on a subject relevant to their service learning activities.

**Grading**

Each learning assessment will be scored using a percentage point distribution system as follows:

<table>
<thead>
<tr>
<th>Learning Aspect</th>
<th>Sub Learning Aspect % Grade Points</th>
<th>% Grade Points</th>
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<tbody>
<tr>
<td>Real-time Assessment &amp; Personal Connections: The 3X4 cards</td>
<td></td>
<td>15</td>
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<tr>
<td>Quizzes</td>
<td></td>
<td>30</td>
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<tr>
<td>Jigsaw Puzzles</td>
<td></td>
<td>25</td>
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<tr>
<td>Term Paper</td>
<td></td>
<td>30</td>
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<tr>
<td>• Semi-Final Draft of term paper</td>
<td></td>
<td>10</td>
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<tr>
<td>• Final Draft of term paper</td>
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<td>12.5</td>
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<tr>
<td>• Peer and group work on term paper</td>
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<td>7.5</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>100</strong></td>
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**Course Readings**


(Available in the Campus Book store; you can also buy a used cheaper copy from Amazon—just make sure it is the 4th Edition to ace your quizzes)

Course Policies:  
Academic Integrity: Plagiarism, cheating, and other misconduct are serious violations of your contract as a student. We expect that you will know and follow the UW's policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to UW regulations. More information, including definitions and examples, can be found at http://depts.washington.edu/grading/issue1/honesty.htm.

Disability Accommodations: To request academic accommodations due to a disability, contact Disabled Student Services, 448 Schmitz, 206-543-8924 (V/TTY). If you have a letter from Disabled Student Services indicating that you have a disability which requires academic accommodations, present the letter to Asah so that we can discuss the accommodations needed for the class.

Diversity of Views and Interactions: The class uses an open, highly participatory, “small group and large group interactive” format. We especially seek a wide variety of views and styles of interaction.

Discussion, Synthesis and Analyses
You will be expected to participate in discussions and presentations in order to improve your grasp of the material as well as your communication abilities. You will be expected to demonstrate an ability to think critically and to weigh alternatives and express them in writing. Performance evaluations in the class depend on critical analyses and interpretations of issues, as well as course-based facts and concepts. The term-long joint/group activities are a forum for you to develop and execute skills in collective responsibility and team work.

The text is the conceptual framework of the class content. To excel, you will want to become sufficiently familiar with that material that you can discuss it intelligently and can refer to it as necessary. Your goal should be to become conversant with concepts and approaches and be comfortable using the concepts in the text as a reference for critical analyses, interpretation and decision making as necessary.
ESRM 201 Course Background: Objectives and Syllabus
Spring 2015: Prof. Sharon L. Doty
TA’s: Robert Tournay and Lisa Hannon
Lectures on Tuesdays 1:30-2:50 in WFS 201
Lab Sections on Wednesdays and Thursdays
Lab Section AA on Wednesdays 1:30-4:20 in WNK 107; extended days on May 13 and 20 to 5:30 PM and 7 AM to 7 PM on May 27
Lab Section AB on Thursdays 1:30-4:20 in WNK 107; extended days on May 14 and 21 to 5:30 PM and 7 AM to 7 PM on May 28

Course Introduction: This course will introduce you to the principles of ecology across an urban to wild land gradient. Students will be exposed in the classroom, labs and field trips to basic ecological theory and northwest plant communities as well as to the interaction of plants, soil, soil organisms, climate, hydrology, fire, insects and diseases on the landscape.

Course Grading
1. Examinations: Mid-term (30%) and Final (30%)
2. Field trips and labs
   a. Factsheets (2 per field trip: 4 x 2 = 8): 20%
   b. Participation
   c. Journal and associated pre-field trip homework: 20%

Course Objectives
- Principles of ecology across an urban to wildland gradient
- PNW plant communities
- Interactions of plants, soils, microbes, climate, hydrology, fire, insects, diseases, and wildlife
- Challenges of managing ecological systems in the urbanizing PNW
- Develop critical analysis and documentation skills

Course Syllabus: Lectures on Tuesdays

Mar 31  Intro to forest and urban ecosystems and the urban-rural gradient; Climate
Apr 7   Principles of Ecology 1a: ecosystem functions
Apr 14  Principles of Ecology 1b: niches, succession, landscape ecology
Apr 21  Principles of Ecology 2a: Abiotic disturbances- fire, wind, avalanches, volcanic eruptions
Apr 28  Wildlife along the urban to wildland gradient
May 5   Principles of Ecology 2b: Biotic disturbances and human influences
May 12  Soils along the urban to wildland gradient
May 19  Aquatic and riparian ecosystems
May 26  Adaptations to different environments
June 2  Landscape management for sustainability; tying it all together
June 12 Final Exam 2:30-4:20 PM
Course Syllabus: Labs/Field Trips

Apr 1&2  (WNK107) Lecture on plant form and function. Analysis of plant samples; campus tree tour with TA

Apr 8&9  Meet at the Washington Park Arboretum Graham Visitor Center. Finish by 5pm.

Apr 15&16  (WNK107) Lab exercises: Split class into three groups:
1) Soils: Textures, ratios, pH, water holding capacity, organic matter
2) Intro to molecular biology as a way to verify species identification
3) Review of plant ID: sketches in lab notebook

Apr 22&23  (WNK107) Lab exercises: plant microbiology
Beneficial microbes: mycorrhizae samples and plants +/- mycc; vetch +/- root nodules (showing benefits of microbes); microbial biodiversity (purified strains on plates of different morphologies); P solubilization assay and siderophore assay examples; microbes from sand vs rich soil on plates.
Pathogens: Samples of root rot and other diseases from the cabinets in WNK107.

Apr 29&30  Field trip to Union Bay Natural Area for wildlife. Fact Sheet presentations.

May 6&7  Midterm Exam

May 13&14  Field trip to SEA streets & Carkeek Park. Return about 5:30 PM. Fact Sheets

May 20&21  Field trip to Snoqualmie River. Return about 5:30 PM. Fact Sheets

May 27&28  All Day field trip to East Side of Cascades. 7 AM to 7 PM! Fact Sheets

June 3&4  Final exam (plant ID only): We will use the UW-assigned final exam day for the written portion.
ESRM 210/SEFS 510  
Introduction to Soils  
Autumn 2015

INSTRUCTOR: Dr. Darlene Zabowski, Rm. 204 Bloedel Hall, phone 685-9550  
Office Hours: Monday and Wednesday, 10:30 am - 12:30 pm, and by appointment  
E-mail: zabow@u.washington.edu

Teaching Assistants:  
Jason James:  Rm. 214 Bloedel Hall  
Office Hours: Tuesday and Thursday, 10:00 am - noon:00 am, and by appointment  
E-mail: jajames@uw.edu

Melissa Pingree: Rm. 311  
Bloedel Hall Office Hours: by appointment  
E-mail: mpingree@uw.edu

This class is intended for students who desire a basic knowledge of the physical, chemical and biological properties of soils. Introductory soils will give you an understanding of what soils are, what processes occur in soils, nutrient supply to plants, land use impacts, and how soils function as a part of the ecosystem. Note that there are generally three lectures per week, two will be in class (MW) and one lecture per week will be on the website.

Text for Course:  
Elements of the Nature and Properties of Soils (Brady and Weil), 3rd Ed.  
(other eds. are fine!)

Website:  
http://courses.washington.edu/esrm210/Fall2015/Home.html

<table>
<thead>
<tr>
<th>Week</th>
<th>Approximate Lecture Topics</th>
<th>Reading Assignments (Chapters and Pages)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Introduction, <strong>Soil components</strong></td>
<td>Chap. 1 (1-20)</td>
</tr>
<tr>
<td>2</td>
<td>Soil morphology, Soil physical properties, <strong>Soil bulk density and porosity</strong></td>
<td>Chap. 2 (52-56) and Chap. 4</td>
</tr>
<tr>
<td>3</td>
<td>Factors of soil formation, <strong>Parent materials</strong></td>
<td>Chap. 2 (27-51)</td>
</tr>
<tr>
<td>4</td>
<td><strong>Weathering</strong>, Clay minerals,</td>
<td>skim Chap. 8</td>
</tr>
<tr>
<td>5</td>
<td><strong>pH</strong>, Pedogenesis, <strong>Soil Classification</strong></td>
<td>Chap. 9 (269-283) and Chap. 3 (58-67)</td>
</tr>
<tr>
<td>6</td>
<td>Exam, Nov. 2 Soil Temperature, <strong>Water film</strong></td>
<td>Chap. 7, Chap. 5</td>
</tr>
<tr>
<td>7</td>
<td>Soil water, Holiday Nov. 11, <strong>Soil air</strong></td>
<td>Chap. 7</td>
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<tr>
<td>8</td>
<td>NO CLASS Nov 16th, <strong>Organic Matter, Organisms</strong></td>
<td>Chap. 10</td>
</tr>
<tr>
<td>9</td>
<td>Essential nutrients, Nutrient availability, HOLIDAY, November 27th</td>
<td>Chap. 1 (21-25) and web file of Singer &amp; Munns chap.</td>
</tr>
</tbody>
</table>
10   Nutrient availability, Soil Conservation,  
     *Nutrient cycling*  
     Chap.12 (397-412)  
     Chap 13 (543-557)

11   Poster session (Dec. 7th); Student poster 
     presentations (Dec 8th); Review in class (Friday) 

12   FINAL EXAM, December 15th, 8:30-10:20

COURSE REQUIREMENTS AND GRADING

1 Mid-term exam  November 2nd:  
25%
1 Final exam, December 15th:  
35%
1 Required lab session and lab quiz  (afternoons of Oct 19 thru Oct 23)  
  5%
1 Required field trip  
4 Quizzes, to be given:  
October 12th  
November 18th  
October 26th  
November 30th  
15%
1 Group poster presentation and paper:  
20%
LABORATORY SESSION

Each student must complete a single afternoon lab session (4 hours) and lab quiz. This lab period will help you learn about some physical and chemical properties of soil. Lab sessions are scheduled for October 19, 20, 21, 22, 23 from 1:30 to 5:20 pm in Rm. 211 Bloedel Hall. During the lab you will be given a “quiz” to complete using your results and lab displays. Sign-up sheets will be posted for you to choose a lab day.

QUIZZES

You will be given a total of 4 quizzes in class. I will average your 3 best in-class quizzes with the lab quiz for this part of your grade. Quizzes are intended to help you keep up with the material, determine where you may need additional explanation, and help you evaluate your knowledge.

GROUP POSTER PRESENTATIONS AND REPORTS

Groups of 3 or 4 students will work together on a project to produce a report and make a poster for presentation to the class. Groups will be assigned in mid-October. Each group must choose its project and submit a title and outline no later than October 26th.

Posters will be displayed from December 7th through December 9th. Reports will be due on December 9th. Posters must be at least 2.5 ft high by 3 ft wide and no more than 3 ft high x 5 ft wide in size. Posters will be displayed on easels, so they need to be in one piece and somewhat rigid. If you have other materials you would like to display with your poster, tables can be set up next to your poster. All posters must have a title, authors, group number, introduction, description of soil(s) (photos would be good), project information, and conclusions. More details will be provided later; sample posters are in the soils lab of Bloedel Hall BLD 211).

Reports should be 6-8 pages long not including cover page, references or figures. Reports should be broken into sections appropriate to your project, but all reports must include an Introduction, Conclusions and References in addition to sections specific to your topic. All references should be cited in the text. Include a cover page with a title, project number of your group, and individual student names; double space the text.

Reports and Posters will be evaluated for content, presentation/writing, research/effort, and organization. Soils faculty and grad students will attend the first poster session and evaluate posters. The focus of your project should be the formation, or management/use or misuse of a soil or soils in the Pacific Northwest. Examples would be from farming, forestry, parks, wilderness, wetlands, landscaping, Mt. St. Helens, or construction. You should discuss the soil type and properties, how it’s being used, if the human use is appropriate or inappropriate and why. Has the soil been changed by the use or activity? If the soil needs to be restored, how would you do it? Any recommendations? Projects may also focus on formation of a particular soil and its use or particular soil forming processes with example soils.
Class overheads available at the class website:
http://courses.washington.edu/esrm210/Fall2015/Home.html

LIBRARY RESERVE LIST

<table>
<thead>
<tr>
<th>TITLE</th>
<th>AUTHOR</th>
<th>LOAN PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elements of the Nature and Properties of Soils</td>
<td>N.C. Brady and R.R. Weil</td>
<td>4 hours</td>
</tr>
<tr>
<td>Soil Genesis and Classification, 5th Ed.</td>
<td>S.W. Buol, R.J. Southard, R.J. Graham, and P.A. McDaniel</td>
<td>4 hours</td>
</tr>
<tr>
<td>The Properties and Management of Forest Soils</td>
<td>R.F. Fisher and D. Binkley</td>
<td>4 hours</td>
</tr>
<tr>
<td>Soil Morphology, Genesis and Classification</td>
<td>D. Fanning and M. Fanning</td>
<td>4 hours</td>
</tr>
<tr>
<td>Soil Fertility and Fertilizers, 5th Ed.</td>
<td>Tisdale, Nelson, Benton and Havlin</td>
<td>4 hours</td>
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<tr>
<td>Keys to Soil Taxonomy, 1999 Ed.</td>
<td>Soil Conservation Service</td>
<td>Overnight</td>
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<tr>
<td>King County Soil Survey</td>
<td>Soil Conservation Service</td>
<td>Overnight</td>
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<tr>
<td>Soil Survey of Snoqualmie Pass Area</td>
<td>Soil Conservation Service</td>
<td>Overnight</td>
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<tr>
<td>Soil Survey of Snohomish County Area</td>
<td>Soil Conservation Service</td>
<td>Overnight</td>
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<tr>
<td>Soil Survey of Pierce County Area</td>
<td>Soil Conservation Service</td>
<td>Overnight</td>
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<tr>
<td>Soil Survey Manual</td>
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</table>
Field Trips

Each student is required to attend one all-day field trip. Three field trip days are available. The field trip will emphasize forest soils, but include examples of different types of soils, soil profiles, environmental factors affecting soils, and soil and vegetation interactions. Each field trip is offered on a different day. Choose ONE field trip to attend. Expect questions on the exams relating to information given on the field trip.

Meet behind Bloedel Hall in the C-10 parking lot by 8:00 am of the day of the field trip.

Bring lunch, rain gear, boots, notebook and field trip handout. Handouts will be given out in class before the field trip.

We will return about 5 pm.

SOILS Field Trip: The field trip will go to Bellevue, Issaquah, the Middle Fork Snoqualmie River, and Snoqualmie Pass.

Dates: Saturday, October 24th or Tuesday, October 27th or Thursday October 29th

SIGN-UP FOR ONLY ONE FIELD TRIP.

Sign-up sheets will be posted approximately the third week of the quarter.
ESRM 300 PRINCIPLES OF SUSTAINABILITY

Instructor:  Professor Jerry F. Franklin in the School of Environmental and Forest Science, College of Environmental Science (jff@u.washington.edu) is responsible for this course. Instructor will have office hours (Anderson Hall 203) from 3:30 to 5:30 p.m. on Tuesdays, following class (or as otherwise individually arranged by email or in class).

Class during Winter Quarter 2015 is held on Tuesdays from 1:30 to 3:20 p.m. in Savery Hall Room 260. Attendance will be recorded at every class period.

Class Content: Overview of principles of sustainability including: Presentations and discussions with experts involved in sustainability and natural resources; reading and discussing literature relevant to the speakers and other aspects of sustainability; and discussions of methods for balancing social, economic, and ecological consequences of proposed policies and actions and of the relation of sustainability to ethics and justice. Students assess the evolution in their perspectives on sustainability during the course of the term by writing short essays at the beginning and at the end of the course. Prerequisites required: None.

Class Description: Principles of sustainability are introduced within a natural resource and human social context. The history and development of sustainability as well as applications across an array of natural resources and disciplines are presented. Preparatory reading assignments are provided for the majority of class periods.

Student Learning Goals:

- Principles of sustainability and their application to natural resources;
- How organizations currently interpret sustainability principles in the practical management of natural resources for which they are responsible;
- How these principles are applied in further studies within the ESRM curriculum;
- Tools and methods that are being used to assess sustainability;
- Relationship of ethics and justice to sustainability; and
- Tenets of natural resource professionals.

General Method of Instruction:

- Primarily involves a weekly seminar presentation followed by classroom discussion. Reading assignments will usually be provided to help students prepare for the upcoming seminar.
Class Assignments and Grading:

Grading is credit/no credit; attendance and participation in the weekly seminars is required – if you are absent more than twice you will receive no credit for the course. You do **NOT** need to notify the instructor if you are going to be absent – however, as noted above, only two absences are allowed.

Assigned readings will be provided in the 3 required course texts and in the optional text as well as several additional readings assigned by the instructor. These additional readings will be emailed to the class as pdfs and posted on the web site.

In addition to attendance two essays are **REQUIRED** to obtain credit for the course. In the initial essay (approximately 500 words) you are to describe your initial understanding of sustainability as applied to management of natural resources and, more broadly, to human society, in effect, define and describe your current perspectives on sustainability. *The first essay is DUE IN CLASS AS HARD COPY AT THE SECOND CLASS MEETING* (January 13).

In the final essay (approximately 1200 words) you are to compare your initial perspectives on sustainability with those that you hold at the end of the course. Have your views on sustainability changed as a result of your participation in the seminar? If yes, how have they changed and, if not, why not? This essay is **DUE IN HARD COPY AT THE TIME OF THE LAST CLASS MEETING** (March 10) at which time it will be your basis for participating in a class discussion of the sustainability concept.

The primary way for my communicating with you is by the University of Washington class email list so you need to be regularly checking your university email. Presentations will also be put up on the class web site for your review.

Text Books (available at University Bookstore):

**Required:**


Floyd, Donald W. 2002. *Forest sustainability. The history, the challenge, the promise*. 81 p. Forest History Society: Durham, NC.

**Optional:**

Environmental & Resource Assessment is an introduction to some multidisciplinary methods used to assess the environment or a variety of resources found in an ecosystem or landscape.

5 Credits, section A
(lecture) meets M,W,F 9:30-10:20, GLD 322 (unless stated otherwise below)
labs 12:30-4:20PM (Sec AA = Tue in WFS 105; Sec AB = Wed in WFS 105)
field 12:30-4:20PM (Sec AA = Tue and Sec AB = Wed both at designated locations)
computer labs 9:30-10:20AM (Sec A) = Fri on Apr 24, May 1, 15, 22, Jun 5 in MGH 030

Lectures and additional info available at the CLASS WEB SITE (TBA)

Instructors: Daniel Vogt, Bloedel 258, ph 685-3292 (dvogt@u.washington.edu)
other instructors, office hours by appointment

TA: Korena Mafune TBA, Office hours TBA or by appointment

Help Available: The best way to get help in this course is to send an email message to help304@uw.edu. The TA will monitor it and will either answer it or forward it to the appropriate course or module instructor.

Text: Course packet and field trip/lab information on class website

Course Requirements

Grading:
80% of total grade is from the module exercises and 20% from the final exam.

Quizzes/Homeworks/Exam:
Either Quizzes or Homeworks may be given by faculty for each 'instructional module'.
One 2-hr final exam will be given on June 10th at 8:30-10:20 in GLD 322.

Field trips/laboratories:
Each student will be required to attend all scheduled Tue or Wed (half-day--12:30-4:20) field trips/laboratories.

E-mail distribution list:
We will set up an email distribution list as soon as we get all of your email addresses.
Please read all emails from us, and we will read all emails from you. Please include "ESRM 304" in the subject line of any message to us. We will then consider it a first priority.
<table>
<thead>
<tr>
<th>Month</th>
<th>Date</th>
<th>Day</th>
<th>Instructor</th>
<th>Time</th>
<th>Topic Module</th>
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<tbody>
<tr>
<td>Mar</td>
<td>30</td>
<td>Mon</td>
<td>Vogt et Team</td>
<td>9:30-10:20</td>
<td>Overview and Team Intro</td>
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<td></td>
<td>31</td>
<td>Tue</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>NO FIELD TRIP</strong></td>
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<tr>
<td>Apr</td>
<td>1</td>
<td>Wed</td>
<td>Turnblom</td>
<td>9:30-10:20</td>
<td>Scientific Methods (Theory and Designing) - Natural</td>
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<td></td>
<td></td>
<td>Wed</td>
<td>Ewing</td>
<td>9:30-10:20</td>
<td><strong>NO FIELD TRIP</strong></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Fri</td>
<td>Ryan</td>
<td>9:30-10:20</td>
<td>Scientific Methods (Theory and Designing) - Social</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Mon</td>
<td>Turnblom</td>
<td>9:30-10:20</td>
<td>Overview of some Field Trip Equipment/Tools</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Tue</td>
<td>Vogt et al</td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Overview</strong></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Wed</td>
<td>Ewing</td>
<td>9:30-10:20</td>
<td>Survey &amp; Navigation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wed</td>
<td>Vogt et al</td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Overview</strong></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Fri</td>
<td>Ewing</td>
<td>9:30-10:20</td>
<td>Survey &amp; Navigation</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Mon</td>
<td>Turnblom</td>
<td>9:30-10:20</td>
<td>Mini-Statistics</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Tue</td>
<td>Vogt</td>
<td>12:30-4:20</td>
<td>Lab -Review</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Wed</td>
<td>Turnblom</td>
<td>9:30-10:20</td>
<td>Mini-Statistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wed</td>
<td>Vogt</td>
<td>12:30-4:20</td>
<td>Lab - Review</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Fri</td>
<td>Moskal/Richardson</td>
<td>9:30-10:20</td>
<td>Remote Sensing</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Mon</td>
<td>A Mihle/Bolton</td>
<td>9:30-10:20</td>
<td>Stream Ecology</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>Tue</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Stream Ecology</strong></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Wed</td>
<td>Bolton</td>
<td>9:30-10:20</td>
<td>Stream Ecology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wed</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Stream Ecology</strong></td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Fri</td>
<td>Bolton</td>
<td>9:30-10:20</td>
<td>Stream Ecology (in MGH 030)</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Mon</td>
<td>Zabowski/Vogt</td>
<td>9:30-10:20</td>
<td>Soils &amp; Microclimate</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>Tue</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Soils &amp; Microclimate</strong></td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Wed</td>
<td>Zabowski/Vogt</td>
<td>9:30-10:20</td>
<td>Soils &amp; Microclimate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wed</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Soils &amp; Microclimate</strong></td>
</tr>
<tr>
<td>May</td>
<td>1</td>
<td>Fri</td>
<td>Zabowski/Vogt</td>
<td>9:30-10:20</td>
<td>Soils &amp; Microclimate (in MGH 030)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Mon</td>
<td>Ryan</td>
<td>9:30-10:20</td>
<td>Social Environment</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Tue</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park – Social Environment</strong></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Wed</td>
<td>Ryan</td>
<td>9:30-10:20</td>
<td>Social Environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wed</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park – Social Environment</strong></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Fri</td>
<td>Vogt</td>
<td>9:30-10:20</td>
<td>Review &amp; Discussions (in GLD 322)</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Mon</td>
<td>Turnblom</td>
<td>9:30-10:20</td>
<td>Tree Canopy</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Tue</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Tree Canopy</strong></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Wed</td>
<td>Turnblom</td>
<td>9:30-10:20</td>
<td>Tree Canopy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wed</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Tree Canopy</strong></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Fri</td>
<td>Turnblom</td>
<td>9:30-10:20</td>
<td>Tree Canopy (in MGH 030)</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>Mon</td>
<td>Wirsing</td>
<td>9:30-10:20</td>
<td>Wildlife Sampling</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Tue</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Wildlife Sampling</strong></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Wed</td>
<td>Wirsing</td>
<td>9:30-10:20</td>
<td>(Design Puzzle handed out)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wed</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Wildlife Sampling</strong></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Fri</td>
<td>Wirsing</td>
<td>9:30-10:20</td>
<td>Wildlife Sampling (in MGH 030)</td>
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<tr>
<td></td>
<td>25</td>
<td>Mon</td>
<td>NA</td>
<td>9:30-10:20</td>
<td><strong>NO CLASS - Memorial Day Holiday</strong></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Tue</td>
<td></td>
<td>12:30-4:20</td>
<td>Lab in WFS 105 - ‘Puzzle Design’ presentations</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Wed</td>
<td>Vogt/Team</td>
<td>9:30-10:20</td>
<td>Preparation for final exam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wed</td>
<td></td>
<td>12:30-4:20</td>
<td>Lab in WFS 105 - ‘Puzzle Design’ presentations</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Fri</td>
<td>Vogt</td>
<td>9:30-10:20</td>
<td>Final synthesis (in GLD 322)</td>
</tr>
<tr>
<td>June</td>
<td>1</td>
<td>Mon</td>
<td>Turnblom</td>
<td>9:30-10:20</td>
<td>Understory</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Tue</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Understory</strong></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Wed</td>
<td>Turnblom</td>
<td>9:30-10:20</td>
<td>Understory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wed</td>
<td></td>
<td>12:30-4:20</td>
<td><strong>Field Trip at St Edward State Park - Understory</strong></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Fri</td>
<td>Turnblom</td>
<td>9:30-10:20</td>
<td>Understory (in MGH 030)</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Wed</td>
<td>Vogt</td>
<td>8:30-10:20</td>
<td><strong>FINAL EXAM</strong> in GLD 322</td>
</tr>
</tbody>
</table>

ESRM 311 Soils and Land Use: Syllabus

Autumn Quarter, 2014, 3 credits

Class meets in Bloedel 211 Thursdays at 12:30-4:20 for lectures and field trips (Sect A),

<table>
<thead>
<tr>
<th>Instructors:</th>
<th>Daniel Vogt (primary), Korena Mafune (&amp; Reader/Grader - R/G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email addresses:</td>
<td>Dan (<a href="mailto:dvogt@uw.edu">dvogt@uw.edu</a>), Korena (??@uw.edu)</td>
</tr>
<tr>
<td>Office Hours</td>
<td>arranged by appointment</td>
</tr>
</tbody>
</table>

Text: several readings; will be announced in class and available at web site

Grading:

- 50% for quality of observations and interpretations in field trip notebook
- 40% for project & presentation
- 10% for quality of evaluating classmates' project presentations

E-mail distribution list:
We will set up an email distribution list based on your UW email account. You will need to read all emails from us. Please include “ESRM311” in the subject line of any message to us.

Field trip notebook:
Get hold of a "write-in-the-rain" type water resistant notebook, available from U Bookstore, REI, etc. All observations and notes should be kept in this notebook.

ESRM 311 Project:
Addresses a topic related to soils and land use. Clear it by emailing your instructor by end of 2nd week of class. Final Project reports are due by the last day of lectures. Projects will be presented to the class as scheduled. Projects will also be peer-reviewed by fellow class members.
<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Material covered</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Week 1:</strong></td>
<td></td>
</tr>
<tr>
<td>Thu</td>
<td>25-Sep</td>
<td>Lecture: <strong>Intro</strong> to Course; How the course will be taught</td>
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<tr>
<td></td>
<td></td>
<td>Reading: go over course syllabus and requirements</td>
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<td></td>
<td></td>
<td>Lab: no meeting</td>
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<td><strong>Week 2:</strong></td>
<td></td>
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<tr>
<td>Thu</td>
<td>2-Oct</td>
<td>Lecture: <strong>Soil Physical Properties</strong> in general, other important soil properties</td>
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<tr>
<td></td>
<td></td>
<td>for soils &amp; land use</td>
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<tr>
<td></td>
<td></td>
<td>Reading: OSU Chapter 3,4; reading optional: Brady &amp; Weil 2002 Chapter 4.1-4.6</td>
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<tr>
<td></td>
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<td>Lab: Soil Physical Properties (Bloedel 211 Soils Lab)</td>
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<td><strong>Week 3:</strong></td>
<td></td>
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<tr>
<td>Thu</td>
<td>9-Oct</td>
<td>Lecture: <strong>Parent Materials:</strong> Glacial &amp; Upland soils, origin, distribution.</td>
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<tr>
<td></td>
<td></td>
<td>Reading: OSU chapter 1, 2, 6; KC soil survey p 1-17; KC soil survey specific soils,</td>
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<td></td>
<td></td>
<td>handouts</td>
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<td></td>
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<td>Field Trip: Glaciation; Field trip walk to UW Arboretum</td>
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<td><strong>Week 4:</strong></td>
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<tr>
<td>Thu</td>
<td>16-Oct</td>
<td>Lecture: <strong>Urban Soils</strong></td>
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<td></td>
<td>Reading: lab or ?: Hand in Lab/Field Trip Notebook and Preparation for Class</td>
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<td></td>
<td></td>
<td>Presentations</td>
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<td><strong>Week 5:</strong></td>
<td></td>
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<tr>
<td>Thu</td>
<td>23-Oct</td>
<td>Lecture: <strong>Water:</strong> Water retention and movement in soil.</td>
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<td></td>
<td></td>
<td>Reading: OSU Chapter 5</td>
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<td></td>
<td></td>
<td>Field Trip: The structure of Seattle along Lake Washington N of UW &amp; CUH runoff</td>
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<td>research plots</td>
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<td><strong>Week 6:</strong></td>
<td></td>
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<tr>
<td>Thu</td>
<td>30-Oct</td>
<td>Lecture: <strong>Organic Matter:</strong> Wetlands, Peat Soils, origin, properties &amp; distribution in region</td>
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<td></td>
<td></td>
<td>Reading: KC soil survey specific soils, handouts</td>
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<td>Field Trip: Wetlands, peat soils field trip, Seattle, Bellevue area</td>
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<td><strong>Week 7:</strong></td>
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<tr>
<td>Thu</td>
<td>6-Nov</td>
<td>Lecture: <strong>Erosion &amp; Deposition</strong></td>
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<td></td>
<td></td>
<td>Reading: handouts</td>
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<td></td>
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<td>Field Trip: Redmond Ridge, Sammamish Canyon, Snoqualmie River Valley</td>
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<td><strong>Week 8:</strong></td>
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<tr>
<td>Thu</td>
<td>13-Nov</td>
<td>Lecture: <strong>Water Management</strong></td>
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<td>Reading: handouts</td>
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<td>Field Trip: Cougar Mountain water, soil and development interactions and solutions</td>
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<td><strong>Week 9:</strong></td>
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<tr>
<td>Thu</td>
<td>20-Nov</td>
<td>Lecture: TBA: given by graduate students</td>
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<td></td>
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<td>Reading: handouts</td>
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<td>Field Trip: Graduate student special field trips</td>
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<td><strong>Week 10:</strong></td>
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<tr>
<td>Thu</td>
<td>4-Dec</td>
<td>Lecture: <strong>Class Project</strong> presentations</td>
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<td></td>
<td></td>
<td>Lab: <strong>Class Project</strong> presentations</td>
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</tbody>
</table>
Course Content: This course is divided equally between natural and social science topics and has no pre-requisites so that it is accessible to upper-division students of diverse university majors; all that is required is an interest in learning more about forests and human interactions with these forests. There are additional reading and writing assignments for students taking the associated SEFS 521c course for graduate credit.

This course provides students with a basic understanding of forest ecosystems, including their structure and function and the diverse organisms (e.g., wildlife) that utilize them as habitat. Old-growth forests and related animals (such as the northern spotted owl and marbled murrelet) are used to exemplify aspects of the natural history and also provide the strong link between natural science and the development of forest policies and controversies in the Pacific Northwest. The significant role of natural disturbances, such as wildfire, windstorm and volcanic eruptions, in development of forests is also covered.

The development of forest policies and practices in the Pacific Northwest is covered in the second half of the course with consideration of conditions both before and after European settlement. Subjects include the history of modern forest exploitation, creation of the national forests and the US Forest Service, and current forest practices and policies on private, state trust, Indian, and federal forest lands. The Northwest Forest Plan for management of federal forest lands is used to illustrate how scientific findings are incorporated into the development of policy and forest practices. The course ends with a consideration of the challenges facing society and resource managers in the 21st century, including climate change.

Field Trips: Two 3-day field trips: (1) April 11-13 Olympic Peninsula and (2) May 16-18 Mt. St. Helens and Wind River Experimental Forest. Both trips will leave promptly at 8:00 a.m. on Friday morning and return by 6 p.m. on Sunday evening. Good field gear (boots, raingear, warm layers) will be required. Cooking and bathroom facilities as well as sleeping space within a structure will be provided during these trips. UW Release forms need to be turned in before each of the field trips.

Textbooks: Three textbooks are required, both of which are available at the University bookstore. Be sure that you get the recent editions of these rather than the original editions!! These books are:


Other readings will be provided either by email as pdfs or as hard copies. A detailed reading assignment schedule will be provided.

**Schedule:** Sieg Hall 224 on Mo We Fr from 1:30pm to 3:20pm, usually with the first half of the period as lecture, and discussion during the second half of the period.

**Grading:** Total of 1200 points divided as follows:

- Examinations (2 X 250 =) 500 points
- Field trip reports (2 X 150 =) 300 points
- Reading assignment reports (10 X 25 =) 250 points
- Book reports on textbooks (2 X 75 =) 150 points

There is no “final examination”, i.e., an exam given during finals week.
ESRM 320 is listed in the time schedule at 4:30-6:50 pm. This is an online course, so why is 4:30-6:50 pm listed? Some students know that certain online events (some events are required and others are optional as described below) take place during 4:30-6:50 pm. 

Online courses can take two forms: A) structured and interactive (there are planned online events on specific dates and times) and B) self-paced and not interactive (there are no planned events on specific dates and times). ESRM 320 is a structured online course.

1) Mandatory attendance for 2 in-person exams on 11.10 and 12.10, 4:30-6:50 pm, in 223 Anderson Hall.
2) Required listening to 4 SPA Conferences (Sustainability Performance Assessment). These online conferences are live and interactive, and the professor and TA mentor students in doing the SPA assignments. Conferences take place on four Thursday from 4:50-6 pm (see Schedule section for specific dates). Students have two options for participating in the SPA Conferences. A) Joining the live, online conferences on their scheduled dates. This is the suggested way to participate, because students can ask questions during the live, interactive conferences. B) The SPA conference will be recorded, for students who do not attend the live conferences. The recordings will be available for viewing approximately two hours after the live conference ends.
3) Required SPA quizzes are scheduled from 6-7 pm (see Schedule section for specific dates).
4) Optional in-person office hours take place 4:30-5:30 pm each Tuesday in 223 Anderson.

COURSE OVERVIEW

Course Details: ESRM 320, Marketing and Human Resources from a Sustainability Perspective (5 credits, NW and I&S). This is an online course that has two mandatory in person exams, 4:30-6:50 pm, on 11.10 and 12.10, in 223 Anderson Hall. There is no cumulative final exam during UW's final exam week.

Contact Information: Dr. Dorothy Paun (dap@uw.edu) and TA Yang Su (yangsu@uw.edu) Course Website:

- ESRM 320 uses the UW Canvas system, and its website is at https://canvas.uw.edu/courses/989152 (you need to log in with your UW ID). Information about Canvas in general is at https://community.canvaslms.com/community/answers/guides/overview, info about Panopto recorded lectures is at http://support.panopto.com/faq-page#t56n416 (see the Viewing section on that website), Panopto troubleshooting is at http://support.panopto.com/documentation/viewing/how-troubleshoot-panopto-viewing-issues, and a Canvas conference tutorial is at http://www.youtube.com/watch?v=LS2lttmPI6A&feature=youtube.
- If you encounter computing hardware and software technical difficulties with Canvas or Panopto recorded lectures, contact UW-IT technical support. 1) Call UW-IT at 206.221.5000, then press option 3, then option 1. 2) Walk-in help is available at the Odegaard Library, Room 230. 3) Email UW-IT at help@uw.edu (they respond within two working days).
Office Hours:

1) **This online course has a lengthy online office hour for the first class, on 10.1, from 4:30-6:50 pm**, to say hello and welcome you to ESRM 320, review the syllabus, and answer questions. You will receive an email invite to join the ESRM 320 Canvas Conference at 4:30 pm; to join the conference, click on the link and log in with your UW ID and password. You can use your microphone to talk during the conference or type questions and comments in the chat box. You will need speakers to hear Dr. Paun (she will be talking not typing in the chat box).

2) When quizzes are open, Dr. Paun and/or the TA hold office hours via a live online, interactive Canvas conference.

3) One-on-one online office hours (via Canvas conference) are available with Dr. Paun by request. If possible, set up your microphone when logging into a conference, or you can use the conference chat box if you do not have a microphone.

4) TA Yang Su will hold in person office hours every Tuesday in 223 Anderson, 4:30-5:30 pm (except 11.10, when exam 1 takes place.


Only the 10th edition. There is a reserve copy of *Understanding Business* on reserve at the Foster Business School Library.

**LEARNING OBJECTIVES**

*Marketing and Management.* In ESRM 320, we explore two of the four primary business dimensions: marketing and human resource management (companion course ESRM 321 explores finance and accounting). *Marketing* refers to promoting, pricing, and distributing new and existing products and services that are aimed at satisfying consumers’ wants, needs, and objectives. *Human resource management* refers to developing, managing, and motivating human capital and resources. *Sustainability.* Refers to integrating environmental, social, and financial elements in order to meet the needs of people today without compromising Earth’s capacity to provide for future generations. Integrating these three is called the triple bottom line. In business, the bottom line refers to net income or profits because it is the last (i.e., bottom) line in a company's income statement; profits are essential because a business is unsustainable without them. Sustaining the planet over the long term depends not on one but all three bottom lines. We will explore the meaning and importance of sustainable business practices that respect and adhere to best environmental science methods and ethical social responsibility standards. The context for this exploration will be assessing data in corporate sustainability reports. Companies that trade on U.S. stock exchanges are required by law to report financial performance, but no laws exist for reporting social responsibility and environmental performance. However, in response to stakeholders many corporations voluntarily issue annual sustainability reports that provide information on the company’s environmental and social responsibility practices and performance.

**Learning Objectives** (at the end of this course, students should be able to do the following).

- Explain marketing, human resources, corporate social responsibility, and sustainability concepts
- Summarize how a market orientation and commitment to sustainability can enhance customer and employee satisfaction
- Describe how consumer markets are segmented, targeted, and products positioned to satisfy individual, government, and business consumers’ wants and needs
• Compare techniques for creating value-added products, services, and ideas; valuing environmental and social externalities and managing traditional pricing; developing distribution strategies and “greening” the supply chain; and creating and implementing promotion campaigns
• Define managerial and leadership styles and theories of motivation, persuasion, and influence
• Summarize the human resource process of recruiting, interviewing, hiring, training, motivating, and evaluating employees
• Describe Global Reporting Initiative (GRI) framework for sustainability reporting
• Assess GRI human rights, labor practices and decent work, product responsibility, and society indicators to measure actual sustainability performance
• Analyze real world sustainability performance using data in corporate sustainability reports
• Summarize and interpret sustainability performance data

Optional Companion Course. ESRM 321 explores finance and accounting. When ESRM 320 and ESRM 321 are both taken, students receive a full introduction to business. Neither ESRM 320 nor ESRM 321 has any prerequisites, and students can take only one course, or both in any order. Both courses use the same required textbook. ESRM 321 is offered winter and summer quarters.

Grading
Points, Percent, and Final Course GPA. Students receive points for assignment(s), exam(s) and quizzes as described in the first table below. Those points are converted to a final course GPA grade using the University of Washington’s Standard Grade Scale (see http://faculty.washington.edu/scstroup/Gradescale.html). The UW Standard Grade Scale is in the second table below.
### ASSIGNMENTS, EXAMS, AND QUIZZES

<table>
<thead>
<tr>
<th>Assignment/Quiz</th>
<th>Possible Points</th>
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<tbody>
<tr>
<td>Human Resources Exam</td>
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<tr>
<td>Marketing Exam</td>
<td>400 points</td>
</tr>
<tr>
<td>Sustainability Performance Assessment (SPA) Quizzes</td>
<td>300 points</td>
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<tr>
<td>Sustainability Performance Interpretation Paper</td>
<td>300 points</td>
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<tr>
<td>Syllabus, SPA Data, and Course Website Quiz</td>
<td>50 points</td>
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<td><strong>TOTAL</strong></td>
<td><strong>1450 points</strong></td>
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<tr>
<th>% EARNED (% of total points possible, which shows in course website's Grading section)</th>
<th>UW SYSTEM GPA, see info at <a href="http://faculty.washington.edu/scstroup/Gradescale.html">http://faculty.washington.edu/scstroup/Gradescale.html</a></th>
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READINGS
The readings references below appear in the syllabus Schedule section’s right column, which is called How to Prepare for Class. The How to Prepare column shows two types of readings: "Read" and "Optional." Read means that the reading is required and may be tested on the exam. Optional means that the reading will not be on the exam, but a quick overview reading will be beneficial for lecture and a full reading if you are interested in the topic. All of the following readings, except the required Nickels textbook, are available on the course website in the Readings section.

