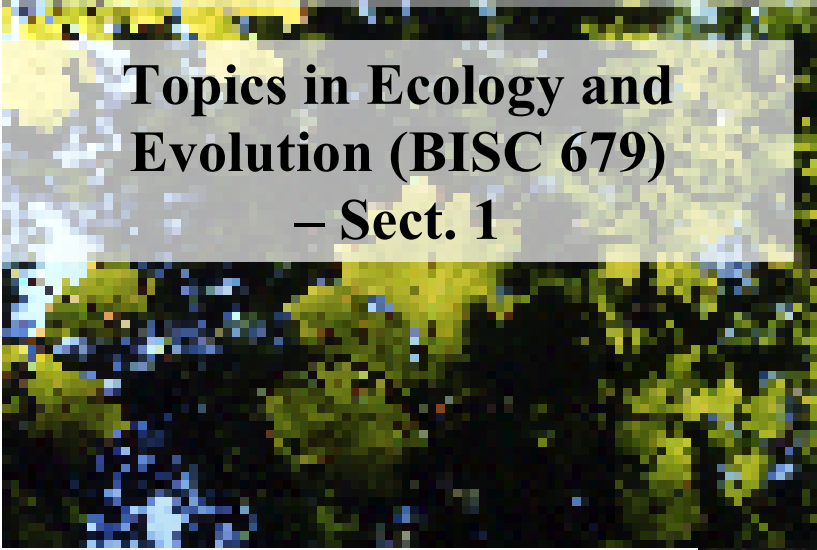
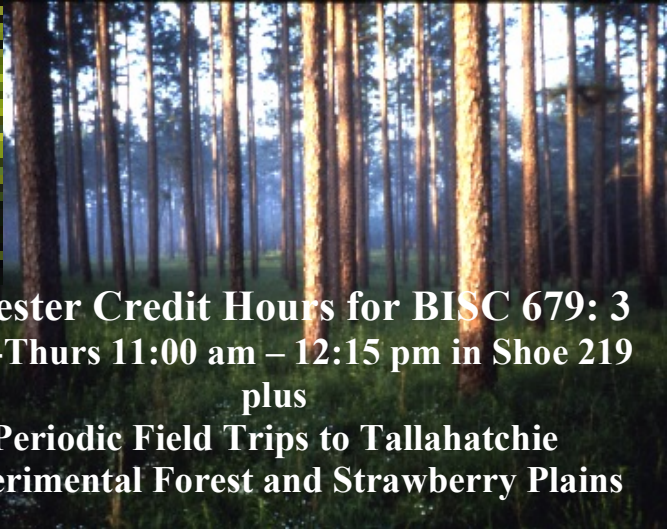


New Course: Ecology and Silviculture

Fall 2012



Topics in Ecology and Evolution (BISC 679) – Sect. 1



Semester Credit Hours for BISC 679: 3
Tues-Thurs 11:00 am – 12:15 pm in Shoe 219
plus
Periodic Field Trips to Tallahatchie
Experimental Forest and Strawberry Plains

Description – An investigation of the principles of forestry and silviculture (the art and science of tending forests to meet human needs) from an ecological perspective. The course will focus on the effects of various natural-regeneration-based forest management techniques on biodiversity, ecosystem processes and services, and wildlife habitat quality. In addition, it will investigate linkages between ecological theories of natural disturbances, methods of timber harvest, natural regeneration of trees, and ecological restoration.

Requirements – Attendance of all classes and scheduled field trips. The textbook – *Ecology and Silviculture of Oaks (2nd edition)* by Johnson, Shifley and Rogers is required.

Instructor – Steve Brewer

Grade - Your grade depends on your performance on mid-term and final take-home essay exams (30% each), class attendance (10%), basic tree identification (10%), and participation on the class project and the associated written report of the results (20%).

Grading Scale: THE PLUS/MINUS SYSTEM WILL BE USED IN THE CLASS.

A+ = 96.7 – 100%; A = 93.3 – 96.6%; A- = 89.9 – 93.2%; B+ = 86.6 – 89.8%; B = 83.2 – 86.5%; B- = 79.8 – 83.1%

Learning Outcome – After successfully completing this course, you will have a greater understanding and knowledge of fundamental ecological principles, as well as an appreciation of the primary scientific literature on the subject of ecological forestry and silviculture, particularly as it relates to tree species of the southern United States. This will be accomplished through a traditional lecture format, reading the required text and assigned readings, becoming familiar with southern tree species, and completing a class research project.

Independent Learning - The class designed to foster independent learning and thoughtful discussion of cutting edge topics in ecological forestry and silviculture, which will be of significant value in an academic or other professional career.

Contact Information - Office hours are by appointment or just after class. Email is the best way to contact me (jbrewer@olemiss.edu); Phone – 915-1077; Office – room 412 Shoemaker

Course Outline

Introduction: Ecological Forestry and Silviculture – Read Introductory Chapter in Text

Part I. Ecology

1. Oak-dominated Ecosystems

Introduction – Read text p. 8

The Taxonomy of Oaks – read text pp. 9-10; and assigned material

The Taxonomy and Distribution of Pines in Mississippi

Eastern Oak Forests

Central Hardwood Region – read text pp. 26-33

Southern Pine Hardwood Region – read text pp. 33-36 and assigned article: Surrlette et al 2008; Southeastern Naturalist

The Forest-Prairie Transition Region – read text pp. 36-40

The Influence of Climate Change – read text pp. 48-51

2a. Regeneration Ecology of Oaks I: Acorn Production, Seedling Establishment, and Sprouting – read text pp. 54, and 73-117

2b. Regeneration Ecology of Longleaf and Shortleaf Pines: Assigned readings

3. Regeneration Ecology of Oaks II. Population Dynamics

Introduction – read text page 134

Regeneration Strategy – read pp. 135 to 165

Part II. Site Productivity and Stand Development

4. Site Productivity

Introduction – read text pp. 188-189

Productivity and Related Self-sustaining Properties of Oak Forests – read text pp. 193-197

5a. Development of Natural Stands

Introduction – read text p. 216

Forest Canopy Layers – read text pp. 216-217

Disturbance – read text pp. 217-221

6. Self-Thinning and Stand Density

Introduction and Self-Thinning – read p. 250

Stand Density and Stocking: Terminology – read pp. 258-260

Part III. Silviculture, Growth and Yield

7. Even-aged Silvicultural Methods

Introduction – read text pp. 280-281

Natural Regeneration Methods – read text pp. 281-304 and assigned articles

The clearcutting method

The shelterwood method

The seed tree method

Economic, Environmental and Social Considerations – read pp. 359-361

8. Uneven-aged Silvicultural Methods

Introduction – read text pp. 379-381

The Single-tree Selection Method – read text pp. 381-383

Applicability to Oak Forests – read text pp. 396-410

- The Group Selection Method – read text pp. 411-418
- Economic, Environmental, Considerations – read pp. 419-421
- 9. Silvicultural Methods for Multi-resource Management
 - Introduction – read text p. 429
 - Oak Savannas and Woodlands – read text pp. 429-441 and assigned articles
 - Pine Savannas – read assigned articles/chapters
 - Managing Stands for Biomass Production and Carbon Sequestration – read pp. 455-465
 - Aesthetics – read pp. 473-477