DEPARTMENT: BIOLOGICAL SCIENCES

COURSE PREFIX: BIO **COURSE NUMBER: 554** **CREDIT HOURS: 4.0**

Department:	Biological Sciences	
Title:	BIO-554 - Dendrology & Forest Conservation	
Credit Hours:	4.0	
Instructor:	Suneeti Jog, Ph.D.	Email: sjog@murraystate.edu
Office:	Biology Building 1112L	Tel. (270) 809-4896
Office Hours:	Mon, Wed 10:00am – 3:00pm	
Class Meets:	Lecture – Tue, Thur 12:30 - 1:45PM Lab – Tue 2:00PM - 5:30PM	

I. TITLE: BIO-554 - Dendrology & Forest Conservation

II. COURSE DESCRIPTION AND PREREQUISITE(S): This course is designed to teach students three main bodies of knowledge. (1) First is an ability to identify common tree species in the eastern US by family, Latin binomial and common name and to know their natural histories and value as timber and habitat. (2) Second is an understanding of how these various species interact with each other and their environment to compose functioning forests. (3) Third is knowledge of forest management strategies for a wide range of natural resource goals. With this knowledge, students will "see both the forest and the trees." Class will comprise 3 hours of lecture and 4 hours of field-oriented lab per week.

Prerequisite(s): BIO 216 and BIO 222

III. COURSE OBJECTIVES:

The student will be able to:

A. identify the common species of woody plants of western Kentucky;
B. describe the natural histories of those same species;
C. identify woody plants in winter condition
D. distinguish between various species of oaks
E. identify the most important of these for ecosystem services, timber, and wildlife food and habitat;
F. describe different ecological niches (e.g., pioneers, shade tolerants) for woody plants growing in the forest environment;
G. describe what is meant by the term "forest succession" along with some problems associated with this term;
H. describe the processes by which forests regenerate following disturbances;
I. describe forest types
J. learn about various forest products

IV. CONTENT OUTLINE:

A. Field identification of woody plants of the eastern US in both growing and dormant seasons
   1. Basic botanical features used for identification – morphological vocabulary of leaves, flowers and fruits
   2. Features and morphological vocabulary for dormant season ID – bark, twigs, buds and fruits
   3. Morphological features of locally important taxa (families, genera, and species) of woody plants
   4. Natural histories of locally important woody plant species
   5. Importance of particular species for timber, wildlife food and habitat, and ecosystem services
B. Trees in the forest environment
   1. Resource needs of woody plants – light, moisture and nutrients
   2. The role of environmental heterogeneity: slope, aspect, light regime, moisture gradients, etc.
   3. Ecological niches and biotic interactions in the forest

C. The process of forest regeneration
   1. Definition, advantages and shortcomings of the concept of "forest succession"
   2. The process by which forests regenerate following disturbances

D. Introduction to silviculture for the eastern US
   1. Basic concepts of silviculture – managing forest for specific resource goals

V. INSTRUCTIONAL ACTIVITIES:

Weekly field trips, lecture by instructor, group project, quizzes, in class assignments, and exams.

VI. FIELD, CLINICAL, AND/OR LABORATORY EXPERIENCES:

This 4-credit course will include one 4-hour trip to the field weekly. The primary objective of these trips will be to learn to identify trees in the forest environment. In addition, the instructor will reinforce classroom instruction on forest ecology, and silviculture. Destinations will be local trees and forests in western Kentucky. In addition, there will be a group project that students will participate in which will involve identification and categorization of tree species on campus. This is considered a service learning project.

VII. TEXT(S) AND RESOURCES:

Kirkman, L.K., Brown, C.L. and Leopold, D.J. 2007. **Native Trees of the Southeast: An Identification Guide.** Timber Press. Portland, OR, USA.

vTree Tree Identification App by Virginia Tech for Android and iPhone. Info at: https://www.youtube.com/watch?v=7115NuRF7P0

Web and Online Resources:

USDA Plant Database, including photos, range maps and botanical illustrations for virtually all plants in North America: http://plants.usda.gov/java/

Vanderbilt trees of SE USA, including multiple photos of leaves, bark, fruit, and buds for each species: http://bioimages.vanderbilt.edu/metadata.htm?//se-trees/list/se-trees

University of Tennessee Knoxville herbarium site, with most vascular plants encountered in western KY: http://tenn.bio.utk.edu/vascular/vascular.shtml

Excellent field guide to eastern oaks with photos of leaves, acorns, bark and range maps: http://www.fs.fed.us/foresthealth/technology/pdfs/fieldguide.pdf

Equipment: Hand lens – at least **7X** (10X is ideal), strong pocket knife, clipboard or field notebook, appropriate field clothing, closed toed shoes.

VIII. EVALUATION AND GRADING PROCEDURES:

QUIZES AND ASSIGNMENTS	**50**
EXAMS	**450**
FINAL EXAM	**200**
TOTAL	**700**

Scale: 90-100% (630-700) = A; 80-89% (560-629) = B; 70-79% (490-559) = C; 60-69% (420-489) = D; < 60% (420) = E

IX. ATTENDANCE POLICY:

Students are expected to adhere to the MSU Attendance Policy outlined in the current *MSU Bulletin*. Students are required to attend all field/laboratory sessions; make-ups are not possible nor permitted. Missing class is the single most damaging thing a student can do to his/her grade.

X. ACADEMIC HONESTY POLICY:

Murray State University takes seriously its moral and educational obligation to maintain high standards of academic honesty and ethical behavior. Instructors are expected to evaluate students' academic achievements accurately, as well as ascertain that work submitted by students is authentic and the result of their own efforts, and consistent with established academic standards. Students are obligated to respect and abide by the basic standards of personal and professional integrity.