Descriptions of Sustainability (2015), author unknown.
Ernst & Young (2014), The Value of Sustainability Reporting. Boston: Center for Corporate Citizenship at Boston College.
This file contains pages 1-16, 62-63, and 142-266.
Paun, Dorothy (2015), Leadership Preferences Questionnaire.
Paun, Dorothy (2015), Motivation Preferences Questionnaire.
Paun, Dorothy (2015), Sustainability Performance Assessment (SPA) System. This is an Excel file called SPA Data that is on the course website’s Readings section.
Sustainability Reports of CSX, Fluor, and UPS (2014). Use the reports on the course
website’s Readings section, so you use the correct sustainability reports. *Understanding Business*, William Nickels, James McHugh, and Susan McHugh (2013), 10th Edition (no other editions as they differ), NY: McGraw-Hill. Available at the University Bookstore, online from various book retailers, and one copy is on reserve at the Foster Business Library (first floor of Paccar Hall).


**SCHEDULE**

**Schedule Notes**

- **Modules.** The Module tab is located in the left navigation panel on the course website. The purpose of modules is to guide students through the lectures and assignments over the quarter. The Schedule below lists the dates and content for each module.

- **Recorded Business Lectures (all are required).** Panopto recorded lectures are available by clicking on the lecture links within the module associated with each class. When you watch a Panopto recorded lecture you can slow down or speed up the recording, see all of the PowerPoint slides using a slider bar, search to find items within a recording, etc. The PowerPoint slides used in all recorded lectures are available in the Lecture Slides section on the course website. Note that mobile devices do not play Panopto recorded lectures.

- **Live Online, Interactive Canvas Conferences (required).** Canvas Conferences focus on how to do the SPA assignment (details about how to do the SPA assignment is at the end of this syllabus). Conferences begin at 4:30 pm (class start time) and run until 6 pm (time when quizzes open). These live online conferences are offered so that students can ask questions about assessing sustainability performance points. To join a SPA conference, accept the conference invite emailed to you. A Panopto recording of the conference will be available approximately two hours after the live conference has ended.

- **SPA Quizzes.** SPA refers to the Sustainability Performance Assessment assignment, which is described at the end of this syllabus.

  ✓ SPA quizzes happen throughout the quarter (the Schedule below lists quiz dates), and each quiz is available to take from 6-7 pm on the date each quiz is due. Canvas will automatically close SPA quizzes at 7 pm. If a student does not finish a quiz by 7 pm, then Canvas will give only partial points for the quiz answers correctly answered before 7 pm. No quizzes can be taken after 7 pm on their respective due dates unless the conditions of the late policy are met. Students will have two attempts to answer each quiz question, if a question is not answered correctly during the first attempt, and the highest quiz score is retained.

  ✓ It is suggested that students begin each quiz at 6 pm so they have the maximum quiz time of one hour, to 7 pm.

  ✓ Students should read the SPA assignment info at the end of this syllabus and the SPA Data file, but here is a brief summary of the workflow related to taking a quiz. 1) In advance of each quiz, students assess sustainability performance by entering their assessed points in the SPA Data file, 2) then students upload their SPA Data file on the course website (uploading the file is a prerequisite for opening a quiz), and 3) then students take the quiz. It is not possible to do steps 1) to 3) in one hour; the 6-7 pm timeframe is for entering quiz answers (assess points), and reviewing work for incorrect answers entered on the first attempt and not for doing all of the work associated with each quiz. Students can do steps 1) to 2) in advance (e.g., days or even weeks ahead of the quizzes).

  ✓ There is one quiz which is not part of the SPA assignment, called the Syllabus, SPA
Data File, and Course Website Quiz.

- SPI Paper Assignment. SPI refers to the Sustainability Performance Interpretation paper assignment. Details about the SPI assignment are at the end of this syllabus. No SPI papers will be accepted after the due date/time unless the conditions of the late policy are met.
- Exams consist of multiple choice and essay questions. There is extensive exam information, and sample questions, on the website's Exam Info section. No exams will be given after the due date and time unless the conditions of the late policy are met. It is not possible to pass the exam by just reading the required Nickels textbook because material that supplements the textbook readings is provided in the required Panopto recorded business lectures. The professor sees course website user information thus knows how many students watch the Panopto recorded business lectures. In the past, the average exam score earned by students who did not fully watch every Panopto recorded business lecture has been a 38%. There are many required Panopto recorded lectures, so students should listen to those recorded lectures regularly over time as compared to watching all recorded lectures in a few days before the exam. Keep that in mind for planning when you will watch the Panopto recorded business lectures for the final exam. We all make choices, and I respect the choices that students make; if students choose to not fully watch all of the recorded business lectures and are unhappy with your final course grade, kindly do not be unhappy with the course.
- Video Case Studies. The Videos tab is located in the left navigation panel on the course website. Videos listed in the Schedule below may be covered on the exam. However, if the Schedule says a video is optional, then the video will not be covered on the exam.

10.1 TH

**MODULE 1**

Dr. Paun and TA Yang Su will hold an online conference (4:30-6:50 pm) to say hello and welcome you to ESRM 320, review the syllabus, SPA Data file, and course website materials, and answer questions. You will receive an email invite to join the ESRM 320 Canvas Conference at 4:30 pm; to join the conference, click on the link and log in with your UW ID and password. We look forward to "meeting you" during the live, online, interactive conference. You can use your microphone to talk during the conference or type questions and comments in the chat box. You will need speakers to hear Dr. Paun (she will be talking not typing in the chat box).

Optional Video Case Study: Global Warning on Global Warming (highly recommended). Optional means the video will not be on the exam, but view it if interested in the topic.

Read the syllabus and the SPA Data files. This will prepare you for taking the Syllabus and SPA Data File Quiz during the next class (see the “What is Due” column on the right for the next class)

Read (at least 15 minutes on each report for a quick overview) the three case study company sustainability reports (CSX, Fluor, and UPS). Locate and read the GRI Index (sometimes called the GRI Content Index) in each sustainability report because the index will guide your SPA work throughout the quarter

Optional read Descriptions of Sustainability (author unknown) and Ernst & Young. Optional means that the reading will not be on the exam, but a quick overview reading will be beneficial for lecture and a full reading if you are interested in the topic

10.6 TU
MODULE 2
Panopto Recorded Lectures:
1) Overview of Sustainability Reporting
2) Introduction to the Case Study Companies: CSX, Fluor, and UPS

Optional Video Case Study: Diamonds and Social Responsibility

Read (30 minutes each) the three case study company sustainability reports. Locate and read the GRI Index (sometimes called the GRI Content Index) in each sustainability report because the index will guide your SPA work throughout the quarter. Optional read Lipman

DUE Syllabus, SPA Data file, and Course Website Quiz (available 6-8 pm). This multiple choice quiz covers the material provided in the course syllabus and SPA Data file. For all quizzes, students have two attempts to answer each quiz question, if a question is not answered correctly during the first attempt. The highest quiz score is retained. All students are encouraged to begin all quizzes when they open to take advantage of the entire two hours for the two quiz attempts allowed for each question
1) Complete the quiz

10.8 TH

MODULE 3
IT IS IMPORTANT TO PARTICIPATE IN THIS LIVE ONLINE CONFERENCE THAT BEGINS AT 4:30 PM
Presentation: Sustainability Performance Assessment (SPA) Assignment Part 1, Overview of the SPA Assignment. There are two options for participating in this presentation:
1) Join the Canvas conference at 4:30 pm for a live, interactive online class where you hear instructions about how to do the SPA assignment and the associated quizzes and also have the option of asking questions
A Panopto recording of the conference will be available approximately two hours after the live conference has ended

Read GRI Manual pages 1-16
Skim read GRI Manual pages 142-235 (Social sub-category HR, LA, PR, SO Indicators)
Read the SPA Data file
Read the three sustainability reports (one hour each)

BEFORE YOU JOIN THE CONFERENCE,
have the following files downloaded to your computer’s desktop and open (it is not optimal to view the files on the course website, so download and open the files):
1) GRI Manual
2) SPA Data file
3) Three case study companies sustainability reports
ESRM 320 syllabus
10.13 TU

MODULE 4
Panopto Recorded Lecture: Dynamic Business Environment

Read Nickels Chapter 1 Optional Besio and Anderson
Read GRI Manual pages 1-16 (for SPA Quiz 1)
Read the SPA Data file
Read the three sustainability reports (one hour each)

DUE SPA Quiz 1 on GRI Sustainability Reporting (available 6-7 pm)
1) Complete the quiz

10.15 TH

MODULE 5
IT IS IMPORTANT TO PARTICIPATE IN THIS LIVE ONLINE CONFERENCE THAT BEGINS AT 4:30 PM
Presentation: SPA Part 2, Mentoring Exercises in Assessing the GRI Human Rights HR Indicators. There are two options for viewing/participating in this presentation:

Join the Canvas conference at 4:30 pm for a live, interactive online class where you hear instructions about how to do the SPA assignment and the associated quizzes and also have the option of asking questions
A Panopto recording of the conference will be available approximately two hours after the live conference has ended

Read GRI Manual pages 173-197 (Human Rights Indicators)
Read the SPA Data file
Read the three sustainability reports

BEFORE YOU JOIN THE CONFERENCE, have the following files downloaded to your computer’s desktop and opened:
1) GRI Manual
2) SPA Data file
3) Three case study companies sustainability reports
ESRM 320 syllabus

10.20 TU

MODULE 6
Panopto Recorded Lecture: Corporate Social Responsibility

Read Nickels Chapter 4
Optional read Lovegrove, Stengel

Read GRI Manual pages 173-197 (Human Rights Indicators)
Read the sustainability report sections that relate to this indicator (the GRI Index will give page numbers)
DUE SPA Quiz 2 (available 6-7 pm)
1) Complete your assessment (assess 0-5 points) of the Human Rights Indicators for all three case study companies by entering your points in the SPA Data file (this is a prerequisite for opening the quiz)
2) Upload your completed SPA Data file

10.22 TH

MODULE 7
IT IS IMPORTANT TO PARTICIPATE IN THIS LIVE ONLINE CONFERENCE THAT BEGINS AT 4:30 PM, OR WATCH ITS RECORDING, BEFORE YOU TAKE THE NEXT QUIZ

Presentation: SPA Part 3, Mentoring Exercises in Assessing the GRI Labor Practices LA Indicators. There are two options for participating in this presentation:
Join the Canvas conference at 4:30 pm for a live, interactive online class where you hear instructions about how to do the SPA assignment and the associated quizzes and also have the option of asking questions
A Panopto recording of the conference will be available approximately two hours after the live conference has ended

Read GRI Manual pages 142-172 (Labor Practices Indicators) Review the SPA Data file
Read the sustainability report sections that relate to this indicator

BEFORE YOU JOIN THE CONFERENCE,
have the following files downloaded to your computer’s desktop and opened (it is not optimal for you to open and view the files on the course website, so download and open the files):
1) GRI Manual
2) SPA Data file
3) Three case study companies sustainability reports

10.27 TU

MODULE 8
Panopto Recorded Lecture: Management and Leadership

Read Nickels Chapter 7 Optional exercise: complete the Leadership Preferences Questionnaire (Paun 2015 reading file on website)

Read GRI Manual pages 142-172 (Labor Practices Indicators)
Read the sustainability report sections that relate to this indicator

DUE SPA Quiz 3 (available 6-7 pm)
1) Complete your assessment of the Labor Practices Indicators for all three case study companies by entering your points in the SPA Data file (this is a prerequisite for opening the quiz)
2) Upload your completed SPA Data file

Complete the quiz
10.29 TH

**MODULE 9**
Panopto Recorded Lecture: Organizational Design

Read Nickels Chapter 8

11.3 TU

**MODULE 10**
Panopto Recorded Lecture: Motivation

Read Nickels Chapter 1
Optional read Herzberg and McKinsey & Company
Optional exercise: complete the Motivation Preferences Questionnaire (Paun 2015 reading file on website)

Read GRI Manual pages 198-220 (Society Indicators)
  Read the sustainability report sections that relate to this indicator

**DUE SPA Quiz 4 (available 6-7 pm)**
1) Complete your assessment of the Society Indicators for all three case study companies by entering your points in the SPA Data file
2) Upload your completed SPA Data file

Complete the quiz

11.5 TH

**MODULE 11**
Panopto Recorded Lecture: Human Resource Management

Optional video case study: SAS Institute (highly recommended)

Read Nickels Chapter 11
Optional read Manning, Pfitzer, Small

11.10 TU

Module 12

**Human Resources Exam**

**Late Policy.** The late policy strives for clarity and fairness: late assignments/exams are accepted only when accompanied by a physician/official person documented emergency (must be a signed, paper copy with contact information) that communicates how the emergency resulted in the student’s inability to meet the due date. All documentation will be verified. A makeup exam will be created for students who meet the emergency-based late policy but NOT for travel, other engagements, being late for an exam and unable to enter Anderson Hall before the doors are locked by UW Security at 5 pm, and other non-emergency situations. UW Security locks the Anderson doors shortly after 5 pm. If something delays you (e.g., traffic) and the Anderson doors are locked when you arrive, walk around Anderson to the side of the building facing the parking lot and bus stop, and yell “let me in” up the open window in 223 Anderson (top floor). If you cannot get inside
Anderson Hall, then you will not be able to take a makeup exam and will receive 0 points. Plan ahead and arrive early.

Read the Exam Info section on the course website. There is detailed exam info and sample questions Study/ review the readings and lectures. There are many required Panopto recorded lectures, so students should listen to those recorded lectures regularly over time as compared to watching all recorded lectures in a few days before the exam

Exam Requirements. Students are required to bring a: 1) UW photo ID (no photo ID, no exam), 2) Scantron ("bubble sheet") form (if you forget to bring a Scantron, we will sell them for $1), and 3) pencil and eraser for completing the Scantron

No blue books are needed, and no electronic devices are allowed (students will forfeit their exam and receive 0 points if an electronic device is turned on). Students are not allowed to leave the classroom after the exam has begun, so use the restroom beforehand

**DUE Human Resources Exam 4:30-6:50 pm, 223 Anderson** UW Photo ID checks take place 4-4:30 pm. Please be patient when you wait in line for the ID check, and feel free to arrive early to avoid the rush

**11.12 TH**

**MODULE 13**

Presentation: SPA Part 4, Mentoring Exercises in Assessing the GRI Product Responsibility PR Indicators. There are two options for participating in this presentation:

1) Join the Canvas conference at 4:30 pm for a live, interactive online class where you hear instructions about how to do the SPA assignment and the associated quizzes and also have the option of asking questions

A Panopto recording of the conference will be available approximately two hours after the live conference has ended

Optional Waddock reading
Read GRI Manual pages 221-235 (Product Responsibility Indicators) Review the SPA Data file
Read the sustainability report sections that relate to this indicator

**BEFORE YOU JOIN THE CONFERENCE,**
have the following files downloaded to your computer's desktop and opened (it is not optimal for you to open and view the files on the course website, so download and open the files):

1) GRI Manual
2) SPA Data file
3) Three case study companies sustainability reports
11.17 TU

MODULE 14
Panopto Recorded Lectures:
Marketing Process and Research
Segmenting, Targeting, and Positioning

Read Nickels Chapter 13

Read GRI Manual pages 221-235 (Product Responsibility Indicators)
Read the sustainability report sections that relate to this indicator

DUE SPA Quiz 5 (available 6-7 pm)
1) Complete your assessment of the Product Responsibility Indicators for all three case study companies by entering your points in the SPA Data file
2) Upload your completed SPA Data file
3) Complete the quiz

You have now completed assessing all GRI indicators and can begin working on the SPI paper

11.19 TH

MODULE 15
Panopto Recorded Lectures:
1) Product Overview
2) New Product Development

Optional Video Case Study: SpaceShipOne

Read Nickels Chapter 14 Optional read American Chemical Society, Knights, Steinmetz

11.24 TU

MODULE 16
Panopto Recorded Lecture: Product Life Cycle

Required Video Case Studies: Interview with GoPro CEO Nick Woodman (video on website) and GoPro Ad (http://www.youtube.com/watch?v=A3PDXmYo F5U)

Read Nickels Chapter 14 Optional read Pfizer and Orlitzky

11.26 TH

Thanksgiving Holiday
12.1 Tuesday

MODULE 17
Panopto Recorded Lectures:
1) Pricing Part 1
2) Pricing Part 2 Environmental Externalities

Optional Video Case Study: Story of Stuff (highly recommended)

Read Nickels Chapter 14 Optional read Mangla, Nidumolu

DUE SPI PAPER
LATE POLICY: Late assignments/exams are accepted only when accompanied by a physician/official documented emergency (must be a signed, paper copy with contact information) that communicates how the emergency resulted in the student's inability to meet the due date

12.3 TH

MODULE 18
Panopto Recorded Lecture: Channels of Distribution

Required Video Case Study: Amazon's Distribution Drone

Nickels Chapter 15
Optional read Sengupta, Shacklett

12.3 TU

MODULE 19
Panopto Recorded Lecture: Promotion

Required Video Case Study: Art of Persuasion

Read Nickels Chapter 16

12.10 TH

Module 20
Marketing Exam
Late Policy. The late policy strives for clarity and fairness: late assignments/exams are accepted only when accompanied by a physician/official person documented emergency (must be a signed, paper copy with contact information) that communicates how the emergency resulted in the student's inability to meet the due date. All documentation will be verified. A makeup exam will be created for students who meet the emergency-based late policy but NOT for travel, other engagements, being late for an exam and unable to enter Anderson Hall before the doors are locked by UW Security at 5 pm, and other non-emergency situations. UW Security locks the Anderson doors shortly after 5 pm. If something delays you (e.g., traffic) and the Anderson doors are locked when you arrive, walk around Anderson to the side of the building facing the parking lot and bus stop, and yell “let me in” up the open window in 223 Anderson (top floor). If you cannot get inside Anderson Hall, then you will not be able to take a makeup exam and will receive 0 points.
Read the Exam Info section on the course website. There is detailed exam info and sample questions. Study/review the readings and lectures. There are many required Panopto recorded lectures, so students should listen to those recorded lectures regularly over time as compared to watching all recorded lectures in a few days before the exam.

Exam Requirements. Students are required to bring a: 1) UW photo ID (no photo ID, no exam), 2) Scantron (“bubble sheet”) form (if you forget to bring a Scantron, we will sell them for $1), and 3) pencil and eraser for completing the Scantron.

No blue books are needed, and no electronic devices are allowed (students will forfeit their exam and receive 0 points if an electronic device is turned on). Students are not allowed to leave the classroom after the exam has begun, so use the restroom beforehand.

DUE Marketing Exam
4:30-6:50 pm, 223 Anderson UW Photo ID checks take place 4-4:30 pm. Please be patient when you wait in line for the ID check, and feel free to arrive early to avoid the rush.
SPA (Sustainability Performance Assessment) and SPI (Sustainability Performance Interpretation) Assignments

Overview of the SPA and SPI Assignments
There are two separate but related sustainability performance assignments: SPA and SPI. Students complete the SPA assignment which forms the basis for the SPI paper. These two sustainability assignments are briefly described next. Then this section of the syllabus provides detailed information about the how to do the SPA assignment. The section that follows provides information about the SPI assignment. The modules guide you through the assignments.

1) Sustainability Performance Assessment (SPA) assignment. You will conduct a sustainability performance assessment for three case study companies. “Assessment” means to review sustainability report information and then assess 0-5 points using the SPA System described in the SPA Data file's SPA worksheet. Your deliverables are your SPA file uploads (complete/incomplete grade) and taking the SPA quizzes.

2) Sustainability Performance Interpretation (SPI) assignment. After you complete the SPA quizzes, you write a paper that interprets your SPA summary statistics. The basis for your SPI paper is your completed SPA Data file. Your deliverable is your SPI paper.

SPA Learning Objectives. At the end of this assignment students should be able to:
- Describe sustainability reporting and the GRI indicators for measuring sustainability performance.
- Assess real world sustainability performance using corporate sustainability reports and GRI indicators.
- Analyze and interpret sustainability performance data.
- Know how to use Excel spreadsheets

Financial and Sustainability Reporting Overview
Financial Reporting and GAAP. Publicly traded companies, meaning those that trade on a stock exchange, are required to issue financial reports using Generally Accepted Accounting Principles (GAAP). GAAP refers to a set of principles, detailed rules and standards, to use for compiling and presenting financial statements. Without GAAP, companies would be at liberty to withhold financial information that might adversely affect investors, creditors, lenders, and other stakeholders. Financial performance disclosed and presented using GAAP provides consistency for those who analyze financial reports in order to assess a company’s financial performance over time, or in comparison to other companies.

Sustainability Reporting and GRI (Global Reporting Initiative). Sustainability reports (also called environmental, citizenship, corporate social responsibility, or CSR reports) are voluntary. A sustainability report discloses a company’s impacts on the environment and society. Sustainability reporting has many potential benefits. It helps companies set goals, measure performance, understand their sustainability impacts, manage change to make operations more sustainable, and reduces legal risks, forecast inaccuracies, insurance rates, and waste. Additionally, sustainability reports enhance accountability, credibility, and stakeholder transparency (all those who are affected by and can affect an organization, Freeman 1984). Sustainability reports may improve the company’s reputation and relations with the public and regulatory bodies, attract socially responsible investors, and produces more loyal customers. The Global Reporting Initiative (GRI) provides principles, widely accepted rules and procedures for reporting environmental and social performance are the equivalent of GAAP for financial reporting.
**GRI Sustainability Reporting Framework**

The GRI sustainability reporting framework provides methods and metrics (called indicators) for measuring and reporting sustainability impacts and performance in three areas: 1) Economic, 2) Environmental, and 3) Social (consists of four sub-categories: Human Rights, Labor Practices, Product Responsibility, and Society). These three GRI categories are briefly described below. In ESRM 320 (marketing and management from a sustainability perspective) students learn to assess sustainability performance relating to the GRI Social sub-categories. In ESRM 321 (finance and accounting from a sustainability perspective) students learn to assess sustainability performance relating to the GRI Economic and Environment categories as well as financial performance. [ESRM 320 and 321 are companion courses (students who take both receive a full introduction to business), but the courses are independent, not prerequisites for one another.]

1) **Economic (EC) Category**: The economic dimension concerns the organization’s impacts on the economic conditions of stakeholders and throughout society (local, regional, national, global). It does not focus on the financial condition of the organization.

2) **Environment (EN) Category**: The environmental dimension concerns the organization’s impact on living and non-living natural systems, including land, air, water, biodiversity, and ecosystems.

3) **Social Category**: The social dimension concerns the organization’s impact on the social systems within which it operates. There are four sub-categories: Human Rights (HR), Labor Practices and Decent Work (LA), Product Responsibility (PR), and Society (SO).

**How to Do the SPA Assignment**

You conduct a sustainability performance assessment for three case study companies. “Assessment” means to review sustainability report information and then assess 0-5 points using the SPA System described in the SPA Data file’s SPA worksheet.

1) For each module, read the assigned pages from the *GRI Manual* publication assigned to that module, which is listed in the Schedule’s How to Prepare column and in each module, so you know the meaning of the indicator before you assess it.

2) Sometimes the GRI Index has a page number error or other type of error or omission. These are described in the SPA Data file’s Report Errors and Omissions worksheet. Consult that worksheet before assessing each indicator.

3) Open a sustainability report and locate the GRI Index (sometimes it is called the GRI Content Index) which is near the end of each report. Find the first GRI indicator that you are assessing to locate the relevant page numbers in the sustainability report. Paste those page numbers in to the appropriate cell in your SPA Data file, so you have them in a convenient location for future reference.

4) Decide how many points to assess for that indicator (How to Assess Points info is in the top rows of the SPA Data file). Open your SPA Data file and enter 0-5 points for the indicator. We suggest assessing each indicator for all three companies *at the same time* before moving on to the next GRI indicator, for consistency.

There are four activities associated with each SPA module: **READ, ASSESS, UPLOAD**, and take the **QUIZ**, as described in the table below.
How to Do the SPI Assignment

After you complete the SPA quizzes, write a paper that interprets your SPA summary statistics. The basis for your SPI paper is your completed SPA Data file’s SPA worksheet.

1) Read again each company’s sustainability report to deepen your understanding of their sustainability performance.
2) Review your SPA Data file summary statistics.
3) Do an intra-firm (within) comparative sustainability performance analysis. How did each company perform in terms of the four sub-categories: Human Rights (HR), Labor Practices and Decent Work (LA), Product Responsibility (PR), and Society (SO). For example, did CSX have higher (or lower) Human Rights (HR) performance compared to Labor Practices and Decent Work (LA), Product Responsibility (PR), Society (SO) performances? Labor Practices and Decent Work (LA) performance compared to Human Rights (HR), Product Responsibility (PR), Society (SO) performances? Product Responsibility (PR) performance compared to Human Rights (HR), Labor Practices and Decent Work (LA), Society (SO) performances? Society (SO) performance compared to Human Rights (HR), Labor Practices and Decent Work (LA), Product Responsibility (PR) performances?
4) Do an inter-firm (among) comparative sustainability performance analysis. For example, did CSX have higher (or lower) Human Rights (HR) performance compared Fluor and UPS? Higher (or lower) Labor Practices and Decent Work (LA) performance? Higher (or lower) Product Responsibility (PR) performance? Higher (or lower) Society (SO)?
5) Then rank the case study companies from highest to lowest, in terms of their overall sustainability performance (summary statistics mean) and transparency (percent of indicators reported), which is the last item in the grading rubric called Summary.
6) Write a paper describing your interpretation findings. A) Organize your paper according to the grading rubric using the organizing template (next page). B) Write a comprehensive and thorough interpretative paper. Provide examples from the sustainability reports, and compare the companies in terms of their summary descriptive statistics in the SPA Data Answer file provided by Dr. Paun after the last SPA quiz. C) Proofread to check spelling, grammar, clarity, and check to make sure that your paper answers all of the grading rubric questions, is not above or too far below the page limitation (see below), and that you have not pasted text from online documents or those written by others.
7) Maximum paper length is 8 pages and should be single spaced, .5 inch page margins, with your choice of font type/size. If you want to include citations, figures, or tables, then put those in an appendix (which will not count in the page total). Citations are not required. Your paper must be uploaded on Canvas on or before the due date and time.

Below is a template with the SPI grading rubric items listed as SPI paper sections. Organizing your paper so that it follows the grading rubric is good insurance for covering all items in the grading rubric.

1) Intrafirm Comparison of Human Rights (HR), Labor Practices and Decent Work (LA), Product Responsibility (PR), Society (SO): CSX
2) Intrafirm Comparison of Human Rights (HR), Labor Practices and Decent Work (LA), Product Responsibility (PR), Society (SO): Fluor
3) Intrafirm Comparison of Human Rights (HR), Labor Practices and Decent Work (LA), Product Responsibility (PR), Society (SO): UPS
4) Inter-firm Comparison of Human Rights (HR) Among All Three Companies
5) Inter-firm Comparison of Labor Practices and Decent Work (LA) Among All Three Companies
6) Inter-firm Comparison of Product Responsibility (PR) Among All Three Companies
7) Inter-firm Comparison of Society (SO) Among All Three Companies
8) Summary rank of which companies had the highest, second highest, and the lowest overall sustainability in terms of mean points (performance), percent of indicators reported (transparency), and weighted mean (reflects performance and transparency combined)
ESRM 321: FINANCE & ACCOUNTING FROM A SUSTAINABILITY PERSPECTIVE
Winter Quarter 2016 (Draft in Progress as of 10.19)

ESRM 321 is listed in the time schedule at 4:30-6:50 pm. This is an online course, so why is 4:30-6:50 pm listed? So students know that certain online events (some events are required and others are optional as described below) take place during 4:30-6:50 pm. Online courses can take two forms: A) structured and interactive (there are planned online events on specific dates and times) and B) self-paced and not interactive (there are no planned events on specific dates and times). ESRM 321 is a structured online course.

1) Mandatory attendance for 2 in-person exams on 2.9 and 3.10, 4:30-6:50 pm, in 223 Anderson Hall.
2) Required listening to 4 SPA Conferences (Sustainability Performance Assessment). These online conferences are live and interactive, and the professor and TA mentor students in doing the SPA assignments. Conferences take place on four Thursday from 4:50-6 pm (see Schedule section for specific dates). Students have two options for participating in the SPA Conferences. A) Joining the live, online conferences on their scheduled dates. This is the suggested way to participate, because students can ask questions during the live, interactive conferences. B) The SPA conference will be recorded, for students who do not attend the live conferences. The recordings will be available for viewing approximately two hours after the live conference ends.
3) Required SPA quizzes are scheduled from 6-7 pm (see Schedule section for specific dates).

COURSE OVERVIEW

Course Details: ESRM 321, Finance and Accounting from a Sustainability Perspective (5 credits, NW and I&S). This is an online course that has two mandatory in person exams, 4:30-6:50 pm, on 2.9 and 3.10, in 223 Anderson Hall. There is no cumulative final exam during UW’s final exam week.

Contact Information: Dr. Dorothy Paun (dap@uw.edu) and TA Yang Su (yangsu@uw.edu) Course Website:
• ESRM 321 uses the UW Canvas system, and its website is at https://canvas.uw.edu/courses/1022603 (you need to log in with your UW ID). Information about Canvas in general is at https://community.canvaslms.com/community/answers/guides/overview, info about Panopto recorded lectures is at http://support.panopto.com/faq-page#t56n416 (see the Viewing section on that website), Panopto troubleshooting is at http://support.panopto.com/documentation/viewing/how-troubleshoot-panopto-viewing-issues, and a Canvas conference tutorial is at http://www.youtube.com/watch?v=LS2lttmPl6A&feature=youtube.
• If you encounter computing hardware and software technical difficulties with Canvas or Panopto recorded lectures, contact UW-IT technical support. 1) Call UW-IT at 206.221.5000, then press option 3, then option 1. 2) Walk-in help is available at the Odegaard Library, Room 230. 3) Email UW-IT at help@uw.edu (they respond within two working days).
Office Hours:

1) **This online course has a lengthy online office hour for the first class, on 1.5, from 4:30-6:50 pm,** to say hello and welcome you to ESRM 320, review the syllabus, and answer questions. You will receive an email invite to join the ESRM 320 Canvas Conference at 4:30 pm; to join the conference, click on the link and log in with your UW ID and password. You can use your microphone to talk during the conference or type questions and comments in the chat box. You will need speakers to hear Dr. Paun (she will be talking not typing in the chat box).

2) When quizzes are open, Dr. Paun and/or the TA hold office hours via a live online, interactive Canvas conference.

3) One-on-one online office hours (via Canvas conference) are available with Dr. Paun by request. If possible, set up your microphone when logging into a conference, or you can use the conference chat box if you do not have a microphone.

4) TA Yang Su will hold in person office hours every Tuesday in 223 Anderson, 4:30-5:30 pm (except 2.9 and 3.10 when exam 1 takes place.

*Only the 10th edition.* There is a reserve copy of *Understanding Business* on reserve at the Foster Business School Library.

**COURSE GOALS & LEARNING OBJECTIVES**

*Overview: Finance and Accounting.* In ESRM 321, we explore two of the four primary business dimensions: finance and accounting (companion course ESRM 320 explores marketing and management). *Finance* refers to the flows and uses of money among individuals, businesses, non-profit organizations, and governments and associated processes, institutions, and markets. *Accounting* involves recording, classifying, summarizing, and interpreting business transactions to provide management and stakeholders with information about a company’s performance, liquidity, growth, value, etc. *Sustainability.* Refers to integrating environmental, social, and financial elements in order to meet the needs of people today without compromising Earth’s capacity to provide for future generations. Integrating these three is called the triple bottom line. In business, the bottom line refers to net income or profits because it is the last (i.e., bottom) line in a company’s income statement; profits are essential because a business is unsustainable without them. Sustaining the planet over the long term depends not on one but all three bottom lines. We will explore the meaning and importance of sustainable business practices that respect and adhere to best environmental science methods and ethical social responsibility standards. The context for this exploration will be assessing data in corporate sustainability reports. Companies that trade on U.S. stock exchanges are required by law to report financial performance, but no laws exist for reporting social responsibility and environmental performance. However, in response to stakeholders many corporations voluntarily issue annual sustainability reports that provide information on the company’s environmental and social responsibility practices and performance.

*Course Goals*  
ESRM 321 has two goals: to provide a context for 1) learning business concepts (through watching the recorded business lectures and reading the Nickels textbook) AND 2) hands on experience assessing corporate sustainability performance (through assessing GRI indicators using sustainability report information). The learning objectives below in **bold**
are achieved through listening to the recorded business lectures and reading the Nickels textbook (both of which are covered on the exams that comprise 55% of the course grade) while the learning objectives underlined below are achieved through the SPA quizzes and SPI paper (45% of the course grade). Exams do not cover SPA, and the SPA quizzes do not cover business concepts. Note that SPA and SPI are described in detail throughout this syllabus.

**Learning Objectives (at the end of this course, students should be able to do the following).**
- Explain finance, accounting, corporate social responsibility, and sustainability concepts
- Summarize what money is, counterfeiting deterrence, and financial institutions
- Explain the functions of the U.S. Federal Reserve System and its monetary policy tools
- Describe stock markets, investing strategies, and socially responsible investing
- Analyze financial statements (e.g., balance sheets, income statements)
- Define corporate financial management
- Describe Global Reporting Initiative (GRI) framework for sustainability reporting
- Assess GRI economic and environment indicators to measure actual sustainability performance
- Analyze real world sustainability performance using data in corporate sustainability reports
- Summarize and interpret sustainability performance data

**Optional Companion Course.** ESRM 320 explores marketing and human resource management. When ESRM 320 and ESRM 321 are both taken, students receive a full introduction to business. Neither ESRM 320 nor ESRM 321 has any prerequisites, and students can take only one course, or both in any order. Both courses use the same required textbook. ESRM 320 is offered fall, spring, and summer quarters.

**GRADING**
*Points, Percent, and Final Course GPA.* Students receive points for assignment(s), exam(s) and quizzes as described in the first table below. Those points are converted to a final course GPA grade using the University of Washington’s Standard Grade Scale (see [http://faculty.washington.edu/scstroup/Gradescale.html](http://faculty.washington.edu/scstroup/Gradescale.html)).

**READINGS**
The readings below appear in the syllabus Schedule’s right column, is called “How to Prepare for Class.” The How to Prepare column shows two types of readings: “Read” and “Optional.” Read means that the reading is required and may be tested on the exam. Optional means that the reading will not be on the exam, but a quick overview reading will be beneficial and a full reading if you are interested in the topic. All of the following readings, except the required Nickels textbook, are available on the course website in the Readings section.

Ambec, Stefan and Paul Lanoie (2008), "Does It Pay to Be Green? A Systematic
Descriptions of Sustainability (2005), author and publisher unknown.
Financial Statements & CEO Letter files of Three Case Study CSX, Fluor, and UPS (2014). Use the files on the course website’s Readings section, so you use the correct files.
Paun, Dorothy (2015), *Sustainability Performance Assessment (SPA) System*. This is an Excel file called SPA Data that is on the course website’s Readings section.
*Sustainability Reports of Three Case Study Companies CSX, Fluor, and UPS* (2014). Use
the reports on the course website’s Readings section, so you use the correct sustainability reports.

*Understanding Business*, William Nickels, James McHugh, and Susan McHugh (2013), 10th Edition (no other editions as they differ), NY: McGraw-Hill. Available at the University Bookstore, online from various book retailers, and one copy is on reserve at the Foster Business Library (first floor of Paccar Hall).

SILVICULTURE – 2015 SYLLABUS –  
ESRM 323  
Website:  
https://catalyst.uw.edu/workspace/crapoh/4920  
Dr. Eric C. Turnblom

LECTURE TOPICS, EXAM SCHEDULE, AND READINGS FROM SMITH, ET AL. [IN SQUAREBRACES]:

Week 1 – (30 Mar) Silviculture; Forest Regeneration  
- Role of silviculture [Chpt. 1] & supplemental reading  
- Natural & Artificial regeneration [Chpt. 7, 10]  
*Field Trip: Fr 3 Apr: Seed orchard, seed plant/ nursery tour*

Week 2 – (6 Apr) Tree Growth, Silvics, Stand Dynamics  
- Individual tree growth, Silvics [Chpt. 3 & supplemental material]  
- Stand Dynamics, Stand Growth & Yield [Chpt. 2, 4]  
*Field Trip: Fr 10 Apr: Tree planting & Forest Regeneration*

Week 3 – (13 Apr) Stand Tending Techniques  
- Stand density assessment [Chpt. 4]  
- Controlling growing space [Chpt. 5, 6]  
*Field Trip: Fr 17 Apr: Stand density & dynamics tour*

Week 4 – (20 Apr) Wood Quality; Site / Habitat  
- Silviculture impacts on wood properties [supplemental reading]  
- Site preparation [Chpt. 8]  
*Lab Session: Fr 24 Apr: Growth & Yield concepts / Applications*

Week 5 – (27 Apr) Species Selection; Silviculture Systems  
- Species selection [Chpt. 9]  
- Silviculture Systems & Single-cohort silviculture [Chpt. 11, 12, 13]  
*Field Trip: Fr 1 May: Silviculture operations*

EXAM 1 -- Take-home during the week of 4 May. Covers material introduced in chapters 1 through 12 and any supplemental readings assigned.

