FNR 558: Digital Remote Sensing and GIS
2008

Instructor: Guofan Shao, Office: PFRN 221B, Phone: 43630
E-mail: shao@purdue.edu

Shawn Li, Office: FORS 206, Phone: 48086,
E-mail: li82@purdue.edu

Class Goals:

- Practice advanced digital remote sensing and GIS technologies and their applications in various areas.
- Teach important theories and methods of image data processing and GIS functionalities.
- Encourage each student to independently perform image data analysis with Erdas Imagine and have preliminary knowledge about MultiSpec and ENVI.
- Help students master skills that lead to accurately present and use various geospatial data products.

Text:

Introductory Digital Image Processing (3rd ed.). By John R. Jensen. 2004. Prentice-Hall, Inc. ISBN: 0-13-145361-0

This book covers about 80% of the class contents. Other materials will be prepared for the class by the instructor and through the Internet by students.

Lecture: Two lecture meetings per week: M. W. 12:30 – 13:20, PFEN 203

Lab: One lab per week: Th. 1:30 – 4:20, PFEN 202

Office Hours: Students may stop by instructor's office any time, and the instructor will see students as long as he is neither with someone nor rushing to finish something.

Grading:

Exams	100 X 2 =	200 points
Quizzes with irregular time intervals	20 X 5 =	100 points
Final Project		100 points
Labs and Assignments		100 points
Total		500 points

Deductions: 10 points for not turning in any lab or assignment on time.

Grading Scale: Total number of points for each student will be converted into a 100 scale. Grade will be given According to this table:

Grade	GPA Value	Range
A+,A	4.0	93-100
A-	3.7	90.0 - 92.9
B+	3.3	87.0 - 89.9
B	3.0	83.0 - 86.9
B-	2.7	80.0 - 82.9
C+	2.3	77.0 - 79.9
C	2.0	73.0 – 76.9

C-	1.7	70.0 – 72.9
D+	1.3	67.0 – 69.9
D	1.0	63.0 – 66.9
D-	0.7	60.0 – 62.9
F	0.0	< 60.0

Policies:

1. Class discussion is encouraged. Please feel free to ask questions during class;
2. If you a student find it necessary to miss a class, it is his/her responsibility to arrange for obtaining the information covered;
3. Students are encouraged to read other books and reference papers.

Outline:

Week 1 (08/25 – 08/29)
Introduction to Remote Sensing
Digital Remote Sensing Data and Methods
Lab –Imagine Beginning and Data Display and Examination

Week 2 (09/01 – 09/05) (Labor Day: 09/01)
EMR and Its Implications to Remote Sensing
Lab – Examining Various Remote Sensing Data

Week 3 (09/08 – 09/12)
Spectral Response
Image Enhancement
Lab – Computing Image Data Statistics

Week 4 (09/15 – 09/19)
Digital Remote Sensing Data Principle
Geometric Correction
Lab – Practice Geometric Correction

Week 5 (09/22 – 09/26)
Digital-Format Remotely Sensed Data (I)
Spectral Transformation
Lab – Practice Spectral Transformation

Week 6 (09/29 – 10/03)
Exam 1
Land Cover and Land Use Classification Systems & Supervised Classification
Lab – Practice Supervised Classification

Week 7 (10/06 – 10/10)
Digital-Format Remotely Sensed Data (II)

Unsupervised Classification
Lab – Practice Unsupervised Classification and Computing Classification Accuracy

Week 8 (10/13 –10/17) (October break: 10/13-14)
Sub-pixel classifier
Lab –Practice Sub-pixel Classification

Week 9 (10/20 –10/24)
Post-Classification Operations and Accuracy Assessment (Project 1 starts)
Object-Oriented Classification
Lab – Practice Object-Oriented Classification

Week 10 (10/27 –10/31)
An Overview of Image Data Classification (Guest Lecture)
Change Detection Techniques
Lab – Performing Change Detections

Week 11 (11/03 –11/07)
Exam 2
Error Propagations of Remote Sensing Applications
Lab – Work on Project 1 (Project 1 Due)

Week 12 (11/10 –11/14)
Use of Lidar Data (Quest Lecture)
Geographic Information Systems
Lab – Practice GIS Analysis

Week 13 (11/17 –11/21)
Preparing for Class Projects
Lab – Start Class Projects (one-to-one help)

Week 14 (11/24 –11/28) (Thanksgiving vacation 11/26-28)
Working on Class Projects (no class meetings)

Week 15 (12/01 – 12/05)
Continue working on Class Projects (no class meetings)

Week 16 (12/08 – 12/12)
Class Project Presentations

Week 17
Class Ends