SYLLABUS

ESRM 461: Forest Management & Economics – *Spring 2017*

Lectures: *Johnson Hall 366, 11:30am - 12:50 pm, M*
WFS 105, 12:30am - 1:50 am, Th
Labs: Johnson Hall 366, 11:30 am - 1:20pm, W
Web Site: *http://faculty.washington.edu/toths/ESRM461.shtml*

Instructor: Sándor F. Tóth
Office Address: 358 Bloedel Hall
Telephone: 206-518-4978; Email: toths@uw.edu

Instructor's office hours: 2:00 - 4:00pm W, or by appointment.
TA: Celine Pastore: Office hours from 3:15-5:15 pm on Wednesdays and 9-11 am on Thursdays in 360 Bloedel Hall; email: cpastore@uw.edu; phone: 206-543-0827

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 In addition, chapters from Marc E. McDill's (MMD) *Forest Resources Management* (Unpublished) will be used for certain topics.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:

- Joseph Buongiorno and J. Keith Gilles. *Decision Methods for Forest Resource Management.* Elsevier Science (USA), 2003.
- W. David Klemperer. *Forest Resource Economics and Finance.* Tech Bookstore, Blacksburg, Virginia (USA), 2003.

Grading:

Assignment	Weights	Notes
Homework Assignments (8)	20%	Individual work
Lab Assignments (9)	20%	Individual work
Midterm Exam – April 24 (1)	30%	Individual work
Final Exam – June 7 2:30-4:20 PM (1)	30%	Individual work

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: 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: 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: 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 http://www.washington.edu/students/drs/.

Table 1.

A	4.00	98-100%	C	1.90	73-74%
A	3.90	96-98%	C-	1.80	72-73%
A-	3.80	94-96%	C-	1.70	71-72%
A-	3.70	92-94%	C-	1.60	70-71%
A-	3.60	90-92%	C-	1.50	69-70%
A-	3.50	89-90%	D+	1.40	68-69%
B+	3.40	88-89%	D+	1.30	67-68%
B+	3.30	87-88%	D+	1.20	66-67%
B+	3.20	86-87%	D	1.10	65-66%
B	3.10	85-86%	D	1.00	64-65%
B	3.00	84-85%	D	0.90	63-64%
B	2.90	83-84%	D-	0.80	62-63%
B-	2.80	82-83%	D-	0.70	60-62%
B-	2.70	81-82%	E	0.00	55-60%
B-	2.60	80-81%	E	0.00	50-55%
B-	2.50	79-80%	E	0.00	40-50%
C+	2.40	78-79%	E	0.00	30-40%
C+	2.30	77-78%	E	0.00	20-30%
C+	2.20	76-77%	E	0.00	10-20%
C	2.10	75-76%	E	0.00	0-10%
C	2.00	74-75%			

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.
4. Guide discussions and labs.
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 2017/*

Part I: Forest Economics

Week 1 – *March 27 - 30*

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

Week 2 – *April 3 - 6*

- 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;
- Th: 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 10-13*

- M: More on LEV. Forest Value (TEXTBOOK Ch.7);
- W: Lab 3: Inflation on a spreadsheet;
- Th: 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 17 - 20*

- 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;
- Th: Forest microeconomics, market failures, non-timber forest benefits accounting.

Week 5 – *April 24 - April 27*

- M: MIDTERM Exam;
- W: Lab 5: Forest Value on a spreadsheet;
- Th: Uneven-aged management: the single tree decision – the concept of financial maturity (TEXTBOOK Ch. 9).

Part II: Forest Management

Week 6 – *May 1 - 4*

- 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;
- Th: Historical overview: forest regulation with area control. The limitations. (TEXTBOOK Ch. 10).

Week 7 – *May 8 - 11*

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

Week 8 – *May 15 - 18*

- M: Linear Programming and harvest scheduling models (TEXTBOOK Ch. 12-13);

- W: Lab 8: Linear programming on a spreadsheet II;
- Th: 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 22 - 25*

- M: Spatially-explicit harvest scheduling models and integer programming;
- W: Lab 9: Spatial harvest scheduling;
- Th: Harvest and road maintenance scheduling with integer programming.

Week 10 – *May 31 - June 1*

- W: Forest management with multiple objectives. Tradeoff analyses.
- Th: Review