

GEOG 4400 – Introduction to Remote Sensing

Fall, 2010. Thursday 6:00 - 8:50 PM, EESAT 336

(This syllabus is for undergraduates only. See GEOG 5960 for the graduate syllabus)

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Office Hours: Wed 2:30 – 4:00 PM, Thu 2:30 – 4:00 PM, or by appointment.

Objectives

This course is designed to introduce the principles of remote sensing and image analysis, including:

- (1) The fundamental characteristics of electromagnetic radiation and how the energy interacts with Earth surface materials;
- (2) Remote sensing platforms and instruments;
- (3) Principles of visual interpretation and basic skills of digital image display and analysis; and
- (4) Remote sensing of vegetation, water, soils, minerals, geomorphology, and urban landscape.

Textbook

Jensen, John R., 2006, *Remote Sensing of the Environment: An Earth Resource Perspective* (2nd edition), Prentice Hall: Upper Saddle River, NJ, 608 pages.

Lab and Homework

Each class has an instruction session followed by an in-class lab session. Five individual homework assignments will be turned in and marked. Late homework will be marked down 10% for every day late. Students are required to read designated chapters for each week.

Grading Structure (90-100: A 80-89: B 70-79: C 60-69: D 0-59: F)

| | Undergraduates | Graduates |
|----------------------|-----------------------|------------------|
| Homework (5) | 50% | 40% |
| Mid-term Examination | 25% | 20% |
| Final Examination | 25% | 20% |
| Course Project | - | 20% |
| Total | 100% | 100% |

Schedule (* with homework assignments due in two weeks).

| Week | Date | Topic | Homework |
|-------------|-------------|--|--|
| 1 | 08/26 | What Is Remote Sensing? Exercise 1: Using ERDAS Imagine Image Processing Software | Chapters 1, 2, and 3 |
| 2* | 09/02 | Electromagnetic Radiation Principles Exercise 2: Measurement and Analysis of Target Reflectance (Homework 1) | Chapter 5 |
| 3 | 09/09 | Elements of Visual Interpretation Exercise 3: Interpretation and Analysis of Aerial and Satellite Imagery (1) | Chapter 7 |
| 4* | 09/16 | Multispectral Remote Sensing Systems (1) Exercise 4: Interpretation and Analysis of Aerial and Satellite Imagery (2) (Homework 2) | Chapter 8 |
| 5 | 09/23 | Multispectral Remote Sensing Systems (2) Exercise 5: Thermal Infrared Image Interpretation | Chapters 8 & 9 |
| 6 | 09/30 | Hyperspectral Remote Sensing Exercise 6: Imagery on the Internet | Chapter 9 |
| 7* | 10/07 | Active and Passive Microwave, and LIDAR Remote Sensing (1) Exercise 7: Analysis and Interpretation of Radar Imagery (Homework 3) | Review |
| 8 | 10/14 | Mid-term Examination | Chapter 9 |
| 9 | 10/21 | Active and Passive Microwave, and LIDAR Remote Sensing (2) Exercise 8: Analysis and Interpretation of Radar Imagery (continued) | Chapter 10 |
| 10* | 10/28 | Remote Sensing of Vegetation Exercise 9: Remote Sensing of Vegetation (Homework 4) | Chapter 11 |
| 11 | 11/04 | Remote Sensing of Water Resources Exercise 10: Remote Sensing of Water Resources | Chapter 12 |
| 12* | 11/11 | Remote Sensing of Urban Landscapes Exercise 11: Remote Sensing of Urban Landscapes (Homework 5) | Chapter 13 |
| 13 | 11/18 | Remote Sensing of Soils, Minerals, and Geomorphology Exercise 12: Remote Sensing of Soils and Geomorphology | Chapter 13 |
| 14 | 11/25 | Thanksgiving (university closed) | |
| 15 | 12/02 | Review | |
| 16 | 12/09 | Pre-Final Week – prepare for final exam and work on projects | |
| 17 | 12/16 | Final Examination (6:00 pm - 8:00 pm) | Graduate students submit project report. |

Statement on Cheating and Plagiarism

Students caught cheating or plagiarizing will receive a "0" for that particular assignment or exam. Additionally, the incident will be reported to the Office of Student Rights and Responsibilities for further penalty. According to the UNT catalog, the term "cheating" includes, but is not limited to:

- a. Use of any unauthorized assistance in taking quizzes, tests, or examinations;
- b. Dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;

- c. The acquisition, without permission, of tests or other academic material belonging to a faculty or staff member of the university;
- d. Dual submission of a paper or project, or resubmission of a paper or project to a different class without express permission from the instructor(s); or
- e. Any other act designed to give a student an unfair advantage.

The term "plagiarism" includes, but is not limited to:

- a. The knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment; and
- b. The knowing or negligent unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

Classroom Courtesy

Please follow these guidelines to avoid disrupting the class:

- a. Turn off cell phones before arriving;
- b. Do not arrive late or leave early (except for a bathroom break or emergency);
- c. Do not sleep during class;
- d. Do not work on other assignments during class;
- e. Do not talk or whisper to neighbors (except for formal class interaction).

Accommodations

The Department of Geography, in cooperation with the Office of Disability Accommodation, complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request before the 12th class day.

Student Evaluation of Teaching Effectiveness (SETE)

The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SETE to be an important part of your participation in this class. At the end of the semester, please visit <https://sete.unt.edu> and login using your EUID and password to complete the short survey.
