

# AMEV-21 G I S FOR ENVIRONMENTAL ENGINEERING

## OBJECTIVES:

To introduce the fundamentals of remote sensing and its applications in the field of environmental engineering.

### UNIT I FUNDAMENTALS OF REMOTE SENSING -

Introduction to remote sensing - Principles of Electro - Magnetic Radiation - Energy /Matter interaction with Atmosphere and land surface - spectral reflectance of materials and earth and Vegetation - Data products.

### AERIAL PHOTOGRAPHY AND SATELLITE REMOTE SENSING -

UNIT II Aerial Photography - Photogrammetry And Visual Image Interpretation. satellites in Various orbit their sensors - Resolutions - Multispectral Remote Sensing and system (MSS) and Design - VISIBLE - NIR remote sensing - Thermal IR Radiation properties, systems and application - Microwave and LIDAR remote sensing - Principles and applications.

### UNIT III DATA ANALYSIS AND GIS -

Data Analysis - Visual interpretation and digital image processing - Classification. Introduction to GIS, concepts and data base structure, various GIS software.

### UNIT IV REMOTE SENSING AND GIS APPLICATIONS -

Applications of Remote sensing and GIS - Management and Monitoring of Land, air, water and pollution studies - conservation of resources - Management - coastal zone Limitations.

### UNIT V LABORATORY PRACTICES -

Data sources - Visual interpretation - digital image processing - Introduction to ENVI processing - image processing Software - GIS / Data Analysis in ARC GIS.

## OUTCOMES:

The students completing the course will have

an understanding of the fundamentals of remote sensing, aerial photography and digital image processing

ability to carry out data analysis using GIS for management and monitoring of land, air,

Water and pollution studies including conservation of resources

ability to use image processing software and analysis in ARC GIS

## TEXT BOOKS:

Anji Reddy, "Remote Sensing and Geographical Information system", B S publications 2001.

Srinivas M.G. "Remote sensing applications", Narosa publishing house, 2001.

Chandra. A M and Ghosh S.K. "Remote Sensing and Geographical Information System",

Narosa Publishing House, 2006.

**REFERENCES:**

Lintz, J. and Simonet, Remote Sensing of Environment, Addison Wesley Publishing Company, 1--4.

Burroughs P.A, Principles of Geographical Information System, Oxford University Press, 1--8.

Thomas M Lille sand, Rupiah W. Kiefer & Jonathan W. Chip man "Remote sensing and Image Interpretation" John Wiley Sons, 2004.

[Kumar S.](#) , Basics of Remote Sensing and GIS, Firewall Media, 2005