Week 6 – (4 May) Double- & Multi-cohort Systems; Mixed Species  
- Double-cohort & Uneven-aged, pure stands [Chpt. 14, 15]  
- Mixed stands, even- and uneven-aged [Chpt. 16]  
*Field Trip: Fr 8 May: Tree Farm Tour*

Week 7 – (11 May) Silvicultural Objectives: Forest Management  
- Timber management and sustained yield [Chpt. 17]  
- Riparian areas & wetlands; WA Forest Practices Rules [suppl. reading]  
*Lab Session: Fr 15 May: Contracts basics; Timber sales & bid set up*

Week 8 – (18 May) Silvicultural Objectives: Wildlife Habitat; Sustainability  
- Pest & Pathogen impacts on Productivity [Chpt. 19]  
- Wildlife habitat management [Chpt. 20]  
*Field Trip: Fr 22 May: Multi-objective stand mgt.*
Week 9 – (25 May) Silvicultural Objectives: Forest Protection; Sustainability
- Monday Holiday – Memorial Day
- Forest Roads, Soils, Special features [Chpt. 18]
  Field Trip: Fr 29 May: Sawmill Tour

Week 10 – (1 Jun) Silvicultural Objectives: Regional Silviculture
- Western Forest Complexes
- Sustainable Forest Mgt. [Chpt. 21]
  Lab Session

EXAM 2 - In class on Tuesday 9 June 2015, from 8:30 – 10:20, in classroom. Open book, open notes, lecture handouts, calculator may be needed. Covers material introduced in chapters 12 through 20 and any supplemental reading material that was assigned.
BIOL/ESRM 331, Spring 2015  
Landscape Plant Recognition  
http://courses.washington.edu/esrm331/ 

Instructors: Sarah Reichard reichard@uw.edu, (616-5020)  
32 Merrill Hall, Center for Urban Horticulture 

Teaching Assistants: Michael Bradshaw mjb34@uw.edu (Lead TA)  
Colleen Brennan colleb@uw.edu (Teaching TA) 

Office hours by appt. – Please contact us so we can meet you somewhere to view the plants you need help with 

<table>
<thead>
<tr>
<th>Date</th>
<th>Subject</th>
<th>Location</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 31</td>
<td>Organization of class, nomenclature, morphology</td>
<td>Bagley 154</td>
<td>2:30</td>
</tr>
<tr>
<td>April 2</td>
<td>Field Day 1</td>
<td>Campus, near Drumheller Fountain</td>
<td>2:30</td>
</tr>
<tr>
<td>April 7</td>
<td><strong>Mid-term 1</strong> (Written - 10% of grade) and Field Day 2</td>
<td>Bagley 154, Campus after exam</td>
<td>2:30</td>
</tr>
<tr>
<td>April 9</td>
<td>Field Day 3 <strong>QUIZ</strong></td>
<td>Arboretum – Graham Visitor’s Center</td>
<td>2:50</td>
</tr>
<tr>
<td>April 14</td>
<td>Field Day 4</td>
<td>Arboretum – Graham Visitor’s Center</td>
<td>2:50</td>
</tr>
<tr>
<td>April 16</td>
<td>Field day 5 <strong>QUIZ</strong></td>
<td>Center for Urban Horticulture-CUH</td>
<td>2:30</td>
</tr>
<tr>
<td>April 21</td>
<td><strong>Mid-term 2</strong> (Plant Recognition – 10%)</td>
<td>CUH Greenhouse</td>
<td>2:50</td>
</tr>
<tr>
<td>April 23</td>
<td>Field Day 6</td>
<td>Arboretum – Graham Visitor’s Center</td>
<td>2:50</td>
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<td>April 28</td>
<td>Field Day 7</td>
<td>Arboretum – Graham Visitor’s Center</td>
<td>2:50</td>
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<tr>
<td>April 30</td>
<td>Field Day 8</td>
<td>Arboretum – Graham Visitor’s Center</td>
<td>2:50</td>
</tr>
<tr>
<td>May 5</td>
<td>Field Day 9 <strong>QUIZ</strong></td>
<td>Arboretum – Graham Visitor’s Center</td>
<td>2:50</td>
</tr>
<tr>
<td>May 7</td>
<td>Field Day 10</td>
<td>Arboretum – Gravel parking lot on Lake Washington Blvd</td>
<td>3:00</td>
</tr>
<tr>
<td>May 12</td>
<td><strong>Mid-term 3</strong> (Plant Recognition – 10%)</td>
<td>CUH Greenhouse</td>
<td>2:50</td>
</tr>
<tr>
<td>Date</td>
<td>Field Day</td>
<td>Location</td>
<td>Time</td>
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<tr>
<td>May 14</td>
<td>Field Day 11</td>
<td>Arboretum – Graham Visitor’s Center</td>
<td>2:50</td>
</tr>
<tr>
<td>May 19</td>
<td>Field Day 12 <strong>QUIZ</strong></td>
<td>Volunteer Park, near Art Museum</td>
<td>3:00</td>
</tr>
<tr>
<td>May 21</td>
<td>Field Day 13</td>
<td>Arboretum - Gravel parking lot on Lake Washington Blvd</td>
<td>3:00</td>
</tr>
<tr>
<td>May 26</td>
<td>Field Day 14</td>
<td>Arboretum – Graham Visitor’s Center</td>
<td>2:50</td>
</tr>
<tr>
<td>May 28</td>
<td>Field Day 15</td>
<td>Campus, near Drumheller Fountain</td>
<td>2:30</td>
</tr>
<tr>
<td>June 2</td>
<td>Field Day 16 <strong>QUIZ</strong></td>
<td>Campus near Drumheller Fountain</td>
<td>2:30</td>
</tr>
<tr>
<td>June 4</td>
<td>The Big Review</td>
<td>CUH Greenhouse</td>
<td>2:30</td>
</tr>
<tr>
<td><strong>June 9</strong></td>
<td>Final exam (Plant Recognition – 60%)</td>
<td>Campus, near Drumheller Fountain</td>
<td><strong>4:30 – 6:20</strong></td>
</tr>
</tbody>
</table>
Class Structure
On March 31st and April 7th, we will meet in Bagley 154. On April 21st, May 12th (plant recognition exams) and June 4th (the Big Review), we will be in the Douglas Greenhouse at the Center for Urban Horticulture. All other days will be field days, as noted. When on campus we will meet in front of Bagley, near Drumheller Fountain and Bagley Hall. On most Arboretum days, except where noted, we will meet at the courtyard on the south side of the Graham Visitor’s Center. At the Center for Urban Horticulture (April 16th), we will meet in the McVay (central) courtyard/Commons. We give you extra time (as noted) to get to these sites, but be there on time or you may have trouble finding us! See the course website for directions to each location.

We will meet on all field days, rain or shine. Come prepared for whatever weather is predicted. Even if it is sunny when you leave your house, it may be pouring rain by 3. On Arboretum days we strongly suggest that you wear waterproof shoes – we will be going out into some very muddy areas. These will not be the days you should wear high heeled shoes and fancy clothes!

We will have notes up on the website before class and you may want to print them off to follow along. You may also find it helpful to buy a write-in-the-rain notebook at the University Bookstore. Be sure to write in pencil, not ink, regardless of what paper you use. If you do not buy a special notebook, a clipboard covered in a plastic bag might be useful.

The Bookstore also has a range of magnifying glasses and field hand lenses. These are useful when trying to see small parts of flowers in the field, but are not required.

Written Materials
A daily plant list and plant descriptions will be posted to the website. They will provide you with a list of the plants to be learned each session as well as descriptions for each plant. You will probably want to have them with you to be sure that you have the spelling correct and to reduce the amount of notes you need to take while in the field. There are also photos of the plants available on the website. The daily plant list and descriptions will be posted a day in advance.

There are no comprehensive books that cover the class material, but you might want to buy a copy of the Sunset Western Garden Book. There is a 2012 edition out that is worth the approximately $30 that it costs. There are, however, plenty of copies of the older versions (which are still OK) available at used bookstores. Note that where scientific names vary, use the ones we give you.

If you are having trouble with terms, you might want to buy “Plant Identification Terminology: An Illustrated Glossary” by James and Melinda Harris. It will have good definitions of any terms we will use in this class. The 1st edition should be available in used book stores. A new 2nd edition is out, but the 1st edition is fine.

“Muenscher's Keys to Woody Plants” by Edward A. Cope will be useful to those of you that plan to go on and learn additional species.

Tests
You will have one "written" midterm, two plant identification midterms, and one plant identification final. The first midterm will be held in More 220, and the two other midterms will be at the Center for Urban Horticulture greenhouse. The final will be at the campus location. The first midterm will be on April 7th and will cover the principles of nomenclature and plant morphology terms – what was covered the first day.
The plant recognition midterms will be on April 21\textsuperscript{st} and May 12\textsuperscript{th}. You will be shown portions of branches that have diagnostic characters and you will need to be able to identify family, genus, and/or species.

Each midterm is worth 10\% of your grade. Because we have to collect plants parts for these tests it is very difficult to give make-up plant recognition midterms. This will only be allowed for extreme situations. You should let us know in advance as soon as possible if you will be out of town for one.

Approximately every two weeks there will be a quiz (see the schedule). The quiz will focus on two plants you have learned and will ask you a variety of questions such as family, genus, species, and diagnostic traits for that taxon. You will be seeing the whole plant. You will be able to drop the lowest score, making only 4 of the quizzes count towards the grade. There will be no make-up quizzes - if you miss one, it is the one that will be dropped. If you miss two, you will get a zero for one of the four that count. The quizzes, all together, will count for 10\% of your grade.

The final will be held on campus and you will be asked to give the family, genus, and species of a wide variety of plants. You will see the entire plants, with all the traits you should need to identify them. The final is worth 60\% of your grade.

Spelling counts! Proper communication of species names requires that the names are correct and clear. If the name is not correctly spelled but is phonetically correct, you will lose a point. If the name is not phonetically correct, you will lose the two points for each part of the name. Write clearly! If we can't read your hand-writing we will count it as misspelled. NOTE: Those of you in landscape architecture, in particular, have been trained to write in all capital letters. In botanical nomenclature, the first letter of the genus is capitalized and the species is not. If you write in all caps, make sure it is clear that the first letter of the genus is larger than the other letters.

In summary:
- Midterm 1 10\%
- Midterm 2 10\%
- Midterm 3 10\%
- Quizzes (best 4 out of 5) 10\%
- Final 60\%

Tips for learning the names of the plants
Much of this class involves simple memorization and we will help you with ways to remember things where we can. Some people are better at this than others, but there are several things you can do to learn to recognize the plants and remember the names. A few are below. Check out the website for more ideas.

- Use the photos of the plants posted on the class web page
- Make flashcards using index cards with photos on one side, write the name down by hand
- Make power point shows with the photo on one slide, name and photo on next slide
- Learn what some of the Latin names mean - they will often describe what a plant looks like
- Get together with friends and go to the arboretum to review plants
- Visit the herbarium (see below) and drill yourself using specimens

This web page also has some great pictures: http://www.orst.edu/dept/ldplants/index.htm\#cade
You may also do an image search on google.com - just type in the name of the species. Be careful though - only use the web pages that end in .edu, not .com. Other helpful web pages are posted on the class page.

**Herbarium**

We have most of the species you will study in the herbarium at the Center for Urban Horticulture. It is found just off the lobby in Merrill Hall at the CUH. While looking at a herbarium specimen can be very different from a live plant, it can be very useful for reminding yourself about key features. It allows you to look at all of the plants you have learned in a quick way and you can lay out all of the plants that confuse you, side by side. **We strongly encourage you to use the herbarium to review the plants you have learned in the class.**

**DO NOT attempt to take plant parts from campus or Arboretum plants in order to make your own "herbarium."** This is very damaging to sometimes rare and expensive plants! If you are caught doing this in the Arboretum, or other locations in the city, you could be fined!

The herbarium is open for several hours during the week. The hours change each day so look on our web page to see when the scheduled hours are. It is open until 8pm on Mondays, the day before the midterms and the final.

You can also arrange a time to use the specimens by contacting Sarah or by contacting the collections manager, Eve Rickenbaker, at (206) 685-2589 or hydeherb@uw.edu

**Misc.**

**Academic Integrity**

Plagiarism, cheating, and other misconduct are serious violations of your contract as a student. We expect that you will know and follow the University's policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to University regulations. More information, including definitions and examples, can be found at: http://depts.washington.edu/grading/issue1/honesty.htm

**Disability Accommodations**

To request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, (206) 543-8924 (V/TTY). If you have a letter from Disabled Student Services indicating that you have a disability which requires academic accommodations, please present the letter to the instructor so we can discuss the accommodations needed for this class.
ESRM 350: Wildlife Biology and Conservation

This course is sponsored by the UW School of Environmental and Forest Sciences (SEFS) and the College of the Environment.

Quarter: Autumn 2014
Times: MTW 11:30-12:20 (lecture), M 12:30-2:20 (discussion section AA), T 1:30-3:20 (discussion section AB)
Locations: Winkenwerder (WFS) 201 (lecture); Winkenwerder 107 (discussion sections)
Course website: http://faculty.washington.edu/wirsinga/ESRM350.htm
Course listserve: esrm350_au14@uw.edu

Instructor

Aaron Wirsing (AW), School of Environmental and Forest Sciences (http://www.sefs.washington.edu), Winkenwerder 101, (206) 543-1585, wirsinga@uw.edu

Office hours: Wednesday 1:30-3:30 or by appointment

Teaching Assistant

Laurel Peelle, School of Environmental and Forest Sciences, Winkenwerder 110a, laurelp@uw.edu

Office hours: by appointment

Guest lecturers

Dr. Brian Kertson (BK), Carnivore Research Scientist, Washington Department of Fish and Wildlife

Dr. David Manuwal (DM), Professor Emeritus, Wildlife Science Group, School of Environmental and Forest Sciences, University of Washington

Course purpose

This course is designed to provide a foundation of understanding in wildlife science for undergraduates in natural science disciplines (including Environmental and Forest Sciences, Biology, and Environmental Studies). I assume that you have a solid background in basic biology and at least some exposure to ecology and analytical methods.
Course objectives

My specific objectives for this course are to 1) introduce you to the science of wildlife biology; 2) increase your understanding of local, regional, and global wildlife conservation issues; 3) expose you to the primary wildlife biology and conservation literature; 4) improve your research and public speaking skills; and 5) prepare you for upper division wildlife science courses (e.g., ESRM 450, 458).

Teaching approach

The course will be lecture based, but will also include in-class discussions and exercises to promote learning via interaction between students and instructors.

Readings

There is no required text for this course. Notes for each lecture are available for download on the course website (see above). I encourage you to download the notes before class and then embellish them during lecture.

“Five-minute” papers

Near the end of each lecture, I will ask you to take a few minutes to reflect on the day’s topic and jot down an observation or follow-up question. These mini-papers will not be graded, but I will expect them to be thoughtful and will use them as the basis for your course participation grade.

Exams

There will be three in-class exams, each covering one-third of the course material (i.e., exams will be non-cumulative). All in-class exams will feature a short answer format and ask you to synthesize and critically evaluate course concepts. There will be no cumulative final exam.

Discussion sections

Students in each discussion section will be placed into groups, each of which will research and present a wildlife conservation case study. The first discussion meetings (Sep 29-30) will detail the assignment, and an example case study will be presented by the instructor and TA, respectively, during weeks two (Oct 6-7) and three (Oct 13-14). Subsequent meetings will be devoted to topic selection, research and preparation, and the talks themselves. Each group will be expected to give a 30-min PowerPoint presentation to the rest of the section with the following components: 1) introduction of the speakers; 2) introduction of the animal (natural history); 3) explanation of the conservation issue (what is the threat, and what parties are involved?); 4) synthesis of pertinent research on the issue (i.e., what does existing science have to say about the severity of the threat, likely outcomes if the issue is left alone, possible solutions, and future research needs); 5) recommendation (what should be done next?). The presentations will be
worth 100 points, and students will receive up to an additional 50 points for participation based on peer evaluation.

**Grading**

Your final grade will be determined by the quality of your course participation (i.e., submission of insights/questions at end of each lecture and contribution to lab discussion), the three exams, and the group presentation. Excused absences and prior notification are required to receive make-up exams. It is your responsibility to let me know that you will be unable to take an exam. If you fail to do so, you will not receive credit for the missed test. Points will be assigned as follows:

- **Course participation:** 100 points (50 for five-minute papers, 50 for group participation in discussion sections)
- **Exams:** 100 points each (300 points total)
- **Group presentation:** 100 points
- **Total:** 500 points

Final grades will be assigned according to the following scale:

- **A = 3.5-4.0, 90-95+%**, 450-475+ points
- **B = 2.5-3.4, 80-89%**, 400-449 points
- **C = 1.5-2.4, 70-79%**, 350-399 points
- **D = 0.7-1.4, 60-69%**, 310-349 points
- **F < 0.7, < 60%**, 0-309 points

**Academic integrity**

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This course is offered in accordance with UW College of the Environment [privacy](http://www.washington.edu/online/privacy) and [terms](http://www.washington.edu/online/terms) policies.
## Lecture schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/24</td>
<td>Course overview and introduction (AW)</td>
</tr>
</tbody>
</table>
| 9/29 | Evolution: a brief review (AW)  
Gould and Lewontin (1979) |
<p>| 9/30 | Temperature regulation (AW) |
| 10/1 | Food and feeding (AW) |
| 10/6 | Case study: contrasting the foraging behavior of lynx and bobcats (AW) |
| 10/7 | Habitat use (AW) |
| 10/8 | Habitat use (AW) |
| 10/13 | Animal movement (AW) |
| 10/14 | EXAM 1 |
| 10/15 | Population characteristics (AW) |
| 10/20 | Demography and population growth (AW) |
| 10/21 | Demography and population growth (AW) |
| 10/22 | Reproduction and mating systems (AW) |
| 10/27 | Competition (AW) |
| 10/28 | Predation (AW) |
| 10/29 | NO CLASS |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/3</td>
<td>Parasitism and disease</td>
<td>AW</td>
</tr>
<tr>
<td>11/4</td>
<td>Wildlife communities</td>
<td>AW</td>
</tr>
<tr>
<td>11/5</td>
<td>EXAM 2</td>
<td></td>
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<tr>
<td>11/10</td>
<td>Wildlife conservation: a brief history</td>
<td>AW</td>
</tr>
<tr>
<td>11/11</td>
<td>NO CLASS - HOLIDAY</td>
<td></td>
</tr>
<tr>
<td>11/12</td>
<td>Habitat loss and Fragmentation</td>
<td>AW</td>
</tr>
<tr>
<td>11/17</td>
<td>Urbanization</td>
<td>AW</td>
</tr>
<tr>
<td>11/18</td>
<td>Case study: cougars at the urban-wildland interface</td>
<td>BK</td>
</tr>
<tr>
<td>11/19</td>
<td>Consumptive and non-consumptive exploitation of wildlife</td>
<td>AW</td>
</tr>
<tr>
<td>11/24</td>
<td>Biology of Marine Birds</td>
<td>DM</td>
</tr>
<tr>
<td>11/25</td>
<td>Conservation of Marine Birds</td>
<td>DM</td>
</tr>
<tr>
<td>11/26</td>
<td>Invasive species</td>
<td>AW</td>
</tr>
<tr>
<td>12/1</td>
<td>Insularity</td>
<td>AW</td>
</tr>
<tr>
<td>12/2</td>
<td>Global climate change</td>
<td>AW</td>
</tr>
<tr>
<td>12/3</td>
<td>EXAM 3</td>
<td></td>
</tr>
</tbody>
</table>
## Discussion schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Discussion Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/29 (AA)</td>
<td>Introduction (AW)</td>
</tr>
<tr>
<td>9/30 (AB)</td>
<td></td>
</tr>
<tr>
<td>10/6 (AA)</td>
<td>Example case study: the decline (and fall?) of the white-tailed jackrabbit (AW)</td>
</tr>
<tr>
<td>10/7 (AB)</td>
<td></td>
</tr>
<tr>
<td>10/13 (AA)</td>
<td>Example case study: Burrowing owls in the Pacific Northwest (LP)</td>
</tr>
<tr>
<td>10/14 (AB)</td>
<td>Formation of groups (WA species of concern lists)</td>
</tr>
<tr>
<td>10/20 (AA)</td>
<td>Selection of case studies; preparation for presentations</td>
</tr>
<tr>
<td>10/21 (AB)</td>
<td></td>
</tr>
<tr>
<td>10/27 (AA)</td>
<td>Preparation for presentations</td>
</tr>
<tr>
<td>10/28 (AB)</td>
<td></td>
</tr>
<tr>
<td>11/3 (AA)</td>
<td>Preparation for presentations</td>
</tr>
<tr>
<td>11/4 (AB)</td>
<td></td>
</tr>
<tr>
<td>11/10 (AA)</td>
<td>NO DISCUSSION - HOLIDAY</td>
</tr>
<tr>
<td>11/11 (AB)</td>
<td></td>
</tr>
<tr>
<td>11/17 (AA)</td>
<td>Presentations (2)</td>
</tr>
<tr>
<td>11/18 (AB)</td>
<td>Section AA: TBD</td>
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<tr>
<td></td>
<td>Section AB: TBD</td>
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<tr>
<td>Date</td>
<td>Section</td>
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<tr>
<td>11/24 (AA)</td>
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<tr>
<td>11/25 (AB)</td>
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<tr>
<td>12/1 (AA)</td>
<td></td>
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<tr>
<td>12/2 (AB)</td>
<td></td>
</tr>
</tbody>
</table>
### TOPICS OUTLINE --:-- ESRM 368 --:-- NATURAL RESOURCE MEASUREMENTS
(a.k.a. FOREST RESOURCES ASSESSMENT: Products, Trees, Stands & Habitats)
**WINTER 2015**

<table>
<thead>
<tr>
<th>[Approx.] Date / Topic # / Description</th>
<th>Readings / Assignments / Due dates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week 1</strong></td>
<td></td>
</tr>
<tr>
<td>[5 Jan] 1. Introduction</td>
<td>T 1, 2'</td>
</tr>
<tr>
<td>1.1 Principles of measurement</td>
<td><strong>Problem Set</strong> (PS) #1:</td>
</tr>
<tr>
<td>1.2 Presenting Information</td>
<td>Math &amp; Stat in For. Sci.,</td>
</tr>
<tr>
<td>1.3 Course Logistics</td>
<td><strong>DUE: Mo 12 Jan</strong></td>
</tr>
<tr>
<td><strong>Indoor Lab:</strong> [Optional] Work on PS #1</td>
<td></td>
</tr>
<tr>
<td>[7 Jan] 2. Review [brief!] of Statistics Knowledge</td>
<td>T 3</td>
</tr>
<tr>
<td>2.1 Statistical Methods</td>
<td></td>
</tr>
<tr>
<td>2.1 Populations, param's, variables, statistics</td>
<td></td>
</tr>
<tr>
<td>2.2 Frequency Dist'ns, Location, Dispersion, Error</td>
<td></td>
</tr>
<tr>
<td>2.3 Covariance, correlation</td>
<td></td>
</tr>
<tr>
<td>2.4 Expanding means, standard errors</td>
<td></td>
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<tr>
<td>2.5 Additional Sampling Concepts</td>
<td></td>
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<tr>
<td>[9 Jan] 3. Land Measurements</td>
<td>T 4</td>
</tr>
<tr>
<td>3.1 US Public Land Survey</td>
<td></td>
</tr>
<tr>
<td>3.2 Distances</td>
<td></td>
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<tr>
<td>3.3 Directions</td>
<td></td>
</tr>
<tr>
<td><strong>Week 2</strong></td>
<td></td>
</tr>
<tr>
<td>[12 Jan] 3.4 Areas</td>
<td><strong>DUE: We 21 Jan</strong></td>
</tr>
<tr>
<td><strong>Field Exercise</strong> (FX) # 1: -- Basic Traverse</td>
<td></td>
</tr>
<tr>
<td>[14 Jan] 4. Assessing Tree Attributes</td>
<td>T 5 [16 Jan]</td>
</tr>
<tr>
<td>4.1 Tree DBH, Age, Height, Form, Crown</td>
<td></td>
</tr>
<tr>
<td>4.2 Tree Contents</td>
<td>Volume Tables / Equations</td>
</tr>
<tr>
<td><strong>Week 3</strong></td>
<td>T 6</td>
</tr>
<tr>
<td><strong>19 Jan</strong> No Class, No Lab -- UW Holiday --</td>
<td></td>
</tr>
<tr>
<td>M.L.K., Jr. Day [21 Jan]</td>
<td></td>
</tr>
<tr>
<td>4.3 Volume distribution / Taper equations, Defects</td>
<td>T 9</td>
</tr>
<tr>
<td>[23 Jan] 5. Assessing Primary Forest Products</td>
<td><strong>PS #2:</strong>-- Log Scaling,</td>
</tr>
<tr>
<td>5.1 Cubic foot contents</td>
<td><strong>DUE: Fr 6 Feb</strong></td>
</tr>
<tr>
<td><strong>Week 4</strong></td>
<td></td>
</tr>
<tr>
<td>[26 Jan] 5.2 Board foot contents</td>
<td></td>
</tr>
<tr>
<td>5.3 Log Defects &amp; grading</td>
<td><strong>DUE: We 4 Feb</strong></td>
</tr>
<tr>
<td><strong>FX # 2:</strong> -- Detailed tree measurements</td>
<td></td>
</tr>
</tbody>
</table>
6. Assessing Stand Attributes
   6.1 Stand Age, Spp. comp., DBH, Height, SI
   6.2 The fixed-area plot

Week 5
[2 Feb] 6.3 The variable-area plot (pps sampling)

FX # 3:– Fixed- & Variable-area plots

[4 Feb] 6.4 Stand Density & Stocking
[6 Feb] 7. Stand Sampling Methods
   7.1 Simple random / Systematic sampling

Week 6
[9 Feb] 7.2 Ratio estimation

Indoor Lab: [Optional] Analyses for FX #3

[11 Feb] 7.3 Double sampling

DUE: We 11 Feb

   8.1 Multi-resource Inventory

Week 7
16 Feb No Class, No Lab – UW Holiday –

Presidents’ Day [18 Feb] 8.2 Stratified Random

Sampling (STRS)
[20 Feb] 8.2a STRS sample size, Lee Forest overview

Sat 21 Feb 2015 FX # 4:– Forest Inventory 8:00 A.M.

DUE: Fr 6 Mar

Week 8
[23 Feb] 8.3 Two-stage sampling

Indoor Lab: [Optional] Analyses for FX #4

[25 Feb] 9. Trees are more than Timber!
   9.1 Tree weight relationships
[27 Feb] 9.2 Forest Biomass / Carbon Storage

Week 9
[2 Mar] 9.3 Habitat Quality (LIS, PRS, Coverboard, Depth gauge)

FX # 5:– Alternate plot types

DUE: We 11 Mar
   10.1 Tree Growth Concepts
   10.2 Dimensional Increment
   10.3 Percentage growth

[6 Mar] 10.4 Stem Analysis

Stand G & Y,

**PS # 4:** – Tree / DUE: Fr 13 Mar

**Week 10**

   11.1 Repeated Sampling
   11.2 Growth components
   11.3 Direct Methods of forecasting growth: TSP & STP

**Indoor Lab:** [Optional] Analyses for FX #5


Tables & Functions
   11.5 Assessing the Assessments

**Tu 17 Mar 2015 Final Exam (Cumulative)**

8:30-10:20 AM
ESRM 400

NATURAL RESOURCE CONFLICT MANAGEMENT

Winter 2014      Tuesdays and Thursdays 9:30 – 10:50 a.m.    MGH 251

Professor Clare Ryan
Office: 123H Anderson Hall
Office Phone: 616-3987 email: cmryan@uw.edu
Office Hours: By appointment – please email or speak with me to set up a time

COURSE DESCRIPTION AND OBJECTIVES

Natural resource conflicts appear to be especially difficult, if not impossible, to manage and resolve, and often require new leadership and planning approaches. We will examine a variety of procedures that are traditionally used to manage conflicts, and analyze why these approaches frequently fail when applied to natural resource and environmental issues. The search for new approaches for managing these conflicts has resulted in increased use of procedures such as collaboration and partnerships. Specific local and national cases of actual natural resource management conflicts will be examined using a mixture of readings, cases, discussion, negotiation simulation exercises (role plays), lecture, and guest speakers to illustrate key points and themes.

Upon completion of this course students will be able to: 1) identify and analyze the causes, dynamics, and consequences of natural resource management conflicts; 2) understand the range of possible intervention tools and procedures that can be used to manage conflicts; 3) write effective memos to decision makers with persuasive recommendations for managing conflict; 4) understand the skills and knowledge needed to lead and participate in effective partnerships, and 5) develop beginning skills in negotiation and/or facilitation of collaborative processes.

Course Web Page: details on daily readings, assignments, and other information are available on the Canvas course web site. The course web page contains assignment details, updates, useful links, and additional readings and cases. All students are responsible for checking their UW email accounts on a regular basis for notifications of important updates or other information available on the course web page.

REQUIRED READINGS


2. Weekly Readings: Weekly required readings and cases will be posted by week on the class web page. (Referred to as “Web” in syllabus.)

http://www.virginia.edu/ien/publications.htm. Also posted on class webpage.


**COURSE POLICIES**

**Contributions to class sessions:** This course is a mix of lecture, small group activities, and case discussion, combined with negotiation simulation (role-play) exercises. Thus, it is critical that you complete the assigned readings and actively participate in class discussions and role-play exercises. The nature of materials covered in class does not lend themselves to you sitting passively; lively and thoughtful participation will enhance the course for everyone. Your presence, punctuality, and participation in class are assumed. Please notify the instructor of any anticipated absence to arrange for in class written or reading assignments missed during your absence. *Role play exercises cannot be made up.*

**Participation in the negotiation simulation exercises is required, and it is not possible to make up these activities.** Two of the written assignments (representing 40% of your course grade) for the class are based on your experiences in and analysis of the simulation exercises. The negotiation simulations require reading and preparation for the role that you will play. Because the simulations are multi-party negotiations, having one party absent negatively affects six to eight other students. Again, because individual learning depends on joint efforts, inadequate preparation harms everyone’s experience. Keeping role descriptions confidential is necessary, and sharing the role descriptions across the class prior to a negotiation will damage the experience and the lessons that can be drawn.

Please be courteous to other class members: *Please turn off any laptop computers, cell phones, and other items that may disturb the class.*

**Course Grading:** There will be a number of written assignments throughout the term that will be graded and combined for your final course grade, as described below. Read each assignment carefully and address each item requested in the assignment. Written work must be logically organized, and free of blatant mistakes in spelling, grammar, and punctuation. The instructor will assess your contributions to the class through observation of class sessions and exercises, and you will be asked to assess your own contributions.

A total of 100 points are available for the course. Final grades are assigned in accordance with UW’s numerical grading system and scale:

- **A** = 3.5 – 4.0 (90 – 95+)
- **B** = 2.5 – 3.4 (80 – 89)
- **C** = 1.5 – 2.4 (70 – 79)
- **D** = 0.7 – 1.4 (60 – 69)
- **E (F)** = 0 (<60)

**Due Dates:** Because of the large number of students in the course, all written work must be submitted on time. Assignments turned in late will result in a deduction in your grade unless previous arrangements are made with the instructor. While the size of the deduction will depend on the nature of the circumstances, generally your grade on an assignment handed in late will be lowered by 20% for each day that is late. Assignment not turned in at all will receive a grade of “zero”. If unforeseen circumstances arise, please contact the instructor as soon as possible and, if possible, in advance of when the assignment is due.
**Academic Integrity:** At the University level, passing anyone else’s scholarly work, which can include: written material, exam answers, graphics or other images, and even ideas as your own, without proper attribution, is considered academic misconduct. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-120). We expect that you will know and follow the UW’s policies on cheating and plagiarism. For more information, see the [College of the Environment Academic Misconduct Policy](#).

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ASSIGNMENTS AND GRADING

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Due Date</th>
<th>% of Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1. Negotiation Simulation Analysis Memo</td>
<td>Jan. 28</td>
<td>20</td>
</tr>
<tr>
<td>#2. Public Meeting Analysis Memo</td>
<td>Feb. 27 (or before)</td>
<td>20</td>
</tr>
<tr>
<td>#3. Negotiation Simulation Analysis Memo</td>
<td>Mar. 4</td>
<td>20</td>
</tr>
<tr>
<td>#4. In-Class Exercises, quizzes</td>
<td>various in class</td>
<td>20</td>
</tr>
<tr>
<td>#5. Final in-class case analysis exercise</td>
<td>Mar. 13</td>
<td>20</td>
</tr>
</tbody>
</table>

COURSE OUTLINE – ORGANIZATION OF THE COURSE

A. Introduction
   • Nature of conflict
   • Conflict drivers and responses

B. Perspectives on Conflict: Communication and Negotiation
   • Communication: Interests, Positions, and Alternatives
   • Framing Environmental Disputes

C. Conflict Management in Practice
   • Negotiation Simulation Exercise

D. Participation in Conflict Management Processes
   • Participation: Purposes and Practice
   • Case Analysis: “Cape Wind”

E. Analyzing Conflict
   • Frameworks for Conflict Analysis
   • Mediation and Facilitation

F. Designing Conflict Management Processes
   • Integrating Science: Data and Technical Issues
   • Case Analysis: “Dissolved Oxygen in Hood Canal”

G. Reaching Agreement, Implementation
   • Agreements, Compliance and Implementation

H. Conflict Management in Practice
   • Negotiation Simulation Exercise

I. Evaluating Conflict Management Approaches
   • Perspectives on Evaluating Collaborative Approaches
   • Public Meeting reflections

J. Leadership in Natural Resource Conflict Management
   • Conflict at the U.S. Forest Service
   • Course synthesis and wrap-up
COURSE SCHEDULE AND READING ASSIGNMENTS

Week 1  Introduction: The Nature of Conflict

Tue. Jan. 7: Course introduction and overview

Read: Carpenter: Ch. 1: “Understanding Public Disputes: The Spiral of Unmanaged Conflict” pp. 3-17.

Thurs. Jan. 9: Drivers of Conflict

Read:
Read: Carpenter: Ch. 2: “Dealing with Conflict Productively” pp. 18-51.
Web: Martin Nie. The Governance of Western Public Lands. Ch. 1: “Why is There so Much Conflict about Public Land and Resource Management?” pp. 11-43.

Week 2  Perspectives on Conflict: Communication and Negotiation

Tues. Jan. 14: Communication: Interests, Positions, and Alternatives

*Optional: Browse through R. Fisher and W. Ury, Getting to Yes.

Distribute Negotiation Simulation Materials

Thurs. Jan. 16: Framing Environmental Disputes


Week 3  Conflict Management in Practice

Tues. Jan. 21: Negotiation Simulation Exercise

Read: Background and individual role information. Prepare for role play simulation. Go directly to the room assigned to your group and complete role play.

Thurs. Jan. 23: Debrief Negotiation Simulation Exercise
Week 4  Participation in Conflict Management Processes

Tues. Jan. 28:  Participation: Purposes and Practice


Assignment #1 Due – Negotiation Simulation

Analysis Memo Thurs. Jan 30: Participation in Practice: Cape Wind

Read: Web: Layzer, J. 2012. Ch. 11: “Cape Wind” pp. 308 - 347. **Be prepared to analyze and discuss this case in class


Week 5  Analysis of Conflict, Mediation and Facilitation

Tues. Feb. 4:  Frameworks for Conflict Analysis

Read: Carpenter: Ch. 3: “Developing an Effective Program of Conflict Management” pp. 52- 65; Ch. 4: “Analyzing the Conflict” pp. 71-91.

Thurs. Feb. 6:  Mediation and Facilitation


Guest Speaker: Martha Bean, Senior Mediator, RESOLVE

Distribute Negotiation Simulation Materials

Week 6  Designing Conflict Management Processes, Integrating Science

Tues. Feb. 11:  Integrating Science: Data and Technical Issues


“The Role of Science” pp. 43-51.

*Optional reading: Web: Dietz and Stern, 2008, Ch. 6, Practice: Integrating Science, pp. 137-156.

Thurs. Feb. 13: Integrating Science in Practice: Shrimp Baiting Case

Read: Web: The Marine Resources Division and the Shrimp Baiting Controversy.

**Be prepared to analyze and discuss this case in class.


Week 7 Conflict Management in Practice

Tues. Feb. 18: Negotiation Simulation Exercise Day 1

Read: Background and individual role information. Prepare for role play simulation. Go directly to assigned room for your group and begin role play.

Thurs. Feb. 20: Negotiation Simulation Exercise Day 2

Read: Background and individual role information. Prepare for role play simulation. Go directly to assigned room for your group and complete role play.

Week 8 Reaching Agreement, Implementation

Tues. Feb. 25: Debrief Negotiation Simulation Exercise

Thurs. Feb. 27: Agreements, Compliance and Implementation


Collaboration Guide: Section 8: “The End Game and Beyond” pp. 52-55.

Assignment #2 Due – Last Day to turn in Public Meeting Analysis Memo

Week 9 Evaluating Conflict Management Approaches

Tues. Mar. 4: Perspectives on Evaluation

**Assignment #3 Due –Negotiation Simulation Analysis Memo**

**Thurs. Mar. 6:**  Public meeting reflections – in class exercise

**Week 10  Leadership in Natural Resource Conflict Management**

**Tues. Mar. 11:**  Conflict at the U.S. Forest Service

**Read:**  Web: O’Leary, R. “Administrative Profile: Claude Ferguson. When a Career Public Servant Sues the Agency He Loves: Claude Ferguson, the Forest Service, and Off-Road Vehicles in the Hoosier National Forest,” *Public Admin Rev.* Nov/Dec 2009, pp. 1068-1076. **Be prepared to analyze and discuss this case in class.**

**Thurs. Mar. 13:**  Course wrap up, synthesis, and conclusion.

**Assignment #5 Due –Final in-class case analysis exercise**
ESRM 403

Forests and Economic Development in the Tropics

M & W  1:30-3:00
22 Anderson Hall

Course website: https://courses.washington.edu/esrm403/index.htm

Instructors:

Dr. Ivan Eastin  Dr. Indroneil Ganguly
Office: 123J Anderson Hall  Office: 123A Anderson Hall
Phone:  (206) 543-1918 (Office)  Phone:  (206) 685-8311 (Office)
(425) 339-0859 (Home)  e mail:  indro@uw.edu
e mail: eastin@uw.edu
Office Hours: T, W, Th: 3:00 - 4:00  Office Hours: by appointment
or by appointment
Forests and the forestry sector represent an important engine of economic growth in many developing countries. Yet, the lack of an effective framework of policies and regulations can lead to rapid deforestation and have tragic results on forest health and forest-dependent communities. This course is designed to explore the relationship between the forestry sector, public policy, economic development, and the on-going process of globalization through a combination of readings, case studies, classroom discussion, and critical thought. Students will examine topics ranging from forest-based economic development to public policy in the forest sector to the use of non-timber forest products in rural communities to the impact of globalization and trade on forests and forest-dependent communities. This multidisciplinary course has been designed for students across a breadth of disciplines, including forestry, public policy, economic development, international studies, and international business.

Course Materials
There is no required text for this course. We will be using a number of supplemental texts and readings for this course, several of which are available as free pdf downloads from the internet. Class readings will be handed out one lecture before they will be discussed. Lecture notes will be provided to students at the beginning of each lecture. Supplemental readings and cases will also be provided to students.

