

FO 4313/6313 – Spatial Technologies in Natural Resources Management
Lecture: Mon, Wed, Fri 10:00-10:50 Rm 208 THX
Lab: Wed 12:00-2:50 or 3:00-5:50 Rm 308 THX

Instructor: David L. Evans
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 Office Hours: 8:00-9:00 Mon-Fri or by appointment

Lab Assistants: Casey Johnston – 12-2:50
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 Ben Elam – 3-5:50
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Course Description:

Spatial Information Technologies used in natural resource assessment and management include Global Positioning Systems (GPS), Remote Sensing (RS) systems, and Geographic Information Systems (GIS).

This course provides the opportunity to learn the use of spatial technologies in natural resource management. The skills you will learn are essential for making timely decisions in the information age. You will be exposed to the basic elements of spatial technologies but it is ultimately your responsibility to assimilate this knowledge and utilize it to develop and refine your professional skills.

Prerequisite: FO 3015 or GR 2313 or consent of instructor

YOU MUST CHECK WITH INSTRUCTOR IF YOU HAVE A VISUAL IMPAREMENT. FAILURE TO MEET THE PREREQUISITES OR OBTAIN INSTRUCTOR CONSENT WILL RESULT IN YOU BEING DROPPED FROM THE COURSE.

Class Schedule and Due Dates:

First exam **Sep 16**
Fall Break **Oct 5**
Second exam **Oct 16**
Final exam **Fri, Dec 4, 8:00-11:00**

Lecture Descriptions		Labs	Lab Date
1) Syllabus, Course Introduction	1 Lecture		No labs Aug 19
2) Maps, Earth Models, Datums, Coordinate Systems, Projections	2 Lectures		
3) Navigation and Positioning Systems Introduction, GPS	2 Lectures	Navigation, GPS	Aug 26
4) Electromagnetic Radiation	1 Lecture		
5) Introduction to Remote Sensing	1 Lecture		
6) Aerial Photography	2 lectures	GPS	Sep 2
7) Image Interpretation, Applications of Image Interpretation	2 Lectures		
Review for Exam 1	1 Lecture	RS/Aerial	Sep 9

		Photos	
Exam 1	Tentative Wed, Sep 16th	No lab in Exam Week	No Labs Sep 16
8) Photogrammetry: Scale, Distance, Area, Height Measurements	2 Lectures	Aerial Photos Cont'd	Sep 23
9) Digital Remote Sensing Concepts Digital Aerial and Satellite Sensors	2 Lectures		
10) Digital Image Analysis	3 Lectures	Digital Image Analysis	Sep 30
11) Large Area Resource Estimation (MIFI inventory)	1 Lecture	Digital Image Analysis	Oct 7
12) Change Detection	1 Lecture		
Review for Exam 2	1 Lecture		
Exam 2	Tentative Fri, Oct 16	No Lab In Exam Week	No Labs Oct 14
13) Geographic Information Systems Overview	1 Lecture	Intro to GIS	Oct 21
14) GIS Data Structures / Topology	2 Lectures		
15) GIS Data Input / Editing	1 Lecture	GIS Data Input/Editing	Oct 28
16) GIS Data Exploration / Basic Operations	2 Lectures		No Labs Nov 4
17) GIS Modeling / Surfacing	1 Lecture		
18) Cartography and GIS	1 Lecture	GIS Outputs	Nov 11
19) GIS Organizational Issues Data Standards/Accuracy	2 Lectures		
20) Visualization	1 Lecture	Visualization	Nov 18
21) GIS Applications Readings	2 Lectures		
Review for Final Exam	1 Lecture		
Final Exam	Fri, Dec 4, 8- 11:00		

Learning Objectives:

1. Develop a basic understanding of the nature and representation of geographic data;
2. Develop a working knowledge of the use of aerial photography and other imagery used in natural resource assessments;
3. Teach interpretation and measurement techniques used to extract information from aerial and satellite imagery;
4. Teach methods of spatial data collection and manipulation for resource assessment;
5. Provide hands-on opportunities to use equipment and software commonly used in professional practices in natural resource management.

Course Materials:

Textbook – none.

Lecture materials and lab assignments are provided on MyCourses - www.mycourses.msstate.edu. Other assigned readings may be posted there as well.

Class/Lab Assignments:

Graduate students who elect to take this course for graduate credit will be required to develop a short additional written review of literature on use of a spatial technology in their respective fields of interest. A topic for this report is due prior to Fall Break. This report is factored into the last exam grade as 25% of the grade.

Lab assignments vary based on the nature of each exercise and are due either the day of the exercise or the following week based on the instructions in lab handouts and direction given by the instructor.

Methods of Evaluation and Standards of Achievement:

Grading: $\geq 90\%$ A; 80-89% B; 70-79% C; 60-69% D; $< 60\%$ F.

Exam 1	15%	
Exam 2	20%	
Final Exam	25%	
Unannounced lecture quizzes	10%	There will be no make-up quizzes.
Lab quizzes/assignments	30%	

Much of the information presented in this course is built upon and used throughout the course. Therefore, material covered on successive exams is cumulative. Missed exams may not be taken at a later date. With prior approval for documented excused absence, an exam may be taken early. Otherwise, the next exam counts for both the missed and next exam. Exam format is short-answer and essay. Lecture quizzes will be based on the previous lecture's material and/or assigned reading for the day.

Graduate students: who elect to take this course for graduate credit will be required to develop a short additional written review of literature on use of a spatial technology in their respective fields of interest. A topic for this report is due prior to Fall Break. This report is factored into the last exam grade as 25% of that grade.

General Class Information:

I expect each student to make every effort to fully participate in all aspects of the class and lab. Attendance is considered mandatory. If you know in advance that you will have to miss a class or lab, you must notify the instructor. Please arrive in the class or lab prepared for the day's topic by reading the assigned material and by reviewing your notes. Assistance outside of regular class hours may be obtained either in regular office hours or by appointment.

The use of cell phones or computers for talking, texting, checking email, playing games, etc. is not permitted in the classroom or lab. Please turn your cell phone off or set to "Silent" or

“Vibrate” if you want to be able to receive any potential Maroon Alert messages. Know that if the possibility of severe weather exists, I will be monitoring it.

Please read and follow the advice given in the document “**Professional Expectations for Students in the Forestry Program**” given on MyCourses web site.

Student Honor Code:

Mississippi State has an approved Honor Code that applies to all students. The code is as follows: “**As a Mississippi State University student, I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.**” Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code. For additional information, please visit: <http://honorcode.msstate.edu/policy>.

Title IX:

MSU is committed to complying with Title IX, a federal law that prohibits discrimination, including violence and harassment, based on sex. This means that MSU’s educational programs and activities must be free from sex discrimination, sexual harassment, and other forms of sexual misconduct. If you or someone you know has experienced sex discrimination, sexual violence and/or harassment by any member of the University community, you are encouraged to report the conduct to MSU’s Director of Title IX/EEO Programs at 325-8124 or by e-mail to: titleix@msstate.edu. Additional resources are available at: <http://www.msstate.edu/web/security/title9-12.pdf>, or at <http://students.msstate.edu/sexualmisconduct/>.

Support Services:

Students who need academic accommodations based on a disability should visit the Office of Student Support Services, 01 Montgomery Hall, call 662-325-3335, or visit the website at www.sss.msstate.edu.