

Course Objectives

This course is designed to make students aware about the basic concepts regarding remote sensing data capturing, classification, analysing, monitoring and mapping for geo-information production.

Learning Objectives

On completion of this course, the students will be able to extract data from the images sent by the satellites and to geo-referenced the satellite data with GIS maps.

Course Outlines

1. Introduction

- Remote Sensing
- History of remote sensing
- Electromagnetic Radiation
- Electromagnetic Spectrum
- Interactions with the Atmosphere
- Radiation
- Passive versus Active Remote Sensing
- Characteristics of Images

2. Sensors

- Sensors (on the Ground, In the Air, In Space)
- Satellite Characteristics
- Pixel Size and Scale
- Spectral Resolution
- Radiometric Resolution
- Temporal Resolution

3. Cameras and Aerial Photography:

- Multi-spectral Scanning
- Thermal Imaging
- Geometric Distortion
- Types of Satellites:
- Weather Satellites
- Land Observation Satellites
- Marine Observation Satellites
- Other Sensors
- Data Reception

4. Microwaves:

- Radar Basics
- Viewing Geometry & Spatial Resolution
- Image distortion
- Target interaction, Image Properties

Laboratory Work

Image Analysis, visual interpretation, digital processing, pre-processing, enhancement, transformation and classification.

Recommended Books

1. Lillesand, T. M. (2006) "Remote Sensing and Image interpretation", John Wiley & Sons, N. York.
2. Aronoff, S. (2005) "Remote Sensing for GIS Managers", ESRI Press, New York.

Syllabus of One-Year Post Graduate Diploma in Geomatics

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. Carter D.J. (1986) "The Remote Sensing". Mc Carta LTD, London
6. Davis .S. (1978) "Remote Sensing the Quantitative Approach". McGraw-Hill New York
7. Michael H.R. (1986) "Remote Sensing Method and Application". John Wiley and sons, New York.
8. 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.