Required Text
None

Supplemental Texts
<table>
<thead>
<tr>
<th>Class Period</th>
<th>Topics Covered and Class Readings:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday, 9/30/15</td>
<td><strong>Introductions and Course Objectives</strong>&lt;br&gt;Handouts:</td>
</tr>
<tr>
<td></td>
<td>• Course Outline and Introduction to Course Website</td>
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<td></td>
<td>• Group Case Study: The Environmental Impasse; Business Memo Guidelines</td>
</tr>
<tr>
<td>Monday, 10/05/15</td>
<td><strong>Research and the Role of Critical Thought (Ganguly)</strong>&lt;br&gt;<strong>Case Study Teams Assigned</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Readings:</strong></td>
</tr>
<tr>
<td></td>
<td>• Lomborg, 2001. The Skeptical Environmentalist. Chapters 1 and 2</td>
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<tr>
<td></td>
<td>• The Economist, 2002. The Road to Hell is Unpaved.</td>
</tr>
<tr>
<td></td>
<td>• Background Videos: Lomborg Part 1, Part 2, Part3</td>
</tr>
<tr>
<td>Wednesday, 10/07/15</td>
<td><strong>Forests, Economic Development and Poverty (Ganguly)</strong></td>
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<td><strong>Readings:</strong></td>
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<tr>
<td></td>
<td>• Economist 2013. Towards the End of Poverty</td>
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<td></td>
<td>• Economist 2012. Global Poverty: A Fall to Cheer</td>
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<td>• Economist 2012. Boomtown Slum</td>
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<td></td>
<td>• Kristoff and WuDunn 2000. Thunder from the East excerpt.</td>
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<td></td>
<td>• S. MacLachlan Video <a href="http://www.youtube.com/watch?v=FDmPcSWEOWU">http://www.youtube.com/watch?v=FDmPcSWEOWU</a></td>
</tr>
<tr>
<td>Monday, 10/12/15</td>
<td><strong>State of the World's Forests</strong></td>
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<td><strong>Readings:</strong></td>
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<td></td>
<td>• FAO, 2001. Part II (pages 29-46)</td>
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<td></td>
<td>• FAO, 2011. The State of Forest Resources. Chapter 1. 27 pages.</td>
</tr>
<tr>
<td>Wednesday, 10/14/15</td>
<td><strong>Causes and Effects of Deforestation</strong></td>
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<td><strong>Readings:</strong></td>
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<td></td>
<td>• Dove, M. and S. Rhee. Swidden Agriculture</td>
</tr>
<tr>
<td>Monday, 10/19/15</td>
<td><strong>Patterns of Forest-Based Industrialization: Indonesia</strong></td>
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<tr>
<td></td>
<td><strong>Readings:</strong></td>
</tr>
<tr>
<td></td>
<td>• Powerpoint Handouts</td>
</tr>
<tr>
<td></td>
<td><strong>Negotiation Strategy Reading:</strong></td>
</tr>
</tbody>
</table>
Wednesday, 10/21/15  **Patterns of Forest-Based Industrialization: Ghana**  
Readings:  

Monday, 10/26/15  **Case Study Team Meetings**

Wednesday, 10/28/15  **Exam #1 (Posted on Class Website: Take Home) NO CLASS**  
- Exam #1 Due by 5:00 pm Wednesday (10/28)

Monday, 11/02/15  **China’s Role in the International Trade of Forest Products (Ganguly)**  
Readings:  

Wednesday, 11/04/15  **Illegal Logging, Corruption and the Illegal Timber Trade (Ganguly)**  
Readings:  
- Smith et al., Illegal Logging, Collusive Corruption and Fragmented Governments in Kalimantan. International Forestry Review 5(3).  
- UNEP and Interpol 2012. Green Carbon, Black Trade

Monday, 11/09/15  **Timber Legality Regulations**  
Readings:  
- CINTRAFORE News. Spring 2015  

Wednesday, 11/11/15  **Cocoa Farmers Perceptions of Trees in Ghana**  
Readings:  
- Ghana Map  
- Video:  [http://www.youtube.com/watch?v=AcCEgQF4xow](http://www.youtube.com/watch?v=AcCEgQF4xow)

Monday, 11/16/15  **Palm Oil Plantations: Economic Development or Eco-Disaster**  
- Various readings  

Wednesday, 11/18/15  **Exam #2 (Posted on Class Website: Take Home) NO CLASS**  
- Exam #2 Due by 5:00 pm Wednesday (11/18)

Monday, 11/23/15  **Team Negotiations**
Business Memo Due by Wednesday (11/25)

Wednesday, 11/25/15 NO CLASS - HAPPY THANKSGIVING

Monday, 11/30/15 Markets and Sustainable Forest Management
Readings:

Wednesday, 12/02/15 Community Based Natural Resource Management (Ganguly)
Readings:

Monday, 12/07/15 Microcredit and Natural Resource Management (Ganguly)
Readings:

Wednesday, 12/09/15 Exam #3 (Posted on Class Website: Take Home) NO CLASS
Exam #3 Due by 5:00 pm Wednesday (12/09)
Course Requirements and Grading

Students will be graded and evaluated based on the following criteria:

- Attendance 20%
- Class participation 10%
- Quizzes 10%
- Exam #1 15%
- Exam #2 15%
- Exam #3 15%
- Case study business memo 15%

Keeping up with the assigned readings and active participation in class discussions is important to the success of this class. Since you need to be in class to participate in the discussions, it is important to emphasize that attendance is mandatory and is not negotiable. More than 3 unexcused absences will result in a zero grade for attendance and class participation. To encourage you to keep up with the readings, several short, unannounced quizzes will be given randomly throughout the quarter. These cannot be made up.
SOIL ECOLOGY
ESRM 409 (5 credits)
FALL 2014

Instructors – Professor Thomas H. DeLuca and Anna Simpson
Tom DeLuca – 107 Anderson Hall, phone 685-1928, email – deluca@uw.edu
Anna Simpson (Laboratory) – office hours by request, email – simpson0@uw.edu

Class web site – http://courses.washington.edu/esrm409/home.html

Lectures 11:30 – 12:20 M,W, F (306 Anderson)
Laboratory 1:30 – 3:20 W (107 Winkenwerder)

Assignments Percent of grade
Exam 1 30
Exam 2 35
Laboratory assignments 10
Reading assessments 15
Student Presentations 10
Total 100


Course purpose and objectives
The purpose of this class is to provide students with a thorough examination of soil ecological communities and processes as they relate to larger ecosystem and global processes. The course strategy is to investigate these processes through a description and exploration of the known microbial communities, fundamental processes that drive nutrient and carbon, and the interaction of human activities with natural soil function. By the completion of this class, students should have an understanding of the common soil microbial community composition, microbial interactions (including symbioses), microbes as drivers of nutrient cycles, the role of disturbance in soil biotic processes, and an appreciation for the extreme complexity of feedback mechanisms between plants, microbes, and soil.

Evaluation
Evaluation of student performance will be based on two exams worth 65% of the total grade, three reading assessments (15%), laboratory assignments (10%), and term presentations 10%).
Exams: Two exams will be given, both of which will be short answer format to be taken in class. The midterm will be one hour and the final exam will be two hours.
Reading assessments: Students will read a paper provided by the instructor and prepare a 1 – 2 page critical review of the work. There will be three reading assessments assigned during the quarter.
Labs: Lab section consists of 2 field trips and 7 labs. There will be one short individual take-home lab assignment and two group lab reports due during the quarter. Students will also maintain a lab notebook which will be graded twice. Students will need to purchase a lab notebook (any bound notebook will do) to record each day’s experiments. Each
entry should contain the date, lab #, title, purpose, a short introductory paragraph including methods to be used, and a step-by-step record of the day's work.

***Lab work and reading assessments will be turned in online using Canvas***

**Presentations:** Students will make a 5 minute classroom presentation on a subject in soil ecology. Students should identify their topic area prior to the midterm exam.

**Academic Integrity**
Plagiarism, cheating, and other misconduct are serious violations of your contract as a student. We expect that you will know and follow the University's policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to University regulations. More information, including definitions and examples, can be found at: [http://depts.washington.edu/grading/issue1/honesty.htm](http://depts.washington.edu/grading/issue1/honesty.htm)

**Disability Accommodations**
To request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, (206)543-8924 (V/TTY). If you have a letter from Disabled Student Services indicating that you have a disability which requires academic accommodations, please present the letter to the instructor so we can discuss the accommodations needed for this class.

### ESRM 409 SOIL ECOLOGY - COURSE OUTLINE

<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>Date</th>
<th>No.</th>
<th>Lecture Topic</th>
<th>Labs/Field trip</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SOIL ORGANISMS AND ANALYTICAL METHODS</strong>&lt;br&gt;(Sept)</td>
<td></td>
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<tr>
<td>1</td>
<td>W</td>
<td>24</td>
<td>1</td>
<td>Overview and history of soil microbiology</td>
<td>Lab 1: Introduction to Soil Organisms&lt;br&gt;Soil organism survey assigned</td>
<td>Chapter 1</td>
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<tr>
<td></td>
<td>F</td>
<td>26</td>
<td>2</td>
<td>Soil overview and habitat</td>
<td></td>
<td>Chapter 2</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>29</td>
<td>3</td>
<td>Overview Microorganisms</td>
<td></td>
<td>Chapter 2</td>
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<tr>
<td><strong>(Oct)</strong></td>
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</tr>
<tr>
<td>W</td>
<td>1</td>
<td>4</td>
<td>Basic methods for studying soil organisms</td>
<td>Lab 2: Field Trip 1: Arboretum</td>
<td>Chapter 3</td>
<td></td>
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<tr>
<td>F</td>
<td>3</td>
<td>5</td>
<td>Molecular methods</td>
<td></td>
<td>Chapter 4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>6</td>
<td>Bacteria and archaea</td>
<td>Lab 3: Invertebrate, plate counts, LOI, pH and moisture</td>
<td>Chapter 5</td>
<td></td>
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<tr>
<td>W</td>
<td>8</td>
<td>7</td>
<td>Soil fungi and eukaryotic algae **</td>
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<td>Chapter 6</td>
<td></td>
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<tr>
<td><strong>MICROBIAL ECOLOGY &amp; PHYSIOLOGY</strong></td>
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<tr>
<td>F</td>
<td>10</td>
<td>8</td>
<td>Soil Fauna **</td>
<td>Lab 4: Molecular methods (PCR), Lab 3 follow-up&lt;br&gt;Soil organism survey due&lt;br&gt;Lab report 1 assigned</td>
<td>Chapter 7</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>13</td>
<td>9</td>
<td>Microbial ecology</td>
<td></td>
<td>Chapter 8</td>
</tr>
<tr>
<td>W</td>
<td>15</td>
<td>10</td>
<td>Microbial physiology</td>
<td></td>
<td>Chapter 9</td>
<td></td>
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</tbody>
</table>

**MUTUALISMS**
<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>17</td>
<td>Mycorrhiza**</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>Legumes and associations</td>
</tr>
<tr>
<td>W</td>
<td>22</td>
<td>Endophytes**</td>
</tr>
<tr>
<td>F</td>
<td>24</td>
<td>EXAM 1</td>
</tr>
</tbody>
</table>
ESRM 410 Forest Soils and Site Productivity (5 credits)

**Field trips (2)** (40% of final grade) = there will be 2 Saturday field trips and each field trip will require a report that is due about one week after the field trip (format of the report will be discussed in class).

**‘What if’ (3) Scenarios** (30% of final grade) = there will be 3 ‘What if’ Scenario QUZZES that will be taken in class as a group of 3-4 students/group. These quizzes will give a forest soil management scenario and ask some question(s) that each group will answer in class.

**Paper/Project and Presentation (1)** (30% of final grade) = Students will write a paper and make a presentation at the end of the quarter. This paper will be on a preapproved topic related to Soils and Productivity.

**Required field trips**
There will be 2 field trips. The field trips will leave from the C10 parking lot behind Bloedel/Winkenwerder Halls at 8:30AM and we’ll try to return by 5PM. The field trips will be to Matlock and Pack Forest. Each person should wear appropriate clothing for field work. For example bring warm clothing in case of cooler weather, bring rain coats/boots in case of forecasted rain, hiking/working boots or at least tennis shoes if you have them and it looks like no rain. Also you should bring your own drinks and lunch (perhaps with daypack for ease of carrying gear and food/drinks). Each person should also bring a pencil and paper or notebook for recording data/info. Each field trip will have information presented to give a foundation of each field trip site and its research. Each student will be required to write a field trip report discussing the aspects covered (a brief paragraph will be handed out in class outlining what is wanted).

Course Intro & Importance of Forest Soil
Forest Productivity
Forest Soils
Soil Chemistry Matlock
Field Trip
Uptake, Biogeochemistry Soils, Roots and Trees
Soil Organic Matter & Soil Health
Biology - Invertebrates, fungi, bacteria,
Mycorrhizas Biochar for forest Management
Forest Fire Effects on soils Forest
Management with Biosolids
Soil processes and productivity
Productivity using Remote Sensing and GIS
Climate Change and ‘Soils and Productivity’
Long-Term Soil Management
Pack Forest Field Trip
Nutrient Mgmt – Biological N
Fixation Bio N fixation
Bio N fixation ‘What if’ [group presentations]
Nutrient Management – limitations Limitations
‘What if’ [group presentations] Nutrient
Management – fertilization
Nutrient Management - fertilization Fertilization
‘What if’ [group presentations] Forest Soils and Site Productivity synthesis
ESRM414/SEFS514  Soil Fertility & Plant Nutrition

Instructor: Rob Harrison
Office: Bloedel 218
e-mail: robh@uw.edu

Grading
1st exam 30%
2nd exam 30%
Project 40%

Class meets: Monday 1:30-4:20 Wink107

<table>
<thead>
<tr>
<th>Day</th>
<th>Material Covered</th>
<th>Reading/homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/1</td>
<td>Introduction to course and students. Define &quot;What is Soil Fertility and Plant Nutrition&quot;. Set up goals for course. What is plant nutrition?</td>
<td>no reading prior to class</td>
</tr>
<tr>
<td>4/8</td>
<td>Rob at Center for Advanced Forest Systems meeting in Georgia: Reading Essential elements, history of plant nutrition research, Plant nutrient media</td>
<td>Reading: Epstein and Bloom chapter 3, 4</td>
</tr>
<tr>
<td>4/15</td>
<td>Essential elements, history of plant nutrition research, Plant nutrient media</td>
<td>Reading: Nutrition of Coniferous Forests</td>
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<tr>
<td>4/22</td>
<td>Inorganic components of plants, Nutrient adsorption by plants</td>
<td>work on exam1</td>
</tr>
<tr>
<td>4/29</td>
<td>Inorganic components of plants, Nutrient adsorption by plants</td>
<td>Reading: Epstein and Bloom chapter 7, 9</td>
</tr>
<tr>
<td>5/6</td>
<td>Nutrient Management;</td>
<td>Reading: Epstein and Bloom chapter 7, 9; handouts</td>
</tr>
<tr>
<td>5/13</td>
<td>Guest presentations: 1:30 Betsy Vance</td>
<td>handouts</td>
</tr>
<tr>
<td>5/20</td>
<td>Student topic presentations, students will talk about and potentially present slides/posters/etc. on their class research topic. Time for questions.</td>
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</tr>
<tr>
<td>5/27</td>
<td>UW Holiday</td>
<td>no reading, work on project</td>
</tr>
<tr>
<td>6/3</td>
<td>Rob at C conference in Iceland</td>
<td>Project Due</td>
</tr>
</tbody>
</table>
ESRM 420 Wildland Fire Management – 5 Credits
Schedule - Spring 2015
Meeting Times: Tu and Th 11:30-12:50 – WFS 107
Lab. Sessions Mo 1:30-3:30 PM at BLD261
Office Hours by appointment Bloedel 332
http://courses.washington.edu/flamma/esrm420

Week 1. 3/31 Introduction (Alvarado)
          4/2 Introduction (Alvarado)

Week 2. 4/7 Fire Behavior (Alvarado)
          4/9 Fire Behavior (Alvarado)
          4/6 Mo. Lab: Video Madness. AND306

Week 3. 4/14-4/16 Fire Ecology (Alvarado and guest speaker)

Week 4. 4/21-4/23 Fire Management: policy/detection/economics (Alvarado)

Friday April 24: Field trip to Pack Forest (Alvarado, Casillas, Miller). Fire ecology of the PNW West, fuels

Week 5. 4/28 Fire Management: organization/strategy/safety (Alvarado)
          4/30 Fire Management: fuel treatments (Johnson)

Week 6. 5/5 The Wildland-Urban Interface (Alvarado, Mell)
          5/7 Prescribed Fire (Alvarado)

Saturday May 16 & Sunday, May 17: Field trip to eastern, WA. Okanogan - Wenatchee National Forest, TNC, Yakama Reservation. Reintroduction of fire to restore dry-forests of eastern WA. Cle Elum: Fuel evaluation, silvicultural prescriptions, broadcast and pile Rx burning. Pateros: 2014 Carlton Complex, WUI.

Week 7. 5/12 Wildland Fire Use (Alvarado)
          5/14 Fire Safe Forest (Alvarado)

Week 8. 5/19 Air Quality and smoke management (Larkin)
          5/21 Climate change and wildfires (Cronan)
          5/18 Mo. lab: Fire Safe Forest BLD261 Mo. lab: Consume and Analyze data collected in field and run fire models (TA). BLD261.
<table>
<thead>
<tr>
<th>Week 9.</th>
<th>5/27</th>
<th>International/Tropical/TEK Fire Management (Alvarado)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5/29</td>
<td>Traditional Ecological knowledge and fire use (Lake, Videoconference)</td>
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<tr>
<td></td>
<td>5/26</td>
<td>Memorial Day (No class)</td>
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<thead>
<tr>
<th>Week 10.</th>
<th>6/2</th>
<th>Anthropogenic Fires (Alvarado)</th>
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<tbody>
<tr>
<td></td>
<td>6/4</td>
<td>Review</td>
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<td></td>
<td>6/1</td>
<td>Mo. lab: First group of final presentations. BLD261.</td>
</tr>
</tbody>
</table>

| Week 11  | 6/10 | Second group final presentations: Wednesday, June 10, 2014, 430-620 pm, WFS 107 |
Lectures: Alvarado (Instructor)
Guest Lecturers:
Dr. Roger Ottmar. USFS PNW Research Station - Seattle
PhD Candidate
Dr. Morris Johnson. USFS PNW Research Station - Seattle
Dr. William Mell. USFS PNW Research Station - Seattle
Dr. Sim Larkin. AIRFIRE Team, USFS PNW Research Station - Seattle.
Ph.D. Candidate Jim Cronan, UW
TA Paulina Llamas

Exams and Grading
There are 2 midterms and one term paper/presentation
Midterm #1: Monday, April 27 (20%)
Midterm #2: Monday, May 27 (15%)
Final Paper and Presentation: Wednesday, June 10, 4:30-6:20 (25%)
Homework (15%)
Leadership/Class Attendance/Participation (10%)
Field Trips 15% (5% field trip attendance, 10% reports) (15%)

Textbook:

Other recommended readings
Stephen J Pyne; Patricia L Andrews; Richard D Laven. 1996. Introduction to wildland fire. New York: Wiley. (Out of Print, expensive)
E A Johnson; Kiyoko Miyanishi. 2001. Forest fires: behavior and ecological effects. San Diego, Calif.: Academic Press. (Northern Rockies)
ESRM 420: Objectives:

- To give you an in-depth understanding of fire management and ecology in wildlands.
- Be able to apply fire behavior and effects predictions in fire management, as well as making decisions appropriate to natural resource and environmental management objectives.
- You will learn about fire management and discuss current issues, including restoration, national fire management policies, fuels management, effects of fires on vegetation, plant communities, and watersheds.
- Learn fire management options, including fuels management, restoration, fire suppression, wildland fire use, and igniting and managing a prescribed fire, post-fire rehabilitation, or no action.
- You will learn the relation of fire, climate change, adaptation and mitigation strategies.

You will be able to:

- Understand fire as an ecological and physical process.
- Apply integrated fire management concepts based on an understanding of fire behavior and fire regimes with an emphasis on ecological effects.
- Understand fire ecology to be able to predict the effects of fire on species composition, structure, and function of rangelands and forestlands.

Final Paper:

Smoke Emissions and Human Health
Black Carbon and melting of mountain glaciers and North Pole ice
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Campsite</th>
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<tbody>
<tr>
<td></td>
<td>H. J. Andrews Experimental Forest is about 40 miles east of Eugene OR and near the upper end of the Blue River Reservoir.</td>
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<td></td>
<td>Familiarization with research program and ecosystems at H. J. Andrews Experimental Forest. With Drs. Fred Swanson (including review of Blue River strategy) and Mark Harmon (regarding coarse woody debris and the 200-year log decomposition study). Visit variable-retention harvest unit with well-developed pre-forest ecosystem. Review forest ecosystem concepts (Chapter 2 of Ecological Forest Management book). Review disturbance and stand-development concepts (Chapter 3 of EFM book).</td>
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<td></td>
<td>Continue learning about PNW coniferous forest ecosystems, historic forest practices, and current national forest conditions and policies. Review silvicultural concepts (Chapter 4 of EFM book) and proposed management strategies for federal forest lands in the PNW (Franklin and Johnson 2014)</td>
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<tr>
<td>September 6</td>
<td>Deschutes National Forest</td>
<td>H. J. Andrews E. F.</td>
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<td>Travel to eastside of Cascade Range to familiarize with ponderosa pine and mixed-conifer forests, restoration concepts, and view stand-replacement fire event (B&amp;B fire). Review frequent-fire forest sections of Chapter 3 of EFM book and “Restoration of Dry Forests in Eastern Oregon. A field guide.”</td>
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<tr>
<td>September 7</td>
<td>Travel HJA to Roseburg Oregon</td>
<td>Whistler’s Bend County Park</td>
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<td>Break camp. Spend 2/3 of day completing activities at H. J. Andrews including consideration of restoration thinning in Douglas-fir plantations to accelerate development of structural complexity. Travel to Roseburg Oregon in the evening.</td>
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<tr>
<td>September 8</td>
<td>Roseburg Bureau of Land Mgmt.</td>
<td>Whistler’s Bend County Park</td>
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<td>Familiarization with BLM management program and issues, including presentation by Dr. Norm Johnson (Oregon State University) and visit to field sites with BLM silviculturalists Abe Wheeler and Craig Klintop to view Buck Rising and proposed White Castle Pilot Projects. Familiarize yourself with the BLM Draft Management Plan.</td>
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</table>
September 9  BLM Management Activities  Whistler’s Bend County Park
Focus on BLM management plan and implementation of ecological forestry concepts. Exact locations of field stops not yet resolved, possibly on Coos Bay District.

September 10  Roseburg Lumber Company  Whistler’s Bend County Park
Visit Roseburg Lumber Company to see manufacturing facilities and visit company forest lands to see production forestry practices in Oregon.

September 11  Travel Roseburg to Arcata CA area  Patrick’s Point State Park
At least two stops along the way, including one at Jedediah Smith Redwood State Park to view coast redwood (Sequoia sempervirens) and possibly one to look at serpentine vegetation and restoration.

September 12  Arcata CA  Patrick’s Point State Park
Management of redwood forests by Green Diamond Corporation (for timber production but with Forest Stewardship Council certification) and by Pacific Forest Trust (for income and restoration).

September 13  Arcata CA travel to Chiloquin OR  National Forest Camp
Ecology of coast redwood forests and associated forest types, possibly including stop at Redwood Experimental Forest or National Park. Travel to Fremont-Winema National Forests/historical Klamath Tribal lands in afternoon and evening.

September 14  Chiloquin OR  National Forest Camp
Rationale and practical experience in restoration of ponderosa pine and mixed-conifer forests on the Fremont-Winema National Forests (following restoration plan of the Klamath Indian Tribes).

September 15  Chiloquin OR  National Forest Camp
Marking exercise in restoration of pine/mixed-conifer forests and evaluation of marks.

September 16  Travel Chiloquin OR to Seattle WA
WINTER 2015  Wildland Hydrology  ESRM 426/SEFS 525

Class information will be found on Catalyst: https://catalyst.uw.edu/workspace/sbolton/42226

And data will be entered on Google docs

Instructor:      Susan Bolton  
244 Bloedel 
685-7651 
sbolton@u.washington.edu

Office Hours: Tuesday 1:30-2:30 and by appointment

Lecture Schedule:      TTh 11:30-1:20  WFS 107 
Lab             Th 11:30-2:20  WFS 107 and UW Arboretum

Text: Environmental Hydrology - 2nd edition by Andy Ward and Stanley Trimble

Course Objectives:
This course is designed to give you a basic understanding of the hydrologic cycle especially in wildland watersheds. Management effects on various components of the hydrologic cycle will also be addressed. Assignments are designed to give you practical knowledge about how to do routine hydrologic analyses and design. Homework is due every Thursday at the start of class. Students will perform hydrologic measurements in the field and use their data to understand and interpret the hydrologic cycle. By the end of the course, students will be able to independently conduct basic hydrologic research and compute basic watershed water balances. This includes:

1. How to do unit conversions for hydrologic analysis, especially with respect to depth, area, volume relationships
2. Methods on filling in missing precipitation data and changing point data to areal data
3. How to measure interception and throughfall components of the hydrologic cycle
4. How to measure infiltration rates
5. Understanding how soil moisture varies in space and time
6. How to compute soil moisture
7. Understanding basic ground water principles
8. Understanding how precipitation, soil moisture, groundwater and stream flow are related
9. How to measure stream velocity and discharge using different methods
10. How to compute return periods for hydrologic events and compute risk
11. How and when to use the Rational Formula and the SCS Curve Number method for computing runoff
12. Awareness of common errors in hydrologic data collection and how to account for them.
Grading: **ESRM 426** (undergraduate level)
- Assignments 45%
- Midterm Test 25%
- Take-home Final 25%
- Participation 5%

**SEFS525** (graduate level)
- Assignments 40%
- Midterm Test 20%
- Take-home Final 15%
- Topic write-ups 15%
- Presentation 10%

Students signed up for **SEFS 525** will locate and critically review a current (no older than 2008) journal article on hydrology every week (**NO MODEL STUDIES**, only real data, please), due on **Tuesdays**.

**TOPICS for SEFS 525 graduate level students and due dates**
- Jan 13: Precipitation
- Jan 20: Interception
- Jan 27: Evapotranspiration
- Feb 3: Infiltration
- Feb 10: Ground water
- Feb 17: Runoff/Streamflow
- Feb 24: Hydrographs/Frequency Analysis
- Mar 3: Land use effects on hydrology
- Mar 12: Sediment issues

**PRESENTATION for SEFS 525 students**: Each grad student will select one of their reports and make a presentation to the class the last week of class.

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**Grades** are assigned on the UW grade point scale. They are equivalent to letter grades as follows.
- A > 90%  3.5-4.0  Exceptional work
- B 80-89%  2.5-3.4  Above average work
- C 70-79%  1.5-2.4  Average work
- D 60-69%  0.7-1.4  Below average work
- F < 60%  0.0  Unacceptable work

Grades will usually be scaled according to the above table. In the event that a curve may need to be used, the above relationships will be modified.
# COURSE OUTLINE

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Course Introduction and Components of the Hydrologic Cycle</th>
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<tbody>
<tr>
<td>Jan 6,8</td>
<td>Read Chap. 1, sects. 1.1-1.4, Chap 14, secs. 14.1-14.5 and class handouts on significant figures</td>
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<tr>
<th>Week 2</th>
<th>Weather and Precipitation</th>
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<tr>
<td>Jan 13,15</td>
<td>Read Chap. 2</td>
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<tr>
<th>Week 3</th>
<th>Interception and Evapotranspiration (ET)</th>
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<tr>
<td>Jan 20,22</td>
<td>Read Chap 10, secs. 10.1-10.9</td>
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<tr>
<th>Week 4</th>
<th>ET and Infiltration</th>
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<tr>
<td>Jan 27,29</td>
<td>Read Chap 3, sects 3.1-3.5, 3.85,3.87-3.89; Chap. 4</td>
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<tr>
<th>Week 5</th>
<th>Infiltration and Ground Water</th>
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<tr>
<td>Feb 3,5</td>
<td>Read Chap. 11.1-11.3</td>
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<tr>
<th>Week 6</th>
<th>Runoff and Streamflow</th>
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<tbody>
<tr>
<td>Feb 10,12</td>
<td>Read Chap. 5.1-5.6,5.8,5.11 and 6 and Chap 10 sects. 10.10-10.1</td>
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**TEST on ~Feb. 17th?**

<table>
<thead>
<tr>
<th>Feb 17, 19</th>
<th>Hydrographs and Frequency Analyses</th>
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<tr>
<td></td>
<td>Read Chap. 12, sect. 12.4 and Chap 7, sects. 7.1-7.3</td>
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<tr>
<th>Week 8</th>
<th>Human Impacts on Hydrologic Cycle</th>
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<tr>
<td>Feb 24, 26</td>
<td>Read Chap. 12, sects. 12.1-12.5</td>
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<tr>
<th>Week 9</th>
<th>Soil erosion and sediment budgets</th>
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<tr>
<td>Mar 3,5</td>
<td>Read Chap 9.1-9.7</td>
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<table>
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<tr>
<th>Week 10</th>
<th>Course review and graduate student presentations</th>
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<tbody>
<tr>
<td>Mar 10,12</td>
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**TAKE HOME FINAL HYDROLOGIC REPORT DUE** Wed March 18 before 5 p.m. This will be an analysis of the data collected over the quarter

Lecture and Lab schedules are approximate and may shift if certain topics require more time.
LABORATORY/FIELD SCHEDULE

Labs in the field will be held in the UW Arboretum. U-cars are available to drive to the Arboretum. I need students to volunteer to drive, must have a Washington State driver’s license. Labs in the class will take place in Wink 107.

Jan 8 Units of Measurement, Hydrologic Cycle and Data (in class/field) Install precip gages and throughfall gages for class/lab
Jan 15 Weekly data and lecture (class/field)
Jan 22 Weekly data (field)
Jan 29 Weekly data and soil texture (field)
Feb 5 Weekly data and lecture (class/field)
Feb 12 Weekly data and Infiltration lab(field)
Feb 19 Weekly data and lecture(class/field)
Feb 26 Weekly data and Channel and Velocity Measurement (field)
Mar 5 Final field visit, Pull equipment after final measurements
Mar 12 in class presentations

CLASS POLICIES

Tests will be given over course material. If you miss a test due to an unexcused absence you will receive a 0 for the test. Excused absences require prior notification to me. Make-ups will be given for excused absences only.

Attendance is not mandatory, but much test material will come out of lecture material. The course outline is approximate and may shift if some material takes more or less time than anticipated.

Due Dates. All written work must be submitted on time. Assignments turned in late will result in a 10% deduction in your grade unless previous arrangements are made with the instructors. Assignments not turned in at all will receive a grade of “zero.” If unforeseen circumstances arise, please contact the instructor as soon as possible and, if possible, in advance of when the assignment is due.
Academic Integrity
Plagiarism, cheating, and other misconduct are serious violations of your contract as a student. We expect that you will know and follow the University's policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to University regulations. More information, including definitions and examples, can be found at: http://depts.washington.edu/grading/pdf/AcademicResponsibility.pdf

Field Trip Insurance. Field Trip insurance is strongly recommended for all students registered in any SEFS course which includes field trips. Students who do not have the regular University health insurance or adequate personal coverage should consider obtaining a special short-term policy at $0.85 per day for the course of the field trips. Information and applications are available on page 3 and Appendix 6 at: http://www.washington.edu/admin/risk/documents/Field_Trip_Guidelines.pdf
The completed application and payment (made out to the University of Washington) must be made to the Cashier's Office, 129 Schmitz Hall before the trip.
Principles of Silviculture: ESRM 428

Syllabus: Winter 2015

Instructors: Greg Ettl ettl@uw.edu
Derek Churchill derekch@uw.edu

Time: Class: MWF 2:30-3:20 in Anderson 306
      Lab:  F    12:30-2:20 in Anderson 306

Pre-requisites: Silviculture (ESRM 323) and Nat. Resource Measurements (ESRM 368)

Field Trips: Four field trips (1-3 days) are part of the course and will use lab and class time on the Friday of each trip. We will meet in the C10 parking lot behind Wink at 12:15 and leave campus at 12:30 on the Friday. A detailed logistical plan will be provided prior to each trip. The four field trips are:
1. Pack Forest 1: Jan 30-31: Measure & mark a stand for thinning and visit several examples of thinning treatments.
2. Vashon Island: Feb 6: Tour recent harvests in a community forest and develop a planting prescription.
3. Pack Forest 2: Feb 13-14: Re-visit marked stands which will have been cut by Pack Forest staff to evaluate their prescription. Students will then inventory a second stand for their final project.

Course Description & Objectives:
Silviculture is the nexus of forest ecology, social needs, economics, and operational implementation. This course focuses on the fundamental science and tools of both ecologically oriented and wood production forestry on public and private lands. Topics include forest development and dynamics, creating wildlife habitat, projecting forest yield, calculating volume and monetary value, density management, writing prescriptions, and designing alternative management pathways. Students will be given a solid foundation in traditional silvicultural knowledge and tools as well as emerging silvicultural challenges such as managing for resilience and climate change adaptation.

To provide education in the principles of silviculture, Dr. Turnblom's ESRM 323 introduces students to silviculture, particularly through field trips to see different aspects of the subject. In ESRM 428 the way that trees, stands and management actions function is dealt with in more detail. Particular, but not exclusive, attention is paid to Washington State and the forest
management in the Pacific Northwest. Students will obtain field experience in analysis of forest stands and in the design and application of treatments. This is a 5 credit course.

The major objectives of the course are to (1) develop the knowledge and experience to understand and critically evaluate a silvicultural system and (2) to design a silvicultural system and set of treatments for specific forest type and set of objectives. Specific topics and learning objectives include:

- Classifying a site and identifying key biophysical drivers and limiting factors of a site.
- Tree physiology and wood growth with a focus on regeneration, shade tolerance, and resource allocation.
- Stand development & dynamics. Assessing key processes and developmental stage of a stand.
- Quantifying and modeling stand development.
- Economic evaluation of silvicultural treatments and systems. Modeling yield, volume, and value.
- Analyzing tradeoffs among even-age, uneven-age, and ecological silvicultural systems
- Spatial component of forest structure: dealing with heterogeneous stands.
- Multi-scale management: how stands fit into landscape management.
- Understanding natural disturbance processes and appropriate treatments to maintain forest health.
- Managing for resilience and climate change adaptation.
- Prescription development for planting, thinning, and regeneration harvests.

**Textbook and Readings**
Reading will come from a primary textbook, chapters from other books, and journal articles. Students should purchase the primary textbook. Book chapters and PDF’s of journal articles will be made available to students. A main reading has been assigned for all lectures. *Additional readings are also provided for some lectures and are strongly recommended for MFR students.*

The textbook for the course is:

*Silviculture and Ecology of Western U.S. Forests* by John C. Tappeiner III, Douglas A. Maguire, Timothy B. Harrington. Oregon State University Press. There are new and used copies on Amazon.com. We have also put this book on reserve at the Library

We also recommend obtaining a copy of *Forest Stand Dynamics, 1996, Oliver and Larson, McGraw Hill.* This has been put on library reserve as well.

**Field Gear:** Students should ideally have their own vest, compass, and diameter tape. However, these can be borrowed if necessary. All other gear will be provided as necessary.
**Attendance:** The course material will be taught sequentially and full attendance of lectures and field trips is critical to successfully completing the course. Students must contact Derek & Greg prior to the class if they have a major commitment requiring them to miss a class or are sick.

*This is a required course for students in the MFR program* and will be treated as a component of a professional qualification. Graduate students are required to maintain a GPA of 3.0 or greater.

**Information Access:** A shared Dropbox will be used to post and share all lecture presentations, reading materials, inventory tools, and other information. Large GIS files will be posted on an ftp site to avoid filling up student’s dropboxes. Please set up a free Dropbox account if you do not already have one and email your dropbox account name to Derek.

**Assignment Delivery:** We will set up a private Dropbox shared folder for each student. Please place all assignments in this folder in MS word or PDF format. Comments and grades for assignments will be made directly into your documents and re-saved in the dropbox folder. **Assignments are due before class on the due date.**

**Assignments & Exams:**
Students will be required to complete five short assignments and two projects involving quantitative analysis, FVS modeling, writing, and presentations. Details instructions for each assignment and project will be provided during the course. Students will work in groups of 2-3 for the projects but are required to complete individual write ups. No exams will be conducted.

**Short Assignments:**
- Inventory Olympics
- Stand dynamics photo series
- FVS lab assignment
- Planting plan for Vashon treated unit
- Olympics field tour notes
- Discussion session questions

**Projects**
- Pack Forest thinning prescription and evaluation. Short summary & presentation to class.
- Pack Forest final project. Develop 3 alternative pathways for mature DF stand. Deliverables will include a write-up and presentation to the class.
**Grading:**

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<th>Percentage</th>
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<tr>
<td>15%</td>
<td>Class participation, attendance, professionalism, and handing in assignments on time.</td>
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<tr>
<td>30%</td>
<td>Small assignments. All assignments will be weighted equally</td>
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<tr>
<td>15%</td>
<td>Pack Forest thinning prescription: presentation &amp; summary</td>
</tr>
<tr>
<td>40%</td>
<td>Final project: presentation &amp; write up</td>
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ESRM430: Remote Sensing of the Environment

Lectures: TTh 12:30 – 1:20 ROOM: TBA

Labs: Session A: T 2:30 – 3:50 BLD261
Session B: T 4:00 – 5:20 BLD261
Session C: Th 2:30 – 3:50 BLD261
Session D: Th 4:00 – 5:20 BLD261

Course Web Site: http://courses.washington.edu/esrm430

Instructor: Dr. L. M. Moskal
Contact Info: Office – Bloedel 382
http://faculty.washington.edu/lmoskal
lmoskal@uw.edu
206.221.6391

Office Hours: by appointment

Teaching Assistant: Jonnie Dunne
Contact Info: Office – Bloedel 357/389
jonniebd@uw.edu

Office Hours: in Bloedel 357 1:30-2:30 T-Th and by appointment

Course summary: (5 credits = 2 lecture credits + 3 lab credits) Students will be exposed to the principles of photogrammetry, image and point cloud interpretation and hyperspatial (high spatial resolution) remote sensing applications in natural resource management. In the first half of the course, manual and computer based laboratory exercises emphasize conventional analysis of aerial photographs and high resolution satellite imagery. Students will have the opportunity to apply these principles and obtain hands-on experience. The second half of the course focuses on the application of active remotely sensed data, specifically LiDAR (Light Detection and Ranging). The uses of hyperspatial remotely sensed information for wetlands, watersheds, forest resources, wildlife habitat, point and non-point pollution, environmental monitoring, land use planning, urban-suburban-forestry interfaces, and outdoor recreation will be discussed and illustrated using research examples throughout the course. Practitioners and users from public and private institutions may be involved as guest lecturers. Students will come out of this course with a mastery of a wide variety of interpretation, measurement, environmental monitoring and map making skills specific to hyperspatial remote sensing.

Course objectives: To develop an understanding of hyperspatial remote sensing fundamentals and the ability to interpret and manipulate high-resolution remotely sensed images and datasets. Students will be presented with the traditional and ‘state of the art’ image processing techniques, and a firm theoretical and practical background in hyperspatial remote sensing applications. By the end of the course students will be expected to evaluate available remote sensing data sources and design simple projects related to environmental applications.

Textbooks
The course spans some traditional and very new sub-branches of remote sensing, thus, there is no one textbook that would best fit the class content. Most of the readings you are expected to do are peer-reviewed literature reviews and research articles, the course readings are found on the readings tab. Below are suggested optional textbooks that relate to the course content.

Required Readings
UW - ESRM430 Remote Sensing of the Environment is a group in Environmental Sciences on Mendeley

Other Resources:
• The software we will use in class is also available on the 12 computers in Bloedel 156, the lab is opened from 9-5 Monday to Friday. Links to the freeware are also available in the lab section of this page.
• Aerial photography and other map resources at the UW Libraries can be found at: http://www.lib.washington.edu/maps/ -- I will let you know if you need them

Required Course Supplies: USB flash drive for archiving your course work (1GB recommended).

Undergraduate Student Grading:

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<th>Component</th>
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<tr>
<td>Midterm</td>
<td>20%</td>
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<tr>
<td>Labs (9)</td>
<td>45 %*</td>
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<tr>
<td>Final Project (lab 10)</td>
<td>25%</td>
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<tr>
<td>Random Quizzes (3-5)</td>
<td>10%</td>
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Approximate letter grades will be 93% (A=4.0), 82 % (B= 3.0), 71 % (C= 2.0), and 60% (D= 1.0). You will fail the course if your cumulative % is below 59 % (F = 0.0).

*Annotated Bibliographies (Graduate Students ONLY):
Graduate students do not submit labs. Every week, starting week two, an annotated bibliographic reference based on a remote sensing - theme refereed journal article will be due at the beginning of each lab session; for a total of 9 annotated bibliographies. Thus, graduate student are expected to attend the labs, however, the annotated bibliographies will substitute for the lab and midterm grades. Annotated bibliographies can be submitted using the ESRM 430 Digital Dropbox. The whole graduate student grade is based on the annotated bibliographies.

Instructions on how to produce an annotated bibliography are available at Cornell Library Site. Each bibliographic reference will be graded as follows: 5 pts = Excellent, 4 pts = Good, 3 pts = Fair, 2 pts = Poor, 0 pts = Late or did not hand in.

Assignments, Lab, Exam Submissions: Use the ESRM 430 Digital Dropbox to submit your labs, midterm, final and annotated bibliography. Always use your name in the file name of your submission. Always assure that you are uploading files to the correct folder. You will have till the start of the next lab session to submit your lab.

Course Policies:
• Missed Exams/Quizzes and Late Labs/Assignments: The UW policies will be followed to determine whether a make-up exam or quiz would be given or late labs/assignments allowed.
• Academic Integrity Statement: Please follow the UW policies on cheating and plagiarism: http://www.washington.edu/students/handbook/conduct.html. For more information on the University’s academic integrity policy, definitions and examples of academic misconduct, please refer to:

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Students with Disabilities: If you have a disability that requires special attention, please see me at my office and contact the University’s Disability Resources for Student Office (448 Schmitz, 206.543.8924, TTY 543.8925, uwdss@u.washington.edu). The Disability Resources for Students has a website at http://www.washington.edu/students/drs.
ESRM 435A Forest Entomology
Professor Patrick Tobin
*Tentative schedule as of 11/2015

Week 1
Course Organization, Introduction to Entomology

Week 2
Insect Population Dynamics
Insects and Forest Ecosystems

Week 3
Introduction to Forest Pest Management
Integrated Forest Pest Management

Week 4
Midterm #1
Biodiversity of Insects: Introduction to Taxonomy

Week 5
Biodiversity of Insects: Major Orders

Week 6
Bark Beetles

Week 7
Wood Borers, Root and Lower-Stem Insects

Week 8
Midterm #2
Insect Defoliators

Week 9
Shoot, Cone, Seed, and Sucking Insects
Host Plant Defense

Week 10
Emerging Issues in Forest Ecosystems: Non-native insects
Emerging Issues in Forest Ecosystems: Climate change and forest insects
ESRM 441: Landscape Ecology

Course Syllabus

Overview
Landscape ecology is the study of the causes of environmental pattern and the effect of spatial pattern on ecological processes. As a discipline, it provides us with a new way of viewing and investigating ecological systems. Until recently, ecologists generally ignored environmental heterogeneity and spatial pattern, either setting up studies to control for heterogeneity or assuming it had little effect on the question being addressed. Landscape ecology explicitly investigates the role of pattern and heterogeneity in ecological systems.

