FOR 457/557 Techniques for Forest Resource Analysis (4)
Course Syllabus
Winter 2013

Instructor: John Sessions
Office: Peavy 223
Phone: 737-2818
Office Hours: 11:00-12:00 MWF, Saturday 9:00-11:30, 1:30-5:00
Email: john.sessions@oregonstate.edu

Course Format: Lecture: MWF 10:00-10:50, Peavy 108
Lab: T, 2:00-4:50, Peavy 256

Required Text: No Required Text

Class Notes: Class Notes and Handouts Available at
T:\Teach\Classes\FOR457

Final: Wednesday, March 13, 2013, 6:00 pm

Student Learning Outcomes

Students, at the conclusion of FOR 457, will be able to:

1. Given a description of a small strategic or tactical forest planning problem, quantitatively describe the goals and constraints for the problem, establish the criteria by which goal attainment will be measured, classify the land to address planning issues, determine the appropriate activities and decision variables, specify the objective function, formulate the resource, goal, and policy constraints and solve the problem using linear and mixed integer programming.

2. Use quantitative approaches to integrate wildlife, water, and soil resources into forest planning, identify efficient pathways to desired forest condition, and undertake sensitivity analysis to examine the tradeoffs involved in policy choices.

3. Integrate road planning and harvest operations in tactical planning including the use of mixed integer and linear programming, network analysis, and heuristics.

4. Formulate and solve a small harvest scheduling problem in a commercial harvest scheduling software environment including a discounted cost and benefit forest land appraisal.

Students, at the conclusion of FOR 557, will be able to

1. Achieve the FOR 457 learning outcomes.

2. Describe methods for addressing uncertainty in forest planning and demonstrate these methods in a small strategic forest planning problem.
EVALUATION OF PERFORMANCE

FOR 457

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Problem Sets</td>
<td>225</td>
<td>(45%)</td>
</tr>
<tr>
<td>Speaker Notes</td>
<td>24</td>
<td>(5%)</td>
</tr>
<tr>
<td>Midterm</td>
<td>100</td>
<td>(20%)</td>
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<tr>
<td>Final</td>
<td>150</td>
<td>(30%)</td>
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</tbody>
</table>

FOR 557

In addition to the metrics for FOR 457, students will submit a paper synthesizing alternative approaches for incorporating uncertainty into forest planning, demonstrate one technique in a small forest planning problem and present the paper summary and example in class during Week 10.

The paper (15-25 pages, 1.5 line spacing) will be graded Acceptable/Not Acceptable. Completion of an Acceptable project is required to receive credit for the course. If the paper is graded Not Acceptable, it must be revised and resubmitted until it is Acceptable.

Letter grades will be based on the following. Depending upon class performance, the curve may be shifted downward.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
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<tbody>
<tr>
<td>A</td>
<td>92.5 to 100</td>
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<tr>
<td>A-</td>
<td>90.0 to 92.5</td>
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<tr>
<td>B+</td>
<td>87.5 to 90.0</td>
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<tr>
<td>B</td>
<td>82.5 to 87.5</td>
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<tr>
<td>B-</td>
<td>80.0 to 82.5</td>
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<tr>
<td>C+</td>
<td>77.5 to 80.0</td>
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<tr>
<td>C</td>
<td>70.0 to 77.5</td>
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<tr>
<td>C-</td>
<td>65.0 to 70.0</td>
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<tr>
<td>D</td>
<td>60.0 to 65.0</td>
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<tr>
<td>F</td>
<td>0.0 to 60.0</td>
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PROBLEM SETS

Problem sets are distributed and discussed at the beginning of each lab and are due at the beginning of next lab. Homework sets may be resubmitted once to recover 50% of points lost.

SPEAKER NOTES

We will have four outside speakers discussing harvest scheduling procedures used by their agency or firm. Immediately following each speaker’s presentation, each student will submit a handwritten list of the three most significant points each speaker made.
EXAMS

Open Book, Open Notes. Optional quizzes may be given during labs that can substitute partially for the midterm and final exam.

Midterm – Tuesday, February 5, 2:00 pm

Final – Wednesday, March 13, 2013, 6:00 pm

Statement Regarding Students with Disabilities

"Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098."

Link to Statement of Expectations for Student Conduct, i.e., cheating policies http://oregonstate.edu/studentconduct/code/index.php#acdis
INTRODUCTION

Why Make a Plan?
Characteristics of Forest Plans
How Plans Have Been Made
  - The Process
Levels of Planning
Available Analytical Techniques
  - Past, Present, Future

FRAMEWORK FOR DECISION MAKING

Elements
Applications
Introduction to Linear Programming
Steps in Problem Formulation/Jerry Wilcox Problem

STRATEGIC FOREST PLANNING (strata-based)

Classical Approaches to Forest Planning
Strategies for Forest Regulation

Forest Planning with Multiple Goals
General Approach/Daniel Pickett Problem
Using a Model I Structure
Multiple Objectives--Goal Programming
Linkage to Aquatic and Wildlife Resources
Using a Model II Structure
Model II with multiple outcomes (Model III)
Aggregate Emphasis for Group Choice (o)
Managing the Uneven-Aged Forest (o)

STRATEGIC FOREST PLANNING – (non-strata based)

Spatial Issues (and introduction to heuristics)
  Roads, Habitat connections, Size of Opening

** page numbers refer to .pdf page numbers on lower right side of page
(o) optional depending upon time
LAB FORMAT AND SCHEDULE

The weekly format for the Labs will be to (1) introduce the problem to be solved that week, (2) discuss solution approaches, (3) review the problem from the previous week, (4) have a short quiz on the past week’s material, and (5) learn from a guest speaker how forests are organized to meet the diverse goals of forest owners and managers.

<table>
<thead>
<tr>
<th>Week</th>
<th>Activity</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to WHAT’S BEST/Lingo</td>
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<tr>
<td>2</td>
<td>Practice Problems</td>
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<tr>
<td>3</td>
<td>Speaker</td>
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<td>4</td>
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<td>5</td>
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<td>6</td>
<td>Midterm</td>
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<td>7</td>
<td>Speaker</td>
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<td>8</td>
<td>Woodstock Lab</td>
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<td>9</td>
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<td>10</td>
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