GEOG 5960 – Introduction to Remote Sensing
Fall, 2016. Thursdays 6:00 - 8:50 PM, ENV 336
(This syllabus is for graduates only. See GEOG 4400 for the undergraduate syllabus)

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Office Hours: Mondays 8:00 – 9:30 AM, Thursdays 8:00 – 9:30 AM, or by appointment.

Objectives

This course is designed to introduce principles of remote sensing and image analysis, including:
(1) 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 application examples;
(4) Techniques of digital image display, processing, and analysis; and
(5) Remote sensing of vegetation, water, soils, minerals, geomorphology, and urban environments.

Textbook


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.

Project

As a graduate student, you are required to complete an individual project on methods or applications of remote sensing. Detailed requirements of the project will be distributed in class. The project report (5-10 single-spaced pages) should be submitted in the final week on or before December 15.

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

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<thead>
<tr>
<th></th>
<th>Undergraduates</th>
<th>Graduates</th>
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<tbody>
<tr>
<td>Attendance and Labs</td>
<td>10%</td>
<td>10%</td>
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<tr>
<td>Homework (5)</td>
<td>50%</td>
<td>40%</td>
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<tr>
<td>Mid-term Examination</td>
<td>20%</td>
<td>15%</td>
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<tr>
<td>Final Examination</td>
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<tr>
<td>Course Project</td>
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<td>15%</td>
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<td><strong>Total</strong></td>
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Extra Credit

The Department of Geography and the Environment does not allow extra credit assignments (work not specified on a course syllabus).

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

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Homework</th>
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| 1    | 09/01 | What Is Remote Sensing?  
Exercise 1: Using ERDAS Imagine Image Processing Software | Chapters 1, 2, and 3 |
| 2*   | 09/08 | Electromagnetic Radiation Principles  
Exercise 2: Measurement and Analysis of Target Reflectance  
(Homework 1) | Chapter 5 |
| 3    | 09/15 | Elements of Visual Interpretation  
Exercise 3: Interpretation and Analysis of Aerial and Satellite Imagery (1) | Chapter 7 |
| 4*   | 09/22 | Multispectral Remote Sensing Systems (1)  
Exercise 4: Interpretation and Analysis of Aerial and Satellite Imagery (2)  
(Homework 2) | Chapter 8 |
| 5    | 09/29 | Multispectral Remote Sensing Systems (2)  
Exercise 5: Thermal Infrared Image Interpretation | Chapters 8 & 9 |
| 6    | 10/06 | Hyperspectral Remote Sensing  
Exercise 6: Imagery on the Internet | Chapter 9 |
| 7*   | 10/13 | Radar Remote Sensing  
Exercise 7: Analysis and Interpretation of Radar Imagery  
(Homework 3) | Chapter 10 |
| 8    | 10/20 | Mid-term Examination | Chapter 10 |
| 9    | 10/27 | LiDAR Remote Sensing  
Exercise 8: Visualization and Analysis of LiDAR Data | Chapter 11 |
| 10*  | 11/03 | Remote Sensing of Vegetation  
Exercise 9: Remote Sensing of Vegetation  
(Homework 4) | Chapter 12 |
| 11   | 11/10 | Remote Sensing of Water Resources  
Exercise 10: Remote Sensing of Water Resources | Chapter 13 |
| 12*  | 11/17 | Remote Sensing of Urban Landscape  
Exercise 11: Remote Sensing of Urban Landscapes  
(Homework 5) | Chapter 14 |
| 13   | 11/24 | Thanksgiving Day (no class). | |
| 14   | 12/01 | Remote Sensing of Soils, Minerals, and Geomorphology  
Exercise 12: Remote Sensing of Soils and Geomorphology. | Review |
| 15   | 12/08 | Pre-Final Day – No class. Prepare for the final exam. | |
| 16   | 12/15 | Final Examination (6:00 pm - 8:00 pm) | Graduate students submit project report. |

Academic Dishonesty

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 University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the Office of Disability Accommodation website at http://www.unt.edu/oda. You may also contact them by phone at 940.565.4323.

**Course Evaluation**

Students will receive an email with a link to the UNT Student Perceptions of Teaching (SPOT) Course Evaluation by the end of the semester.