INSTRUCTOR: Dr. Thomas Kuzmic

OFFICE & CONTACT INFO: Office: 015 Agricultural Hall
Office Hours: Immediately after class up to noon, and afternoons on Tuesday, Wednesday, and Thursday. It is best to arrange an appointment in advance if possible.
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TIME & PLACE: Monday, Wednesday & Friday, 10:30 - 11:20am, 019 Ag Hall

COURSE DESCRIPTION: A survey of forestry as an art, science and profession, covering topics in the human uses and values associated with forests and related natural resources; ecosystem services provided by forests; global forest biomes; forest distribution; tree biology and growth; forest ecosystem process and management; forest health and restoration; and career opportunities.

COURSE OBJECTIVES: By the completion of this course, you should be able to demonstrate your knowledge and skills in the following:

♦ Understand and appreciate the extent and importance of forest resources, how humans use and manage them, and environmental considerations and implications associated with forest use and management.

♦ Understand and appreciate the relationship between natural ecosystem process and well-conceived scientific management of forests by professional foresters as a continuing, sustainable, renewable resource that provides a broad diversity of amenities, goods and ecosystem services.

♦ Formulate a basic vocabulary of terminology related to trees, forests, forest ecosystems, and forest resource management.

♦ Develop an awareness of the career opportunities and challenges for foresters in federal, state, local, industrial and private non-industrial organizations and enterprises.

COURSE FORMAT: Lectures and class discussions complemented by PowerPoint slides, one required overnight fieldtrip (see details on next page), and homework assignments will comprise the course. All PowerPoints and course materials will be posted on D2L. Students are expected to attend class regularly and to take good notes for the optimal learning experience.

COURSE OUTLINE: An outline of course topics is attached. It is recommended that you refer to it on a regular basis to keep track of class progress.
No textbook is required. Some reading materials may be assigned from time to time. Specifically, students will be assigned to read one chapter from a book selected by the instructor that presents an informative and interesting story of how trees and forests played an important role in the early history of the United States. A written assignment will accompany this reading.

**FIELDTRIP:**

An overnight fieldtrip to southeastern Oklahoma is scheduled for October 20-21. Attendance is required! Students who cannot attend the fieldtrip should withdraw from the course this semester and enroll in a subsequent year when the trip better fits their schedule. See "Evaluation & Grading" scheme on the following page for additional policy regarding the fieldtrip.

We will depart campus at 7:00am on Thursday, Oct. 20, and travel in university vans to Broken Bow for a field-based program with the US Forest Service at the Ouachita National Forest. Then on Friday, Oct. 21, we will tour the field forestry operations of Weyerhaeuser timber company in the region. We will meet and interact with several professional foresters in their workplace environment. This is a splendid opportunity for students to get a good perspective of the practice forestry in different settings, and to meet real people doing real forestry work.

We will bunk overnight at the Kiamichi Forestry Research Station in Idabel. You will need to bring your own sleeping bag and pillow, or other suitable bedding. Everyone needs to be dressed for the field and prepared for the weather (long pants, sturdy shoes, no sandals, jacket, hat, raincoat, etc.), and to provide for their own meals as follows:

- sack lunch on Thursday
- dinner at restaurant on Thursday
- breakfast at fast-food place on Friday
- fast-food for Friday dinner (eat in the van on the way home)

A complimentary field lunch will be provided by Weyerhaeuser Company on Friday. We will return to campus by 8:00pm on Friday.

A fieldtrip report will be assigned.

**FEE IN ADDITION TO TUITION:** A transportation fee of $24 will be assessed to each student through the Bursar's office to cover the use of University vehicles for the fieldtrip.

**CANCELLED CLASSES:** There will be no class on the following days:

Friday, September 16
Friday, October 14 (Fall Break!)
EVALUATION
& GRADING:

Your performance in the course will be evaluated on the following basis:

Exams (3@100 points each) 300 points
Homework assignments (5@20 pts) 100 points
Book chapter reading assignment 100 points
Fieldtrip participation and report 100 points
TOTAL POINTS POSSIBLE 600 points

A = 540 - 600 points 90-100%
B = 480 - 539 points 80-89%
C = 420 - 479 points 70-79%
D = 360 - 419 points 60-69%
F = below 360 points 0-59%

Exams are scheduled for the following dates:
• Wednesday, September 14 (Week #5 at regular class time)
• Wednesday, October 19 (Week #10 at regular class time)
• Monday, December 5 (Final Exam Week at 10:00-11:50am)

The exams will not be comprehensive. Each will only include the material covered during the class sessions since the preceding exam.

