AGRI 313   GIS AND REMOTE SENSING TECHNIQUES   3 (2+1)

Objective(s)

The basic Objective(s) of this course is to teach concepts of GIS and remote sensing with specific applications in agriculture related statistics.

UNIT I

Introduction to Geographical Information System; Components of a GIS; Data Models in GIS-Raster and Vector

UNIT II

Spatial Data Analysis- Raster and Vector, Data input, verification, storage and output

UNIT III

Introduction- maps and spatial information; manual and automatic digitizing process; Spatial and nonspatial data linking; preparation of thematic maps, Data errors in GIS; Spatial modeling; Spatial interpolation; Current and potential uses of GIS in agricultural planning;

UNIT IV

Physics of remote sensing, Satellites and their characteristics; Satellite Remote Sensing and Sensors; Spectral signatures of earth surface features, spectral characteristics of vegetation, soil and water

UNIT V

Data acquisition Data Reception, Transmission, Processing and data storage; Visual and digital image interpretation; Digital image processing, Applications of Remote Sensing in Agriculture, Basics of GPS; Observables and Biases; Errors and Limitations; Type and applications of GPS.

Reference Book (s):

1. Annadurai, S. and Shanmugalakshmi, R. Fundamentals of Digital Image Processing. Pearson Education.
2. Burrough, P.A. Principles of Geographic Information System for Land Resources Assessment. Oxford University Press.
3. Curran, P.J. Principles of Remote Sensing. Longman Inc., New York.

Practical(s):

1. Digitization of a map with the help of a digitizer; Map editing;
2. Geo-referencing and map projections;
3. Creation of attribute database and linking with spatial data;
4. General analysis of the data with the help software;
5. Applications of digital elevation models using GIS;
6. Spatial interpolations using GIS;
7. Visual interpretations of remote sensing data;
8. Geometric corrections of remote sensing digital data;
9. Methods for improving quality of digital data and Techniques of image classifications