FE 448 Forest Operations Planning and Scheduling (WIC Course) Fall 2008

Lectures: Tuesday 9-9:50 am
Thursday 9-9:50 am

Lab: Tuesday 7-8:50 am

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Office Hours:
Monday – Wednesday 9:30-10:30 a.m.

Introduction:
This is the first in the two-course capstone sequence. These courses are integrative courses. They are NOT intended to generate new knowledge, but to provide you an opportunity to integrate the knowledge and skills that you have gained while in the Forest Engineering Department. I expect you to revisit information from your previous courses to complete these assignments. This course is an enforced prerequisite for FE 451. You MUST complete this course with a passing grade before you will be allowed to register for FE 451.

Additionally, this is the first course in a two-course series that satisfies your writing intensive curriculum (WIC) requirement. The second course is FE 451 and both must be completed for graduation. In FE 451, the tactical and operational forest plans prepared in FE 448 will be revised and resubmitted along with additional writing assignments to support a procurement problem.

Students with disabilities:
Accommodations are collaborative efforts between students, faculty and Services for Students with Disabilities (SSD). Students with accommodations approved through SSD 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 SSD should contact SSD immediately at 737-4098.

Student conduct:
Expectations for student conduct can be found at http://oregonstate.edu/admin/stucon/achon.htm

Background:
The exercises are designed to increase your ability to express your understanding of forest operations concepts and practices using both written and oral communication. You will have
multiple formal and informal writing assignments to be completed during the term. These skills are very important for your professional advancement. See the quotes below:

*The ability to write and to speak good, plain, understandable English is a prime requisite in the Forester’s training. It is a part of education frequently neglected, especially by those in engineering or scientific pursuits….*

*Gifford Pinchot (1914). The Training of a Forester.*

*Our foresters and engineers routinely have contact with managers, the public, and government agencies. In order to effectively do their jobs they need to communicate clearly; this requires well-developed writing and speaking skills. These skills are necessary now, and I see them becoming even more important in the future.*

*Rich Wininger*
*Director of Operations - Western Timberlands, Weyerhaeuser Company*

What kind of jobs does this relate to?

**NEW - Timber Resource Manager**

**Salary to $95,000 + bonus.** Specialty forest products firm in Western Oregon seeking to upgrade stumpage and log procurement activities. Volume exceeds 40MMBF annually. Selected candidate must have a B.S. in Forestry and 10+ years of stumpage procurement and log trading in the Southern Washington, Western Oregon timber regions. Focus is to increase quality log procurement to supplement semi-processed raw material purchases. Selected candidate should be familiar with key stumpage and log suppliers from the Coastal Regions to the Cascade Range. Manager's responsibilities include developing and implementing weekly/monthly/yearly log supply plans, log and stumpage purchase negotiations, log inventory management, and become an active participant in company's leadership team focused on continuous process and profit improvements through total employee involvement. Excellent long-term future with a private firm taking pride in serving customers throughout the U.S. with quality specialty products. (SA# 5003CJ)

**Lab hours:**

The labs are your chance to work on the project to minimize the time you spend outside the course. I will review items such as Microsoft Projects, GIS, and the use of GAMS system for harvest scheduling work, but the bulk of the time is for you to work. I will be in the lab until the end of class or the last student leaves.

**Learning Objectives for FE 448:**

The capstone course is designed to integrate elements from the Forest Operations Management curriculum into projects that are professionally presented in both written and oral forms. The following are the learning objectives where students will have the opportunity to:

- Develop business and technical writing skills through the use of project proposals, progress reports, and final reports to demonstrate the knowledge necessary to develop a tactical and operational forest plan.
- Enhance the student’s ability to apply project management techniques.
• Enhance the knowledge and skills required to perform tactical and operational scheduling while using GIS and optimization software.
• Enhance the student’s understanding of the role of forest planning in the creation of annual operating budgets commonly used in the forest industry.

Assessment Descriptions:

Project plan

You will produce a written report along with an executive summary that describes the work necessary to complete a tactical and operational forest plan. You will need to be specific when you describe the tasks that are necessary to complete this project. You must include a Gant chart that demonstrates an on-time completion. The typical length is 4 to 6 pages plus a one-page executive summary.

Some of the likely work elements are:

1. Organize GIS and yield data
2. Develop tactical plans
3. Prepare GAMS script to optimize tactical plans
4. Develop annual plan
5. Prepare GAMS script to optimize annual plans
6. Compute payment schedules using plan work rates.

Due 6 October - value is 15 points – must be passed satisfactorily

Progress reports

Develop a business letter describing project status for the project plan. Please include a list of all the elements from your project plan along with their status, green, amber or red where the color represents the following project status:

• Green – on schedule
• Amber – behind but can catch up, must include a new schedule
• Red – Major problems – see instructor immediately

1st progress report is due 23 October - value is 5 points
2nd progress report is due 13 November - value is 5 points

Additionally, you may meet with me during the week of each progress report and show me the progress you have made - we will often do this during lab. We can discuss any questions that you have. These are minimally graded assignments designed to teach students to prepare a formal business letter.

