



School of Planning and Architecture: Vijayawada

(An institution of National Importance under the Ministry of Human
Resource Development, Govt. of India)

Survey No.4/4, ITI Road, Vijayawada-520008, Andhra Pradesh, India

Department of Architecture

Course: MUD

Subject Code; MUD1105 –
Geoinformatics for Urban Design

Class: 1st Yr MUD I
Sem A.Y. 2026-27

Instructors:

Subject Instructors- **Dr. Prashanti Rao**

Internal Assessment: 100

Contact Periods/Week: 03 periods. (50 min each)

Total Marks: 100

Time Table:

Wednesday

Credits: 3

Attendance: Min
75%

Min. Passing Marks: 50% each in Internal &
External Assessment, 50% in Aggregate

Objective: To develop an understanding of the land and its designed modifications, with an integration of Earth sciences. To develop understanding and capacity building to use information science in Urban Studies to address various problems of geography, cartography, geosciences and related branches of science and engineering in urban design.

LECTURE PLAN

S.NO	DATE	TOPIC OF CLASS LECTURE & DISCUSSION	REMARKS
1	Week-1 19 TH August	Concept and Foundation of Remote Sensing, Elements of Photographic System, Types of Aerial Photographs: Vertical Photographs, Oblique Photographs, Satellite Imagery.	Lecture and Discussion
2	Week-2 3rd Sept	Introduction to Air Photo Interpretation, Basics of Photogrammetry for Map Making: Definition and Principles, Geometric Elements of a Vertical Photograph, Relief Displacement, Ground Control for Aerial Photography.	Lecture and Discussion
3	Week-3 10 th Sept	Digital Image Processing, Applications: Geologic & Soil mapping, Land-use/land cover Mapping, Land use Classification, Agriculture Applications, Forestry Applications, Water resource Applications: Water Pollution Detection, Flood Damage Estimation, Urban & Regional Planning Applications, Wetland mapping.	Lecture and Discussion
Study Tour From 12-20 th of Sept of 2026			
4	Week-4 (24 th Sept)	Presentations on Application of Remote sensing	Assignment-1
5	Week-5 (1 st October)	Definition and components of GIS: Hardware, Software, Data Input, Storage, Output, and Database Structures. Types of Spatial Data: Vector (point, line, polygon) and Raster (grid-based). Coordinate	Lecture and Practice in GIS Lab
6	Week-6 (8th Oct)	Systems: Geographic Coordinate System (GCS) and Projected Coordinate System (PCS). Data Processing: Georeferencing, digitization using KML files, and spatial data preparation. Open Source GIS platforms (e.g., QGIS) and their applications.	Lecture and Practice in GIS Lab

7	Week-7 (15 th oct)	Attribute Data: Importance of attribute tables, features, and basic spatial analysis.	Lecture and Practice in GIS Lab
8	Week-8 (22 nd Oct)	Mid Sem jury-Assignment-2	GIS Lab
9	Week-9 (19th oct)	Introduction to ArcGIS/QGIS interface: navigation, selection, editing, and layer management tools. Data management functions including projection, coordinate transformation, and data conversion. Geoprocessing tools: Buffer, Clip, Merge, Union, Intersect, Dissolve, Spatial Join, and overlay analysis.	Lecture and Practice in GIS Lab
10	Week-9(B) (22nd oct)	Application of proximity, network, and suitability analysis in urban planning.	Lecture and Practice in GIS Lab by Expert (Workshop-Day-1)

11	Week-10 (29TH Oct)	Raster and terrain analysis: DEM, Digital Elevation Model & Digital Terrain Model NDVI, NDBI, NDWI	Discussion-GIS -lab
12	Week-10(B) (1ST Nov)	Preparation for Rural, Urban, and Regional Studies Base Map and Land Use Land Cover- Supervised and Unsupervised	Lecture and Practice in GIS Lab by Expert (Workshop-Day-2)
13	Week-11 (15th Nov)	Watershed delineation Map, Flood, Risk Mapping, Drought Mapping,	Discussion-GIS -lab
14	Week-12 (22nd Nov)	Output and visualization: thematic mapping, symbology, map layout, and export functions.	Discussion-GIS -lab
15	Week-12(B) (25th Nov)	GPS monitoring of pedestrian movement, Use of Open Street mapping, and Various Open Sources. Drones are used for aerial mapping and surveying.	Lecture and Practice in GIS Lab by Expert (Workshop-Day-3)
16	Week-13 (29thNov)	Spatial Analysis, Indices and Map Composition, Open-source GIS tools and processing toolbox for spatial analysis.	Discussion-GIS -lab

18	Week-14 (4th Dec)	End Of The Classes Internal Assessment -3	GIS -lab
S. No.	Stages of Evaluation		Weightage
1	First stage: Assessment –1		20
2	Second stage: Mid-semester Examination		40
3	Third stage: Assessment –3		40
	Total		100

Reference Books:

References:

1. Batty, D.M.a.M. (ed.) (2005) GIS, Spatial Analysis and Modelling, ESRI Press.
2. Brewer, C.A. (n.d) Designing Better Maps: A Guide for GIS Users, ESRI Press.
3. C, H.T. (n.d) Land Form Designs, P D A Publication.
4. C. Hanna, K. (1999) GIS for Landscape Architects, ESRI press.
5. G.S. Srivastava (2014) An Introduction to Geoinformatics, McGraw Hill Education.
6. Garcia, J. (2017) Introduction to Geographic Information System, Larsen and Keller Education.
7. H, P.P. (1995) Concrete Floors Finishes, Butterworth-Heinemann.
8. K.R, B. (1990) Integrating GIS into Urban Regional Planning, Alternative approaches for developing countries regional development Dialogue, Japan: UNCRD.
9. Michael, L. (1988) Tree Detailing, London: Butterworth Architecture.
10. Michael, L. (1993) Landscape Detailing Vol.1 Enclosure, 3rd edition, Architectural Press.
11. Mitchell, A. (2005) Geographic patterns and Relationships, ESRI Press.
12. Stevens, D. (2000) Ultimate Water Garden Book, 01st edition, Conran.

**Course Instructors:**

sd/-
(Dr. Prashanti Rao)

Head of Department:

sd/-
(Prof.Dr. Amitava Sarkar)