

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

Mon., Wed., Fri., 12:20–1:10 pm in ES&T L1116

Instructor: James Wray – 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, γ -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 / 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 11am-2pm Wednesdays (outside of class time!), or by appointment.

Statement of Intent for Inclusivity

As a member of the Georgia Tech community, I am committed to creating a learning environment in which all of my students feel safe and included. Because we are individuals with varying needs, I am reliant on your feedback to achieve this goal. To that end, I invite you to enter into dialogue with me about the things I can stop, start, and continue doing to make my classroom an environment in which every student feels valued and can engage actively in our learning community.

Campus Resources for Students

In your time at Georgia Tech, you may find yourself in need of support. Below you will find some resources to support you both as a student and as a person.

Academic support

- Center for Academic Success <http://success.gatech.edu>
 - 1-to-1 tutoring <http://success.gatech.edu/1-1-tutoring>
 - Peer-Led Undergraduate Study (PLUS) <http://success.gatech.edu/tutoring/plus>
 - Academic coaching <http://success.gatech.edu/coaching>
- Residence Life's Learning Assistance Program
<https://housing.gatech.edu/learning-assistance-program>
 - Drop-in tutoring for many 1000 level courses
- OMED: Educational Services (<http://omed.gatech.edu/programs/academic-support>)
 - Group study sessions and tutoring programs
- Communication Center (<http://www.communicationcenter.gatech.edu>)
 - Individualized help with writing and multimedia projects
- Academic advisors for your major
<http://advising.gatech.edu/>

Personal Support

Georgia Tech Resources

- The Office of the Dean of Students: <http://studentlife.gatech.edu/content/services>; **404-894-6367**; Smithgall Student Services Building 2nd floor
 - You also may request assistance at https://gatech-advocate.symplicity.com/care_report/index.php/pid383662?
- Counseling Center: <http://counseling.gatech.edu>; **404-894-2575**; Smithgall Student Services Building 2nd floor
 - Services include short-term individual counseling, group counseling, couples counseling, testing and assessment, referral services, and crisis intervention. Their website also includes links to state and national resources.
 - *Students in crisis may walk in during business hours (8am-5pm, Monday through Friday) or contact the counselor on call after hours at 404-894-2204.*
- Students' Temporary Assistance and Resources (STAR):
<http://studentlife.gatech.edu/content/need-help>
 - Can assist with interview clothing, food, and housing needs.
- Stamps Health Services: <https://health.gatech.edu>; **404-894-1420**
 - Primary care, pharmacy, women's health, psychiatry, immunization and allergy, health promotion, and nutrition
- OMED: Educational Services: <http://www.omed.gatech.edu>
- Women's Resource Center: <http://www.womenscenter.gatech.edu>; **404-385-0230**
- LGBTQIA Resource Center: <http://lgbtqia.gatech.edu/>; **404-385-2679**
- Veteran's Resource Center: <http://veterans.gatech.edu/>; **404-385-2067**
- Georgia Tech Police: **404-894-2500**