

**Syllabus: FOR 319 / FOR 595-001 Forest Economics - Fall 2018**  
**NC State University Department of Forestry and Environmental Resources**  
**Version 4; Updated 15 September 2018**

**Instructor and Office Hours**

Fred Cabbage Professor, Room 3118 B Jordan Hall      [fred\\_cabbage@ncsu.edu](mailto:fred_cabbage@ncsu.edu)

**Office Hours:** Tuesday Thursday, 10:00 – 10:30, Jordan Hall; or After Class, T-Th Gardner Hall

**Teaching Assistant and Office Hours**

Logan Richardson      [lerichar@ncsu.edu](mailto:lerichar@ncsu.edu)      Office Hours: by appointment

**Class Meeting Times**

11:45 am - 1:00 pm, Tuesday and Thursday, 2213 Gardner Hall

**Overview, Goals, and Objectives**

At the completion of this course, students will be able to (1) estimate production functions, costs, returns, and profits for forestry operations; (2) develop physical and cash flow tables necessary to perform financial analyses of short- and long-term forestry investments; (3) perform financial and economic analyses necessary to estimate the investment returns of long-term forestry activities; (4) use capital budgeting criteria and tools correctly to make recommendations regarding forestry investments; (5) compute property tax and income tax effects on forestry investments; (6) evaluate returns for nontimber forest products and the value of nonmarket forest benefits; (7) understand forest products demand and calculate the effects of price on demand; and (8) understand partial equilibrium models and effects of external shocks on supply, demand and prices of forest products

**Required Readings and Textbook**

Readings will be assigned from a book: *Forestry Economics*, by John E. Wagner, 2011, Routledge Press; ISBN #9780415774765; and on journal articles. One copy of the book will be on reserve in the Natural Resources library.

Some readings will be required and available at Sir Speedy, Mission Valley

Final letter grades will be assigned according to the following distribution.

(1)	Homework Assignments (5 @5% each)	25%
(2)	Class presentations of readings or problems	5%
(2)	Exam #1	35%
(3)	Exam #2	35%

For graduate students, a term paper will be required for 10% of the grade, and the tests will count 30% each. **The graduate student term paper will be due December 4, 2018.**

Grades will be based approximately on a conventional scale with 90 or better being an A; 80 and better a B; 70 or better a C; 60 or better a D; and less than 60 an F. Some adjustment will be made based on the final class distribution.

**Homework assignments** are labs that provide examples of the skills required for the class and the profession, with applications to forest resources

**Exams** are tests of each student's grasp of the material presented in the class, including readings, lectures, and applications.

**Graduate Term Papers** are expected to be 8 to 10 page papers covering an application of one of the subjects covered in class applied to a specific topic, such as an investment analysis of a complex timber management or investment problem, a nonmarket valuation of carbon, agroforestry, or any other relevant topic. It should include a clear objective, appropriate literature, the application, economic calculations, and conclusions. It should include sections on objectives, literature, methods, analysis, results, and conclusions. Alternatively, graduate students may perform a preliminary economic analysis of a problem related to their Master's research.

**Forest Economics – FOR 319/519 Class Schedule 2018      Version #4; 15 September 2018**  
**Including most confirmed speakers; subject to change based on availability**

<b>August 23</b>	Introduction & Class Procedures
<b>August 28</b>	Forest Economics Overview Class Readings: Cubbage et al. 2007, Wagner 2012, Chapter 1
	<b>Topic 1: Production Functions and Economics - Principles</b>
<b>August 30</b>	Stand and Stock Tables and Growth and Yield Readings: Wagner, 2012 Chapter 2 <b>Homework Assignment – Lab 1: Stand and Stock Tables</b>
<b>September 4</b>	Global Timber Investments, 2005-2017 Reading: Cubbage et al. 2014
<b>September 6</b>	Production Economics and Production Functions Readings: Wagner, 2011, Chapter 2
<b>September 11</b>	Input-Output Relationships, Cost Functions, Relevant Costs Readings: Wagner, 2011, Chapter 3

- September 13** Class canceled due to Hurricane Florence  
**Lab 1 Due at 11:45 am on Moodle; bring hard copy to class on September 18**
- September 18** Timber Price Reporting Data, Conversion Factors, Robert Bardon  
Readings: Wagner 2011, Chapter 4, Bardon Handout  
**Homework Assignment – Lab 2 – Timber Stand Valuation**
- September 20** Profits, Multiple Inputs, and Multiple Products  
Reading: Wagner 2011, Chapter 5
- Topic 2: Capital Budgeting and Investment Analyses**
- September 25** Discounted Cash Flow Analysis and Capital Budgeting  
Readings: Wagner 2011, Chapter 8, Cabbage et al. 2012, p 1-20
- September 27** Analyzing and Making Forest Investments for Timber Investment Management Organizations; Ernest (Bo) Dixon, Global Forest Partners  
**Lab 2 Due**  
**Homework #3: Cash Flow Analyses & Capital Budgeting with Spreadsheets**
- October 2** Discounted Cash Flow Analysis of Timber and Environmental Services: Silvopasture in North Carolina; Stephanie Chizmar, NCSU PhD Student  
Reading: Chizmar et al. 2018
- October 4** **Fall Break**
- October 9** Nonmarket Valuation  
Erin Sills, Professor  
Reading: Wagner, Chapter 12
- October 11** Discount Rates, Risk, and Inflation  
Reading: Cabbage et al. 2012 p. 20-38, Wagner 2011, Chapter 10  
**Homework #3 Due**
- October 16** Capital Budgeting / Review for Exam 1
- October 18** **Exam #1: All Material Covered through October 16**
- Topic 3: Production Economics and Forest Operations**
- October 23** **Hofmann Forest Visit (optional / weather and site conditions permitting)**  
**Depart at 6:30 am, Biltmore Lower Lot**

