Course Type	Course Code	Name of the Course	L	T	P	Credits
DP	NMNC529	Geospatial Data Modelling Lab	0	0	3	1.5

Course Objectives

Students will learn the practical aspects of data collection, data processing, modelling and analysis of spatial data.

Learning outcomes

Students will learn various online data sources, spatial pattern distribution, processing of UAV data and model builder.

Units	Course Content	Contact hrs	Learning Outcomes
Unit 1	Demonstration of advanced data collecting techniques in engineering surveying.	3	Student will learn about total station and laser scanner
Unit 2	Study of GNSS surveying; data collection with both Handheld and DGPS survey	3	Student will know about setup and working principal of GNSS survey
Unit 3	Data download and Processing	3	Students learn about download and processing tools.
Unit 4	Demonstration of various data sources of geospatial data in public domain	3	Student will learn about various spatial data available sources in online.
Unit 5	Processing of data in GIS platform	3	Student will Explore maps, services, data and learn basic processing tools in GIS.
Unit 6	Visualization of 2D and 3D data and integrating spatial data with online resources	3	Student will learn how to visualize the data into both 2d and 3D and know about importing GIS data into online platforms and creating DEMS
Unit 7	Statistical GIS Modelling	3	Student will learn Statistical GIS modelling tools
Unit 8	Creating Spatial distribution maps (MCDA, Weighted overlay)	3	Student will know about various spatial pattern Analysis techniques and prepare distribution maps
Unit 9	Ortho Mapping: Processing of UAV Imagery	3	Students learn about processing tools to make ortho images
Unit 10	Preparing Data for Analysis & creating Model Builder for UAV data	3	Students learn about how to build model and process the data of UAV.
Unit 11	Volumetric estimation using spatial data	3	Students learn about volumetric calculations using DEM

Unit 12	Suitability Analysis and susceptibility mapping with spatial data	3	Students learn about suitability analysis for different case studies.
Unit 13	Mini Project	6	
	Total	42	

Textbooks:
1) Paul A. Longley, Michael Batty "Spatial Analysis: Modelling in a GIS Environment"
2) Jay Gao "Fundamentals of Spatial Analysis and Modelling"

Reference Books:
3) P.D. Sreekanth, S.K. Soam and Ch. Srinivasa Rao (2020) "Practical Manual for GIS