GEOG 5225 – Geographic Applications of Remote Sensing

Instructor

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Lectures/Labs

0135 Derby Hall, TuTh 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, 4th ed., ISBN 9780134058160.

Optional Reference

Jensen, John R., 2007, *Remote Sensing of the Environment: An Earth Resource Perspective*, Prentice Hall: Upper Saddle River, NJ, 2nd 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 be penalized by 10% per day late.
- **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. More detailed information on the final project 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. For additional information, see the Code of Student Conduct at http://studentlife.osu.edu/csc/.

Disability Services

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. You are also welcome to register with Student Life Disability Services to establish reasonable accommodations. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

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.

Weekly Topics

A tentative outline of weekly topics is given below. Students should check the course website frequently for updates.

Week	Topics	Readings
1	Introduction	Ch. 1
2	Remote sensing basics	Ch. 1, Ch. 2
3	Remote sensing systems	Ch. 2
4	Image statistics	Ch. 4
5	Image preprocessing: radiometric correction	Ch. 6
6	Image preprocessing: geometric correction	Ch. 7
7	Image enhancement	Ch. 8
8	Classification overview	Ch. 9
9	Classification algorithms	Ch. 9, Ch. 13
10	*Spring break*	
11	Change detection	Ch. 12
12	Remote sensing applications	Assigned reading
13	Working on final project	
14	Remote sensing applications	Assigned reading
15	Final project presentation	