Violations of Academic Honesty include:

Cheating - Intentionally using or attempting to use unauthorized information such as books, notes, study aids, or other electronic, online, or digital devices in any academic exercise; as well as unauthorized communication of information by any means to or from others during any academic exercise.

Fabrication and Falsification - Intentional alteration or invention of any information or citation in an academic exercise. Falsification involves changing information whereas fabrication involves inventing or counterfeiting information.

Multiple Submission - The submission of substantial portions of the same academic work, including oral reports, for credit more than once without authorization from the instructor.

Plagiarism - Intentionally or knowingly representing the words, ideas, creative work, or data of someone else as one's own in any academic exercise, without due and proper acknowledgement.

Instructors should outline their expectations that may go beyond the scope of this policy at the beginning of each course and identify such expectations and restrictions in the course syllabus. When an instructor receives evidence, either directly or indirectly, of academic dishonesty, he or she should investigate the instance. The faculty member should then take appropriate disciplinary action.*

Disciplinary action may include, but is not limited to the following:

1) Requiring the student(s) to repeat the exercise or do additional related exercise(s).
2) Lowering the grade or failing the student(s) on the particular exercise(s) involved.
3) Lowering the grade or failing the student(s) in the course.

If the disciplinary action results in the awarding of a grade of E in the course, the student(s) may not drop the course.

***The policy for any form of cheating in this class (BIO 554) is as follows:**

For the first instance of cheating, the guilty student(s) will receive a zero (0) on that assignment.
For the second instance of cheating, the guilty student(s) will receive an E in the course.

Faculty reserve the right to invalidate any exercise or other evaluative measures if substantial evidence exists that the integrity of the exercise has been compromised. Faculty also reserve the right to document in the course syllabi further academic honesty policy elements related to the individual disciplines.

A student may appeal the decision of the faculty member with the department chair in writing within five working days. Note: If, at any point in this process, the student alleges that actions have taken place that may be in violation of the Murray State University Non-Discrimination Statement, this process must be suspended and the matter be directed to the Office of Institutional Diversity, Equity and Access. Any appeal will be forwarded to the appropriate university committee as determined by the Provost.

NON-DISCRIMINATION STATEMENT

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, sex, gender identity, sexual orientation, religion, age, veteran status, or disability in employment or application for employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities.

In particular and without limiting the preceding and pursuant to and consistent with the requirements of Title VI of the Civil Rights Act of 1964 and its regulations 34 CFR 100 et seq.; Section 504 of the Rehabilitation Act of 1973 and its regulations 34 CFR 104; Title IX of the Education Amendments of 1972, 20 USC 1681 et seq., and its regulations 34 CFR 106 et seq; and the Age Discrimination Act of 1975 and its regulations 34 CFR 110, Murray State University does not

discriminate on the basis of race, color, national origin, sex, handicap, or age in its educational programs and activities. This non-discrimination in education programs and activities extends to employment and admissions and to recruitment, financial aid, academic programs, student services, athletics, and housing. Murray State is required by Title IX and 34 CFR part 106 not to discriminate on the basis of sex and the prohibition against sex discrimination specifically includes a prohibition of sexual harassment and sexual violence.

For information regarding nondiscrimination policies contact the Executive Director of IDEA/Title IX Coordinator, Camisha Duffy, Office of Institutional Diversity, Equity and Access, 103 Wells Hall, Murray, KY 42071. Telephone: 270-809-3155 (Voice) 270-809- 3361 (TDD).

STATEMENT ADDRESSING STUDENTS WITH DISABILITIES

Students with Disabilities: Students requiring special assistance due to a disability (temporary or permanent) should visit the Office of Student Disability Services immediately for assistance with accommodations. For more information, students with disabilities should contact the Office of Student Disability Services, Ken Ashlock, 423 Wells Hall, Murray, KY 42071. Telephone: 270-809-2018 (Voice) 270-809- 5889 (TDD).

XI. TENTATIVE LECTURE / LAB SCHEDULE:

August 20/22	Introduction, Taxonomic hierarchy, Leaf Lab, Use of Taxonomic Keys, FIELD TRIP: MSU Campus
August 27/29	Forest types, **QUIZ 1, 2**, FIELD TRIP: Hancock Biological Station
September 3/5	Tree morphology, **QUIZ 3**, FIELD TRIP: Hematite Lake
September 10/12	Tree architecture, **QUIZ 4,** FIELD TRIP: Keying, Central Park
September 11/13	Tree architecture, **QUIZ 5/6,** FIELD TRIP: MSU Campus
September 18/20	**QUIZ 7** FIELD TRIP: Bear Creek, keying of oaks
September **25**/27	**EXAM 1** (Lecture notes, field notes, labs, identifications, keying), tree anatomy
October 2/4	Student group project: tree characterization on MSU Campus.
October 9/11	Introduction to Oaks – how to tell them apart, keying, review of oaks
October 16/18	Forest Ecology, Diseases
October 23/25	Fire Management, Forest products, **QUIZ 8**, FIELD TRIP: Murphy's Pond
October 30/Nov1	LAB: Winter twig identification, Fruits, twigs, acorns, Keying, **QUIZ 9**
November 6/8	**QUIZ 10**, FIELD TRIP: Clark's River NWR
November **13**/15	**EXAM 2,** Urban and community forests
November 20/22	Keying/ MSU Campus, **Thanksgiving – No class on Nov 22**
November **27**/29	**CUMULATIVE FINAL LAB EXAM,** Use of Taxonomic Keys
December 4	**FINAL EXAM**