<b>October 25</b>	Forest Operation Costs: Planting, TSI, Harvesting, Roads Readings: Cabbage and Duncan 2001 <b>Homework #4: Estimating Timber Harvesting Costs with Spreadsheets and the Auburn Harvesting Analyzer</b>
<b>October 30</b>	Forest Operation Costs: Planting, TSI, Harvesting, Roads Readings: Review Wagner, Chapter 3; Aust and others various dates
<b>Topic 4: Timber and Land Taxes and Appraisals</b>	
<b>November 1</b>	Timberland Appraisals and Valuation I – Principles and Lecture
<b>November 6</b>	Timberland Appraisals and Valuation II – Class Exercise <b>Lab 4 Due</b>
<b>November 8</b>	Federal Income Taxes Readings: Wagner 2011, Chapter 11, IRS Form 1040 <b>Homework Assignment – Lab 5: Timber Income Taxes</b>
<b>November 13</b>	Income Taxes for Timber - Greg Frey Readings: van der Hoeven and Megalos 2009
<b>November 15</b>	Property Taxes - Mark Megalos Readings: Hamilton and Bardon 2007
<b>Topic 5: Supply, Demand, Regional Economics</b>	
<b>November 20</b>	Regional Economic Analysis – Rajan Parajuli Readings: Dahal et al. 2015 <b>Homework #5 Due</b>
<b>November 22</b>	<b>Thanksgiving Holiday</b>
<b>November 27</b>	FIA Timber Supply Analyses and the SRTS Model– Bob Abt Readings: Abt et al. 2009
<b>November 29</b>	Demand / Bioenergy Karen Abt, USDA Forest Service (requested)
<b>December 4</b>	Supply and Demand Interactions – Comparative Statics Readings: Wagner Chapter 6
<b>December 6</b>	Review for Final Exam
<b>December 13</b>	<b>Final Exam      8:00 am – 11:00 am</b>

**Readings: Note: Reprinted in the class course pack with prior permission of:**

- 1) All *Journal of Forestry and Southern Journal of Forestry*: Reprinted with permission of the Society of American Foresters, Bethesda, MD.
- 2) All *Forest Products Journal*: Reprinted with permission of the Forest Products Society, Madison, Wisconsin.
- 3) All *Forest Landowner*: Reprinted with permission of Forest Landowners Association, Atlanta
- 4) *New Zealand Journal of Forest Science*: Open source journal.
- 4) All others: government documents—USDA Forest Service, NC Cooperative Extension Service, Forestry Trade Associations, or others—or manuscripts by Fred Cabbage and others. Any not in the Coursepack are available on the electronic library course reserves for this class.

**Citations:**

- Abt, Robert, Frederick Cabbage, and Karen Abt. 2009. Projecting southern timber supply for multiple products by subregion. *Forest Products Journal* 59(7/8):7-16.
- Aust, W.M., R.M. Visser, and W.A. Lakel, III. 2005. Estimation of road costs using an itemized planning guide. Technical Release 05-R-23. Forest Resources Association, Inc. Rockville, MD.
- Cabbage, Frederick and Douglas Duncan. 2001. Timber harvesting in the southern U.S.A.: trends in equipment, productivity, and costs. In: *Proceedings of SilvoArgentina II*. Published by University of Argentina at Eldorado. p. 164-178.
- Cabbage, Frederick, Robert Davis, Gregory Frey, and Diji Chandrasekharan Behr. 2013. Financial and Economic Evaluation Guidelines for Community Forestry Projects in Latin America. PROFOR & the World Bank, Latin America and the Caribbean Region. Accessed at: <http://www.profor.info/knowledge/community-forestry-enterprise-competitiveness-and-access-markets-mexico>. 21 February 2013.
- Dahal RP, Henderson JE; Munn IA (2015) Forest products industry size and economic multipliers in the U.S. South. *Forest Products Journal* 65(7/8):372-380.
- Forest Landowners Association. 2017. Timber Planting and Practice Costs.
- Hamilton, Rick A. and Robert E. Bardon. 2007. North Carolina's Forestry Present-Use Property Tax Program. Woodland Owner Note. NC Cooperative Extension.
- Hogaboam, Liliya S. and Steven R. Shook. 2004. Capital budgeting practices in the U.S. forest products industry: a reappraisal. *Forest Products Journal* 54(12):149-158.
- van der Hoeven, Guido and mark Megalos. 2009. Federal income taxes for timber growers. NCSU Extension Service, Forestry. Mimeo. 22 p.
- Werblow, Dennis A. and Frederick W. Cabbage. 1986. Forest harvesting equipment ownership and operating costs in 1984. *Southern Journal of Applied Forestry* 10(1):10-15.