This course will provide you with an overview of landscape ecology. It is designed to introduce you to the many diverse aspects of the field and to expose you to applications of landscape ecology for both management and conservation.

Required text: none

Lectures: Class will be a combination of lectures, discussions, and other activities. Lecture slides can be found here (https://canvas.uw.edu/courses/589182/pages/lecture-slides) and will be uploaded the day before or shortly after the lecture.

Required readings: Assignments will often consist of readings from the primary scientific literature (papers from scientific journals or book chapters). You are responsible for reading any assigned papers or book chapters. Links to required readings are provided on the Assignments page.

Response to readings: Assignments will often include required responses to readings, which you will submit via Canvas.

Discussions: Class will usually consist of short lectures followed by structured discussion of the assigned readings or related topics. You will be graded on your participation in discussions.

Field trip: There will be one required overnight field trip leaving Seattle on 10/9 and returning on 10/11. The trip will be to the Wind River Experimental Forest and the Columbia River Gorge National Scenic Area. More info (https://canvas.uw.edu/courses/589182/pages/field-trip)

Exams: There will be one midterm, take home, exam.

Labs:
- Landscape Metrics (https://canvas.uw.edu/courses/589182/pages/landscape-metrics-lab)
- Species Distribution Modeling (https://canvas.uw.edu/courses/589182/files/33294534/download?wrap=1)
- Climata data (https://canvas.uw.edu/courses/589182/files/33294550/download?wrap=1)
- Species data (https://canvas.uw.edu/courses/589182/files/33294656/download?wrap=1)
- Conservation Planning (https://canvas.uw.edu/courses/589182/pages/conservation-planning-exercise-and-lab)
- Simulating Populations (https://canvas.uw.edu/courses/589182/pages/simulating-populations-lab)

Term paper and presentation: There will be a term paper due 12/11 (at 11:59pm). You will present your term paper to the class in one of the last three classes of the quarter. You will be asked to submit a brief description of your paper topic by 11/23. A description of the term paper assignment can be found here (https://canvas.uw.edu/courses/589182/pages/term-paper-proposal). A description of the presentation can be found here (https://canvas.uw.edu/courses/589182/pages/final-paper-proposal).

Grading: Grades will be determined as follows: 20% assignments, 20% midterm, 25% participation (discussions and field trip), 20% final term paper, and 20% final presentation. Click here for a grading rubric (https://canvas.uw.edu/courses/589182/pages/assignment%20Grading%20criteria) for the short reading assignments and for examples of questions and observations that were awarded a score of 10/10. Click here for an answer key to the midterm (https://canvas.uw.edu/courses/589182/pages/midterm-answer-key)
<table>
<thead>
<tr>
<th>Date</th>
<th>Details</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon Oct 5, 2015</td>
<td><strong>Readings and Questions: Introduction to Landscape Ecology</strong></td>
<td>due by 7pm</td>
</tr>
<tr>
<td></td>
<td><a href="https://canvas.uw.edu/courses/385162/assignments/2322139">https://canvas.uw.edu/courses/385162/assignments/2322139</a></td>
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<tr>
<td>Tue Oct 6, 2015</td>
<td><strong>Class: Introduction</strong> <a href="https://canvas.uw.edu/calendar?event_id=930876&amp;include_contexts=course_385162">https://canvas.uw.edu/calendar?event_id=930876&amp;include_contexts=course_385162</a></td>
<td>1:30am to 3:30am</td>
</tr>
<tr>
<td>Wed Oct 7, 2015</td>
<td><strong>Readings and Questions: Drivers of Pattern</strong></td>
<td>due by 7pm</td>
</tr>
<tr>
<td></td>
<td><a href="https://canvas.uw.edu/courses/385162/assignments/3952160">https://canvas.uw.edu/courses/385162/assignments/3952160</a></td>
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<tr>
<td>Thu Oct 8, 2015</td>
<td><strong>Class: Drivers of Pattern</strong> <a href="https://canvas.uw.edu/calendar?event_id=930877&amp;include_contexts=course_385162">https://canvas.uw.edu/calendar?event_id=930877&amp;include_contexts=course_385162</a></td>
<td>1:30am to 3:30am</td>
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<tr>
<td>Fri Oct 9, 2015</td>
<td><strong>FIELD TRIP (Depart: 12:30)</strong> <a href="https://canvas.uw.edu/calendar?event_id=930882&amp;include_contexts=course_385162">https://canvas.uw.edu/calendar?event_id=930882&amp;include_contexts=course_385162</a></td>
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</tr>
<tr>
<td>Sat Oct 10, 2015</td>
<td><strong>FIELD TRIP</strong> <a href="https://canvas.uw.edu/calendar?event_id=930866&amp;include_contexts=course_385162">https://canvas.uw.edu/calendar?event_id=930866&amp;include_contexts=course_385162</a></td>
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<tr>
<td>Sun Oct 11, 2015</td>
<td><strong>FIELD TRIP (return: 5:00pm)</strong> <a href="https://canvas.uw.edu/calendar?event_id=930867&amp;include_contexts=course_385162">https://canvas.uw.edu/calendar?event_id=930867&amp;include_contexts=course_385162</a></td>
<td>12am</td>
</tr>
<tr>
<td>Mon Oct 12, 2015</td>
<td><strong>Readings and Questions: Scale</strong> <a href="https://canvas.uw.edu/courses/385162/assignments/3016222">https://canvas.uw.edu/courses/385162/assignments/3016222</a></td>
<td>due by 7pm</td>
</tr>
<tr>
<td>Tue Oct 13, 2015</td>
<td><strong>Class: Scale</strong> <a href="https://canvas.uw.edu/calendar?event_id=930883&amp;include_contexts=course_385162">https://canvas.uw.edu/calendar?event_id=930883&amp;include_contexts=course_385162</a></td>
<td>1:30am to 3:20am</td>
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<tr>
<td>Wed Oct 14, 2015</td>
<td><strong>Readings and Questions: Pattern on Process</strong></td>
<td>due by 9pm</td>
</tr>
<tr>
<td></td>
<td><a href="https://canvas.uw.edu/courses/385162/assignments/3917570">https://canvas.uw.edu/courses/385162/assignments/3917570</a></td>
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<tr>
<td>Thu Oct 15, 2015</td>
<td><strong>Class: Pattern on Process</strong> <a href="https://canvas.uw.edu/calendar?event_id=931008&amp;include_contexts=course_385162">https://canvas.uw.edu/calendar?event_id=931008&amp;include_contexts=course_385162</a></td>
<td>1:20am to 3:20am</td>
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<tr>
<td>Tue Oct 20, 2015</td>
<td><strong>Class: Measuring Pattern</strong> <a href="https://canvas.uw.edu/calendar?event_id=931009&amp;include_contexts=course_385162">https://canvas.uw.edu/calendar?event_id=931009&amp;include_contexts=course_385162</a></td>
<td>1:30am to 3:20am</td>
</tr>
<tr>
<td></td>
<td><strong>Reading: Measuring Pattern</strong> <a href="https://canvas.uw.edu/courses/385162/assignments/3922481">https://canvas.uw.edu/courses/385162/assignments/3922481</a></td>
<td>due by 1:30pm</td>
</tr>
<tr>
<td>Wed Oct 21, 2015</td>
<td><strong>Reading: Measuring Pattern II</strong> <a href="https://canvas.uw.edu/courses/385162/assignments/3023593">https://canvas.uw.edu/courses/385162/assignments/3023593</a></td>
<td>due by 9pm</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
<td>Time</td>
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<tr>
<td>Thu Oct 22, 2015</td>
<td>Class: Pattern Lab <a href="https://canvas.uw.edu/calendar?event_id=931066&amp;include_contexts=course_989162">Link</a></td>
<td>1:30pm to 3:20pm</td>
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<tr>
<td>Mon Oct 26, 2015</td>
<td>Readings and Questions: Climate Change <a href="https://canvas.uw.edu/courses/989162/assignments/2626100">Link</a></td>
<td>due by 11:59pm</td>
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<tr>
<td>Tue Oct 27, 2015</td>
<td>Class: Climate Change <a href="https://canvas.uw.edu/calendar?event_id=931128&amp;include_contexts=course_989162">Link</a></td>
<td>9pm</td>
</tr>
<tr>
<td>Thu Oct 29, 2015</td>
<td>Class: Species Distribution Modeling <a href="https://canvas.uw.edu/calendar?event_id=931600&amp;include_contexts=course_989162">Link</a></td>
<td>1:30pm to 3:20pm</td>
</tr>
<tr>
<td>Thu Nov 3, 2013</td>
<td>Reading: Species Distribution Modeling <a href="https://canvas.uw.edu/courses/989162/assignments/2629323">Link</a></td>
<td>due by 1:00pm</td>
</tr>
<tr>
<td>Tue Nov 3, 2013</td>
<td>Class: Connectivity <a href="https://canvas.uw.edu/calendar?event_id=931082&amp;include_contexts=course_989162">Link</a></td>
<td>1:30pm to 3:20pm</td>
</tr>
<tr>
<td>Thu Nov 5, 2013</td>
<td>Class: Connectivity Lab <a href="https://canvas.uw.edu/calendar?event_id=931086&amp;include_contexts=course_989162">Link</a></td>
<td>1:30pm to 3:20pm</td>
</tr>
<tr>
<td>Fri Nov 6, 2013</td>
<td>Readings and Questions: Connectivity <a href="https://canvas.uw.edu/courses/989162/assignments/2629518">Link</a></td>
<td>due by 9pm</td>
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<td>Tue Nov 10, 2015</td>
<td>Class: Conservation Planning <a href="https://canvas.uw.edu/calendar?event_id=931086&amp;include_contexts=course_989162">Link</a></td>
<td>1:30pm to 3:20pm</td>
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<tr>
<td>Thu Nov 12, 2015</td>
<td>Reading and Question: Spatial Conservation Planning <a href="https://canvas.uw.edu/courses/989162/assignments/2630613">Link</a></td>
<td>due by 1:30pm</td>
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<td>Thu Nov 12, 2015</td>
<td>MIDTERM <a href="https://canvas.uw.edu/calendar?event_id=8467140&amp;include_contexts=course_989162">Link</a></td>
<td>12pm</td>
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<tr>
<td>Date</td>
<td>Event Description</td>
<td>Details</td>
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<tr>
<td>Mon Nov 16, 2015</td>
<td><strong>MIDTERM</strong> (<a href="https://canvas.uw.edu/courses/989162/assignments/3041775">link</a>)</td>
<td>due by 8pm</td>
</tr>
<tr>
<td>Tue Nov 17, 2015</td>
<td><strong>Readings and Responses: Debate Team Assignments</strong> (<a href="https://canvas.uw.edu/courses/989162/assignments/3039014">link</a>)</td>
<td>due by 8pm</td>
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<tr>
<td>Thu Nov 19, 2015</td>
<td><strong>Class: Debate Prep</strong> (<a href="https://canvas.uw.edu/calendar?event_id=831079&amp;include_contexts=course_989162">link</a>)</td>
<td>1:30am to 3:30pm</td>
</tr>
<tr>
<td>Mon Nov 23, 2015</td>
<td><strong>Landscape Conservation Debates</strong> (<a href="https://canvas.uw.edu/calendar?event_id=831078&amp;include_contexts=course_989162">link</a>)</td>
<td>1:30am to 3:30pm</td>
</tr>
<tr>
<td>Tue Nov 24, 2015</td>
<td><strong>Research Proposal Topic (term paper topic)</strong> (<a href="https://canvas.uw.edu/courses/989162/assignments/3040645">link</a>)</td>
<td>due by 11:59pm</td>
</tr>
<tr>
<td>Thu Nov 26, 2015</td>
<td><strong>Class: Landscape-level forest management (Dr. Jerry Franklin)</strong> (<a href="https://canvas.uw.edu/calendar?event_id=831074&amp;include_contexts=course_989162">link</a>)</td>
<td>1:30pm</td>
</tr>
<tr>
<td>Thu Nov 26, 2015</td>
<td><strong>Readings: Landscape Level Forest Management</strong> (<a href="https://canvas.uw.edu/courses/989162/assignments/3041178">link</a>)</td>
<td>due by 1:30pm</td>
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<tr>
<td>Thu Nov 26, 2015</td>
<td><strong>NO CLASS - Thanksgiving</strong> (<a href="https://canvas.uw.edu/calendar?event_id=831071&amp;include_contexts=course_989162">link</a>)</td>
<td>12am</td>
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<tr>
<td>Tue Dec 1, 2015</td>
<td><strong>Class: Populations in Space</strong> (<a href="https://canvas.uw.edu/calendar?event_id=830990&amp;include_contexts=course_989162">link</a>)</td>
<td>1:30am to 3:30pm</td>
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<tr>
<td>Wed Dec 2, 2015</td>
<td><strong>Readings and Questions: Populations in Space II</strong> (<a href="https://canvas.uw.edu/courses/989162/assignments/3052940">link</a>)</td>
<td>due by 9pm</td>
</tr>
<tr>
<td>Thu Dec 3, 2015</td>
<td><strong>Class: Simulating Populations</strong> (<a href="https://canvas.uw.edu/calendar?event_id=830911&amp;include_contexts=course_989162">link</a>)</td>
<td>1:30am to 3:30pm</td>
</tr>
<tr>
<td>Tue Dec 8, 2015</td>
<td><strong>Class: Presentations (Part I)</strong> (<a href="https://canvas.uw.edu/calendar?event_id=831066&amp;include_contexts=course_989162">link</a>)</td>
<td>1:30am to 3:30pm</td>
</tr>
<tr>
<td>Thu Dec 10, 2015</td>
<td><strong>Class: Presentations</strong> (<a href="https://canvas.uw.edu/calendar?event_id=831068&amp;include_contexts=course_989162">link</a>)</td>
<td>1:30am to 3:30pm</td>
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<tr>
<td>Fri Dec 11, 2015</td>
<td><strong>Proposal</strong> (<a href="https://canvas.uw.edu/courses/989162/assignments/3063796">link</a>)</td>
<td>due by 11:59pm</td>
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<td><strong>Class Participation</strong> (<a href="https://canvas.uw.edu/courses/989162/assignments/3080174">link</a>)</td>
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<tr>
<td></td>
<td><strong>Presentation</strong> (<a href="https://canvas.uw.edu/courses/989162/assignments/3083793">link</a>)</td>
<td></td>
</tr>
</tbody>
</table>
ESRM 450: Wildlife Ecology and Conservation

Quarter: Winter 2015
Times: MW 10:30-11:50 (lecture), W 3:30-4:50 (section AA), W 5:00-6:20 (section AB)
Locations: FISH 108 (lecture); Anderson 306 (lab)
Course website: http://www.sefs.washington.edu/classes.esrm.450/Syllabus.htm
Course listserv: esrm450a_wi15@uw.edu

Instructor

Aaron Wirsing (AW), School of Environmental and Forest Sciences (http://www.sefs.washington.edu), Winkenwerder 101, (206) 543-1585, wirsinga@uw.edu

Office hours: Wednesday 1:30-3:20 or by appointment

Teaching Assistant

Laurel Peelle, School of Environmental and Forest Sciences, Winkenwerder 110a, laurelp@uw.edu

Office hours: by appointment

Course goals

One of the biggest challenges facing wildlife ecologists is to understand patterns of animal distribution, abundance, and diversity. Having covered the basics of wildlife ecology in ESRM 350, or assuming that you have covered these basics in other courses, I will use this upper-level course to furnish you with a more in-depth understanding of core concepts, new ideas, and advanced research methods that will help you to address this challenge. Our training as ecologists must enable us to identify and tackle pressing wildlife conservation issues. Thus, I will also seek to increase your understanding of local, regional, and global wildlife conservation problems and the means by which the ecological concepts broached in this course can be applied to help solve them.

Teaching approach

The course will be lecture based, but will also include in-class discussions and exercises to promote learning via interaction between students and instructors and especially among students.

Readings

There is no required text for this course. Notes for each lecture are available for download on the course website (see above). I encourage you to download the notes before class and then embellish them during lecture.
“Five-minute” papers

Near the end of each lecture, I will ask you to take a few minutes to reflect on the day’s topic and jot down an observation or follow-up question. These mini-papers will not be graded, but I will expect them to be thoughtful and will use them as the basis for one-half of your course participation grade (see below).

Exams

There will be two in-class exams: exam one will cover the first half of the course material, and the second exam will cover the latter half (i.e., will be non-cumulative). Both exams will feature a short answer format and ask you to synthesize and critically evaluate course concepts.

Discussion sessions

Weekly laboratory sessions (Wednesdays) will serve as a forum for students to discuss and critique papers from the scientific literature that illustrate and apply course concepts. Students will enroll in one of two discussion sections (AA or AB), each of which will meet for 80 minutes. During each section meeting, students will be expected to actively participate in the discussion and are strongly encouraged to bring anecdotes and experiences that are relevant to the discussion topic. Our first meeting will take place on Wednesday the 7th of January. During this introductory meeting, I will explain the discussion format and outline my expectations for the writing assignment (see below). Then, on the 14th, we will hold the first of seven topical discussions (papers for these discussions are available for download on the course website). You will be expected to choose one of the seven papers we discuss as the basis for a formal review, or in other words a paper (8-10 double-spaced pages plus an additional page or two for references) that does the following: (1) identifies and describes the problem (what is the major issue or ecological process being addressed?) and provides some background (What do we know so far about the issue, and what are some other major papers that have addressed it?), 2) identifies the paper’s strengths and weaknesses and places it into context (is the paper novel and important, and how does it compare with other recent papers on the topic? Would you recommend that the paper be published if you a reviewer for a scientific journal?), (3) recommends ways to improve the study, and (4) offers ideas for future research that builds on the results of the study. I would like each of you to submit a rough draft to me by the end of the day (5 pm) on Friday, Mar-6 for preliminary (non-graded) evaluation; rough drafts will be returned to you with suggestions for improvement by the morning of Mar-11. Final papers are due by 5 pm on Wednesday, Mar-18. All submissions are to be electronic (please email preliminary and final drafts to me at wirsinga@uw.edu).

Grading

Your final grade will be determined by the quality of your course participation (i.e., submission of insights/questions at end of each lecture and contribution to lab discussion), the two exams, and the final paper. Excused absences and prior notification are required to receive make-up exams or to delay the submission of your final paper. It is your responsibility to let me know that you will be unable to take an exam or turn in the final paper on time. If you fail to do so, you will not receive credit for the missed assignment. Points will be assigned as follows:
Course participation: 100 points (50% for five-minute papers, 50% for lab discussion)
Exams: 100 points each
Final paper: 100 points
Total: 400 points

Final grades will be assigned according to the following scale:

A = 3.5-4.0, 90-95+% , 360-380+ points
B = 2.5-3.4, 80-89%, 320-359 points
C = 1.5-2.4, 70-79%, 280-319 points
D = 0.7-1.4, 60-69%, 240-279 points
F < 0.7, < 60%, 0-239 points

**Academic integrity**

Plagiarism, cheating, and other misconduct are serious violations of your contract as a student. We expect that you will know and follow the University's policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to University regulations. More information, including definitions and examples, can be found at: http://depts.washington.edu/grading/issue1/honesty.htm

**Disability accommodations**

To request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, (206) 543-8924 (V/TTY). If you have a letter from Disabled Student Services indicating that you have a disability that requires academic accommodations, please present the letter to the instructor so we can discuss the accommodations needed for this class.

This course is offered in accordance with UW College of the Environment (http://www.coenv.washington.edu) privacy (http://www.washington.edu/online/privacy) and terms (http://www.washington.edu/online/terms) policies.
<table>
<thead>
<tr>
<th>Date</th>
<th>General Topic</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/5</td>
<td></td>
<td>Course overview (AW)</td>
</tr>
<tr>
<td>1/7</td>
<td>Habitat Use and Foraging</td>
<td>Habitat use, selection and preference (AW)</td>
</tr>
<tr>
<td>1/12</td>
<td></td>
<td>The economics of foraging (AW)</td>
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<tr>
<td>1/14</td>
<td></td>
<td>The economics of foraging (AW)</td>
</tr>
<tr>
<td>1/19</td>
<td></td>
<td><strong>NO LECTURE – HOLIDAY</strong></td>
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<tr>
<td>1/21</td>
<td>Competition</td>
<td>Interspecific competition: exploring the niche concept (AW)</td>
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<tr>
<td>1/26</td>
<td></td>
<td>Intraspecific competition as a driver of individual differences (AW)</td>
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<tr>
<td>1/28</td>
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<td><strong>EXAM I</strong></td>
</tr>
<tr>
<td>2/2</td>
<td>Consumptive Predator Effects</td>
<td>Functional, numerical, and total responses (AW)</td>
</tr>
<tr>
<td>2/4</td>
<td>Non-consumptive Predator Effects</td>
<td>Risk effects and the ecology of fear (AW)</td>
</tr>
<tr>
<td>2/9</td>
<td></td>
<td>Condition-dependent risk taking (AW)</td>
</tr>
<tr>
<td>2/11</td>
<td>Indirect Predator Effects</td>
<td>Consumptive and non-consumptive indirect effects (AW)</td>
</tr>
<tr>
<td>2/16</td>
<td></td>
<td><strong>NO LECTURE – HOLIDAY</strong></td>
</tr>
<tr>
<td>2/18</td>
<td>Indirect Predator Effects</td>
<td>Consumptive and non-consumptive indirect effects (AW)</td>
</tr>
<tr>
<td>2/23</td>
<td></td>
<td>Density dependence and regulation (AW)</td>
</tr>
<tr>
<td>3/2</td>
<td></td>
<td>What drives population cycles? (AW)</td>
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<tr>
<td>3/4</td>
<td>Metapopulation Dynamics</td>
<td>Metapopulations I (AW)</td>
</tr>
<tr>
<td>3/9</td>
<td>Metapopulation Dynamics</td>
<td>Metapopulations II (AW)</td>
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Lab (discussion) schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>General Topic</th>
<th>Lab Discussion (Wed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/7</td>
<td>Introduction</td>
<td>Overview of discussion format and explanation of the writing assignment</td>
</tr>
<tr>
<td>1/14</td>
<td>Habitat Use and Foraging</td>
<td>Discussion: Cougar space use and movements in the wildland–urban landscape of western Washington (Kertson et al. 2011)</td>
</tr>
<tr>
<td>1/21</td>
<td>Habitat Use and Foraging</td>
<td>Discussion: Experimental evidence for an ideal free distribution in a breeding population of a territorial songbird (Haché et al. 2013)</td>
</tr>
<tr>
<td>1/28</td>
<td>Competition</td>
<td>Discussion: Size, sex and individual-level behaviour drive intrapopulation variation in cross-ecosystem foraging of a top predator (Nifong et al. 2015)</td>
</tr>
<tr>
<td>2/4</td>
<td>Consumptive Predator Effects</td>
<td>Discussion: Can intense predation by bears exert a depensatory effect on recruitment in a Pacific salmon population? (Quinn et al. 2014)</td>
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<tr>
<td>2/11</td>
<td>Non-consumptive Predator Effects</td>
<td>Discussion: Diet quality in a wild grazer declines under the threat of an ambush predator (Barnier et al. 2014)</td>
</tr>
<tr>
<td>2/18</td>
<td>Indirect Predator Effects</td>
<td>Discussion: Predatory beetles facilitate plant growth by driving earthworms to lower soil levels (Zhao et al. 2013)</td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Discussion:</td>
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<tr>
<td>2/25</td>
<td>Population Dynamics</td>
<td>Opportunistic exploitation: an overlooked pathway to extinction (Branch et al. 2013)</td>
</tr>
<tr>
<td>3/4</td>
<td></td>
<td>NO DISCUSSION – WORK ON PAPERS (TA AVAILABLE FOR QUESTIONS IN WINK 110a)</td>
</tr>
<tr>
<td>3/6</td>
<td></td>
<td>PAPER ROUGH DRAFTS DUE AT END OF DAY (5 PM) FOR PRELIMINARY EVALUATION</td>
</tr>
<tr>
<td>3/11</td>
<td></td>
<td>PAPERS RETURNED WITH COMMENTS</td>
</tr>
<tr>
<td>3/18</td>
<td></td>
<td>FINAL PAPERS DUE BY END OF DAY (5 PM)</td>
</tr>
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**SYLLABUS**

ESRM 461: Forest Management & Economics – Spring 2015

**Lectures:** Bloedel Hall 261, 11:30am - 12:50pm, M  
Savery Hall 167, 10:30am - 11:50am, F  

**Labs:** Bloedel Hall 261, 11:30am - 1:20pm, W  

**Web Site:** [http://faculty.washington.edu/toths/ESRM461.shtml](http://faculty.washington.edu/toths/ESRM461.shtml)

**Instructor:** Sándor F. Tóth  
**Office Address:** 358 Bloedel Hall  
**Telephone:** 206-616-2738; **Email:** toths@uw.edu

Instructor’s office hours: 2:00 - 4:00pm W, or by appointment.

**Course Description:** This course establishes the economic foundation of forest management and it covers the most fundamental decisions forest managers make in managing forests for multiple-uses such as timber production or wildlife habitat preservation. We will discuss the most common tools that can aid making these decisions. These tools include financial analysis, forest regulation, linear-., integer-, and multiple-objective programming. The students will learn how to select the most appropriate tools for various situations, how to use them, and how to interpret the results these tools provide.

**Course Objectives:** By the end of the course, all students should be able to:

1. evaluate typical stand-level management decisions on a financial basis;  
2. calculate the value of a forested property based on expected revenues and costs from timber production;  
3. understand and apply the concepts of the land expectation value and forest value to forested properties;  
4. determine the harvest level and the specific areas to be harvested over time;  
5. schedule harvests, road constructions and other forestry operations spatially;  
6. make management decisions in the face of multiple, conflicting objectives;  
7. have improved problem solving and computer skills; and  
8. better integrate and utilize the knowledge they have acquired from other courses such as forest measurements, forest operations and silviculture.

**Textbook:**

- My lecture notes will be posted on the course website prior to the lectures. In addition, chapters from Marc E. McDill’s (MMD) *Forest Resources Management* (Unpublished) will be used for certain topics.

**Books for reference:**

I will list the relevant sections in the following books after each lecture as applicable:

Grading:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Weights</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework Assignments (8)</td>
<td>20%</td>
<td>Individual work</td>
</tr>
<tr>
<td>Lab Assignments (9)</td>
<td>20%</td>
<td>Individual work</td>
</tr>
<tr>
<td>Midterm Exam (1)</td>
<td>30%</td>
<td>Individual work</td>
</tr>
<tr>
<td>Final Exam (1)</td>
<td>30%</td>
<td>Individual work</td>
</tr>
</tbody>
</table>

Note: The actual number of assignments might be lower but not higher.

Course Policies:

- **Grading**: Table 1 shows the grading scale for undergraduate students based on the University of Washington’s grading system: [Grading Sys.html](http://www.washington.edu/students/gencat/front/Grading_Sys.html)
- **Missed Exams**: The UW policies will be followed.
- **Academic Integrity Statement**: Please follow the UW’ policies on cheating and plagiarism: [conduct.html](http://www.washington.edu/students/handbook/conduct.html). For more information on the University’s academic integrity policy, definitions and examples of academic misconduct, please refer to: [honesty.htm](http://depts.washington.edu/grading/issue1/honesty.htm)
- **Students with Disabilities**: If you have a disability that requires special attention, please see me at my office and contact the University’s Disability Resources for Students Office (448 Schmitz, (206) 543-8924, (TTY) 543-8925, uwdss@u.washington.edu). The Disability Resources for Students has a web site at [drs/](http://www.washington.edu/students/drs/).

**Student/Instructor Responsibilities:**

Learning should be a cooperative venture between the students and the instructor and among the students of a class. The following lists are incomplete, but should help clarify our roles and responsibilities to each other. Feel free to give me your own additions or comments.

**Both the Students and the Instructor:**

1. Be prepared and on time for class.
2. Treat everyone in the class with respect.

**Instructor:**

1. Set clear expectations and provide motivation for students.
2. Select and prepare course materials, and make them readily available to students in a timely fashion.
3. Explain difficult concepts.
5. Provide fair and prompt feedback and grading.
6. Give students opportunities to provide feedback on the course and listen to their comments and suggestions.
**Students:**
1. Study assigned readings before class.
2. Complete all assignments on time.
3. Attend and participate in class and labs.
4. Think for yourself and ask questions.
5. Contribute at least your share to group assignments.
6. Give thoughtful feedback to the instructor on how to improve the course

**Tentative Schedule /Spring 2015/**

**Part I: Forest Economics**

**Week 1 – March 30 - April 3**
- M: Introductions, the syllabus, the role of models in making forest management decisions, model building fundamentals;
- W: Lab 1: Intro to using spreadsheets, growth and yield
- F: Present and future values, interest rates, discounting, the single value formula, infinite/finite and annual/periodic payments (TEXTBOOK Ch. 2).

**Week 2 – April 6 - 10**
- M: Overview of discounting, financial analysis with inflation: interest rates, real vs. nominal values, deflating and inflating. (TEXTBOOK Ch. 3);
- W: Lab 2: Financial analysis: discounting with single and multiple-payments formulae;
- F: Financial analysis overview (steps in financial analysis, selecting an interest rate, etc.); introducing the concepts of Net Present Value, Benefit/Cost Ratio, and the Internal Rate of Return as financial criteria for project evaluations (TEXTBOOK Ch.4). The Land Expectation Value (LEV) and the financially optimal rotation (TEXTBOOK Ch.6).

**Week 3 – April 13-17**
- M: More on LEV. Forest Value (TEXTBOOK Ch.7);
- W: Lab 3: Inflation on a spreadsheet;
- F: Growth and yield concepts: Periodic and Mean Annual Increment, and the Compound Interest Rate of Growth (TEXTBOOK Ch. 5). Stand establishment, thinning and other intermediate treatment decisions (TEXTBOOK Ch. 8).

**Week 4 – April 20 - 24**
- M: The economics of uneven-aged management: selecting an optimal cutting cycle and residual basal area (TEXTBOOK Ch. 9);
- W: Lab 4: NPV, Benefit/Cost Ratio and IRR + LEV on a spreadsheet;
- F: Uneven-aged management: the single tree decision – the concept of financial maturity (TEXTBOOK Ch. 9).
Week 5 – April 27 - May 1
- M: Forest microeconomics, market failures, non-timber forest benefits accounting;
- W: Lab 5: Forest Value on a spreadsheet;
- F: MIDTERM exam.

Part II: Forest Management

Week 6 – May 4 - 8
- M: Introduction to the concepts of forest and landscape-level decision making (TEXTBOOK Ch. 10). The social context of forest management objectives;
- W: Lab 6: Uneven-aged management;
- F: Historical overview: forest regulation with area control. The limitations. (TEXTBOOK Ch. 10).

Week 7 – May 11 - 15
- M: Introduction to Linear Programming (TEXTBOOK Ch. 11);
- W: Lab 7: Linear programming on a spreadsheet I;
- F: Using Linear Programming to solve forestry-related problems.

Week 8 – May 18 - 22
- M: Linear Programming and harvest scheduling models (TEXTBOOK Ch. 12-13);
- W: Lab 8: Linear programming on a spreadsheet II;
- F: More on LP-based harvest scheduling models (TEXTBOOK Ch. 14). Incorporating non-timber objectives into LP-based harvest scheduling models (TEXTBOOK Ch. 15).

Week 9 – May 25 - 29
- M: Spatially-explicit harvest scheduling models and integer programming;
- W: Lab 9: Tradeoff analyses with Excel macros;
- F: Harvest and road maintenance scheduling with integer programming.

Week 10 – June 1-5
- M: Forest management with multiple objectives. Tradeoff analyses.
- W: Review
- F: Review
ESRM 465: Economics of Conservation

Meeting times and location: MW 10:30-11:50 Anderson 22

Instructor:

Sergey Rabotyagov  
Associate Professor,  
School of Environmental and Forest Sciences  
123 G Anderson Hall  
206-685-3159  
rabotyag@u.washington.edu

Office hours: MW 2-3 and by appointment

Course description and objectives

Well-functioning economies have a demonstrated potential to improve human welfare around the world. At the same time, it is now well understood that when it comes to the environment, economic activity may (and, in too many cases, does) lead to significant environmental damage, contributes to decreased welfare of current and future generations, and does not ensure sustainability of human welfare and ecosystem function and ecosystem services that humans rely upon. The challenge then is to correct the course, which includes finding better ways to operationalize the notion of sustainability and of the economic value societies derive from ecosystem services. Central to economic thinking on sustainability is the conservation of natural capital (which includes concerns on protecting specific species, for example) and enhancing man-made, human, and social capital. This course will set up a framework for thinking about sustainability from an economic perspective, and consider the role of markets, individuals, and government entities in correcting the currently unsustainable path. We develop an understanding of the basic underlying causes of many failures of societies to allocate resources efficiently and equitably (both within the current generation and across time). Within the broad scope of the current economic thinking on sustainability, we will take a closer look at some of the corrective policies and actions which can help alleviate the most pressing issues of today. In doing so, we will attempt to draw upon concepts and ideas from the related fields of environmental and ecological economics.

As an aside, much of economic thinking on sustainability is about ensuring non-declining levels of human welfare over time. As such, any considered thinking about sustainability runs into thinking about what factors contribute to human welfare, how can they be measured over space and over time, and how one can ensure that current and future generations have the ability to access things that tend to make them happy. As a result, one finds that environmental and ecological economics, sustainability economics, and economics of biological conservation is strongly related to the paradigm of sustainable development.

A background in basic or intermediate microeconomics is strongly recommended, but not required. The only requirement is familiarity with basic algebra and statistics concepts.

Literature on the interactions between the economy and the environment, economics of sustainability and conservation, and sustainable development is vast. For this course, we will primarily use a textbook by Harris and Roach (thereafter HR) and will read an important original contribution on the economics of climate change (Wagner and Weitzman, WW thereafter). I will also assign readings and online videos throughout the quarter.
Required books:


Furthermore, I would recommend you read the book on sustainable development (Jeffrey Sachs, “The Age of Sustainable Development”. Kindle edition: http://www.amazon.com/Age-Sustainable-Development-Jeffrey-Sachs-ebook/dp/B00S5CF2BW/ref=sr_1_1?ie=UTF8&qid=1434756313&sr=1-1&keywords=age+of+sustainable+development+by+jeffery+sachs) and/or view online lectures by Prof. Sachs: https://www.coursera.org/learn/sustainable-development/home/welcome

Grading and Evaluation:

Quizzes/Class participation/Attendance: 20% (short T/F and multiple choice questions will accompany most lectures)

Homework Assignments: 20%

Midterm Exam: 20%

Final Exam: 20%

Group paper/presentation: 20%

Group project description:

The main emphasis in the class meetings will be on core principles and concepts. Some problems cannot get due attention in class. As a result, the class will be split into 5-6 groups of students with diverse backgrounds and interests, and each group will pick an issue (roughly following a textbook chapter) and will develop a summary paper and a 10-15 minute presentation. The paper will be brief (minimum 5 and a maximum of 10 pages, double spaced) and should be in the form of an “executive summary”. You are encouraged to use the HR chapters as starting points. However, in your research, you must use at least one source of data which is more recent than the data shown in the book. There is some flexibility on the topics but the broad areas I envision are:

1. Fisheries (Chapter 13 HR)
2. Agriculture and the environment (Chapter 10 HR)
3. Forest ecosystems (Chapter 14 HR)
4. Trade and the environment (Chapter 20 HR)
5. Greener production/industrial ecology (Chapter 17 HR)
6. Population growth and environment (Chapter 9 HR)
Disability Accommodations

To request academic accommodations due to a disability, please contact Disability Resources for Students (http://depts.washington.edu/uwdrs/)

Academic Integrity:

At the University level, passing anyone else’s scholarly work (which can include written material, exam answers, graphics or other images, and even ideas) as your own, without proper attribution, is considered academic misconduct.

Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-120). We expect that you will know and follow the university’s policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the College of the Environment Academic Misconduct Policy and the University of Washington Community Standards and Student Conduct website.
<table>
<thead>
<tr>
<th>Class #</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10/05/15. How do economists think about sustainability. Weak and strong sustainability. How are we doing? How can we do better? Sustainable development. Notes, Ch. 2 and Ch. 21 in HR. Videos in module 1 (What is sustainable development?) <a href="https://www.coursera.org/learn/sustainable-development">https://www.coursera.org/learn/sustainable-development</a></td>
</tr>
<tr>
<td>3</td>
<td>10/07/15. The criterion of economic efficiency. Choosing the efficient level of environmental quality. Total benefits and total costs and marginal benefits and marginal costs. Equimarginal Principle I. Efficiency of markets. Supply and demand. Measuring benefits and costs using demand and supply. Consumers’ surplus, producers’ surplus. Notes; Ch. 3 in HR (please review Appendices in Ch. 3 of HR if you need a refresher) HW 1 out. Read Ch. 1 in WW</td>
</tr>
<tr>
<td>5</td>
<td>10/14/15. Also read <a href="http://www.pnas.org/content/112/24/7348.full">http://www.pnas.org/content/112/24/7348.full</a></td>
</tr>
<tr>
<td>Date</td>
<td>Assignments</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>10/19/15</td>
<td>Review content of 5 and 6. National and environmental accounts. Read Ch. 8 in HR</td>
</tr>
<tr>
<td></td>
<td>HW 1 due. HW 2 out.</td>
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<tr>
<td>10/21/15</td>
<td>Environmental accounts and natural capital. Read Ch. 3 in WW</td>
</tr>
<tr>
<td>10/26/15</td>
<td>Externalities. Notes, readings, and Ch. 3 in HR</td>
</tr>
<tr>
<td></td>
<td>HW 2 due.</td>
</tr>
<tr>
<td>10/28/15</td>
<td><strong>Midterm exam.</strong></td>
</tr>
<tr>
<td>11/2/15</td>
<td>Common pool resources. Read Ch. 4 in HR.</td>
</tr>
<tr>
<td></td>
<td>Read Ch. 4 in WW</td>
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<tr>
<td></td>
<td>Recent data on groundwater: <a href="http://ase.tufts.edu/gdae/Pubs/te/ENRE/ENREUpdates/ENREUpdate4_Groundwater.pdf">http://ase.tufts.edu/gdae/Pubs/te/ENRE/ENREUpdates/ENREUpdate4_Groundwater.pdf</a></td>
</tr>
<tr>
<td>11/4/15</td>
<td>Discounting/dynamic efficiency. Read Ch. 5 in HR.</td>
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<tr>
<td>11/9/15</td>
<td>Valuing the environment. Social discount rate; Weitzman-Gollier discounting</td>
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<tr>
<td></td>
<td>Read Ch. 6, pp. 124-125, notes and readings</td>
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<td></td>
<td>Read Ch. 5 in WW</td>
</tr>
<tr>
<td>11/11/15</td>
<td><strong>--NO CLASS. Veterans' Day</strong></td>
</tr>
<tr>
<td>11/16/15</td>
<td>Valuing the environment; methods. Read Ch. 6 in HR and posted materials</td>
</tr>
<tr>
<td></td>
<td>Read Ch. 6 in WW</td>
</tr>
</tbody>
</table>
options: subsidies, taxes, cap-and-trade. Targeting conservation efforts across actors and space.