Supply chain paper

An in-class write-and-pass assignment will be completed 1 week prior to the assignment being due to encourage the student to think about the larger assignment. You will use this feedback from the write-and-pass exercise as the beginning of a paper – 3 to 5 pages plus a one-page executive summary – explaining to your boss how the planning contributes to the development
of pull-push supply chain model that will improve a business’s financial performance. Include a discussion of how you are able to integrate your plan across company boundaries to improve the economic and service performance from the supply chain. This is a minimally graded paper.

**Supply chain paper is due 15 October – 5 points**

**Description and use of supply chain metrics used to document the improvement in the forestry supply chain.**

Your goal will be to develop and describe two supply chain performance metrics that will be used to measure the performance of your plan. Discuss what industries currently use these metrics and why you believe they are applicable to forestry problems. You are required to use citations from scientific and professional literature to support your arguments. The paper which will describe and justify the metrics is expected to be 6-8 pages double-spaced plus a one-page executive summary. **You will have page and line numbers on the first draft of the paper as it will be reviewed by me and another student.** The goal of this assignment is to develop your skills at applying science to solve a problem. This assignment can not be completed correctly in one or two days before it is due – **START EARLY.** You will need help using the research tools – see me or make an appointment with the library staff.

Another student and I will critique this paper giving you feedback on the metrics, your justification and your presentation. You will revise your metrics, your justification and apply them to your area plan.

**Paper is due 27 October - value is 25 points**

Once you have completed this assignment, you will critique another student paper. Consider the following items in your critique:

- Are the facts correct? If not, state where they were incorrect.
- Are important facts missing? Make a suggestion.
- Are the arguments logical? Where could they be improved or corrected?
- Is the argument expressed well? How could it have been improved?

**Critiques will be completed in class on 9 November - value is 10 points**

**Use of optimization in forest planning**

An in-class write-and-pass assignment will be completed 1 week prior to the assignment being due to encourage the student to think about the assignment. Using this initial feedback, you will write a paper – 3 to 5 pages plus an executive summary where you will describe the process of developing and applying optimization models to forest operations management problems. You will discuss the information requirements, time commitments and economic advantages that result when forest planning models are applied to the forest industry. This will be minimally graded
Forest Optimization Paper due 15 November - 5 points

Tactical and operational plan

You will develop and solve a fully optimized tactical and operational plan to schedule all forest operations activities in the planning area. This will result in the flow of volume that maximizes the discounted net revenue. You will define your harvesting crews and assign them to logging units until all work has been completed. You will track expenditures by the following categories: stand establishment, intermediate stand treatments, final harvesting and road building activities. You will use linear or integer programming models to complete the planning activities and create a tactical plan that will assign treatments to stands. For each year, you will develop a detailed project budget by tracking expenses for all activities. This will be the first draft of your full paper that will be revised in FE 451 as part of the second WIC course.

Presentation is due Dead Week - value is 10 points
Paper is due 7 December - value is 30 points

Sequence of major writing assignments:

1. Project plan – graded assignment to be revised and included with final draft of the forest plan
2. Description of supply chain metrics to apply to forest plan – a graded research paper that will be revised and included with final draft of forest plan.
3. Tactical and Operational forest plan – This will be the first complete draft of the forest plan that will be revised as part of WIC requirements in FE 451, which is the second WIC course required in the Forest Operations Management (FOM) program.

Grading:

Grades will be assigned using a combination of technical merits and your written and oral presentation skills. Final grades are based on the following percentages.

- 93.0 -100.0 A
- 90.0 - 92.9 A-
- 87.0 – 89.9 B+
- 83.0 – 86.9 B
- 80.0 – 82.9 B-
- 77.0 – 79.9 C+
- 73.0 – 76.9 C
- 70.0 – 72.9 C-
- 65.0 – 69.9 D
- 0 - 64.9 F

All assignments are to be completed individually. You may use the writing center or me for help with writing, but you may NOT use girlfriends, boyfriends, classmates, parents, etc., for help. The goal is to maintain a level playing field for all students and to develop your own writing skills that you will take to work each day. All assignments are due by 5:00 pm and you may deliver them in the following ways:

- Put them in my mailbox in the FE office
• Send me your assignments electronically, but it must contain the fully-collated
document with tables and maps inserted where appropriate.
• Place them under my door

Late assignments will receive 10% reduction of grade per day unless you have permission from
me prior to the assignment due date. You must pass all assignments in this class to receive a
passing grade in the course. **All assignments except the two progress reports will require
a transmittal letter and executive summary. This is a letter that describes what you are
giving me. You should use the format from the photogrammetry or route surveying
classes.**