

**Introduction to Remote Sensing
GEOG 372 Summer Session I 2008
Section 0101 (3 credits)**

Instructor:

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Room 2138 LeFrak Hall

Office Hours: Thursday 3:00-5:00 or by Appointment

Teaching Assistant:

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Office Hours: By Appointment

Class Times:

Tuesday Thursday 6:00 pm to 9:30 pm

Lecture - Room 1124 LeFrak

Lab - Room 1138 LeFrak

Aims of the Course:

This course is intended to provide an introduction to remote sensing of the environment. It will introduce the basic principles of image interpretation and remote sensing in relation to optical, thermal, and microwave (including radar) remote sensing systems. Examples of remote sensing applications will be presented along with methods for obtaining quantitative information from remotely sensed images. Interpretation of remotely sensed images will emphasize the study of spatial and environmental relationships.

Target Audience:

This course is intended for those who want to learn more about remote sensing either as a termination for a more general program or as a gateway to 400 level classes in Geography, especially GEOG 472. Non-Geography students or undeclared majors are welcome.

Overlaps:

This course has no overlaps with other courses inside or outside the Department of Geography.

Prerequisites:

This course does not have any prerequisites.

Enrollment limit:

35

Geography Major Program Information:

This course counts as a gateway course for Geography majors. See GEOG advisers in LeFrak Rm. 2108 (Tel. 301-405-4073) for further information on course selection.

Text Book:

Jensen, J.R., *Remote Sensing of the Environment - An Earth Resource Perspective*, 592 pp., Prentice Hall, Upper Saddle River, NJ, 2007. ISBN: 0131889508 **SECOND EDITION**

Assessment:

The grading for this course will be based on five different aspects: 2 quizzes, a final exam, laboratory assignments, and a class project. The first quiz will be held on **6/12/2008 at 6:00 p.m.** covering the first three lectures and corresponding readings. The second quiz will be held on **6/24/2008 at 6:00 p.m.** covering lectures 4, 5, and 6 and corresponding readings. Each quiz will account for 15% of the total grade. The final exam will be held on **7/8/2008 at 6:00 p.m.** covering the remaining part of the course material (not cumulative). The final exam will account for 30% of the total grade. In total all quizzes and exams will account for 60% of the total grade. The laboratory assignments (20%) and class project (20%) will account for the remaining 40% of the total grade. Each laboratory assignment will be due at the beginning of the next class. Lab assignments build successively and therefore will not be accepted more than one day late. The class project will be due **7/10/2008 at 9:30 p.m.**

Class project:

Each student will work individually on a class project. The project assignment will consist of writing a proposal for the project of your choice based on your own **original** idea. The proposal will be a minimum of 4 pages, double-spaced, Times New Roman 12 pt font, left justified, with 1" borders all around. Figures may be included, but will be in addition to the 4-page minimum. The proposal should present a coherent narrative in the third person and contain the following sections: Topic and Significance, Goals and Objectives, Data Sources, Methods, and Expected Conclusions. The proposal should incorporate what you have learned in class, such as important considerations in selecting imagery for a project, methods for extracting information, and sources of error in your end result classifications. Project specifics will be discussed in greater detail in class.

Recommended Lab Equipment:

A print account is necessary in order to print in the lab and can be obtained through the Office of Information Technology. It is **strongly** recommended that students have a re-writeable CD or a USB jump drive to store jpegs and documents from class to be printed elsewhere. Jpeg file sizes are often large and technical difficulties with the lab printer may impede your ability to print your labs.

Attendance:

Attendance at each class meeting is expected. If you need to miss a class for a religious holiday, illness, etc., please notify the instructor as soon as possible.

Honor Code:

The University has a nationally recognized Honor Code, administered by the Student Honor Council. The Student Honor Council proposed and the University Senate approved an Honor Pledge. The University of Maryland Honor Pledge reads:

"I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination."

Unless you are specifically advised to the contrary, the Pledge statement should be handwritten and signed on the front cover of all papers, projects, or other academic assignments submitted

for evaluation in this course. Students who fail to write and sign the Pledge will be asked to confer with the instructor.

Disabilities:

If you have a documented disability and wish to discuss academic accommodations, please contact the instructor as soon as possible.

Class Schedule:

Class	Date	Lecture Topic	Lab Topic	Reading
1	06/03/08	Course Overview, Introduction to Remote Sensing, Principles of Electro-magnetic Radiation	Data Sources	Ch. 1, 3
2	06/05/08	Energy/matter Interaction - Atmosphere and Landcover	Introduction to ENVI, Data Visual Analysis	Ch. 2
3	06/10/08	Aerial Photography, Photogrammetry, and Visual Image Interpretation	High Resolution Visual Analysis	Ch. 4, 5, 6 (149-162)
4	06/12/08	QUIZ 1 Multispectral RS Systems and Design	Spatial Resolution Comparison, Geometric Registration	Ch. 7
5	06/17/08	VIS/NIR RS of Vegetation - Spectral/Temporal Characteristics, Indices, and Change Detection	Analysis of Vegetation - Spectral Signatures and Indices	Ch. 11, 12
6	06/19/08	VIS/NIR RS of Water, Soil, and Urban Areas	Extracting Soil, Water and Impervious Signatures	Ch. 13, 14
7	06/24/08	QUIZ 2 Thermal IR - Radiation Properties, Systems, and Applications	Thermal Signatures	Ch. 8
8	06/26/08	Microwave and LIDAR RS - Principles and Applications	Radar Signatures	Ch. 9, 10
9	07/01/08	Image Classification	Image Classification	None
10	07/03/08	RS Applications; Final Exam Review	Multi-temporal Change Detection	Ch. 15
11	07/08/08	FINAL EXAM	No lab	None
12	07/10/08	PROJECT DUE	No lab	None