

**Remote Sensing of Earth & Planetary Surfaces  
(Land Remote Sensing)**

Mon., Wed., Fri., 11:15 am-12:05 pm in ES&T L1116

Instructor: James Wray – [jwray@gatech.edu](mailto:jwray@gatech.edu)

<http://wray.eas.gatech.edu/>

**Course Description**

This course will cover the broad spectrum of techniques for making remote measurements of the composition, morphology, and thermophysical properties of solid surfaces on Earth and other planetary bodies. Both the physics underlying the techniques and their applications to a range of problems of interest will be discussed. Students will gain experience accessing, processing and interpreting remote sensing data, and will acquire an understanding of which techniques are most useful for answering particular scientific questions about a range of land environments.

**Topics Covered**

Electromagnetic Spectrum Overview  
Radiative Transfer  
Photometry  
Imaging Systems and Processing  
Visible/NIR Reflectance Spectroscopy  
Thermal IR Spectroscopy  
Thermal Inertia  
Radar, Lidar  
X-ray,  $\gamma$ -ray Spectroscopy  
Neutron Spectroscopy

**References**

Weekly reading will be assigned from several remote sensing textbooks. The class website will also provide links to online data sources and additional resources to supplement the text chapters.

**Grading/Assessment**

There will be roughly 6 graded homework assignments and computer lab exercises throughout the term. Homework sets will be due at the beginning of class. Late assignments will be deducted 20% if turned in by the following class day, but will not be given credit after that unless exceptional circumstances are demonstrated. While you may discuss the homework assignments and labs with your classmates, you must turn in your own original work, and you will be responsible for individually understanding the material. There will be one midterm and one final exam (equally weighted), and a final project consisting of a research term paper and an oral presentation. The course grading breakdown is as follows:

Homeworks and labs:	35%
Exams (equally weighted):	35%
Final Project:	25%
Class Participation:	5%

**Office Hours**

Office hours will be in ES&T 2234 at 12:05 PM on Wednesdays, or by appointment.