3-month Certificate course on
Fundamentals of remote sensing and GIS

Course Objective

The course will provide a basic understanding of remote sensing and GIS and their application in various fields including research. The course also seeks to develop insights among the learners on the relevance of geospatial technology across disciplines. Additionally, this short term course is designed to develop hands on skill of the students on application of GIS and remote sensing in solving real life problems.

Course Outcome

This course will enable student to perform basic GIS and remote sensing analysis. The students will learn to process spatial data in a GIS environment for real world application. Student will also be trained to access geospatial data from various sources. Additionally, they will learn to perform basic satellite image processing.

Course duration: 90 days

Seats: 30

Fee structure: Rs. 400 /- (Admission fee Rs. 100+ Laboratory fee Rs. 200+ Examination fee Rs. 100)

Course structure: The course is panned out for 90 days with 15 contact hours per week (5 theory+10 practical). Examination will be conducted for 100 marks (40% Theory+ 50% Hands on exercise+ 10% Viva and practical notebook).

Evaluation process

- 90% attendance is compulsory for all participants to be eligible for evaluation.
- The evaluation process will be carried out by end trimester examination (refer to course structure)
- Question paper will be set up by course coordinator and external evaluator.
- Students will be graded in the following structure:

Grade	Marks
O	90% and above
A+	80% to 89 %

A	70% to 79%
B	60 to 69%
C	50 to 59%
F	Below 50%

O = outstanding, A+ =excellent, A = very good, B= good, C= Average, F= Fail

Course contents

The course syllabus has been determined and approved by the syllabus committee, as appointed by the office of the Principal, Dimoria College.

Theory

Unit 1: Principles of remote sensing

- Remote sensing: Introduction and history of development
- Electro-magnetic spectrum: Basic principles, properties and interaction with earth surface and atmosphere
- Spectral signature and its identification
- Resolution (Spatial, Spectral, Radiometric and temporal)
- Remote sensing system: Sensor and platform
- Remote sensing data products
- Image processing: Visual and Digital
- Application areas of remote sensing

Unit 2: Introduction to GIS

- Definitions and history of development
- Components of GIS
- GIS data structure and formats
- Coordinate system
- Database management system
- Spatial data analysis: Buffer, proximity, overlay and interpolation
- Application of GIS

Unit 3: Introduction to GPS

- Fundamental of GPS: Principles, Components and application

Practical

- Remote sensing data acquisition (Aerial photograph, Satellite Imagery and other digital data products)
- Remote sensing data visualisation in GIS environment

- Visual image interpretation

- Geo-referencing

- Digitization of features from maps

- Map layout preparation in ArcGIS and QGIS

- Digital image processing (Band combinations, Image enhancement, Image classification)

- GIS operations: Buffer, proximity, overlay, interpolation and topographical analysis

- GPS survey and map preparation

Course Schedule

Day	Theory	Practical
Monday	10AM-11AM	1.30PM-3.30PM
Tuesday	1PM-2PM	2PM-4PM
Wednesday	1PM-2PM	2PM-4PM
Thursday	-	-
Friday	1PM-2PM	2PM-4PM
Saturday	9AM-10AM	2PM-4PM