Read: Ch. 16 in HR
http://www.pnas.org/content/112/24/7408.full.pdf?sid=72872ea3-aeb2-45ba-bb29-338fc70edeeb

Rabotyagov et al (2014)

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read Ch. 7 in WW</td>
<td></td>
</tr>
<tr>
<td>Posted materials, Ch. 18 in HR.</td>
<td></td>
</tr>
<tr>
<td>11/30/15.</td>
<td>Global Climate Change, continued.</td>
</tr>
<tr>
<td>Finish WW (Epilogue), revisit Ch. 19 in HR</td>
<td></td>
</tr>
<tr>
<td>18/12/2/15.</td>
<td>Current landscape: Paris COP 2015; WA carbon tax</td>
</tr>
<tr>
<td>19/12/7/15.</td>
<td>Time permitting: environmentally modified input-output analysis</td>
</tr>
<tr>
<td>HW 4 due.</td>
<td></td>
</tr>
<tr>
<td>20/12/9/15.</td>
<td>Student group presentations</td>
</tr>
</tbody>
</table>

ESRM 468: Forest Operations
### Spring 2015

Jim Fridley: fridley@uw.edu

<table>
<thead>
<tr>
<th>Course</th>
<th>Monday</th>
<th>Wednesday</th>
<th>Thursday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3/30 – 4/2</td>
<td>Introduction. We will emphasize transportable concepts not current business and industry practice – you can learn that by keeping your eyes open and paying attention. Hand out dev of FE paper. Intro to engineering estimation.</td>
<td>Unit operations and systems. Work patterns. Time elements and throughput within unit ops. Continue estimating time and cost to load the pile.</td>
</tr>
<tr>
<td>3</td>
<td>4/13 – 4/16</td>
<td>Term Project Review II</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>4/27 – 4/30</td>
<td>Mobile machinery tipover stability</td>
<td>Lifting and swinging with a boom</td>
</tr>
<tr>
<td>6</td>
<td>5/4 – 5/7</td>
<td>Term Project Review IV</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>5/11 – 5/14</td>
<td>Winches and wire rope</td>
<td>Basic cable system mechanics</td>
</tr>
<tr>
<td>8</td>
<td>5/18 – 5/21</td>
<td></td>
<td>Cable systems</td>
</tr>
<tr>
<td>9</td>
<td>5/25 – 5/28</td>
<td>Cutting wood</td>
<td>Chippers and grinders</td>
</tr>
<tr>
<td>10</td>
<td>6/1 – 6/4</td>
<td>Contracts and contracting</td>
<td>Labor</td>
</tr>
</tbody>
</table>

Grades: Assignments 50% (10, 5% ea). Project 50% (five reviews 20%, deliverables 30%)

University of Washington
Instructor: Ashley Lunde
School of Forest Resources
alunde2@uw.edu
ESRM 470 Natural Resources Policy and Planning

Time and Place

<table>
<thead>
<tr>
<th>Time</th>
<th>Place 1</th>
<th>Place 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW 9:30-11:20</td>
<td>CDH 101</td>
<td></td>
</tr>
<tr>
<td>F 11:30-12:20</td>
<td>EEB 003</td>
<td></td>
</tr>
</tbody>
</table>

**Description.** This course provides an introduction to natural resource policy and planning with an emphasis on understanding the policy formation process and the legislation and regulations associated with policies and plans. Discussion will focus on the interaction of agencies, interest groups, Congress and the courts in the development and implementation of policies and plans. Selected natural resource policy and planning case studies will be presented that may focus on endangered species management, conservation plans, state and federal forest land management, land use planning and growth management, and recreation planning issues. Concepts of spatial and temporal scale are illustrated in examples. One all-day (9-5) Saturday field trip required.

**Objectives:**
1. To understand the role of policy and planning in natural resources management.
2. To understand several broad aspects of policy and planning theory.
3. To understand the policy and planning formation process.
4. To understand the primary considerations for evaluating natural resource policies and plans.
5. To analyze issues from multiple theoretical perspectives and positions.
6. To differentiate among the various types and levels of natural resource policies and plans.

**Assignments and Participation.** In addition to weekly reading, exercises, and participating in class discussions, you are responsible for completing six weekly case study/issue analyses, a rapid assessment assignment, and a final exam. The issue analysis assignments will be the product of teamwork; the rapid assessment assignment and final exam will be an individual effort. The exam will test your knowledge of and ability to apply information presented during class and the readings to particular natural resource issues and situations. Additional guidance for the assignments will be provided in advance of their due date. Presence in class and participation are important. We will have student-led discussions of current issues (additional guidance will be provided) and will discuss posted questions (as time permits) based on assigned readings.  

*Friday class sessions are devoted exclusively to team project work.*

Final grades for ESRM 470 will be based on the following factors:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percent of Grade</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Six Issue Analysis Papers</td>
<td>50</td>
<td>Weekly</td>
</tr>
<tr>
<td>Rapid Assessment Paper</td>
<td>10</td>
<td>March 7</td>
</tr>
<tr>
<td>Final Exam (Take Home)</td>
<td>25</td>
<td>March 16</td>
</tr>
<tr>
<td>Class Contributions (Presence, Discussion, Articles, Evaluations, Field Trip)</td>
<td>15</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
Course Website is available at: [https://catalyst.uw.edu/workspace/gbradley/47932/351473](https://catalyst.uw.edu/workspace/gbradley/47932/351473)

**COURSE POLICIES**

**Class Contributions.** Your presence, punctuality, and participation in class are assumed. Please notify the instructor of any anticipated absence to arrange for in class written or reading assignments missed during your absence. You are expected to participate regularly, voluntarily and productively in lecture and discussion. The nature of materials covered in class does not lend themselves to students sitting passively; lively and thoughtful participation will enhance the course for everyone.

To calculate your class contribution grade, the instructor will assess your contributions through observation of class sessions and exercises. In addition, you will be asked to assess the contributions of your group members and yourself. These evaluations will make up your class contribution grade for the course.

Please be courteous to other class members: Please turn off any cellular phones or other items that may disturb the class.

**Due Dates.** Because of the number of students in the course and the nature of the assignments, all written work must be submitted on time and in hard copy. Email submission of papers and other assignments will not be accepted without prior approval. Assignments turned in late will result in a deduction in your grade unless previous arrangements are made with the instructor. While the size of the deduction will depend on the nature of the circumstances, generally your grade on an assignment handed in late will be lowered by 20% for each day that is late. Assignments not turned in at all will receive a grade of “zero”. If unforeseen circumstances arise, please contact the instructor as soon as possible and, if possible, in advance of when the assignment is due.

**Proofreading.** Yes, grammar, organization, and neatness count! Written work must be logically organized, and free of blatant mistakes in spelling, grammar, and punctuation.

**Conferences.** You are strongly encouraged to confer with the instructor about your work. You are responsible for initiating contact, although the instructor may request a conference if they feel there is a special need. Office hours are **Mondays from 11:30-1:30** and by appointment.

**Working in Groups.** Several assignments are the product of teamwork. Each individual is expected to participate fully in all group activities. There is no assurance that a grade assigned to a group product will necessarily be the same grade assigned to each individual. As mentioned earlier, peer evaluation as well as self and instructor evaluation will be used to assess the group work products.

**Academic Integrity.** Plagiarism, cheating, and other misconduct are serious violations of your contract as a student. We expect that you will know and follow the University's policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to University regulations. More information, including definitions and examples, can be found at: [https://depts.washington.edu/grading/pdf/AcademicResponsibility.pdf](https://depts.washington.edu/grading/pdf/AcademicResponsibility.pdf)
Disability Accommodations. To request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, (206)543-8924 (V/TTY). If you have a letter from Disabled Student Services indicating that you have a disability which requires academic accommodations, please present the letter to the instructor so we can discuss the accommodations needed for this class.
COURSE OUTLINE – ORGANIZATION OF THE COURSE

A. Introduction
   1. Course description
   2. Approach to the course

B. Natural Resource Policy and Planning Case Study
   1. Issues in natural resources management and land use planning
   2. The Evergreen Forest Trust

C. Policy and Planning Concepts
   1. Conceptual models in policy and planning
   2. Application of models to case study

D. Actors, Interests, Goals, and Agendas
   1. Identifying actors
   2. Roles and functions of actors
   3. Identification and determination of goals/agendas
   4. How different actors influence goals

E. Alternative Development
   1. Alternatives and decision criteria
   2. Relation of alternatives to goals
      3. Roles of information
      4. Range of options

F. Making Choices
   1. Decision criteria
   2. Analytical tools
   3. Making decisions

G. Putting Plans and Policies into Action: Implementation
   1. Implementing plans and policies
   2. Who implements
   3. Conditions for implementation success
   4. Implementation tools

H. Putting Plans and Policies into Action: Monitoring and Evaluation
   1. Monitoring and evaluation
   2. Why monitor and evaluate
   3. Who monitors and evaluates
   4. What to monitor and evaluate

I. Adaptive Management and the Evolution of Plans and Policies
   1. Feedback processes
   2. Adaptive Management
   3. Evolution of Forest Management in the Northwest
J. Current Issues in Resource Policy and Planning
   1. Rapid Assessment Exercise

K. Synthesis, Conclusion, Future of Policy and Planning

COURSE SCHEDULE AND READING ASSIGNMENTS

All readings are available on the class Common View site:
https://catalyst.uw.edu/workspace/gbradley/47932/351473

Week 1 – Course Introduction and Overview
Monday January 4th – Course overview and introduction, logistics

Wednesday January 7th – Sample Case Study: The Evergreen Forest Trust

Friday January 8th – Brainstorm case study topics, form groups

Reading:
- Randolph, John. Ch. 7 Local Government Smart Growth Management for Environmental Land Use.
- The Future of Washington Forests.

Week 2 – Policy and Planning Concepts - Actors, Interests, Goals, and Agendas
Monday January 11th – Policy and planning theory and practice; Definition of terms, the language of policy and planning; Normative models

Wednesday January 13th – Identifying actors; Roles and functions of actors; Goals and agendas; How actors influence goals

Friday January 15th – Group Work: Discussion of First Issue Analysis (Scoping)

Reading:
- Randolph, John. Ch. 2 Environmental Planning.

Week 3 –

Monday January 18th – Martin Luther King Holiday

Wednesday January 20th – Group Issue Analysis Presentation #1 – Case Study Topic and Scope
**Saturday January 23rd: Field Trip – Meet at the SEFS at 9:00am, return by ~5pm**

**Reading:**
- Norman Vig and Michael Kraft, Ch. 4 “Presidential Powers and Environmental Policy,” pp. 75-98.
- Norman Vig and Michael Kraft, Ch. 5 “Environmental Policy in Congress,” pp. 99-124.
- Norman Vig and Michael Kraft, Ch. 6 “Environmental Policy in the Courts” pp. 125-146.
- Cubbage, O'Laughlin, and Bullock: Ch. 9 “Interest Groups,” pp. 201-225; Ch. 11 “Mass Media and the Forestry Message,” pp. 253-280.

**Week 4 – Alternative Development**

**Monday January 25th** – Alternatives and decision criteria

**Wednesday January 27th** – **Group Issue Analysis Presentation #2** – Actors, Interests, Goals, and Agendas

**Reading:**

**Week 5 – Making Choices**

**Monday February 1st** – Planning and policy choices; Decision criteria; Analytical tools; Making decisions – **Article Discussion Groups 1&2**

**Wednesday February 3rd** – **Group Issue Analysis Presentation #3** – Alternative Development

**Reading:**

**Week 6 – Putting Plans and Policies into Action: Implementation**

**Monday February 8th** – Implementing plans and policies; Who implements; Conditions for Implementation success; Implementation Tools – **Article Discussion Groups 3&4**

**Wednesday February 10th** – **Group Issue Analysis Presentation #4** – Making Choices
Reading:
- Randolph, John. Ch. 5 Land Conservation for Working landscapes, open space and ecological protection

Week 7 – Putting Plans and Policies into Action:

Monday February 15th – Presidents Day Holiday

Wednesday February 17th – Group Issue Analysis Presentation #5 – Implementation

Reading:

Week 8 – Monitoring and Evaluation, Adaptive Management and the Evolution of Plans and Policies


Wednesday February 24th – Adaptive Management, Barriers- Evolution of Forestry – Article Discussion Groups 7&8

Reading:

Week 9 –

Monday February 29th – Group Issue Analysis Presentation #6 – Monitoring

Wednesday March 2nd – Rapid Assessment Case Study Assignment
Week 10 – Rapid Assessment/Evaluations

Monday March 7th – Rapid Assessment Discussion/Presentation

Wednesday March 9th – Wrap-up Discussion. Course evaluations. Distribute take-home final exam.

**Take Home Final Exam is due Wednesday, March 16th 2015 at 10:30 AM**
Plant Ecophysiology

ESRM478/BIOL424, Winter Quarter 2013 (5 credits)

General Information

Lectures: Tue & Thurs 10:30 – 11:50, Anderson Hall 008 [Map]

Labs: Center for Urban Horticulture (CUH), Douglas Research Conservatory (DRC)103 [Map]

AA: Wed 12:30 – 2:20
AD: Wed 2:30 – 4:20

Instructor: Dr. Soo-Hyung Kim, Associate Professor, School of Environmental and Forest Sciences, soohkim@uw.edu, (206) 616-4971, Merrill 037

TA: Hannah Kinmonth-Schultz, PhD candidate in Biology, hannah2@uw.edu


Online Resources

Course webpage: https://faculty.washington.edu/soohkim/ecophys/

Catalyst workspace: https://catalysttools.washington.edu/workspace/soohkim/3275 (This workspace is a hub for the following catalyst functions)

"CollectIt" assignment dropbox: https://catalyst.uw.edu/collectit/dropbox/soohkim/25023

Q&A and Lab handouts: https://catalysttools.washington.edu/gopost/board/soohkim/14230/

Research Paper / Peer Review "GoPost" Board: https://catalyst.uw.edu/gopost/board/soohkim/14405/ (post your paper and do peer review here)

GradeBook: https://catalyst.uw.edu/gradebook/soohkim/70773

Class e-mail list: multi-esrm478a_wi13@uw.edu
Course overview

This course will cover physiological and physical basis of how plants function and interact with the environment. Students will be introduced to plant physiological mechanisms underlying ecological processes and observations. In addition, students will be exposed to key instrumentation and measurement techniques in plant ecophysiology. This course will address stress responses, acclimation and adaptation of plants to the environment with an emphasis on whole-plant responses. The impacts of global climate change on plants and their role in ecosystem processes will be discussed.

Instruction method

There will be lectures, discussions, and laboratories in the greenhouse or in the field. Laboratories will focus on instrumentation and measurement techniques central in plant ecophysiology. There will also be guest lecturers who have special interests and expertise in particular aspects of plant ecophysiology.

Tentative Schedule

<table>
<thead>
<tr>
<th>Jan 8</th>
<th>Tu</th>
<th>Course logistics and Introduction</th>
<th>Ch 1</th>
<th>Violle et al., 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>W</td>
<td>Lab 1: Lab overview and experimental design</td>
<td>Poorter et al., 2012</td>
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<tr>
<td>10</td>
<td>Th</td>
<td>The growth of plants</td>
<td>Ch 7:321-335</td>
<td>Kirschbaum, 2011</td>
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<tr>
<td>15</td>
<td>Tu</td>
<td>C3 Photosynthesis – Biochemical and biophysical limitations</td>
<td>Ch 2A:11-47</td>
<td>Pearcy et al., 1987*</td>
</tr>
<tr>
<td>16</td>
<td>W</td>
<td>Lab 2: Growth analysis, phenology, and chlorophyll meter - Part 1 (Exceltool)</td>
<td>Hunt et al., 2002*; Richardson et al., 2002</td>
<td>Energy and Enzymes</td>
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<tr>
<td>Date</td>
<td>Day</td>
<td>Topic</td>
<td>Reading</td>
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<td>17</td>
<td>Th</td>
<td>C3 Photosynthesis – Environmental and stress effects (see LI-COR webinar on chlorophyll fluorescence)</td>
<td>Ch 2A:47-64</td>
<td>Evans, 1989</td>
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<tr>
<td>22</td>
<td>Tu</td>
<td>C4 and CAM photosynthesis</td>
<td>Ch 2A:64-81</td>
<td>Edwards et al., 2001</td>
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<tr>
<td>24</td>
<td>Th</td>
<td>Modeling photosynthesis (Modeling tools: Curve fitter in Excel as in Sharkey et al., 2007)</td>
<td>Ch 2A:19-21</td>
<td>Sharkey et al., 2007</td>
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<tr>
<td>29</td>
<td>Tu</td>
<td>Plasticity in plants: Photosynthetic acclimation</td>
<td>Ch 2A: 26-36</td>
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<tr>
<td>31</td>
<td>Th</td>
<td>Stomatal relations and leaf energy balance</td>
<td>Ch 3:199-210; Ch4: 225-244</td>
<td>Brodribb &amp; McAdam, 2011</td>
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<tr>
<td>Feb 5</td>
<td>Tu</td>
<td>Exam 1 (through Stomatal relations and leaf energy balance)</td>
<td>Ch 2B:101-143</td>
<td>Study questions 1</td>
</tr>
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<td>6</td>
<td>W</td>
<td>Lab 5: Leaf gas-exchange measurements – Part 3: Water use efficiency</td>
<td>Box 2A.4:37-40</td>
<td>Ryan, 2011*; McDowell et al., 2008</td>
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<tr>
<td>7</td>
<td>Th</td>
<td>Plant water relations</td>
<td>Ch 3: 163-216</td>
<td>Koch et al., 2004</td>
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<tr>
<td>12</td>
<td>Tu</td>
<td>Plant hydraulics</td>
<td>Ch 3: 163-216</td>
<td></td>
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<tr>
<td>13</td>
<td>W</td>
<td>Lab 6: Chlorophyll fluorescence Part 1: Lightadapted leaves</td>
<td>Box 2A.2: 22-24; Ch3: 206-210</td>
<td>Mid-quarter group peer evaluation due at CollectIt</td>
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<td>Date</td>
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<td>Topic</td>
<td>Reading</td>
<td>Notes</td>
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<td>14 Th</td>
<td>Respiration</td>
<td>Ch2B: 101-112, 119-144</td>
<td>Loomis &amp; Amthor, 1999</td>
<td>Research paper: ** Complete draft ** Due at GoPost and also at CollectIt</td>
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<tr>
<td>19 Tu</td>
<td>Plant nutrition and nutrient use efficiency</td>
<td>Ch 6: 255-283, 302-310</td>
<td>Evans, 1989; Cavagnaro et al., 2011</td>
<td>Peer review process diagram</td>
</tr>
<tr>
<td>20 W</td>
<td>Lab 7: Chlorophyll fluorescence - Part 2: Darkadapted leaves</td>
<td>Ch2A: 37-40</td>
<td>Maxwell &amp; Johnson, 2000; Pons et al., 2009</td>
<td>Peer review due at GoPost and also at CollectIt (reviewer report form)</td>
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<td>21 Th</td>
<td>Tree root biology</td>
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<td>Prieto et al., 2011</td>
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<td>26 Tu</td>
<td>Plant architecture</td>
<td></td>
<td>Kennedy et al., 2010</td>
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<tr>
<td>27 W</td>
<td>Lab 8: Plant water status: Pressure chamber</td>
<td>Ch3: 183-206</td>
<td>Jones, 2007; Seibt et al., 2008</td>
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<tr>
<td>28 Th</td>
<td>Plant growth and resource allocation</td>
<td>Ch7: 335-367</td>
<td>Poorter et al., 2012</td>
<td>Research paper: revision due with coverletter at CollectIt</td>
</tr>
<tr>
<td>Mar 5 Tu</td>
<td>Biotic interactions</td>
<td>Ch 9A &amp; B: 403-437</td>
<td>Kiers et al., 2003</td>
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<tr>
<td>6 W</td>
<td>Lab 9: Group time</td>
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<td>Hunt et al., 2002</td>
<td>Due: Draft lab group report (comprehensive from lab 2 through lab 8)</td>
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<tr>
<td>7 Th</td>
<td>Plant phenology and the climate</td>
<td>Ch 8: 375-398</td>
<td>Forrest et al., 2010</td>
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</table>
12 Tu  Scaling to the canopy and ecosystem processes  Ch 5: 247-253  Ch 10B: 555-569  Field et al., 1995*; Sellers et al., 1997

13 W  Lab 10: Presentation

14 Th  Plants and climate change  Ch 10A & 10B  Chapin et al., 2008*

18 M  Final Exam (cumulative) 10:30-12:20

Assignments (See links for details):

1. **Research paper:** A research review paper on a topic of your interest, 6-8 pages of text (1.5 spacing; 12 pt; 1 inch margins). Check out example topics. Also see citation style and reference format, and a list of journals in plant ecophysiology. (Contact instructor for optional 'W' credit)
2. **Lab notebook, report, and presentation**
3. **Peer review (extra credit):** Each student is encouraged to review up to two research papers from other students through an open peer review process moderated by the instructor. Review form. See review assignment table to download the papers.

Exams / Quizzes

1. In-class quizzes (lecture, reading, and lab materials)
2. Midterm: 5 Feb 2013 (Thur)
3. Final exam: 18 Mar 2013 (Mon)

Grading (Grade scale)

1. Research paper: 20% (Plus, extra credit for peer review and cover letter up to 2%)
2. Midterm exam: 10%
3. Final exam: 20%
4. Quizzes: 15%
5. Labs: 30%
Office hours

Instructor: Thursdays 2pm - 3pm or by appointment. Merrill Hall 037. TA: By appointment

Academic Integrity

Plagiarism, cheating, and other misconduct are serious violations of your contract as a student. We expect that you will know and follow the University's policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to University regulations. More information, including definitions and examples, can be found at: http://depts.washington.edu/grading/issue1/honesty.htm

Disability Accommodations

To request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, (206)543-8924 (V/TTY). If you have a letter from Disabled Student Services indicating that you have a disability which requires academic accommodations, please present the letter to the instructor so we can discuss the accommodations needed for this class.

References

Additional Books (Optional)

PROFESSIONAL LEADERSHIP
PBAF 403A

Faculty: Dorothy Bullitt, Distinguished Visiting Practitioner
bullid@u.washington.edu
Office phone: 206-221-4565

Class time: Winter Quarter 2016
Tuesdays and Thursdays 11:30 AM – 12:50 PM

Location: ALC 141
Class Size: 35

Office hours: By appointment

Web Site: https://catalyst.uw.edu/workspace/bullid/44849/

COURSE DESCRIPTION

Professional Leadership (403A) will help students cultivate the practical skills required to lead within various operational contexts. Managerial strategies for addressing problems in public, not-for-profit and business organizations will be examined through case studies, general readings, class-exercises and presentations by practitioners. Throughout this four credit course, students will practice the core skills required for their success as future leaders. This competitive entry course will be graded using graduate level standards.

The course conforms to the Evans School’s policy on Academic integrity. (Details located under the syllabus tab of the PBAF 403A web site.)

THE PURPOSE OF THIS COURSE

Unlike previous generations, you can anticipate several discrete careers. You may move between sectors of the economy: not-for-profit, government and business. What core skills and behaviors will equip you to thrive as leaders in disparate careers? This course intends to help you prepare to transition effectively from field to field and earn respect wherever you land.

Critical to the success of leaders is emotional intelligence: the ability to identify, assess and manage their emotions and that of others and entire groups. Not everybody is endowed with naturally high emotional intelligence but certain habits, if developed deliberately and practiced, can achieve similar results. Success also requires leaders to develop strong communication skills including the ability to write clearly, speak publicly, negotiate persuasively, and appreciate the differing communication styles of those with whom they work. Also important are an ethical, analytical approach to problem solving and a readiness to match employees’ responsibilities with the necessary authority and resources. This course intends to help you focus upon and progress in each of these areas.
**STUDENT LEARNING GOALS**

- Identify behaviors of effective and ineffective leaders
- Expand skills necessary for effective leadership
- Cultivate habits necessary to earn respect as a leader
- Identify the value of different communication and learning styles
- Demonstrate an understanding of the connection between leadership and team work
- Understand the difference between leading up, down and across an organization
- Develop tools for succeeding in different sectors of the economy

**NOTE: This course qualifies for WRITING CREDIT.**

**GENERAL METHODS OF INSTRUCTION**

The course will incorporate a variety of instruction techniques. Understanding the tasks, responsibilities and practices of executive managers will be gained from cases, articles, book excerpts, short lectures, small and large group-discussions, in-class exercises, student presentations and guest speakers’ presentations. The guest speakers are not gap-fillers or an add-on but integral to students’ acquisition of the key learning goals of this course. All are proven leaders and natural teachers whose classes will be interactive. All of our distinguished guests are eager to help you acquire the skills and habits of leadership that are necessary for success in whichever field you choose. The third memo you will write will analyze the speakers’ styles and messages, and how you have incorporated them into your own respective brands of leadership.

**RECOMMENDED PREPARATION FOR OUR FIRST CLASS**

- How do you define leadership? Contemplate who has impressed you as an especially effective or ineffective leader and why. What particular skills and behaviors did he or she demonstrate? This individual should be someone you observed closely: a colleague, a teacher, a relative, a team-mate, a coach, etc. Come prepared to speak about this for approximately three minutes. On the first day of class I will call on a few students. I encourage you to jot down a few notes in advance. (Tip: When making a presentation, summarize what you’re about to say, say it then re-state your main point.)

- Please read Pat Bettin’s *Leadership that Shapes the Future*. It should help you organize your remarks.

**CLASS ASSIGNMENTS AND GRADING**
There will be three required memos and one team project/presentation. The first two memos will each constitute 15% of your grade. The third memo will constitute 10%. The team project will constitute 35% of your grade. Class participation will count for the remaining 25%.

**Requirements and Assignments**

Class participation:

Throughout the course students are expected to practice the basic habits and skills of leadership. There will be many opportunities, including:

- Short in-class commentary on effective and ineffective leaders you have known
- Small group leadership – take turns facilitating your small group discussions, playing scribe, keeping time, and presenting to the class
- An in-class “communication styles” exercise
- An in-class negotiation
- In-class discussion of cases and articles: respond to the questions posed, listen respectfully to others
- Post class notes on-line (each day I will ask for a volunteer)
- Post relevant articles and blogs in response to class discussion, speakers and course readings
- Pose thoughtful questions to our guest speakers
- Absorb the core concepts of the course, returning to them as you listen to (and question) the guest speakers, consider cases, and analyze articles
- During all presentations – including final team presentations - I’ll grade with an eye to punctuality, attendance, respect, active listening, relevant questions, and reflection back to the key skills and habits underpinning the course.

Note: sample rubrics for class participation and all graded elements of the course are located at the back of your course pack and posted on the web site under GRADING.

Memo One: Analyzing the Effectiveness of Leaders and Teams

Read: *Erik Peterson*, case (parts A and B – located in the appendix of the course pack) by Professor John Gabarro, HBR

Analyze this case from the perspective of an organizational consultant hired by the company to assess the leadership and team effectiveness of the CelluComm business.

Apply what you’ve learned from the readings and class discussion during the first month of the course to the facts of the case (A and B). Focus on the characters’ leadership styles and methods and the strengths, weaknesses and structure of the various teams. Employ lessons derived from the leadership toolbox, class readings and class discussion (class one through five) as you analyze the effectiveness and/or ineffectiveness of the managers and their teams. What are they doing right? What is not working? If you were in charge, what would you do differently? Why? What would make the leaders and their teams more effective? Please explain. Be specific.
Conclude with a set of recommendations to the Company’s President.

Please attach a third page endnote explaining which readings, speakers, handouts and/or in class discussion you employed in constructing your analysis.

Don’t get bogged down in the details of the CelluComm business. Though you will need to describe the salient facts of the case, keep focused on the leadership and team related issues.

Memos should not exceed three pages, one and a half spaced with size 12 Times New Roman font and one inch margins. One of those pages should contain References, Bibliography or detailed Endnotes. The style that you decide to use for the reference page does not matter. What does matter is that you cite any readings, discussions, and or course lectures that you incorporate into this memo.

NOTE: There will be an optional memo writing seminar conducted by Jacob Houston at a time and place to be determined.

The memo is due at the beginning of class 6, though you are welcome to submit it early via e-mail.

Memo Two:  Goal Setting and First Impressions

A two-page business memo (plus a one page end note) to yourself setting forth:

1. What contribution do you want to be making five years from now?
   - In what kind of an organization? What kind of a culture? What kind of a boss? Where do you want to live (Is there a city or country where you believe you will have the best chance to thrive?)
   - In what role? Consider this in light of your personality, communication style, particular strengths
   - How will you move toward your goal? How will you move toward your goal? This may include a discussion of the personal and professional things you want to work on (e.g., Become more BROWN, overcome the temptation to be passive aggressive, overcome perfectionism and related procrastination, exercise more, “come out”, acquire a pet, start a family), hard skills you wish to develop (e.g., public speaking, learn a foreign language, learn how to write grants).
NOTE: If you currently have a job, or are about to start a new job or internship, this can serve as a starting point. If you don’t, let your imagination go and consider what you want to be doing five years from now. Where? Why? And how might you get there?

2. **Describe what you will do during your first month on the job** (five years hence) in order to build alliances, design a plan of action and demonstrate leadership. Explain the reasons behind your plan. **NOTE: The readings for Class 11 (listed below) will help you. So please read ahead before writing your memo.**

3. **Craft a one sentence mission or mantra to guide you along the way.** You can use a line from a poem or a song lyric or craft your own, using the Five Steps to a Leadership brand reading from Class 3

**SUGGESTIONS**

- Your writing should be clear, direct, persuasive and efficient. (See memo writing standards on the class website and under Memo One for general guidance.)
- **BE PERSONAL (DEEP SELF-REFLECTION IS ENCOURAGED).**
- Employ the key skills and habits you’ve been developing in the course.
- Be Specific.
- Please attach a third-page endnote explaining which readings, speakers, handouts and/or in-class discussion you employed in constructing your analysis.
- Suggestions
- Organize your memo in a way that flows naturally for you while adhering to the memo writing guide posted on the class web site.
- The articles and case below should assist you as you contemplate your first month as a new leader.

*Creating the Climate for Change: Mobilizing the Executive Team of your Organization* by Katherine Kane

*New Leaders: Stop Downward Performance Spirals Before They Start* by Jean-Francois Manzoni, Jean-Louis Barsoux

*Elizabeth Best A and B HBS cases*

Note: You may also want to revisit two articles from class 3: “Five Steps to Building Your Personal Leadership Brand” and the Daniel Goleman article on Leadership styles. These may help you as you formulate your five year plan.

**Memo Two is due at the beginning of Class 11.**

**Third Memo: Analyzing our speakers’ styles and messages**

Think back on what each speaker brought to our class and your view of leadership. Write a three page memo sharing the leadership messages that connected with you the most. One page of your
memo should be a matrix or other visual representation of your analysis of each speaker’s communication style and leadership style. The other two pages of your memo should incorporate this analysis, but focus on the overarching take-away messages to YOU.

It may be helpful to use the Leadership Toolbox, syllabus topics and class notes as you develop the analytical framework for your memo. Adhere to the memo writing standards set forth above.

**Memo Three is due at the beginning of class 18.**

**Final Team Project: Critical analysis of a famous leadership team**

**Proposal (topic, roles and responsibilities, deadlines) due at the beginning of class 10**

**Reports (maximum 10 pages not including bibliography) due at the beginning of class 19.**

**Oral presentations will occur** during classes 19 and 20.

You and approximately four of your classmates will form a consulting team contracted to conduct an effectiveness audit of a famous leadership team. Prepare a 12-minute presentation (ten minutes with time for transitions and technical difficulties) on their skills and habits, and the ways in which they have been effective or ineffective. Employ the knowledge you have learned in class. An evolving list of these skills and habits will be posted on our class website.

The leadership team you select may be historical (for example Lincoln’s Team of Rivals, China’s Gang of Four or Martin Luther King and his cohorts), contemporary (for example The George W Bush Administration in its first term or the Obama campaign leadership group). It can be international (for example the leadership of Hugo Chavez or Nelson Mandela). You can focus on a business leadership team (for example Merrill Lynch or Toyota Motor Company) or a not-for-profit (for example the Girl Scouts, the Red Cross or Habitat for Humanity International). You can choose to focus more locally (for example the leadership of the University of Washington or a local not-for-profit that particularly interests you). You are welcome to examine a fictional team if that’s what excites you the most (e.g., *Toy Story*, *Harry Potter*, *Friday Night Lights*). If you experience difficulty selecting a fruitful subject – you may experience a false start or two - please let me know and I will do my best to help.

These presentations are designed to demonstrate the value of the tools you’ve been learning. They should involve a diverse consulting team. Each team should assign roles based upon particular talents of individual team members. For example, one member may be a particularly gifted researcher, another, a great editor; others may be strong public speakers or unusually adept with technology. The presentation grade will be based:

- In part on the product of the team: proposal, oral presentation and detailed report and bibliography (maximum ten pages not including the bibliography) (20 point maximum);
• In part upon a confidential peer review submitted by fellow team mates (5 point maximum) including numerical (e.g., 3.5 on a 4.0 scale) score and optional comments; and

• In part upon the team’s two-page reflection of itself: “What did you learn about operating as a team?” (10 point maximum).

Project teams will be assigned the second week of class. Class 8 will be devoted to the challenges and opportunities of working on a team with special focus on helping you devise the optimal game plan built around your team members’ specific strengths. During Class 9, a few minutes will be devoted to an in-class exercise in which teams will use negotiation skills to hammer out members’ roles and responsibilities and approach agreement upon project. Final project proposals containing a presentation topic (your first choice and a back-up subject); a team design (who’s going to do what) along with a rough game plan are due at the beginning of Class 11.

Teams should be prepared to answer questions following their presentations, which will occur during the last two days of class.

Be creative. Be focused. Maximum length (not including Q & A): 12 minutes including transitions.
CLASS SESSIONS

CLASS 1

TOPIC: Introduction to Leadership – a toolbox for success in the workplace

- Brief student presentations: personal examples of effective or ineffective leadership
- Short lecture on the basic habits and skills necessary for effective leadership
- Course overview

Readings: A Model of Effective Leadership by Pat Bettin
Leadership That Shapes the Future by Pat Bettin

Please complete Catalyst Web Q to help me select teams (available at course web site)

CLASS 2

TOPIC: Valuing Diverse Communication Styles

Class Exercise led by Rhonda Hilyer, CEO of Agreement Dynamics and the creator of Success Signals

Readings

No advance reading is required.

NOTE: Our guest presenter, Rhonda Hilyer and I will bring copies of this $22.63 communications exercise book, which we acquired at a discount on your behalf. Each student is expected to purchase the book for use in this critical class. Please make out your check to the publisher, Agreement Dynamics and bring it with you to class on January 9. I will collect the checks and deliver them to the publisher.

After class, please complete the test in your Success Signals booklet to firmly establish your dominant style/color. Please e-mail the results to me by 9 AM January 8.

CLASS 3

TOPIC: The Right Leadership Style for You

SMALL TEAMS ASSIGNED

Large group discussion re cases and readings

Team meetings: getting acquainted and discussing which of the Goleman styles apply to you or your preferred bosses.
**Large group discussion:** What is your leadership style? Explain. What style do you look for in a boss? Why?

**Readings**

*Coach Knight: The Will to Win*, an HBR case study by Scott A. Snook, Leslie A. Perlow, and Brian J. DeLacey

*Coach K: A Matter of the Heart*, an HBR case study by Scott A. Snook, Leslie A. Perlow, and Brian J. DeLacey

*Leadership That Gets Results* by Daniel Goleman, HBR article

*Five Steps to Building Your Personal Leadership Brand* by Dave Ulrich, Norm Smallwood, Harvard Management Update  (NOTE: This reading will assist you in preparing Memo 2 due at the beginning of Class 10.)

**CLASS 4**

**TOPIC:** Taking Care of Your People

Guest Presenter: **Bill Center**, retired U.S. Admiral

**Readings**

Introduction by Bill Center

*Douglas Southall Freeman on Leadership* (Great Historians of the Civil War) (Hardcover) by Douglas Southall Freeman and Stuart W. Smith

**NOTE:** At a time and place to be determined there will be an optional memo writing seminar conducted by Jacob Houston. He will help you prepare for Memo One (due at the beginning of Class 6). He will also offer suggestions for Memos Two and Three.

**CLASS 5**

**TOPIC:** Leading Up, Down and Sideways

Large group discussion

Short lecture

Team meetings

Short team presentations applying the material to real life experiences
Readings

Case:  *Just Trying to Help*  HBR Case study and commentary by Julia Kirby

Article:  *Up and Down the Communications Ladder* by Bruce Harriman, HBR September – October 1974

Book excerpt:  *The Five Dysfunctions of a Team* by Pat Lencioni

CLASS 6

**MEMO ONE DUE** (See instructions in syllabus)  The *Erik Peterson* case (A and B) is located in the appendix section of the course pack. Please address your memo to Ric Jenkins, CEO. Please write as an objective consultant, knowledgeable about the readings in PBAF 403A.)

**TOPIC:**  Leading From the Heart

Guest Presenter:  Father Sundborg, President of Seattle University

No reading required. Please focus on writing your second memo

CLASS 7

**TOPIC:**  Responsibility = Authority + Resources

Small and large group discussion of hypotheticals

Short lecture

**Brief student presentations:** personal examples of situations where authority + resources has failed to = responsibility

Readings


CLASS 8

**TOPIC:**  How Can a Team Achieve Success?
Guest Presenter: **Paul Dziedzic**, Former Special Assistant to the Governor on Substance Abuse Issues. Currently provides strategic advice and facilitation to public agencies and not-for-profit profit organizations. He has a particular expertise assisting teams to achieve success.

**Readings**

Carefully consider the brief discussion of Final Project Success located in the course pack.

**At a time and place TBD Grant Blume will conduct an optional Public Speaking Workshop.**

**CLASS 9**

**TOPIC:** Negotiations: formal and every day

Team discussion and presentations about the selected readings’ application to real life experiences

In class “Sugar Bowl” negotiations exercise

Teams will use negotiation skills explored in the readings and class discussion to begin hammering out members’ roles and responsibilities and settle on an agreed upon final project topic (and a back up topic).

**Readings**

*Non Verbal Communication in Negotiations* by Michael Wheeler, HBR

*How to Get Your Way—Without Destroying Relationships* by Martha Craumer, Harvard Management Communication Letter

*Negotiating When Your Job Depends on It* by Nick Morgan, Harvard Management Communication Letter

*Negotiations: the basics*, a memo to 503A students tied to in-class exercise and the final project

*Sugar Bowl*: A short in class negotiation exercise, Kellogg School of Dispute Resolution (background material will be handed out before class)

**CLASS 10**

**TOPIC:** Intuitive Leadership

**Final Project Proposal Due** (instructions above)

Guest Presenter: **Paul Ishii**, General Manager, Mayflower Hotel

**Readings**
Imagine by John Lennon

Reflect on a favorite saying of Paul’s: *Find the lowest common denominator first*

An Ordinary Man by Paul Rusesabasina, Introduction

CLASS 11

SECOND MEMO DUE (see description in syllabus)

TOPIC: First Impressions

Large group discussion:

- Real life examples of first impressions on the job (informed by articles)
- Elizabeth Best cases A and B
- If you have an example if someone’s first impression was colored by what you now perceive as your own implicit bias, please describe. NOTE: we all have implicit biases. But if we know what they are we can take explicit steps to counter those hidden biases with the alternative values and diverse relationships we cultivate.

Readings

Elizabeth Best (A and B) HBR case study, Wickham Skinner and Ardis Burst

Creating the Climate for Change: Mobilizing the Executive Team of your Organization by Katherine Kane

New Leaders: Stop Downward Performance Spirals Before They Start by Jean-Francois Manzoni, Jean-Louis Barsoux

Please take implicit bias tests on race, gender/career and sexual orientation: https://implicit.harvard.edu/implicit/takeatest.html

CLASS 12

TOPIC: Leading when you are not in charge

Guest Presenter: Grace Chien, CEO, The Girl Scouts of Western Washington (retired)

Readings

A case will be prepared by our guest and delivered by e-mail

Please revisit the readings:

Case: Just Trying to Help HBR Case study and commentary by Julia Kirby
Article: *Up and Down the Communications Ladder* by Bruce Harriman, HBR September – October 1974

Book excerpts: *The Five Dysfunctions of a Team* by Pat Lenocini

NOTE: At a time and place TBD Loribeth Dalton of Waldron and Associates will offer a complimentary (optional) job search workshop. Friends are welcome to attend. Please RSVP.

