

# **GEO 7316 – REMOTE SENSING AND ENVIRONMENT**

## **SOUTHWEST TEXAS STATE UNIVERSITY, FALL 2002**

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**Office Hours:** 12:00 PM – 2:00 PM Thursdays or by appointment

**Class Time:** 2:00 PM – 4:45 PM Thursdays

**Classroom:** Evans Liberal Arts (ELA) Building, Room 312 and ELA 122 after 3:00 PM

**Course Line Number:** 236864

### **COURSE DESCRIPTION**

A detailed examination and implementation of sophisticated approaches for processing satellite digital images with emphasis on environmental applications. This course will emphasize advanced approaches for extracting geographic information at the earth's surface using airborne and satellite-based sensors using visible, near-infrared, and thermal wavelengths. Potential techniques discussed include atmospheric correction, time series analysis, image regression, classification and regression tree approaches, scaling and sensor compatibility, image fusion, radiative transfer theory, linear unmixing, textural and contextual classification, vegetation indices, and remote sensing/GIS integration.

### **COURSE OBJECTIVES**

By the end of this course, you should be able to understand and apply advanced techniques in digital image processing and physical information extraction from remotely sensed data. Toward this end, an integral part of this course will be both small lectures/discussions and laboratory work on an individual remote sensing research project.

### **COURSE MATERIALS**

Readings for this class will be from several recent research articles from such journals as *Remote Sensing of Environment* and *The International Journal of Remote Sensing*. Most of these articles will be distributed electronically as PDF files, although a few will be distributed as paper copies. There will be no charge for the articles.

### **EVALUATION AND GRADING POLICIES**

I will evaluate your performance and assign grades based on two major areas of work in this course. First, I will assess your ability to communicate advanced material through class participations in weekly research article discussions, and in-class presentation of your proposed remote sensing research and your final research product. Second, a significant individual written research project proposal and final writeup is also used to evaluate your final grade. All students are expected to prepare assignments by the scheduled time.

There is a maximum of 300 points for all of the lecture exams and lab exercises. The basis for grading will be as follows: 50 points for the project proposal, 25 points for a

small project proposal presentation, 25 points for in-class participation, 50 points for the final project presentation, and 150 points for the final project. The final grades will be determined based on the following rules:

A	≥90% (≥270 points)
B	≥80% and <90% (240 – 269 points)
C	≥70% and <80% (210 – 239 points)
D	≥60% and <70% (180 – 209 points)
F	<60% (< 179 points)

### **CLASSROOM AND ATTENDANCE POLICIES**

Good attendance in the class is key to your success in this course. First, the student presentations in class will require knowledge from previous weeks. Second, the individual research projects will require a deep familiarity with class material.

If you must miss class because of an illness, a personal emergency, or some other extenuating circumstance, please contact me as soon as possible so I can make alternative arrangements for you (this is key). Of course, good attendance means more than just showing up for class. Please read and adhere to the policy on classroom etiquette that appears below. These codes of conduct will allow everyone to participate equally as learners. Thank you for your cooperation.

In the Department of Geography, instructors strive to create an atmosphere of mutual trust and respect in which learning, debate, and intellectual growth can thrive. Creating this atmosphere, however, requires that instructors and students work to achieve a classroom in which learning is not disrupted. At the most basic level, this means that everyone should attend class, be prepared with readings and assignments completed, and that students pay attention. This means no conversations with friends, reading the newspaper, coming late, or leaving early. Such behavior is disruptive to the instructor and to your fellow classmates.

### **STUDENTS WITH DISABILITIES**

Students having special needs/disabilities that require accommodations for successful completion of this course must notify both SWT's Office of Disability Services and the course instructor by no later than the end of the first week of classes. Failure of the student to do so may result in the necessary accommodations not being made.

### **SWT ACADEMIC HONESTY POLICY**

Learning and teaching take place best in an atmosphere of intellectual fair-minded openness. All members of the academic community are responsible for supporting freedom and openness through rigorous personal standards of honesty and fairness. Plagiarism and other forms of academic dishonesty undermine the very purpose of the university and diminish the value of an education. Specific sanctions for academic dishonesty are outlined in *SWTexan*.

<b>Schedule by Week</b>	<b>Topics</b>
<b>Aug 29</b>	Image-Based Atmos. Correction & Reflectance Conversion
<b>Sep 5</b>	Normalized Image Time Series Analysis
<b>Sep 12</b>	Image Regression
<b>Sep 19</b>	Classification and Regression Tree Approaches
<b>Sep 26</b>	Vegetation Indices
<b>Oct 3</b>	Linear Unmixing Theory; <b>Project Proposals Due</b>
<b>Oct 10</b>	Radiative Transfer Theory
<b>Oct 17</b>	Scaling and Sensor Compatibility
<b>Oct 24</b>	Image Fusion
<b>Oct 31</b>	Textural Mapping and Classification and Geostatistics
<b>Nov 7</b>	Contextual Classification
<b>Nov 14</b>	Remote Sensing/GIS integration
<b>Nov 21</b>	Remote Sensing/GIS integration
<b>Nov 28</b>	<i>No class (Thanksgiving)</i>
<b>Dec 5</b>	Student Presentations
<b>Dec 12</b>	<b>Final Projects Due Thursday, Dec 12, 3:00 pm</b>