**Failure to take an exam or submit an assignment on the scheduled date will result in a "zero" grade for that exam or assignment.** Students who anticipate or experience a credible difficulty with meeting a deadline should discuss their situation with the instructor during office hours, preferably before the scheduled exam date or homework deadline, or as soon as possible thereafter. Send an e-mail or make a phone call if you experience a credible reason for not being able to attend class on the day an exam is given or an assignment is due. Under all circumstances, you are responsible for all missed material as presented in the PowerPoints in class and available on D2L. There will be no make-up classes, reviews, or exams given. Of course, you may come by to ask questions about missed material after reviewing the PowerPoints.

**Students who miss the fieldtrip will receive an "Incomplete" (I) grade for the course and will be invited to attend a similar fieldtrip next Fall to resolve their "I" grade. There will be no substitute assignment available.** If you foresee conflicts with the fieldtrip dates and your other classes or your employment schedule, begin to work toward resolving those conflicts now. If the dates of the trip are in conflict with your personal schedule, then you should simply drop the course and find another for your class schedule.

OSU POLICY:

We will adhere to the standard University policy and schedule for **dropping or withdrawing from class** and for **academic integrity** (see next section) as printed in the University catalogue, the official OSU Syllabus Attachment (which is attached), and posted on the OSU website.
I am committed to upholding the Academic Integrity Policy of Oklahoma State University and you should be as well. I expect all students to align with the standards of academic integrity and ethical conduct as delineated in University Academic Regulation 6.12 in the OSU catalog and as presented at www.academicintegrity.okstate.edu on the OSU website. Behavior that violates the OSU academic integrity policy will not be tolerated and will be subject to disciplinary action.

My paramount goal is to incite understanding, awareness, appreciation and enthusiasm for trees, forests, and forestry. We all have a stake in our forests and how they are used and managed by and for people, to serve many uses, values, goods and services. Some of you have chosen this field as your major and career profession, and others are in the class to fulfill a requirement in another major. Some simply may be taking this course as an elective. Regardless, my assumption is that you all are interested in forestry and desire to learn more about it. We need to recognize and understand that we all depend on trees and forests for a broad diversity of uses, values, goods and services, every day of our lives! Trees and forests are certainly a key element of our "quality of life"!

I will do my best to provide you with an exciting and challenging academic experience. However, I want you to know and accept that it’s a two-way responsibility. I can only do so much. I expect each student to accept responsibility for their success in the course. I expect each of you to attend class regularly, to keep up with assignments and turn them in on time, to participate in class discussions, to ask questions, and to be motivated to learn and explore new ideas!
I. SETTING A FORESTRY FOUNDATION
   A. What is forestry?
   B. Forestry and natural resource ideologies
      1. Conservation
      2. Preservation
      3. Sustainability
      4. Commodity v. noncommodity
      5. Utilitarianism
      6. Anthropocentric v. biocentric
   C. Forest uses, values, goods and services
      1. Timber and non-timber resources
      2. Per capita consumption of wood and paper
   D. Key foundation concepts
      1. Forests, trees, and quality of life
      2. Forests are renewable resources
      3. Conundrum of human and natural time scales
      4. Linkage of science, social, political and economic elements
      5. Forest stewardship
      6. The "Greatest Good"

II. UNDERSTANDING TREES & WOOD
   A. What is a tree?
   B. Dendrology: the classification and identification of trees
      1. Gymnosperms
      2. Angiosperms
      3. Scientific names (binomials)
   C. Structural and functional parts of a tree
      1. Crown
      2. Woody stems
      3. Roots
      4. Leaves
      5. Vascular cells
   D. Tree physiological processes
      1. Photosynthesis
      2. Translocation
      3. Respiration
      4. Transpiration
      5. Water transport
      6. Physiological role of water
      7. Reproduction
      8. Floral terminology, condition and strategies
      9. Cones, fruit and seeds
   E. Tree growth processes
      1. Primary growth
      2. Secondary growth
   F. Woody stem anatomy and annual growth rings
   G. Dendrochronology: tree ring analysis and dating
   H. Wood
      1. Chemical and fiber structure
      2. Wood properties
      3. Wood and paper products
III. FOREST BIOMES OF THE WORLD

A. What is a forest?
   1. Open-canopy forests
   2. Closed-canopy forests
   3. Riparian forests

B. Status and extent of the global forest
   1. Distribution across the continents
   2. Distribution by biome
   3. Growth, loss, and human use
   4. Global forests and the Third-World