CLASS 13

**TOPIC:** Ethical Decision Making

Large group discussion exploring the case: *An English Teacher in South Korea* and current ethical dilemmas in the news

Team presentations about a real life ethical challenge

**Readings**

*Ethics for the Real World* (chapter 2) by Ronald Howard and Clinton Korver, (2008)


*An English Teacher in South Korea* by Stacey Fitzimmons and Paul Shantz, Richard Ivey School of Business Foundation, Product # 910C27

Look on line to refresh your memories the Penn State scandal and South Korean Ferry disaster. Also consider more current issues (e.g., The Hunting Ground). Please consider these in light of the readings.

CLASS 14

**TOPIC:** How Failure Can Lead To Success

Guest Presenter: **Sten Crissey**, Former owner of Crissey’s Flowers and Gifts, and past president of the Rotary Club of Seattle

**Readings:**

*How to Succeed in the Face of Failure: Palm Pilots and counterproductive Carrots – Making Intersectional Ideas Happen* by Frans Johansson, Harvard Publishing chapter, 4618BC-PDF-ENG

*If*, a poem by Rudyard Kipling
READ ON LINE:

*Better Ideas Through Failure* by Sue Shellanbarger, Wall Street Journal, 9/27/11
@http://online.wsj.com/article/SB10001424052970204010604576594671572584158.html


**CLASS 15**

**TOPIC:** Influencing People’s Behavior

Small and large group discussion

Short lecture

**Readings**

*The Radical: Carly Fiorina’s Bold Management Experiment*, Business Week

*The Great Intimidators* an HBR article by Roderick Kramer

*Unlocking Generational Codes* by Anna Liotta, Chapter 6

**CLASS 16**

**TOPIC:** Motivational Leadership

Guest presenter: **Diankha Linear, Director of Compliance, NORDSTROM, former President of the Loren Miller Bar Association**

**Readings**


*Fierce Conversations* by Susan Scott: The Idea of Fierce pages 1-12 and Tackle Your Toughest Challenge Today, pages 124-142

**CLASS 17**

**TOPIC:** The Big Picture

Large and small group discussion about case

Brief student presentations about how O’Neill’s leadership relates to the learning in the day’s readings and the course as a whole
Readings

Vision and Strategy: Paul H. O’Neill at OMB & Alcoa (Abridged), Kennedy School case study

CLASS 18

THIRD MEMO DUE (see description in syllabus)

TOPIC: The Power of Vulnerability

Guest Presenter: Lauren Domino, Seattle Foundation, Philanthropic Advisor, Improv Artist, MPA 2011

Readings

Please re-visit the ethics readings from Class 13

CLASS 19

Final Reports Due

TOPIC: FINAL TEAM PRESENTATIONS

- Presentations
- Evaluation of speakers and course design

Class 20

TOPIC: Last Class

- FINAL PRESENTATIONS
- Course Wrap-Up
- Course Evaluation
MASTER READING LIST

Book

Success Signals by Agreement Dynamics: This training book will be used as the basis of an in-class exercise.

NOTE: I will bring copies of this $22.63 communications exercise book, which the publisher has provided at a discount on our behalf. Each student is expected to purchase the book for use in this critical class. Please make out your check to the publisher, Agreement Dynamics and bring it with you to class on January 8. I will collect the checks and deliver them to the publisher.

Book Excerpts

Douglas Southall Freeman on Leadership (Great Historians of the Civil War) (Hardcover) edited with commentary by Stuart W. Smith, pages 206-214 (with an introduction by guest presenter Admiral Bill Center)

The Five Dysfunctions of a Team (pages 185 – 220) by Pat Lencioni

Ethics for the Real World, (Chapter 2) by Ronald Howard and Clinton Korver, (2008)

An Ordinary Man by Paul Rusesabasina, Introduction

Paradoxes of Culture and Globalization, Sage, Thousand Oaks, 2008 by M.J. Gannon (Paradox 5.1, pages 100-104, and Paradox 5.2 pages 104-107

Unlocking Generational Codes by Anna Liotta, Chapter 6

Cases

Coach Knight: The Will to Win: HBR case study by Scott A. Snook, Leslie A. Perlow, Brian J. DeLacey, August 10, 2005, Product #406043

Coach K: A Matter of the Heart, an HBR case study by Scott A. Snook, Leslie A. Perlow, and Brian J. DeLacey, Product # 406044

Just Trying to Help: HBR case study and commentary by Julia Kirby, Marcus Buckingham, Joanne Bischmann, Lars Kolind, Tomas Blomquist, June 1, 2006 Product #R0606A

Erik Peterson (A and B), HBR case study by Professor John Gabarro, Product # 494005-PDF-ENG, 494006-PDF-ENG, 494007-PDF-ENG (Located in Appendix of Course Pack)

Elizabeth Best (A): HRD case study by C. Wickham Skinner and Ardis Burst, Product # 9-675-123

Elizabeth Best (B): HRD case study by C. Wickham Skinner and Ardis Burst, Product # 9-675-124
An English Teacher in South Korea by Stacey Fitzimmons and Paul Shantz, Richard Ivey School of Business Foundation, Product # 910C27

Vision and Strategy: Paul H. O'Neill at OMB & Alcoa (Abridged) Kennedy School case Product # 1134.3

Articles

Leadership to Shape the Future by Pat Bettin

Leadership That Gets Results by Daniel Goleman, HBR, Product #R00204

Five Steps to Building Your Personal Leadership Brand by Dave Ulrich, Norm Smallwood, Harvard Management Update article, Product # U0712A


What Makes an Effective Executive by Peter Drucker, Harvard Business Review, June 1, 2004, Product # R0406C

Up and Down the Communications Ladder by Bruce Harriman, HBR September – October 1974, Harvard Business Review Product #74505


How to Get Your Way--Without Destroying Relationships by Martha Grazmer, Harvard Management Communication Letter, September 1, 2001, Product # C0109C

Negotiating When Your Job Depends on It by Nick Morgan, Harvard Management Communication Letter, Product # C0209A

Creating the Climate for Change: Mobilizing the Executive Team of your Organization by Katherine Kane, Harvard Business Review, May 15, 2004, Product #B0405D

Better Ideas Through Failure by Sue Shellanbarger, Wall Street Journal, 9/27/11

New Leaders: Stop Downward Performance Spirals Before They Start by Jean-Francois Manzoni, Jean-Louis Barsoux, Harvard Management Communications Letter, Product # U0810A

The Great Intimidators HBR article by Roderick Kramer R0602D

The Radical: Carly Fiorina’s Bold Management Experiment, Business Week, February 19, 2001

Other

Imagine by John Lennon
If, a poem by Rudyard Kipling


Better Ideas Through Failure by Sue Shellanbarger, Wall Street Journal, 9/27/11
http://online.wsj.com/article/SB10001424052970204010604576594671572584158.html

Look on line to refresh your memories the Penn State scandal and Italian cruise ship/Korean ferry disaster. Also sexual assaults on American campuses (Google “The Hunting Ground”).

Appendix

Erik Peterson (A and B), HBR case study by Professor John Gabarro, Product # 494005-PDF-ENG, 494006-PDF-ENG, 494007-PDF-ENG (CASE analyzed for MEMO ONE)

503A Learning Goals

Leadership Tool Box
Bill Center, U.S. Rear Admiral (retired)

Grace Chien, CEO, The Girl Scouts of Western Washington (retired)

Sten Crissey, Former owner of Crissey’s Flowers and Gifts, and past president of the Rotary Club of Seattle

Lauren Domino, Seattle Foundation, Philanthropic Advisor, MPA 2011

Paul Dziedzic, Former Special Assistant to the Governor on Substance Abuse Issues. Currently provides strategic advice and facilitation to public agencies and not-for-profit organizations.

Paul Ishii, General Manager, the Mayflower Hotel

Diankha Linear, the Director of Corporate Compliance, NORDSTROM

Father Steve Sundborg, President, Seattle University

Certified Success Signals Trainer

Rhonda Hilyer, CEO, Agreement Dynamics, Inc. and creator of Success Signals

Job Search Workshop

Loribeth Dalton, Waldron and Company

Public Speaking Workshop

Grant Blume, PhD student, Public Affairs and Education

Memo Writing Workshop

Jacob Houston, PhD, Education
QSci 486 Analysis of Designed Experiments
Winter Quarter 2014

Instructor: Dr. Susan Lubetkin  lubetkin@uw.edu  Office MSB 238  cell (206) 719-4730 
TA: Dale Jacques  djacques@uw.edu

Class meets MWF 10:30-11:20 (lecture) in MEB 237, and F 12:30-2:20 (R lab) in MGH 044

Course website: Stay tuned…

Office Hours
Lubetkin  M, 12:30-2:30  MGH 086  Jacques  T, TBD  MGH 086


Optional supplies: colored pencils or pens if you take notes on paper

Learning objectives: The purpose of this course is to enable students to develop the ability to translate a scientific research question into a specific experimental design, to recognize a variety of experimental designs, to differentiate between various designs, and to apply the appropriate analysis to each design. These skills are very important for planning research designs and analyzing the resultant data. The associated lab section will give students a chance to learn how to use R and R-studio with these data and analyses. (Don’t panic if you haven’t used R before.)

Homework, paper, end-of-term project, and grading: Good news! No exams! Bad news: Don’t neglect your homework and then expect a miracle. There will be weekly homework, due on Wednesdays, which will account for 75% of your grade. The remainder will be a term project, worth 20%, and a paper review, worth 5%. Most weekly homework assignments will start with a Question 0 which will be a part of the term project and help to stave off procrastination on your part as well as allow for feedback from me. (Question 0 will be turned in to me directly. The more traditional remaining questions will be turned in to the TA.) The paper review (more details to follow) will give you a chance to show me that you aren’t going to be a scientist who only looks at the p-values in the primary literature and skips the details of the statistical analysis.
The final course grades will be based on the following percentages:

- 95-100% 3.7 – 4.0
- 90-94 3.4 – 3.6
- 85-89 3.0 – 3.3
- 80-84 2.7 – 2.9
- 75-79 2.4 – 2.6
- 70-74 2.0 – 2.3

Syllabus (subject to change)

Week 1 [Jan. 6, 8, 10] Casella Chapter 1 *(Brief review of some key concepts that carry over from the end of QSci 482; introduction to designed experiments, randomization, completely randomized designs (CRDs))*

Week 2 [Jan. 13, 15, 17] Casella Chapter 2.1-2.4 (Contrasts, inference for contrasts, contrasts for trend, multiple factor experiments, investigating interactions)

Week 3 [Jan. 22, 24] Casella Chapter 2.5 (Deeper into multiple factors, interactions, and higher order factors)

Week 4 [Jan. 27, 29, 31] Casella Chapter 2.6 (Use of co-variates to reduce variation, analyzing unbalanced data)

Week 5 [Feb. 3, 5, 7] Casella Chapter 3 (The randomized complete block (RCB) design)

Week 6 [Feb. 10, 12, 14] Casella Chapter 3.6 (Variations on blocking, including adding crossing and nesting; Latin Square designs)

Week 7 [Feb. 19, 21] Casella Chapter 5 (Split plot designs; when the whole plots are CRD and when they are RCB)

Week 8 [Feb. 24, 26, 28] Casella Chapter 5.6 (Further “variations on a theme”; repeated measures designs)

Week 9 [March 3, 5, 7] Casella Chapter 6 (Confounding in blocks; incomplete block designs)

Week 10 [March 10, 12, 14] Special topics (Scheffe *a posteriori* testing; components of variance)

Due dates: Paper review *Wednesday, February 26* (Week 8) (Yes, there will be a regular homework assignment due, too, but I’ll plan on making it a little lighter in scope.)

Term project, *Friday, March 14* (Week 10) (No, there won’t be a regular homework assignment due on March 12.)
# QSCI 480
## Sampling Theory for Biologists
### Course Outline – Winter Quarter 2015

<table>
<thead>
<tr>
<th>Week 1</th>
<th>I. Basic Sampling Concepts</th>
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</thead>
<tbody>
<tr>
<td>5 – 9 Jan.</td>
<td>Lecture #1: What is sampling?</td>
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<tr>
<td></td>
<td>• Example of all possible samples</td>
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<td></td>
<td>• Measurement error vs. sampling error</td>
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<td></td>
<td>• Definitions and parameters</td>
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<td></td>
<td>• Drawing a random sample</td>
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<tr>
<td></td>
<td>Lecture #2: Simple random sampling (SRS)</td>
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<tr>
<td></td>
<td>• Estimating population means and totals</td>
</tr>
<tr>
<td></td>
<td>• Estimating proportions and ratios</td>
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<tr>
<th>Week 2</th>
<th>Lecture #3: Sample size calculations for SRS</th>
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<tbody>
<tr>
<td>12 – 16 Jan.</td>
<td>• Confidence interval estimation</td>
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<td>• Defining sampling precision</td>
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<tr>
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<td>Lecture #4: Stratified random sampling (STRS)</td>
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<tr>
<td></td>
<td>• Estimating population means and totals</td>
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<td>• Post-stratification</td>
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<tr>
<th>Week 3</th>
<th>Lecture #5: Sample size calculations for STRS</th>
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<tbody>
<tr>
<td>19 – 23 Jan., 19 Jan. – Holiday</td>
<td>• Example of spatial-temporal STRS</td>
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<td></td>
<td>• Optimal allocations</td>
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<tr>
<td></td>
<td>Lecture #6: Systematic sampling</td>
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<td></td>
<td>• Estimating population means and totals</td>
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<td></td>
<td>• Advantages and disadvantages</td>
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<td>• Comparison to other sampling schemes</td>
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<tr>
<th>Week 4</th>
<th>II. More Advanced Sampling Designs</th>
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<tbody>
<tr>
<td>26 – 30 Jan.</td>
<td>Lecture #7: Cluster sampling for equal size clusters</td>
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<tr>
<td></td>
<td>• SRS of primary units</td>
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<td></td>
<td>• SRS of primary and secondary units</td>
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<td></td>
<td>Lecture #8: Cluster sampling for unequal size clusters</td>
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<tr>
<td></td>
<td>• SRS of primary units</td>
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<td>• Sampling with probabilities proportional to cluster size</td>
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<td>Week 5</td>
<td>Lecture #9: Multi-stage (three-level) sampling</td>
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<tr>
<td>(2 – 6 Feb.)</td>
<td>Applications in nature</td>
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<td>Optimal allocation</td>
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<tr>
<td>Lecture #10: Ratio and regression estimators</td>
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<tr>
<td></td>
<td>Estimating population means and totals</td>
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<tr>
<th>Week 6</th>
<th>Lecture #11: Double sampling to estimate means and totals</th>
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<tr>
<td>(9 – 13 Feb.)</td>
<td>Double sampling for stratification</td>
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<tr>
<td>Lecture #12: Ranked-set sampling</td>
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<tr>
<td></td>
<td>Using priors to improve precision</td>
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</table>

## III. Specialized Topics

<table>
<thead>
<tr>
<th>Week 7</th>
<th>Lecture #13: Sampling with model-based errors</th>
</tr>
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<tbody>
<tr>
<td>(16 – 20 Feb.)</td>
<td>Example: Regional abundance</td>
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<tr>
<td>16 Feb. - Holiday</td>
<td>Example: Season-wide smolt survival</td>
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<tr>
<td>Lecture #14: Line-intercept sampling</td>
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<td></td>
<td>Example: Estimating timber windfall</td>
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<tr>
<th>Week 8</th>
<th>Lecture #15: Line-transect sampling</th>
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<tbody>
<tr>
<td>(23 – 27 Feb.)</td>
<td>Flush count surveys – radial distance methods</td>
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<tr>
<td>Lecture #16: Line-transect sampling</td>
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<tr>
<td></td>
<td>Right-angle distance methods</td>
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<td></td>
<td>Designing line-transect surveys</td>
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<tr>
<th>Week 9</th>
<th>Lecture #17: Compositing samples for analysis</th>
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<tbody>
<tr>
<td>(2 – 6 Mar.)</td>
<td>Design and analysis of compositing schemes</td>
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<tr>
<td>Lecture #18: Sampling for time trends</td>
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<tr>
<td></td>
<td>Rotational sampling</td>
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<td>Bellwether sampling</td>
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<td>Panel designs</td>
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</tbody>
</table>
Week 10 (8 – 12 Mar.)  Lecture #19: Adaptive sampling
• Variations on adaptive cluster sampling
• Simple adaptive cluster sampling

Lecture #20: Summary of sampling principles

Final project due on the last day of class, 12 March 2015.
Q SCI 482 - COURSE OUTLINE - Fall 2015 STATISTICAL INFEERENCE IN APPLIED RESEARCH I:

HYPOTHESIS TESTING AND ESTIMATION FOR ECOLOGISTS AND RESOURCE MANAGERS

Class Meeting Times and Location:

Lecture: Tuesdays and Thursdays
Hours: 11:30am - 1:20pm; Location: SMI 102

Stat Lab: Fridays
Hours: 2:30pm - 4:20pm; Location: SAV 264

Course Instructor:
Dr. Indroneil Ganguly
Office: 123A Anderson Hall
Contact: indro@uw.edu; (206) 685-8311
(o)ffice) Office Hours:
Tuesdays and
Thursdays
(appointments
required) Hours:
2:00pm to 3:00pm

Teaching Assistants:
Ms. Cindy Chen and Ms. Amita Banerjee (RG)
Office: Mary Gates Hall
contact:
cxchen11@uw.edu Office Hours:
Mondays and
Wednesdays Hours:
10:00 - 11:30
Course Goal and Objectives

The **course goal** is to develop critical thinking for statistical modeling in natural sciences and natural resource management contexts and to develop relevant data analysis skills.

The course will provide students in the natural resources/biological sciences with an introduction to modern statistical practice. Topics include exploratory data analysis, the design of experiments, probability, estimation and statistical inference. The **primary objectives** are to master the basic concepts of statistics, to be able to apply these concepts correctly in biological problems, and to gain basic competence with the modern statistical software R.

A note on the importance of regular class attendance

Statistics is a "vertical" subject. This means that what is done in one lecture almost surely is built upon what was done yesterday, and the day before, etc. Obviously, if you do not understand yesterday's materials, it indicates that today's material will be a problem. You are strongly advised to attend lectures consistently and take notes during the class. You are also encouraged to ask questions in class and be active participants in class.

Prerequisites

Q SCI 381 (Introduction to Probability and Statistics) or equivalent.

You are expected to be comfortable with mathematics at the level of college algebra or calculus (we will not use calculus) and a basic understanding of commonly used probability distributions (normal, binomial, Poisson).

A calculator will be required for exams. Students may not share calculators during exams. Homework assignments will require the use of the statistical package R. It may be downloaded free for Windows, Macintosh and Linux machines. The home page is http://cran.r-project.org/. R is also available in some of the computer labs on campus.

During the exams, I may ask you to read and interpret R output. Rather than wait until you need it, get started now installing it and becoming comfortable with it. The course web page includes introductory information on getting started with R.
<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
<th>Reading</th>
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<tbody>
<tr>
<td>1-Oct</td>
<td>Thursday</td>
<td>1. Introduction</td>
<td>Zar, Chapters 1-5</td>
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<td>2. data and distributions</td>
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<td>3. Introduction to hypothesis testing</td>
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<tr>
<td>2-Oct</td>
<td>Friday</td>
<td>Introduction to R</td>
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<tr>
<td>6-Oct</td>
<td>Tuesday</td>
<td>Goodness of fit tests for unordered (χ²)</td>
<td>Zar 22.1, 22.2, 22.5, 22.8</td>
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<td></td>
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<td>categorical data</td>
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<tr>
<td>8-Oct</td>
<td>Thursday</td>
<td>Contingency table data, including continuity corrections for 2x2 tables</td>
<td>Zar 23.1, 23.3</td>
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<td>9-Oct</td>
<td>Friday</td>
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<tr>
<td>13-Oct</td>
<td>Tuesday</td>
<td>Subdividing a χ² after rejection of the null hypothesis</td>
<td>Zar 22.3, 22.7, 23.5, 23.6</td>
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<tr>
<td>15-Oct</td>
<td>Thursday</td>
<td>Goodness-of-fit for ordered categorical and continuous data</td>
<td>Kolmogorov-Smirnov</td>
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<tr>
<td>16-Oct</td>
<td>Friday</td>
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<td>Graphical assessment of normality</td>
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<tr>
<td>22-Oct</td>
<td>Thursday</td>
<td>Central Limit Theorem, Z-test as test of significance</td>
<td>Zar p. 87 and figures</td>
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<tr>
<td>23-Oct</td>
<td>Friday</td>
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<tr>
<td>27-Oct</td>
<td>Tuesday</td>
<td>Midterm</td>
<td>Zar 6.3, 6.4</td>
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<tr>
<td>29-Oct</td>
<td>Thursday</td>
<td>One-sample t-test and χ² test on the variance</td>
<td>Zar 7.1, 7.2</td>
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<td>Confidence intervals for the mean; hypothesis tests</td>
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<td></td>
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<td>and confidence intervals for the variance</td>
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<td>30-Oct</td>
<td>Friday</td>
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<td>3-Nov</td>
<td>Tuesday</td>
<td>Power and sample size calculations for a single mean</td>
<td>Zar 7.6</td>
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<td>Two-sample t-tests (compare means) and F-test on two variances</td>
<td>Zar 8.1, 8.5</td>
</tr>
<tr>
<td>5-Nov</td>
<td>Thursday</td>
<td>Power and sample calculations for two means; nonparametric two-sample tests</td>
<td>Zar 8.2, 8.4, 8.9, 8.10</td>
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<td>6-Nov</td>
<td>Friday</td>
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<tr>
<td>10-Nov</td>
<td>Tuesday</td>
<td>No Class</td>
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<tr>
<td>12-Nov</td>
<td>Thursday</td>
<td>Paired tests: parametric (paired t) and nonparametric paired test</td>
<td>Zar 9.1, 9.2, 9.3, 9.5</td>
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<td>13-Nov</td>
<td>Friday</td>
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<td>17-Nov</td>
<td>Tuesday</td>
<td>Single factor (one way) ANOVA and graphical interpretation</td>
<td>Zar 10.1</td>
</tr>
<tr>
<td>19-Nov</td>
<td>Thursday</td>
<td>Post-ANOVA comparisons. Multiple comparisons among means, comparison of a control mean to each of several treatment means</td>
<td>Zar 11.1, 11.2, 11.3, 11.4</td>
</tr>
<tr>
<td>20-Nov</td>
<td>Friday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24-Nov</td>
<td>Tuesday</td>
<td>Power, sample size analysis for ANOVA</td>
<td>Zar 10.3</td>
</tr>
<tr>
<td>26-Nov</td>
<td>Thursday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27-Nov</td>
<td>Friday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Dec</td>
<td>Tuesday</td>
<td>Nonparametric ANOVA—Kruskal-Wallis test</td>
<td>Zar 10.4, 11.6</td>
</tr>
<tr>
<td>3-Dec</td>
<td>Thursday</td>
<td>Factorial treatment design; fixed, random, and mixed models for two-way ANOVA</td>
<td>Zar 12.1</td>
</tr>
<tr>
<td>4-Dec</td>
<td>Friday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-Dec</td>
<td>Tuesday</td>
<td>Randomized block designs</td>
<td>Zar 12.3, 12.4</td>
</tr>
<tr>
<td>10-Dec</td>
<td>Thursday</td>
<td>TBD</td>
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</tr>
<tr>
<td>11-Dec</td>
<td>Friday</td>
<td></td>
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</tr>
<tr>
<td>16-Dec</td>
<td>Wednesday</td>
<td>Finals</td>
<td></td>
</tr>
</tbody>
</table>
QSCI 483
Statistical Regression in Ecology

Instructor: John R. Skalski
(skalski@uw.edu)

Office Hours: By appointment
Office Location: FSH 264D
1515 Puget Sound Plaza, 1325 Fourth Avenue
Office Phone Number: (206) 616-4851

Class Hours and Location:

Lecture      MW, 11:30 – 1:20 p.m., FSH 108
Lab          TH, 11:30 – 1:20 p.m., MGH 044

Readings:
Lecture Notes (Rams Copy Center, 4144 University Ave NE)
Kutner et al. (2004), Applied linear regression models (University Bookstore)

Prerequisites:
QSCI 482 or equivalent

Course Requirements:

Weekly homework assignments 9 × 50 = 450
In-class midterm exam 100
In-class final exam 150

Grading:

<table>
<thead>
<tr>
<th>Score</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90%-Above</td>
<td>3.5-4.0</td>
</tr>
<tr>
<td>80%-90%</td>
<td>2.5-3.4</td>
</tr>
<tr>
<td>70%-79%</td>
<td>1.5-2.4</td>
</tr>
</tbody>
</table>

Late homework – No credit without prior approval.
| Week 1 | 1. Introduction to course objectives  
       (28 Mar– 1 Apr)  
       2. Multiple perspectives of a linear regression line  
       3. Precision and tests of $\beta_0$ and $\beta_1$  
       4. Regression analysis by ANOVA |
|--------|------------------------------------------------------------------|
| Week 2 | 5. Interpretation and inferences from the correlation coefficient  
       (4–8 April)  
       6. Nonparametric measures of association  
       7. Regression through the origin  
       8. Interval estimates for regression line and predictions |
| Week 3 | 9. Inverse regression/predictions  
       (11–15 April)  
       10. Regression diagnostics: normality, constant variance  
       11. Regression diagnostics: linearity and lack-of-fit  
       12. Regression diagnostics: outliers and influential points  
       [Student tutorial – Matrix algebra review] |
| Week 4 | 13. Regression diagnostics: measurement errors in x’s and y’s  
       (18–22 April)  
       14. Statistical power of regression analyses  
       15. Introduction to linear models in matrix notation  
       16. Analysis of linear models in matrix notation |
| Week 5 | 17. Comparison of two lines  
       (25–29 April)  
       18. Polynomial regression  
       19. Multiple regression – two variables  
       20. Multiple regression – ≥3 variables, forward stepwise selection |
| Week 6 | 21. Model selection – backwards elimination, AIC  
       (2–6 May)  
       22. Interaction terms in regression models  
       23. Interpreting regression coefficients, partial correlation coefficients, standardized regression  
       24. Effects of multicollinearity |
| Week 7 | 25. Regression models for experimental design (ANOVA)  
       (9–13 May)  
       26. Weighted regression  
       27. Introduction to GLM  
       28. Delta method for variance calculations |
| Week 8 | 29. GLM likelihood models, ANODEV  
       (16–20 May)  
       30. Analysis of binary data in GLM  
       31. Analysis of binomial data in GLM  
       32. Poisson log-link models in GLM |
Week 9
(23–27 May)
33. GLM analysis of multidimensional contingency tables
34. Model transformations for linearity

Week 10
(30 May – 3 June)
35. Nonlinear regression
(30 May – Holiday
36. Weighted nonlinear regression
37. Spline and jump regression
38. Nonparametric smoothers
38. Summary of regression strategies

Midterm Exam: 5 May, 12:30 – 1:20 p.m., MGH 044
Final Exam: 10 June, 2:30 – 4:20 p.m., MGH 044

Weekly Labs

Week 1 Introduction to R; data input, output, scatterplots, straight-line regression

Week 2 Linear regression, regression through origin, confidence intervals about line, variance-covariance matrix

Week 3 Regression diagnostics, Q-Q plots, residual plots, hat matrix Week 4 Input of design matrices

Week 5 Multiple regression, comparison of two lines, forward stepwise model selection

Week 6 Multiple regression, hierarchical and backwards elimination

Week 7 Introduction to generalized linear models (GLM), weighted regression, offset models

Week 8 GLM analysis of binary, binomial, and Poisson data

Week 9 Analysis of contingency table data in GLM

Week 10 Spline regression and Lowess smoothers
SEFS 500: Graduate Student Orientation

Agenda

Thursday, September 24, 2015
College of the Environment Orientation, Johnson Hall 102

Friday, September 25, 2015
SEFS Orientation, Lockwood Forest Club Room, Anderson 207
& Northwest Horticultural Society Hall, UW Botanic Gardens

Monday and Tuesday, September 28 and 29, 2015
UW Laboratory Safety Seminars, Physics/Astronomy A102

Attendance Thursday and Friday is required for SEFS 500 credit
Laboratory Safety Seminar

Training takes place in:

UW Laboratory Safety Seminars, Physics/Astronomy A102
Campus map location: http://uw.edu/maps/?paa

Registration:

Attendance at the Tuesday, September 29 date is recommended for the Field Research Health Hazards session

FYI: ADDITIONAL TRAINING MAY BE REQUIRED

Graduate students working in wet labs, leading field trips, and working in the field will be required to complete certification in First Aid and CPR.

Graduate students working in remote field areas require certification in Wilderness First Aid. The Wilderness First Aid training provided at the University of Washington includes CPR instruction. Wilderness First Responder certification may substitute for Wilderness First Aid.
# College of the Environment Graduate Student Orientation

**Johnson Hall Auditorium (Room 102)**

**Thursday, September 24th, 2015**

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
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</thead>
<tbody>
<tr>
<td>1:00-1:05</td>
<td>Welcome</td>
<td>Associate Dean of Academic Affairs, Julia Parrish</td>
</tr>
<tr>
<td>1:05-1:30p</td>
<td>CoEnv Resources &amp; Opportunities (leadership funding/scholarships, certificates)</td>
<td>Jill Rand, Ana Wieman, Miriam Bertram CoEnv SAC—Chris Giordano</td>
</tr>
<tr>
<td>1:30-1:35</td>
<td>GPSS: Intro to GPSS</td>
<td>Evan Firth &amp; Brian Tracey</td>
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<tr>
<td>1:35-2:05</td>
<td>Union for Academic Student Employees</td>
<td>UAW 4121 Representative</td>
</tr>
<tr>
<td>2:05-2:20</td>
<td>Student Financial Aid Office: overview of funding/support available</td>
<td>Financial Aid Lead Senior Counselor, Rose Steele</td>
</tr>
<tr>
<td>2:20-2:30</td>
<td>Hall Health &amp; Counseling Center</td>
<td>Hall Health Coordinator, Karin Rogers</td>
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<tr>
<td>2:30-2:40</td>
<td>Libraries</td>
<td>Maureen Nolan, Louise Richards, and Matt Parsons</td>
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<tr>
<td>2:40-3:05</td>
<td>Break: Coffee/Tea/Water &amp; Snacks</td>
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<tr>
<td>3:05-3:15</td>
<td>Disability Resources for Students</td>
<td>DRS Director, Bree Callahan</td>
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<tr>
<td>3:15-3:35</td>
<td>Campus Safety: UW PD, Safe Campus</td>
<td>UWPD &amp; Safe Campus, Tawan Pratt-Wieburg &amp; Adaora Ubaka</td>
</tr>
<tr>
<td>3:35-4:05</td>
<td>Sexual Harassment Prevention Training</td>
<td>Title IX Coordinator, Amanda Paye</td>
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<tr>
<td>4:05-4:35</td>
<td>Intro &amp; Overview of Conflict Resolution; presentation &amp; discussion</td>
<td>Ombud, Charles Sloane</td>
</tr>
<tr>
<td>4:35-4:40p</td>
<td>Closing remarks</td>
<td>Jill Rand</td>
</tr>
</tbody>
</table>
SEFS Graduate Student Orientation

Friday, September 25th, 2015

8:30-8:40 AM  Welcome to SEFS! (Continental breakfast provided)
Tom DeLuca, Director

8:40-9:00  Introductions
Soo-Hyung Kim, Graduate Program Coordinator; Student & Academic
Services Staff; Incoming Graduate Students

9:00-9:30  SEFS Program Overview, Gordon Bradley, Professor

9:30-10:00  Student & Academic Services – Navigating SEFS and UW
The Red Book, Setting Up Your Committee, Green Sheets, Degree
Checklists, UW Resources, and best of all—Q & A!

10:00-10:30  BREAK (Refreshments provided)

10:30-11:00  SEFS Financial Services, Wendy Star and Ryan Benton

11:00-11:15  Program on the Environment
Environmental Management Certificate Program

11:15-11:30  SEFS Facilities, Amanda Davis

11:30-12:00  SEFS Information Technology, Shane Krause

12:00-1:00 p.m.  LUNCH – Pizza and salad in the Forest Club Room

1:00-2:15  Introduction to UW Libraries Session held in the Suzzallo Graduate
Library, time for walking to the library included

2:15-3:15  Guided walk to University of Washington Botanical Gardens at the Center
for Urban Horticulture Afternoon session held in the Northwest
Horticultural Society Hall at the Center for Urban Horticulture

3:30-4:00  Faculty Panel Discussion
Discussion with SEFS Faculty

4:00-?  Happy Hour Reception by SEFS Student Clubs
Refreshments, including beer and wine provided
SEFS 501 - Fall 2015

Forest Ecosystems Community Ecology

Meeting: 8:30-9:20 M,W,F; Winkenwerder 201.

Discussion session: Wednesday 1:30 - 2:20; Winkenwerder 201

Liam Stacey

liams@uw.edu; Office: 16 Winkenwerder,

Office phone: 206-685-2671, cell (emergencies only) 206-354-0577.

Office Hours: M,W, F 9:30-10:20, and by appointment

Description: Community ecology of forest ecosystems; quantitative methods of community description; role of limiting factors, competition and disturbance in determining community composition, structure and stability; introduction to forest ecosystem productivity; history and application of successional theory. Prerequisite: basic ecology course or permission of instructor.

The course is broken into 3 sections. First we examine the role the physical environment plays in determining species and community distributions. Next we look at natural stand development and biotic interactions that shape forested ecosystems. Finally we examine the role of disturbance in shaping these ecosystems. We will examine and discuss the primary literature for examples of important processes and you will be expected to have read the assigned papers before coming to each class. References for each lecture will be posted to the website and literature can be accessed through the UW electronic collection. Lectures will aim to tie together research from a number studies to further our understanding of the systems or processes we are studying. The course will use examples from the Pacific Northwest to illustrate ecological principles as a means of building knowledge of systems to which they are
most likely to conduct research. I will also weave examples from other forested ecosystems into many lectures as a way to increase our breadth of knowledge and to discuss some aspects of community ecology that are not as prominent in PNW forested ecosystems.

Goals 1) increase knowledge of forest communities of the PNW (including plant identification), 2) increase understanding of ecological processes, 3) facilitate learning from the primary literature, 4) build skills in independent critical scientific thinking, 5) build skills in technical scientific writing, and 6) develop a sense of community sufficient to stimulate academic synergy. Success in graduate school at the School of Environmental and Forest Sciences is dependent on mastering skills and knowledge described in these goals.

Objectives

1. Students will be able to identify the following tree species in the field and classroom, identify geographic distribution and properly use Latin names: *Thuja plicata*, *Chamaecyparis nootkatensis*, *Larix occidentalis*, *Pseudotsuga menziesii*, *Picea sitchensis*, *Picea engelmannii*, *Pinus monticola*, *Pinus ponderosa*, *Pinus contorta*, *Pinus albicaulis*, *Abies amabilis*, *Abies procera*, *Abies lasiocarpa*, *Abies grandis*, *Tsuga heterophylla*, *Tsuga mertensiana*, *Taxus brevifolia*, *Arbutus menziesii*, *Populus tremuloides*, *Populus balsamifera* var. *trichocarpa*, *Alnus rubra*, *Cornus nuttallii*, *Acer macrophyllum*, *Acer glabrum* var. *douglasii*, *Acer circinatum*, *Quercus garryana*, and *Fraxinus latifolia*. The ability to distinguish species relies on spending sufficient time with samples in the field to distinguish foliage samples from one species from all other competing vegetation. The ability to place species on the landscape will be dependent on experiences gained in the field and also through working with data and synthesis of primary literature.

2. Students will be able to describe forest community types of Washington both in the field and in the classroom. The ability to distinguish and describe communities will be demonstrated through the analysis of data and the integration of primary literature into community analyses and critical description of communities. Complete
description of PC-ORD and other field output will be used to assess the proficiency the student has gained in understanding forest community types.

3. Students will learn to gather information from the primary forest ecology literature. Students will demonstrate their ability to read and synthesize the primary literature through discussion sessions, presentations, accurate written responses to discussion questions, and well-cited answers to assignments and final exams. Students will demonstrate their ability to transition from textbook learning by connecting ideas, concepts, and methodologies to groups of scientists who have driven development of the ideas of that field.

4. Students will build critical scientific thinking skills. Students will demonstrate their ability to think critically by demonstrating a linear progression of ideas, and by drawing logical conclusions from facts and inferences. Students will have ample opportunity to practice these skills in the field, and their ability to think critically will be challenged throughout the course by the instructor asking open-ended questions. Students will demonstrate progress, and ultimately proficiency commensurate with first-year graduate students through critical writing assignments and answers to exam questions. Students who are already skilled in this area will likely be able to show their skills early in the quarter. Students with less experience in this area will initially need to work with other students: discussing assignments and questions, actively participating in discussion sections and writing and rewriting answers to discussion questions. Extraordinary proficiency and/or substantial progress in critical thinking skills will be a requirement for achieving A-level grades in this course.

5. Students will demonstrate proficiency in technical scientific writing. The ability to write clearly is a prerequisite to publishing scientific work and all assignments will be graded for content AND clarity of presentation. Students will consistently use clear topic sentences in their writing. Students will tie together sentences and words within the document in a linear manner. Transitions will lead the reader from one idea to the next and the entirety of the arguments will support the thesis of the paper. All papers must be free of grammatical and spelling errors and demonstrate a logical progression of ideas.

6. Each student will present a critical analysis of one scientific paper as part of a team of 2 students. Students will become familiar with the process of reviewing primary literature articles including: examining analytical techniques used in forest ecology,
methods for displaying results, and using additional literature and logic to discuss the usefulness of the research and its contribution to science.

**Suggested texts:** No textbooks are required, but at least one plant identification book and one forest ecology text are recommended.


**GRADING**

Group Participation 5%

Multivariate Analysis 10%

Discussion Papers (3) 30%

Discussion Critique 10%

Class Presentation 10%

Final Project 15%

Final Exam 20%
Schedule

INTRODUCTION AND FOREST COMMUNITY DATA COLLECTION

<table>
<thead>
<tr>
<th>Week &amp; Date</th>
<th>Lecture/Discussion Topic</th>
<th>Readings: updated on line.</th>
<th>Assignments Due</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week 1</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>Field trip #1</strong></td>
<td>Required field trip to Wenatchee National Forest</td>
<td>Field Trip Handout; Field trip species list</td>
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<tr>
<td>Sept 27-29</td>
<td></td>
<td></td>
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<tr>
<td>F Oct 2</td>
<td>Forest associations of western WA continued</td>
<td>Fonda and Bliss 1969: how to identify forest communities.</td>
<td></td>
</tr>
</tbody>
</table>

FOREST COMMUNITIES & THE PHYSICAL ENVIRONMENT

**Week 2**

<table>
<thead>
<tr>
<th>M Oct 5</th>
<th>Organization of field trip data</th>
<th>Computer Lab (Blodel 261)</th>
<th>Submit data in the afternoon.</th>
</tr>
</thead>
</table>
F Oct. 9  

**Week 3**

**Field trip # 2**

**Required field trip to Pack Forest**

- **Oct 11-12**
  - Saturday 7 AM-Sunday 7 PM
  - Field trip Handout

**M Oct. 12**

- **Spatial analysis**
  - Harrod et al 1999

**W Oct. 15**

- **Introduction to Vegetation Classification.**
  - Bray and Curtis 1957, analys w/ ordainment (foundation paper). (afternoon reading to be determined)
  - Ques.

**F Oct. 17**

- **Ecophysiology Light**
  - Parker et al. 2004 Wind river canopy Methods, and observation; Lewis et al. 1999 (photo synth at different levels of canopy.)

