

## **GEOG 5225 – Geographic Applications of Remote Sensing**

### **Instructor**

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### **Teaching Assistant**

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### **Lectures/Labs**

0140 Derby Hall, Tu Th 11:10-12:30PM

### **Course Website**

The course schedule, announcements, lecture notes, lab assignments, readings, and other course information will be posted on Carmen (<https://carmen.osu.edu>).

### **Course Description**

This course provides an introduction to the fundamentals of remote sensing and its geographic applications. Lectures will focus on basic concepts and techniques in remote sensing data acquisition and analysis. Examples from a variety of topical areas will be used to illustrate how the information derived from remotely sensed data can be used in geographic studies. Computer laboratory exercises are designed to help students to gain hands-on experiences on the digital processing of remotely sensed data. Students are expected to complete a project that applies remote sensing techniques to solve a real-world problem.

### **Required Textbook**

Jensen, John R., 2015, *Introductory Digital Image Processing: A Remote Sensing Perspective*, Prentice Hall: Upper Saddle River, NJ, 4<sup>th</sup> ed., ISBN 9780134058160.

### **Optional Reference**

Jensen, John R., 2007, *Remote Sensing of the Environment: An Earth Resource Perspective*, Prentice Hall: Upper Saddle River, NJ, 2<sup>nd</sup> ed., ISBN 9780131889507.

## Course Evaluation

Final course grades will be based on the following weighting of assessment components:

- **Participation (20%):** Class attendance and participation is expected for all students. Students will receive credits for participating in-class activities including class exercises, presentations, and discussions.
- **Laboratory exercises (35%):** The laboratory exercises will require the use of ERDAS Imagine. All lab assignments should be turned in on time. Late submissions will NOT be accepted. Your lowest score will be dropped in the calculation of the final grade.
- **Examination (15%):** There will be an in-class examination in the second half of the semester. The exact exam date depends on the actual course progress and will be announced later. Students must take the exam to receive credits. No make-up exam will be given unless legitimate documents for medical or personal emergency are presented **prior to** the exam.
- **Final project (30%):** Students are required to complete a final project that applies remote sensing techniques to solve a real-world problem of their own interest. The project deliverables include a proposal, an oral presentation, and a final report. The oral presentation is scheduled at the last week of the semester. The requirements and due dates for the proposal and final report will be discussed in class.

Final course grades will be assigned based on the following grading scale:

**A:** 93–100 | **A-:** 90–92 | **B+:** 87–89 | **B:** 83–86 | **B-:** 80–82 | **C+:** 77–79

**C:** 73–76 | **C-:** 70–72 | **D+:** 67–69 | **D:** 60–66 | **F:** below 60

## Student Responsibility

You are responsible for your own learning. I am here solely to facilitate your learning. I will help you as much as I can, but learning the material is ultimately up to you. This includes:

- Attending class meetings or getting notes from others if you miss class;
- Asking questions when you have them, either in class or out of class;
- Doing the assignments on time and participating in class;
- Contacting me if you have difficulties.

## Communication Devices

Cell phones and other communication devices must be either turned off or put on vibrate during class. Please refrain from texting during class as a courtesy to those sitting around you. All electronic devices other than a calculator must be shut off and put away during examinations.

## Academic Misconduct

Please help maintain an academic environment of mutual respect and fair treatment. It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term academic misconduct includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). Academic misconduct will not be tolerated and will be dealt with procedurally in accordance with university policy, which is available at <http://oaa.osu.edu/coam.html>. The Code of Student Conduct can be found at <http://studentaffairs.osu.edu/csc/>.

## Disability Services

All students who feel they may need accommodations based on the impact of a disability should contact the instructor privately to discuss their specific needs. Students with documented disabilities must also contact the Office of Disability Services (ODS) in 150 Pomerene Hall (614-292-3307) to coordinate reasonable accommodations for the course. ODS forms must be given to your instructor as early in the semester as possible to be filled out and returned to you.

## Receiving an 'I' for the Course

You cannot receive an incomplete for the course unless 70% of the work in the course has been completed. Extenuating circumstances will be handled on a case-by-case basis.

## Course Schedule

A tentative course schedule is given below. Students should check the course website on Carmen frequently for updates.

Week	Date	Topics	Readings
1	01/12	Introduction to Remote Sensing	Ch. 1
	01/14	Lab 1: Introduction to ERDAS/Imagine	
2	01/19	Remote Sensing Basics	Ch. 1, Ch. 2
	01/21	Remote Sensing Basics	Ch. 1, Ch. 2
3	01/26	Remote Sensing Systems	Ch. 2
	01/28	Lab 2: Data and Image Resources	
4	02/02	Image Statistics	Ch. 4
	02/04	Lab 3: Image Statistics and Visualization	
5	02/09	Image Preprocessing I: Radiometric Correction	Ch. 6
	02/11	Lab 4: Atmospheric Correction	

6	02/16	Image Preprocessing II: Geometric Correction	Ch. 7
	02/18	Lab 5: Geometric Correction	
7	02/23	Image Enhancement	Ch. 8
	02/25	Lab 6: Image Enhancement	
8	03/01	Classification Overview	Ch. 9
	03/03	Classification Algorithms	Ch. 9
9	03/08	Accuracy Assessment	Ch. 13
	03/10	Lab 7: Image Classification	
10	03/15	<i>Spring Break</i>	
	03/17	<i>Spring Break</i>	
11	03/22	In-Class Exam (Tentative)	
	03/24	Change Detection	Ch. 12
12	03/29	AAG in SF: Working on Final Project	
	03/31	AAG in SF: Working on Final Project	
13	04/05	Remote Sensing Applications I	Assigned reading
	04/07	Remote Sensing Applications II	Assigned reading
14	04/12	Remote Sensing Applications III	Assigned reading
	04/14	Remote Sensing Applications IV	Assigned reading
15	04/19	Project Presentation	
	04/21	Project Presentation	