

23SA8451- Remote Sensing & Geographical Information Systems

Course Code	23SA8451	Year	II	Semester	II
Course Category	Skill Enhancement Course	Branch	CIVIL	Course Type	Practical
Credits	2	L-T-P	0-0-3	Prerequisite	Surveying
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course objectives: By the end of this course student will be able to

1	Introduce the basic principles of Remote Sensing and GIS techniques and its application to Civil Engineering
2	Learn various types of sensors and platforms and understand the principles of spatial analysis techniques in GIS.
3	Introduce GIS software to understand the process of digitization, creation of thematic map from toposheets and maps.

Course Outcomes

Upon successful completion of the course, the student will be able to:

CO1	Acquire knowledge about concepts of remote sensing, sensors and their characteristics	K1
CO2	Familiarize with data models and data structures to introduce various Raster and Vector Analysis capabilities in GIS.	K2
CO3	Digitize and create thematic map and extract important features to calculate geometry	K2
CO4	Perform surface analysis over Contour to develop digital elevation model.	K2
CO5	Use GIS software to perform simple analysis in water resources and transportation engineering.	K2

Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2		1	1			2					2	1	1
CO2	2		1	1			2					2	1	1
CO3	1	2	2	1	2	2	3		2	2	1	3	1	2
CO4	1	2	2	1	2	2	3		2	2	1	3	2	2
CO5	1	2	2	1	2	2	3		2	2	1	3	2	2
Avg.	3	3	3	3	3	2	2		2				3	2
	1- Low			2-Medium				3-High						

Course Content		
Experiment No.1	Georeferencing a Toposheet or Map	CO1 CO2 CO3 CO4 CO5
Experiment No.2	Digitization and Attribute table creation.	
Experiment No.3	Creation of Thematic Map	
Experiment No.4	Calculation of Feature geometry – Length, Area & Perimeter.	
Experiment No.5	Contour map – developing TIN & DEM from Contour.	
Experiment No.6	Stream network – Stream ordering map.	
Experiment No.7	Watershed - calculate Hydro-geomorphological parameters.	
Experiment No.8	Transportation Network Map – Route analysis.	

Learning Resources

Text Books	<ol style="list-style-type: none"> 1. BasudebBhatta (2021). 'Remote sensing and GIS', 3rdedn., Oxford University Press. 2. S. Kumar, (2016) 'Basics of Remote sensing & GIS', Laxmi Publications. 3. Lillesand, T.M, R.W. Kiefer and J.W. Chipman (2022) 'Remote Sensing and Image Interpretation', 7thedn., Wiley India Pvt. Ltd. 4. Demers, M.N, (2013) 'Fundamentals of Geographic Information Systems', 4th edn., Wiley India Pvt. Ltd.
Reference Books	<ol style="list-style-type: none"> 1. Schowengerdt, R. A (2006) 'Remote Sensing', Elsevier publishers. 2. Burrough P A and R.A. McDonnell, (1998) 'Principals of Geographical Information Systems', Oxford University Press. 3. George Joseph (2013) 'Fundamentals of Remote Sensing', Universities Press.