FNR 357: Fundamental Remote Sensing
Fall of 2009

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Class Goals:

- Introduce the fundamental principles and methods of remote sensing technology.
- Demonstrate the applications of aerial photographs and satellite imagery in natural resource measurement and management.
- Introduce the concepts of digital processing and analyses of remotely sensed data.
- Practice the use of analog and digital remotely sensed data in computer mapping and problem solving.

Reference Books:

Fundamentals of Remote Sensing and Airphoto Interpretation. By Thomas E. Avery and Gradon L. Berlin. 1992. Prentice-Hall, Inc. ISBN: 0-02-305035-7.
Remote Sensing and Image Interpretation (3rd edition). By Thomas M. Lillesand and Ralph Kiefer. 1994. John Wiley & Sons, Inc. ISBN: 0-471-57783-9.
Introductory Digital Image Processing (3rd edition). By John R. Jensen. 2004. Prentice-Hall, Inc.
Remote Sensing for Sustainable Forest Management. By Steven E. Franklin. 2001. Lewis Publishers. ISBN: 1-56670-394-8.

Internet Source:

http://rst.gsfc.nasa.gov/

Lecture: Two lecture meetings per week: M. W. 10:30am – 11:20am, PFEN 203

Lab: One lab per week: T. 11:30am – 2:20pm, PFEN 202

Office Hours: Students may stop by instructors' offices any time, and instructors will see students as long as he/she is neither with someone nor rushing to finish something. You can also send an email for any questions, he/she will response ASAP.

Grading:

Exams	100 * 2 =	200 points
Quizzes with irregular time intervals	20 * 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 (08/24 – 08/28)
Introduction to Remote Sensing and Aerial Photography
Lab – Getting to know remote sensing facilities

Week 2 (08/31 – 09/04)
Cameras, Films, Filters, and Photographs
Lab – Getting to know and use aerial photographs

Week 3 (09/07 – 09/11) (Labor Day: 09/07)
Electromagnetic Radiation (EMR) and Its Atmosphere Interactions
Lab – Generating stereograms

Week 4 (09/14 – 09/18)
Scale and Resolution
Lab – Display and Compare Satellite Remote Sensing Data

Week 5 (09/21 – 09/25)
Color Formation, Displacement, and Acquisition of Aerial Photographs
Lab – Handling Digital Remote Sensing Data

Week 6 (09/28 – 10/02)
Image Statistics and Enhancement, and Space-Borne Remotely Sensed Data
Lab – Computing Image Statistics

Week 7 (10/05 – 10/09)
Class Review and Exam 1
Lab – Mid-Term Project

Week 8 (10/12 –10/16) (October break: 10/12-13)
Mid-Term Project

Week 9 (10/19 –10/23)
Band Transformation
Lab – Mid-Term Project

Week 10 (10/26 –10/30)
Digital Classification
Lab – Band Transformation

Week 11 (11/02 –11/06)
Accuracy Assessment and Change Detection Techniques
Lab – Perform Digital Classification

Week 12 (11/09 –11/13)
Class Review and Exam 2
Lab – Change Detection

Week 13 (11/16 –11/20)
Final Project Introduction and Remote Sensing Demonstration
Lab – Final Project

Week 14 (11/23 –11/27) (Thanksgiving vacation 11/26-28)
Remote Sensing Demonstration and Final Project Continues
Lab – Final Project Continues

Week 15 (11/30 – 12/04)
Work on Final Project
Lab – Work on Final Project

Week 16 (12/07 – 12/11)
Class Project Presentations

Week 17
Class Ends