GEOG.609. ADVANCED REMOTE SENSING APPLICATIONS 3(2-1)

Course Objectives

To make students understand in using high-resolution multispectral data, sophisticated image processing software, theory and application of image processing techniques.

Course Outline

1. **Introduction to advanced remote sensing**
   - Introduction to advanced remote sensing
   - Remote sensing and earth energy budget
   - Electromagnetic spectrum and radiation
2. **Foundations of Remote Sensing**
   - Physical foundation of Visible Infrared and microwaves remote sensing
   - High and low resolution remote sensing
3. **Theoretical explanation**
   - Theoretical explanation of reflection, absorption and transmission
   - High resolution multi-spectral data
   - Advanced image processing software
4. **Theory and application of image processing techniques**
   - Accuracy testing
   - Height measurement techniques
   - Area measurement techniques
5. **Image Enhancements**
   - Geometric data correction
   - Atmospheric data correction
   - Radio-metric data correction
   - Transformations and classification

Recommended Books

1. Lillesand, T. M. (2006) "Remote sensing and image interpretation". John Wiley & Sons, Inc. N.York
2. Aronoff, S. (2005) "Remote Sensing for GIS Managers". ESRI Press, New York.
3. Canada Centre for Remote Sensing (2005) "Fundamentals of remote sensing", Remote Sensing Tutorial, Natural Resources, Canada.
4. Carleton .A. (1990) "Satellite Remote Sensing in Climatology", CBS publishers and distributor, New Delhi
5. European Space Agency (1988) "Remote sensing moving towards the 21st century". Proceeding of international geosciences and Remote sensing Symposium.12-16 September 1988 volume I, Edinburgh U.K.
6. Carter D.J. (1986) "The remote sensing", Mc Carta LTD, London
7. Michael H.R. (1986) "Remote Sensing method and application", John Wiley and sons Inc. New York.
8. Davis .S. (1978) "Remote sensing the Quantitative approach", McGraw-Hill New York