C. Factors affecting global forest distribution
   1. Climate
   2. Geography
   3. Geologic process
   4. Disturbance regimes

D. The Boreal Forest
   1. Geographic extent and landscape features, factors and phenomena
   2. Diversity (plant and animal)
   3. Human use and management potential

E. The Temperate Forest
   1. Geographic extent and landscape features, factors and phenomena
   2. Four temperate forest types
      a. broad-leaved deciduous temperate
      b. needle-leaved evergreen temperate
      c. mixed temperate
      d. broad-leaved evergreen temperate
   3. Diversity (plant and animal)
   4. Human use and management potential

F. The Tropical Forest
   1. Geographic extent and landscape features, factors and phenomena
   2. Four tropical forest types
      a. tropical rainforest
      b. drought-deciduous tropical forest
      c. mangrove forest
      d. subtropical forest
   3. Diversity (plant and animal)
   4. Human use and management potential
      a. deforestation
      b. slash and burn farming
      c. NGOs and sustainable programs

G. Forests of Oklahoma

IV. ECOLOGY OF FOREST ECOSYSTEMS

A. Ecological linkage between forests and people
B. Ecology defined
C. Environment
   1. Climatic components
   2. Edaphic components
   3. Topographic components
   4. Hydrologic components
   5. Scale: micro v. macro

D. Ecosystems
   1. Function and process
   2. Complexity
   3. Structural diversity
   4. Biotic diversity (biodiversity)
   5. Dynamic (change)
E. Factors influencing tree species distribution
   1. Tolerance
   2. Shade tolerance
   3. Light compensation point
   4. Light saturation point

F. Silvics

G. Ecological niche

H. Life history patterns
   1. Ruderal plants
   2. Competitor plants
   3. Stress tolerant plants

I. Nutrients and nutrient cycles
   1. Essential nutrients
   2. Nutrient inputs, outputs, availability and pools
   3. Nutrient transfer
   4. Symbiosis
   5. Carbon cycle

J. Forest succession
   1. Seral stages (pioneer, climax, subclimax)
   2. Sources of change
   3. Speed and process

K. Landscape patterns
   1. Elevational influence
   2. Latitudinal influence
   3. Geology and geomorphological influence
   4. Influence of animals, insects and disease
   5. Human influence

L. Ecological role of fire
   1. Natural fire regimes and fire-dependent ecosystems
   2. Negative effects of fire on ecosystems

M. Old-growth forests
   1. Characteristics of old-growth forests
   2. Values and issues associated with old-growth

N. Ecosystem restoration
   1. Objectives
   2. Case-study: Shortleaf pine-big bluestem ecosystem of the Ouachita highlands and the red-cockaded woodpecker

V. SILVICULTURE & FOREST ECOSYSTEM MANAGEMENT
   A. Definition and objectives
   B. Understanding and mimicking natural disturbance patterns
   C. Growth and development of forest stands
      1. Even-aged v. uneven-aged stands
      2. Rotation age
      3. Pure v. mixed stands
      4. Size classes (stage of development) of trees
      5. Crown classification of trees
   D. Silvicultural systems: a cycle of renewability
      1. Even-aged systems
         a. clearcutting system
         b. seed-tree system
         c. shelterwood system
      2. Uneven-aged system: selection system
      3. Silvical factors involved in the selection of a silvicultural system for forest stand management
   E. Site preparation for a renewed forest
      1. Objectives and challenges
2. Techniques
F. Regeneration of forest stands
   1. Natural regeneration
   2. Artificial regeneration
G. Stand tending and protection
   1. Site productivity
   2. Site index
   3. Treatments to manage and improve developing stands
      a. thinning
      b. fertilizer application
      c. pruning
      d. control of competing vegetation
      e. timber stand improvement (TSI)
   4. Protection from wildfire, insects, and disease
H. Timber harvest systems
   1. Planning elements
   2. Process, techniques and equipment
I. The regulated forest

VI. FOREST HEALTH & PROTECTION
   A. What is a forest health and a healthy forest?
   B. What is “forest protection”?
   C. Insect and disease interactions in the forest
   D. Diagnosis dilemma: sign v symptom
   E. Modes of insect attack
   F. Disease agents and mode of attack
   G. Negative effects of insects and disease
   H. Beneficial attributes of insects and microorganisms
   I. Forest pest management strategy
   J. Wildfire in the forest
      1. Causes of wildfire
      2. Wildfire policy development
      3. Factors affecting wildfire behavior
      4. Fire prerequisites: the Fire Triangle
      5. Fire suppression techniques (fire-fighting)
      6. The Smokey Bear story