

SEMESTER-III

GEOG. 666:

PRINCIPLES OF REMOTE SENSING

3(2-1)

Course Objective

To acquaint the students with the skills of processing remotely sensed data, enhance image on remotely sensed imagery, and extract information from remotely sensed data through either manual or automated techniques.

Learning Outcomes

On completion of this course, the students will be able to develop maps in various software programs, and capable of critical analysis not only through maps but in text form for broader range of many applications.

Course Outline

1. Introduction to Remote Sensing

- History and Scope of Remote Sensing
- Electromagnetic Radiation
- Mapping Cameras
- Land Observation Satellites

2. Remote Sensing Analytical Process

- Digital Imagery
- Lidar
- Image Resolution
- Preprocessing: System and data;
- Multispectral RS System
- Data Models, Image types and Formats
- Mosaics and Compression
- Spatial Preprocessing; Projecting raster data, subset and clipping
- Geo-referencing and ortho-rectification
- Pan sharpening, Spatial Filters
- Spectral Preprocessing: Atmospheric Correction, Incise and Band Ratios, Lidar Preprocessing

3. Image Interpretation and Feature Extraction

- Image understanding, image interpretation: Classification, Detection, Recognition, identification, Enumeration, Mensuration, Delineation image display:
- Band Assignment, Image enhancement.
- Image Classification,
- Accuracy Assessment,
- Land Use and Land Cover, Change Detection. Accuracy Assessment, Remote sensing Resources

4. Photogrammetry

- Concept
- Evolution
- Types
- Essentials
- Measurements

Lab. Work

1. Data acquisition and interpretation,

2. Image pre-processing
3. Image enhancement
4. Image correction
5. Image sub-set and Image classification.

Exercises

Use of RS in Agriculture, Land use planning, forestry, Geology, Socioeconomic Assessment, Environmental management and monitoring, change detection, Global Scale applications.

Recommended Books

1. James B, et.al. (2011) "Introduction to Remote Sensing" IT Wynne. Norway.
2. Charles E. (2011) " Physics & Techniques of remote Sensing"
3. Illesand,et.al.(1994)"Remote Sensing and Image Interpretation", Wiley & Sons, USA.
4. Smisth (1990) "Aerial Photographs and their Applications", Reading Arnold.