**Week 4**

**M Oct. 19**

- **Guest lecture:** Paulina Llamas Ordination in R Computer lab, Bloedel 261

**W Oct. 21**

- **Discussion (1)** McDowell et al. 2003

**F Oct. 23**

- **Ecophysiology Water**
  - Brooks et al. 2006
Week 5

M Oct. 26  Mckenzie and Peterson 2003 (student)

W Oct. 28  Student-led  Peterson and Peterson 2001; Climatic Limits to Forest Zones
Discussion (1)

F Oct. 30  NO CLASS  Extra time for PC-ORD  PC-ORD Due

Week 6

M November 2  Student-led  Lewis et al. 2000
Discussion (2)

STAND DEVELOPMENT AND BIOTIC INTERACTIONS

W Nov 4  Group  Anderegg and Callaway 2012 carbon starvation  Discussion

F Nov 6  Conceptual  Johnson and Miyanishi 2008  Discussion
Models of Succession  Question #2 Due

Week 7

M Student-led  Fastie 1995 (glacier bay)

Nov. 9  Discussion (4)

W Nov.  Stand Initiation

11
F Nov.  *Student-led*  Gray and Spies 1997: gaps and establishment

13  *Discussion (5)*

**Week 8**

M Nov.  competition  Shainsky and Radosevich 1992 Alder and
16  PSME at different densities ==> different outcomes

W Nov.  Density-dependent mortality  Janzen 1970, and others
18  Larson and Churchill 2008

F Nov.  *Density dependent mortality 2*

20

**Week 9**

M Nov.  Old-growth Development  Franklin et al. 2002
23  and Larson and Franklin 2010

W Nov.  Trophic Interactions  Martin et al. 2010
25

**Week 10**

M Nov.  Trophic Interactions  Hawkins and Henkel 2011 Trophic interactions of mycorrhizae.
30  Final field work  Due Tuesday night.
Student-led Discussion (7)

W Dec. 2

FOREST COMMUNITY RESPONSE TO DISTURBANCE

F Dec. 4 Fire Agee 1988 (R); Gavin 2007 Discussion
Question #3 Due

Week
11

M Dec. 7 Student-led Discussion (8) Kashian et al. 2005

W Dec. 9 Forest Response to Climate Change - or invasive species... Morin et al. 2008---Westerling may be better.

Critique of Question #3 Due

F Dec. 11 Group Discussion

Week 12

T Dec. 15

Final
Class website at http://depts.washington.edu/sefs507/

SEFS 507 Soils and Land Use: Syllabus
Autumn quarter, 2014, 4 credits
Class meets in Bloedel 211 Thursdays at 12:30-4:20 for lectures and field trips (Sect A),

<table>
<thead>
<tr>
<th>Instructors:</th>
<th>Daniel Vogt (primary), Korena Mafune (&amp; Reader/Grader - R/G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email addresses:</td>
<td>Dan (<a href="mailto:dvogt@uw.edu">dvogt@uw.edu</a>), Korena (??@uw.edu)</td>
</tr>
<tr>
<td>Office Hours</td>
<td>arranged by appointment</td>
</tr>
</tbody>
</table>

Text: several readings; will be announced in class and available at web site

Grading:
- 40% for quality of observations and interpretations in field trip notebook
- 40% for project & presentation
- 10% for graduate field trip
- 10% for quality of evaluating classmates' project presentations

E-mail distribution list:
We will set up an email distribution list based on your UW email account. You will need to read all emails from us. Please include "SEFS507" in the subject line of any message to us.

Field trip notebook:
Get hold of a "write-in-the-rain" type water resistant notebook, available from U Bookstore, REI, etc. All observations and notes should be kept in this notebook.

ESRM 507 Project:
Addresses a topic related to soils and land use. Clear it by emailing your instructor by end of 2nd week of Final Project reports are due by the last day of classes.
Projects will be presented to the class as scheduled. Projects will also be peer-reviewed by fellow class members.

SEFS 507 Field Trip (Week 9):
SEFS 507 students will develop and conduct a field trip for the class.
What is expected will become clearer as we do class field trips
<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Material covered</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week 1:</strong></td>
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<td></td>
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<tr>
<td>Thu</td>
<td>25-Sep</td>
<td>Lecture: <em>Intro</em> to Course; How the course will be taught</td>
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<td></td>
<td></td>
<td>Reading: go over course syllabus and requirements</td>
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<td>Lab: no meeting</td>
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<tr>
<td><strong>Week 2:</strong></td>
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<tr>
<td>Thu</td>
<td>2-Oct</td>
<td>Lecture: <strong>Soil Physical Properties</strong> in general, other important soil properties for soils &amp; land use</td>
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<td></td>
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<td>Reading: OSU Chapter 3,4; reading optional: Brady &amp; Weil 2002 Chapter 4.1-4.6</td>
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<tr>
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<td>Lab: Soil Physical Properties (Bloedel 211 Soils Lab)</td>
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<td><strong>Week 3:</strong></td>
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<td></td>
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<td>Reading: OSU chapter 1, 2, 6; KC soil survey p 1-17; KC soil survey specific soils, handouts</td>
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<td>Field Trip: Glaciation; Field trip walk to UW Arboretum</td>
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<td><strong>Week 4:</strong></td>
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<td>Thu</td>
<td>16-Oct</td>
<td>Lecture: <strong>Urban Soils</strong></td>
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<td>Reading:</td>
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<td></td>
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<td>lab or ?: Hand in Lab/Field Trip Notebook and Preparation for Class Presentations</td>
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<td><strong>Week 5:</strong></td>
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<td>Reading: OSU Chapter 5</td>
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<td>Field Trip: The structure of Seattle along Lake Washington N of UW: CUH runoff research plots</td>
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<td><strong>Week 6:</strong></td>
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<tr>
<td>Thu</td>
<td>30-Oct</td>
<td>Lecture: <strong>Organic Matter</strong>: Wetlands, Peat Soils, origin, properties &amp; distribution in region</td>
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<td></td>
<td></td>
<td>Reading: KC soil survey specific soils, handouts</td>
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<td></td>
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<td>Field Trip: Wetlands, peat soils field trip, Seattle, Bellevue area</td>
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<td><strong>Week 7:</strong></td>
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<td>Thu</td>
<td>6-Nov</td>
<td>Lecture: <strong>Erosion &amp; Deposition</strong></td>
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<td></td>
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<td>Reading:</td>
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<td>Field Trip: Redmond Ridge, Sammamish Canyon, Snoqualmie River Valley</td>
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<td><strong>Week 8:</strong></td>
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<td>Thu</td>
<td>13-Nov</td>
<td>Lecture: <strong>Water Management</strong></td>
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<td>Reading:</td>
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<td>Field Trip: Cougar Mountain water, soil and development interactions and solutions</td>
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<td><strong>Week 9:</strong></td>
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<td>Thu</td>
<td>20-Nov</td>
<td>Lecture: <strong>TBA</strong>: given by graduate students</td>
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<td>Reading:</td>
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<td>Field Trip: Graduate student special field trips</td>
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<td><strong>Week 10:</strong></td>
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<td>Thu</td>
<td>4-Dec</td>
<td>Lecture: <strong>Class Project</strong> presentations</td>
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<td>Lab: <strong>Class Project</strong> presentations</td>
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SEFS 526 Exploring Forested Ecosystems of the Americas (3 Credits)

Instructor: Gregory J. Ettl

Tuesdays: 11:30 306 ABD
Thursday 9:30-11:20 320 Odegaard Library
Office: Winkenwerder 214, 6-4120, ettl@uw.edu

Course Description: This course explores forest ecosystems in the Americas. We examine the ecology of the important tree species in each system, their regeneration and stand development and environmental services and wood production provided through silvicultural practices. The core of the course is the Thursday seminar series of invited speakers who will describe the ecology of one particular forest system, and a silvicultural system for fiber and timber production. The talks will emphasize the biology (regeneration, growth, and competitive abilities) of the tree species in each system, and at least one silvicultural system designed for regeneration and wood production.

Goals: 1) increase knowledge of forest communities and important timber species of the Americas, 2) increase understanding of ecological processes, 3) facilitate learning from the primary literature, 4) build skills in independent critical scientific thinking, 5) build skills in organizing literature, 6) express thoughts clearly and in manner that is respectful of a diversity of opinion, and 7) develop a sense of community sufficient to stimulate academic synergy.

Objectives:

1. Gain knowledge of the following forest community types (target management species and associated forest system):

   a) Pseudotsuga menziesii, Thuja plicata, *Tsuga heterophylla* (with *Alnus rubra* and *Acer macrophyllum*);

   b) *Pinus taeda* and mixed hardwoods;

   d) Northern hardwood forests (*Betula alleghaniensis*, *Tsuga canadensis*, *Acer saccharum*, *Acer rubrum* with *Pinus strobus*, *Prunus serotina*, *Ulmus Americana*, *Abies balsamea*, *Populus tremuloides*);

   e) Coastal redwood (*Sequoia sempervirens*, *Pseudotsuga menziesii* *Notholithocarpus densiflorus*, *Abies grandis*, and *Tsuga heterophylla*, *Arbutus menziesii*);

   f) Bottomland hardwoods *Carya illinoinensis* *Fraxinus pennsylvanica*, *Quercus alba*, *Quercus falcata var. pagodifolia*, *Quercus michauxii*, *Quercus nuttallii*, *Quercus shumardii* with mixed hardwoods

   g) Chilean mixed hardwoods: *Drimys winteri*, *Nothofagus dombeyi*, *Nothofagus nervosa*

   h) Mixed hardwood (Quercus spp., *Carya spp.*, *Fraxinus americana*, *Juglans nigra*, *Liriodendron tulipifera*, *Acer rubrum*, *Fagus grandifolia*, *Tilia americana*).
i) Pinyon-Juniper woodlands: *Juniperus occidentalis*, *J. osteosperma*, *J. scopulorum*, *Pinus edulis*, *P. monophylla*, *P. cembroides*)

j) Mixed *Quercus-Pinus* montane forest examples in Mexico

1) Build electronic search and library skills

2) Trace the history of ideas through the literature, define and organize the original contributions of authors

3) Organize complex Information in ways suitable for mass scientific consumption

Schedule

**April 2** John Lhotka, University of Kentucky

*Formulating an Expanding-Gap Silvicultural System to address Oak Regeneration Issues in the Central Hardwood Forest Region*


**April 9** Chris Webster, Michigan Tech University

*Gap dynamics in managed hemlock-northern hardwood forests: consequences for underrepresented tree species.*


**April 16** Christian Wehenkel, Instituto de Silvicultura e Industria de la Madera, Área de Genética forestal, Universidad Juárez del Estado de Durango (UJED)

*Structure in pine-oak forests on the Sierra Madre Occidental, Mexico*


**April 23**

**Steve Meadows, USFS Southern Research Station, Stoneville, MS**

*Silvicultural systems for southern bottomland hardwood forests*


**April 30**

**Pablo Donoso**, Universidad Austral de Chile, Facultad de Ciencias Forestales y Recursos Naturales, Instituto de Silvicultura, Valdivia, Chile.

*Native forests and plantations in Chile and the challenge for mixed-species silviculture.*


**May 7**

**Pascal Berrill, Humboldt State University**

*Coastal redwood stand density, spatial pattern, site quality, and individual tree response to conversion from even-aged to multiaged management.*


May 14 Patricia Raymond, Ministère des Forêts, de la Faune et des Parcs Direction de la recherche forestière,

**Developing a Silviculture Adapted to Temperate Mixedwood Forests: A Québécois Approach.**


May 21 No seminar or emergency seminar reschedule

May 27, 3:30 PM AND Gregory Ettl, University of Washington

A mixed species clearcut silviculture system to restore native species composition and structure of old-growth forests in western Washington

May 28 Jerry Gottfried, Emeritus Scientist, Research Forester; Rocky Mountain Research Station, Forest and Woodland Ecosystems, Phoenix, AZ.

**Southwestern pinyon-juniper woodlands.**


June 4 Eric Jokela, University of Florida

**Interactions of genetic stock, spacing, and environment on the growth of loblolly pine plantations.**


Assignments and Grading

The course uses seminars, independent reading and research, and discussions to facilitate learning. The seminars and readings provide the content and the discussions aim to integrate and increase our depth of knowledge. Active participation in discussions is expected and this can only take place if we have all done the readings.

Participation will count as 30% of your grade. Appropriate participation includes: constructively adding to conversations, being respectful of other opinions, not dominating the conversation, being attentive (no electronics, sleeping, reading, etc.) and asking questions of the seminar speakers. Attendance is expected.

Literature review will count as 50% of your grade. You will each select a speaker and forest system to study. You will start with the papers assigned and create a flow diagram that organizes the key themes, general concepts, and innovations related to silviculture in that system working your way back in time to the origin of each idea.

Deliverables: a) Author/concept flow diagram, b) annotated bibliography (1-2 sentences describing contributions), c) Table of species in the system and a ranking of at least 2 of their relative environmental tolerances (e.g., drought or shade tolerance), and d) Table comparing prices paid for typical log sorts in the system.

Preparation of one discussion question from the readings that week. These questions are due to me prior to the Thursday morning seminar. Questions will be judged on their relevance to the readings, and their ability to stimulate critical thinking regarding the silvicultural system.

Preparation and development of questions for the assigned speakers and to facilitate discussion on the Tuesday following the seminar speaker will account for 10% of your grade.
Course Syllabus

SEFS 529

GRAD SEMINAR

COURSE SYLLABUS WINTER QUARTER 2016

WEDNESDAYS 3:30
ROOM 223 Anderson Hall

Course Description
The purpose of this seminar is to provide students with current research being conducted in the School of Environmental and Forest Sciences. This quarter the theme for grad seminar is Carbon and Ecosystems, from Nano to Global Scale. Seminars will address a wide variety of topics surrounding ecosystem carbon including forest community ecology, oil sands development and reclamation, boreal forest soils, applied terrestrial ecology, policy and management, ecosystem services, climate change, fire, natural resource curricula, remote sensing, traditional knowledge, and incorporating video into research. In addition to the delivery of research seminars, the students are expected to participate in the discussion sessions that proceed and follow the seminar. At least one published paper on the forthcoming seminar will be provided to students in advance of the seminar. Students are expected to read and come prepared to discuss research with faculty, staff, and other students.

Aims and Objectives
This course is aimed at promoting scientific and casual interaction between SEFS faculty, staff, and students in an attempt to enhance learning opportunities and advance new ideas, concepts and connections. The purpose of the seminar is to provide an update on some of the research
currently being conducted at or in association with the School. Through this process we hope to simultaneously improve student experience and broaden our collective understanding of ecosystems, ecology, forest management, utilization, alternative energy, economics, and human dimensions of forest and associated terrestrial and freshwater environments.

Students will openly discuss concepts and relationships in natural and human influenced environs and push to develop new concepts and challenge existing assumptions.

Receptions are held after the first seminar in each month, all students are expected to attend the reception and dialogue with students and faculty.

**Teaching**

**Seminars:** (10 x 1 hour sessions)

**Assessment**

The course is taught as credit/no credit and will be assessed by a required 90% participation except under unique circumstances.
**Speaker/Seminar Schedule**

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Speaker</th>
<th>Seminar Title</th>
<th>Location</th>
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<tbody>
<tr>
<td>1</td>
<td>6-Jan</td>
<td>Tom DeLuca</td>
<td>Soil carbon: a future for sequestration?</td>
<td>223 Anderson</td>
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<td>2</td>
<td>13-Jan</td>
<td>John Vincent</td>
<td>Carbon in New Guinea rain forests: storage, dynamics, and community based</td>
<td>223 Anderson</td>
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<td>conservation</td>
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<td>3</td>
<td>20-Jan</td>
<td>Anthony Dichiara</td>
<td>Synthesis of carbon nanomaterials from biomass for environmental remediation</td>
<td>223 Anderson</td>
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<td>4</td>
<td>27-Jan</td>
<td>Dylan Fisher</td>
<td>Ecosystem Genetics and Riparian Forest Carbon Flux: from Common Garden</td>
<td>223 Anderson</td>
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<td>Experiments to the Field</td>
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<td>5</td>
<td>3-Feb</td>
<td>David Butman</td>
<td>The Carbon Conundrum for Aquatic Ecosystems - where does it all come from?</td>
<td>223 Anderson</td>
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<tr>
<td>6</td>
<td>10-Feb</td>
<td>Sally Brown</td>
<td>Why the food yard waste bin is a good thing</td>
<td>223 Anderson</td>
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<td>(carbon accounting for food scraps)</td>
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<td>7</td>
<td>17-Feb</td>
<td>David Ford</td>
<td>TBA</td>
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<td>8</td>
<td>24-Feb</td>
<td>Rob Harrison</td>
<td>What deep soils can tell us about forest productivity and resilience</td>
<td>223 Anderson</td>
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<td>9</td>
<td>2-Mar</td>
<td>Janneke Hils-Lambert</td>
<td>TBA</td>
<td>223 Anderson</td>
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<tr>
<td>10</td>
<td>9-Mar</td>
<td>Derek MacKenzie</td>
<td>TBA</td>
<td>223 Anderson</td>
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* Indicates reception after seminar
SEFS 535  FIRE ECOLOGY  
AUTUMN 2015 – 4 Credits  
Ernesto Alvarado,  
Office: 332 Bloedel Hall, OFFICE HOURS: By appointment  
(UW) 206-616-6920; (USFS PWFSL) 206-732-7842, Email: alvarado@uw.edu

CLASS MEETS  
Tu 8:30-10:50, AND 306; Th 8:30-9:50, AND 306  
Lab Session. Tu 10:00-10:50. Lab and discussion of classic and current literature, Discussion will be lead by a student in AND 306.

FIELD TRIPS:  
Trip 1: October 1-2. Yakama Nation. Leave 7AM, return 7PM following day. (Joint with CFR521D).
Trip 2: October 17-18, to Eastside forests, Winthrop, WA (Overnight trip). Leave 6:30AM, return 8PM next day

GRADING:  
40% Paper Topic of your choice (let me know the title by week 3)  
15% Field Trip Reports (Yakama Nation, Winthrop)  
15% Lab Reports (2 labs).  
10% Participation in class (showing familiarity with reading assignments, leading 1+ discussion session)  
5% Final Presentation  
5% Peer Grading  
10% Weekly quizzes  
(10%) Comprehensive final exam to make up for weekly quizzes or field trips


OTHER BOOKS:  
4. Walstad et al. 1990. Natural and prescribed fire in the Pacific Northwest. Oriented to slash burning and arranged by topic; good chapters on selected topics.

Website:  
http://courses.washington.edu/flamma/sefs535/

The website has all the Powerpoint lectures (in PDF format) for the course and additional readings will be posted. You may wish to view and print out copies of the web lectures from the address above. These will be the templates for lectures over the first 8 weeks of the class. Most of the files include 40-70 slides so my suggestion is to print them out using multiple copies per page (3 to 6 per page works pretty well – select Print, select Handouts, and either 3 or 6 per page), and it’s a lot quicker to use grayscale than color, although color is very nice.
SEFS 535 Fire Ecology - Potential Project Topics

Below are a few of the topics that have been selected by students in the past. I encourage you to select a topic that can and will be discussed IN DEPTH. Survey papers do not meet my expectation for a term paper. Some original thinking and thought is necessary for a top score. Length is always a question, and I always have a hard time defining this in advance, as it is a function of the topic and scope. Generally speaking 15-20 double-spaced (including figures and tables), 12-font, 1 inch margin pages (+ or -) are in the ballpark.

Your topic must be submitted IN WRITING by Oct 22 by email (or lose “points”)

Modeling fire effects: strengths and weaknesses of current models. A case study of ecological effects of a particular fire (need site-specific data). Modeling firesafe forests: applications to a given forest type, prescribed fire planning to produce desired landscapes. Effects of fire on soil organisms, Fire and tree physiology, Insect dynamics and fire, Ecology of fire on a particular organism (plant or animal, native or noxious), Soil chemistry and fire, Air quality impacts of expanded prescribed fire programs, Riparian fire - does it differ from upland fire? Indian burning - relevant to today? Fire effects on propagules, fire ecology education, climate change and fire, traditional ecological knowledge, fires in riparian areas, etc.

Presentations to the class of the paper (15 minutes or so per student) will be done at quarter end. Plan for a 12-minute presentation and 3 minutes for questions. Your grade will depend partly on the quality of the presentation and partly on your participation in asking good questions of other presenters. With 10 in the class we’ll take 2 lectures for presentations with a random draw of order. Once drawn, you are eligible to trade with another student. Bring your Powerpoint on a CD or thumb drive and we’ll load it on before the class period that you will present.

Papers/Projects are due Friday December 10
Week 1 Notes (Alvarado).
10/6 and 10/8: Introduction and Fire Regimes
Reading in Text: Chapter 1
Additional readings (See “Assignments”)
Additional readings in the website
Forum 2003, Pyne 2007, Moritz et al. 2005
October 1, 2. Two-day field trip to the Yakama Nation and the Naches RD of the Okanogan-Wenatchee National Forest. Overnight camping required. Joint field trip with CFR521.

Week 2 Notes (Alvarado)
10/13: Natural Fire Regimes
Reading in Text: Chapter 2-3
10/15 Natural Fire Environment
October 17 and 18. Two-day field trip to Winthrop and Pateros, WA in the Okanogan-Wenatchee National Forest – Camping required. For questions contact E. Alvarado (alvarado@uw.edu). Information on:
Carlton Complex of 2014: 386,972 acres, 300 homes destroyed, 1 fatality, burned from 7/14 – 8/7, 2014

Week 3. Notes (Alvarado)
10/20: Fire Effects on Vegetation
Reading in Text: Chapter 5 and 6
10/22: Fire Effects on Vegetation (continued)

Week 4 Notes (McKenzie, Guest, and Alvarado)
10/27: Landscape Ecology and Fire (McKenzie)
Readings:
October 27. Article Discussion and Decision Support Models: Fire Behavior.
10/29: Interactions Fire-Insects. (Guest Lecturer)
Additional readings: Hicke et al. 2012.

Week 5 Notes (Alvarado)
11/3 and 11/5: Fire History
Reading in Text: Chapter 4 plus additional reading Wright and Agee (2004), Plus Heyerdahl et al. (2007)
November 3. Lab Session – Fire History Laboratory – Dendrochronology – Alvarado

Week 6 Notes (Alvarado, Mell).
11/10: Low Severity Fire Regimes
Reading in Text: Chapters 10 (pp.280-312) and 11 (pp. 320-338)


November 10. Lab Session. Article Discussion and Guest Lecture: Wildland Urban Interface – Mell

11/12: Mixed Severity Fire Regimes

Week 7 Notes (Alvarado, Johnson) 11/17:
Mixed Severity Fire Regimes,

11/19: High Severity Fire Regimes
Reading in Text: Chapters 7 and 9


Week 8 Notes (Alvarado)
11/24 High Severity Fire Regimes (Continued)

November 24. Lab Session. Article Discussion.

11/26. Thanksgiving – No class

Week 9 Notes (Guest Lecturer, Larkin)
12/1. Climate Change and Fire — (TBD)
GHG, Air Quality and Smoke Management (Larkin)

December 1. Lab Session. Article Discussion.

Week 10 (Guest Lecture and Student Presentations)
12/8. Traditional Ecological Knowledge and Indian Burning — TBD 12/10

Student Presentations

December 11. UW Instruction Ends

Week 11 Final Exam: Tuesday, December 15, 2015, 1030-1220, AND 306

December 15. Exam Date. Student Presentations (If needed)

Lecturers: Ernesto Alvarado (Instructor) Guest
Lecturers:
Dr. Don McKenzie. USFS PNW Pacific Wildland Fire Sciences Laboratory - Seattle. Dr. William Mell. USFS PNW Pacific Wildland Fire Sciences Laboratory - Seattle. Dr. Morris Johnson. USFS PNW Pacific Wildland Fire Sciences Laboratory - Seattle. Dr. Roger Ottmar. USFS PNW Pacific Wildland Fire Sciences Laboratory – Seattle PhD Candidate
Jim Cronan, UW SEFS Graduate Student
Peace Corps Master's International (PCMI) SEMINAR
WINTER Quarter 2014
CFR 550A and GH 592B

Location: Anderson Hall, Room 22
Time: Winter Quarter, 2014
January 26, 5:00-6:00 p.m.
February 9, 5:00-6:00 p.m.
February 23, 5:00-6:00 p.m.
March 2, 5:00-6:00 p.m.

Instructor: Ivan Eastin (RPCV Liberia '85-87)
123 Anderson Hall,
543-1918 or eastin@uw.edu

“I see overseas experience in the Peace Corps as an opportunity for education. That is it very simply. That education begins in an open conversation with strangers. Probably the hardest and most difficult response for human beings anywhere is to listen to and to hear that which is different. Yet that is where we must all start. Never has it been more necessary.”

From: Robert Gaudino, from The Uncomfortable Learning, Some Americans in India, 1974. Popular Prakashan, Bombay

Returned PC and PCMI students who will be participating in some or all of the seminars include:

Ben Roe, Forestry, Bulgaria '09-11
Seth Kammer, Forestry, Ethiopia '09-13
Gillian O’Bryan, Public Health, Cameroon, ’12-14
Meghan Flaherty, Public Administration, Peru, ’12-14

Seminar Overview
The purpose of the PCMI Seminar is to join PCMI students from the School of Public Health, the School of Environmental and Forestry Sciences, and the Evans School of Public Administration in an informal setting to:

- Learn from returned PCMI and a variety of speakers on special topics related to PC service;
- Discuss and analyze cross-cultural experiences and previous PCMI research; and
- Network other PCMI and RPCMI students

The approach to this seminar is multidisciplinary and participatory. It will draw upon the expertise that can be found at the University of Washington (e.g., returned PCMI students, returned Peace Corps volunteers, experts in fields relevant to Peace Corps service) as well as off campus NGO or Peace Corps resources. The PCMI Seminar is graded C/NC. There are required advance readings and class attendance is required as is active participation in the discussions. Students will be expected to share their own volunteer and international experience and insights in discussions. Returned PCMI students will attend and share their perspectives, experiences, insights, how they’ve changed, etc. with the incoming PCMI class. In other words, we will use RPCMI’s to help mentor the new PCMI students.
Topics for Seminar Sessions

Session 1: The PCMI Academic Year and Introductions

Background Readings for January 26th
“A Lesson in Giving,” Dorothea Hertzberg, NYT, August 23, 2003

Introduction
Overview of the PC Recruiting and Placement Process
Facilitator: Ben Conway, PC Representative, Seattle Office
Roundtable Discussion between PC Representative, RPCMI’s and RPCV’s

Session 2: UW Academic and Research Protocols

Background Readings for February 9th

Presentations
How to Maintain your On-Leave Status and Deferring Student Loans at UW
Facilitator: David Campbell, Student Services, SEFS
Obtaining Human Subjects Approval for your PCMI Research
Facilitator: Laura Henderson, Human Subjects Division, UW

Session 3: Identifying the Intersection Between Community Needs and Research

Background Readings for February 23rd

Presentation
Identifying a Research Topic: Conducting a Participatory Rural Appraisal/Community Needs Assessment
Facilitator: Ben Roe (RPCV Bulgaria ’09-11)

Session 4: A Discussion of Gender Concerns During PC Service

Background Readings for March 2nd
Anti-gay legislation and PC safety handout.

Presentation
Panel Discussion led by RPCMI and RPCV students
CFR 564 – Advanced Forest Biometry

UW Catalog:
Classical problems in analysis of forest populations and growth theory, and principles of parametric analysis and estimation processes in forest biometry. Offered: odd years; A.

More Detail …
Quantitative techniques commonly used in forecasting future forest conditions; methods for assessing site quality; development of site index equations; measurement of stand density; quantifying the effects of site quality and density on growth; predicting growth and yield; familiarization with current computerized forest growth simulation models. Prerequisite: Two statistics courses; forest measurements a plus. Offered: Fall.

Logistical Information
Lecture/Lab: M 12:30 - 4:20 PM BLD 261
Instructor : Eric Turnblom ect@u.washington.edu
Office hrs : by appt. BLD 232

Texts

Supplemental Reading
Each week, several relevant, topical journal articles will be assigned.

Evaluation
Problem Sets (5) 35% (1/2 weight on lowest score)
Lab Reports (5) 55% (1/2 weight on lowest score)
Class participation 10%

Objectives
1. To discuss quantitatively and interpret the factors that affect the growth and yield of trees and stands, particularly site quality, stand density, and stand structure;
2. To gain familiarity with some existing growth and yield projection systems pointing out pros and cons of each; and
3. To explain the limitations, development, and application of volume and taper equation systems;
4. To gain familiarity with the techniques used to develop growth and yield models, giving consideration to sampling and measurement, monitoring and to model validation.
Advanced Forest Biometry

Week 1.  5 October  Forest models: Recruitment, growth, mortality
Problem Set #1 – Growth estimation

Week 2.  12 October  Stand attribute description & development w/time
Lab #1 – Diameter increment prediction

Week 3.  19 October  Whole-stand, cohort, tree-list model examples
Problem Set #2 – Theoretical growth equations

Week 4.  26 October  Competition, DBH distributions, change functions
Lab #2 – Stand structure description

Week 5.  2 November  Site productivity metrics
Problem Set #3 – Site quality inference

Week 6.  9 November  Using / Developing multi-component models
Lab #3 – FVS & treatment effects

Week 7.  16 November  Mortality / death and recruitment / birth models
Problem Set #4 – Birth / death quantification

Week 8.  23 November  Sampling for model development & monitoring
Lab #4 – Whole stand model development

Week 9.  30 November  Monitoring and validating growth & yield models
Lab #5 – Model Critiquing, Benchmarking

Week 10.  7 December  Volume / taper equation development
Problem Set #5 – Volume / taper equation inference

Week 11.  14 December  Student groups' topics chosen for further knowledge
PowerPoint presentations
Professor Clare Ryan  
123H Anderson  
Office Phone: 616-3987  
email: cmryan@uw.edu  
Office Hours: by appointment  

Class meets Mondays and Wednesdays, 10:30 - 12:20 p.m., Smith 107  

This 4-credit course is designed to provide an intense graduate-level introduction to the structure and dynamics of the U.S. natural resource policy processes and administrative decision-making. Natural resource and environmental policy is made and carried out by a diverse set of individuals, groups, and interests, few of whom have sufficient power to control the situation. Policy formation and implementation becomes a process of bargaining and negotiation, controlled partly by the character of the participants and partly by the nature of the arenas in which action takes place. In order to build an understanding of the policy process, this course focuses both on the key actors that participate in the process, including elected and appointed executives, bureaucracies, legislators and interest groups, and on the legislative, judicial and administrative arenas in which they act. The course is intended for graduate students in resource and public policy, planning, public or marine affairs, resource management, and related fields.  

Learning goals for the course include:  
1) Understand how policy proposals gain sufficient support to be approved  
2) Understand how policies are actually put into effect, and how elected and appointed officials consider policy choices.  
3) Within the context of natural resource policy, evaluate the political, administrative and technical feasibility of different policy choices.  
4) Become familiar with several major theoretical policy process frameworks  
5) Use and apply theoretical policy process frameworks to an actual policy issue  

The course uses several conceptual frameworks for analysis of the policy process, as well as numerous case studies of federal, state, and local action to practice using the frameworks. The overriding objective is to build students’ ability to disaggregate complex political and management situations, assess the feasibility of resource policy choices, and build strategies to get such choices adopted and implemented.  

The course meets for two 2-hour sessions per week, and a significant amount of reading and case preparation is required for the course. The format is a mix of lecture and discussion, with an emphasis on exploration of case materials. Case discussions use our joint understanding of a policy issue to figure out what and why things happened, as well as what actors should do in a given situation. They provide real settings to probe historical behavior and test strategy. In order to benefit from the cases most effectively, students must regularly attend class and be prepared to actively participate by reading the cases analytically and thoroughly.
COURSE READING MATERIALS


2. Other required readings, cases, and helpful research links (“Resources for Policy Research” page) are available on the Canvas course web page (referred to as “Web” in syllabus).

ASSIGNMENTS

Two individually written decision memos and one team-written and oral assignment (2 parts) will constitute the work for the course, in addition to your individual class contributions. Detailed descriptions of each assignment are posted on the course web page.

1. **Policy Formation Decision Memo:** In this individual assignment, you will advise an appointed executive on a recommended course of action regarding a water resource project. (*Due Monday, Jan. 26*)

2. **Administrative Strategy Memo:** This individual assignment asks you to suggest a course of action regarding the role of an administrator in the policy process, assess the challenges associated with conflicts in the policy process, the politics of expertise, and the difficulties in solving common pool resource management problems. (*Due Monday Mar. 2*)

3. **Policy Issue Case Research and Development (team assignment):** This team assignment involves small student teams in analyzing a current policy issue, and requires two written products, along with two brief oral presentations:

   a. **Issue Identification and Description:** A brief 2-3 paragraph description of the issue your team will analyze. (*Due Wednesday Jan. 14*)

   b. **Issue Network/Legislative History (paper and presentation):** This assignment identifies and analyzes the principal actors in a specific issue, along with their interests, motivations, and resources they have to influence a decision on the issue. The legislative or administrative history details its progress through the legislative process, from getting on the agenda to legitimation by legislative decision. (*Presentations Wednesday, Feb. 11. Paper due Friday, Feb. 13.*)

   c. **Policy Decision Context (paper and presentation):** This assignment builds on the issue network/legislative history, and sets the stage for an elected or appointed official to make a specific decision on the issue. (*Presentations 3/4, 3/9, 3/11. Paper due Friday March 13.*)

**Class Contributions:** Your contributions to the class will be assessed in several ways: 1) your contributions to and /or leading of class discussions of assigned reading materials and cases; 2) your short oral presentations to the class of your team issue analysis, and 3) a self- and peer- evaluation for your team policy issue work. Every student is responsible for preparing for class sessions by reading the assigned materials and contributing their thoughts, questions, and responses to other students during class discussions.
GRADING

Final course grades will be based on the following components:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percent of Final Grade</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Policy Formation Decision Memo</td>
<td>20</td>
<td>Jan. 26</td>
</tr>
<tr>
<td>2. Administrative Strategy Memo</td>
<td>20</td>
<td>Mar. 2</td>
</tr>
<tr>
<td>3a. Issue identification/description</td>
<td>---</td>
<td>Jan. 14</td>
</tr>
<tr>
<td>3b. Issue Network/Legislative History</td>
<td>15</td>
<td>Feb. 13</td>
</tr>
<tr>
<td>3c. Policy Decision Context</td>
<td>20</td>
<td>Mar. 13</td>
</tr>
<tr>
<td>4. Class Contributions/Presentations/Peer Eval</td>
<td>25</td>
<td>various</td>
</tr>
</tbody>
</table>
CLASS SCHEDULE

Week 1  Introduction to Policy Processes

Mon 1/5  Course Introduction and Overview


Wed 1/7  Policy Context and Theoretical Frameworks


Week 2  Policy Formulation

Mon 1/12  Analyzing the Political Environment, Assessing Political Feasibility


Wed 1/14  CASE: Playground or Paradise? Snowmobiles in Yellowstone National Park (Web)


Assignment 3a: Issue Identification and Description Due Wed Jan 14th

Week 3  Actors in Policy Processes

Mon 1/19  No class meeting, UW Holiday

Wed 1/21  Bureaucracies

Read: Politics: Ch. 4: “Bureaucratic Politics,” pp. 89-120.
## Week 4

**Actors in Policy Processes**

**Mon 1/26**  
**CASE:** The Two Forks Project (A, B) ([Web](#))

**Assignment 1: Policy Formation Decision Memo Due Monday Jan 26**

**Wed 1/28**  
Interest Groups and Media

- **Read:** *Politics*: Ch. 8: “Living Room Politics,” pp. 231-269.  

## Week 5

**Policy Formulation and Implementation**

**Mon 2/2**  
**CASE:** Protecting the Columbia River Gorge (A) & (B) ([Web](#))

**Wed 2/4**  
Policy Implementation


## Week 6

**Policy Formulation and Implementation**

**Mon 2/9**  
**CASE:** 1) Gambling on the Gorge; 2) Lyle Point Case ([Web](#))

- **Also peruse:** the *Columbia River Gorge Commission* home page: [http://www.gorgecommission.org/](http://www.gorgecommission.org/)

- **Also peruse:** the *National Scenic Area* (USFS managed) home page: [http://www.fs.usda.gov/crgnsa](http://www.fs.usda.gov/crgnsa)

**Wed 2/11**  
Issues in Resource Policy and Administration: Team Issue Network Presentations

**Assignment 3b: Issue Network/Legislative History Due Friday, Feb. 13**

## Week 7

**Evaluation and Adaptation**

**Mon 2/16**  
*No class meeting, UW Holiday*

**Wed 2/18**  
Evaluation and Scientific Management
**Read:** Web: R. Brunner et al., *Ch. 1:* “Beyond Scientific Management,” in Adaptive Governance: Integrating Science, Policy, and Decision Making. pp. 1-46
*Politics: Ch. 9:* “Institutional Performance,” pp.271-298; *Ch. 10:* “Assessing American Policy,” pp. 299-337.

**Week 8**

**Policy and Administration in Complex Social-Ecological Systems**

**Mon 2/23**

Social-Ecological Systems Frameworks


**Wed 2/25**

**Team Policy Issue Case work time:** Clare available during class time for consultation and feedback

**Week 9**

**Current Topics in Resource Policy and Administration**

**Mon 3/2**

**CASE:** TBD (Web)

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**Assignment 2: Administrative Strategy Memo Due Monday Mar. 2**

**Week 10**

**Current Topics in Resource Policy and Administration**

**Mon 3/9**

Team presentations of Policy Issue Analyses

**Wed 3/11**

Conclude Team Policy Issue Analysis presentations Course wrap-up and conclusion, course evaluations

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**Assignment 3c: Policy Decision Context Due Friday March 13**

**Disability Accommodations:** To request academic accommodations due to a disability, please contact Disability Resources for Students at http://depts.washington.edu/uwdrs/. Please let me know as soon as possible if you require accommodations to participate in this course.
**Academic Integrity:** Students at the University of Washington are expected to maintain the highest standards of academic conduct. Most professions have codes of ethics, standards to which you will be expected to adhere when you are working. Academic integrity requires that the course work (drafts, reports, examinations, papers) you present to an instructor, honestly and accurately, indicates your own academic efforts. Academic misconduct occurs when a student fails to practice high standards of academic and professional honesty and integrity. Any suspected cases of academic misconduct will be handled according to University regulations. More information, including definitions and examples, can be found at: [http://coenv.washington.edu/intranet/academics/academic-policies/academic-misconduct/](http://coenv.washington.edu/intranet/academics/academic-policies/academic-misconduct/)

**Grading Guidelines.** The following guidelines are used to assign numerical grades for the written assignments in this course. These guidelines are also used to assign numerical grades for your class contributions and final oral presentation. For your class contributions, a single grade will be assigned to represent your class contribution and oral presentation component of the course.

**4.0** Excellent and exceptional work for a graduate student. Work at this level is unusually thorough, methodologically sophisticated, and well written. Work is of good professional quality, shows an incisive understanding of the major policy and management issues and demonstrates a clear recognition and mastery of the appropriate analytical approaches to address the problems and questions.

**3.7** Strong work for a graduate student. Work at this level shows signs of creativity and is thorough and well reasoned. It indicates a strong understanding of appropriate methodological or analytical approaches and demonstrates a clear recognition and good understanding of the salient policy and management issues and problems.

**3.4** Competent and sound graduate student work. Work is well reasoned and thorough and methodologically and analytically sound, but is not especially creative or insightful, nor technologically or analytically sophisticated. It shows adequate understanding of the policy and management issues and problems, although that understanding may be somewhat incomplete. This grade indicates neither unusual strengths nor exceptional weaknesses.

**3.2** Adequate graduate student work. Basically competent performance, although the work shows some weaknesses. Work is moderately thorough and well reasoned, but there is some indication that the understanding of important policy or management issues is less that complete. It may also be inadequate in other ways, such as quality of reasoning, writing, or incomplete analysis. Methodological or analytical approaches are generally adequate but have one or more weaknesses or limitations.

**3.0** Borderline graduate student work. This work barely meets the minimal expectations for a graduate student in the course. The understanding of basic policy or management issues is incomplete and the methodological or analytical work performed is minimally adequate. The writing and reasoning barely qualify for professional quality work. Overall performance, if consistent in graduate courses, would barely suffice to sustain graduate status in good standing and does not reflect long-term professional quality work.

**2.6** Deficient graduate work. This work does not meet the minimal expectations for a graduate student in the course. Work is inadequately developed and flawed by numerous errors and misunderstandings of important issues. Methodological work or analysis is weak and fails to demonstrate knowledge or basic skills competence expected of graduate student work. May also reflect unprofessional level of writing, organization, or reasoning skills. This grade means that the course will not count towards graduation.