

Lecture Plan		
Name of the college: Government college of Arts, Science and Commerce, Sanquelim Goa		
Name of Faculty: Dr. Arati Panshekar	Subject: Economics	
Paper code: ECO-6401 Techniques of Geo-spatial Analysis	Program: MA	Division: A
Academic year: 2026 - 2027	Semester: III	Total Lectures: 30
Course Objectives: To provide students a comprehensive understanding of India’s economic development in recent years and to familiarize them with the growth, development, and contribution of various sectors to the Indian economy.		
Expected Course Outcome: CO1. Recall major phases and reforms in India’s post-independence economy. CO2. Analyze trends and policies in agriculture, industry, and services. CO3. Evaluate India’s trade structure and balance of payments. CO4. Assess debates on poverty, employment, inequality, and sustainability. CO5. Apply economic data to interpret India’s development outcomes		
Student Learning Outcome: Upon successful completion of this practical course, students will be able to: 1. Create and manage spatial datasets by interacting with vector and raster data, creating shapefiles, editing attributes, applying topology rules, and managing coordinate reference systems. 2. Apply geospatial analysis techniques, including buffering, clipping, terrain analysis, interpolation, raster–vector integration, and zonal statistics using GIS software. 3. Visualize and interpret spatial information by styling raster and vector layers, creating thematic and 3D maps, and designing professional map layouts. 4. Perform advanced raster and vector analyses to solve geographical problems and effectively communicate spatial information through GIS-based outputs.		

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
June	22/06/2026	27/06/2026	2	Introduction to Spatial Data and Its Applications in Economic Analysis	- Chalk and talk aided by ICT enabled lectures - Flipped Classroom - PC lab exercises - Assignments and presentations - Group activity - Exploration - Google Maps Exercise	- Debate - Classroom Teaching - Google Maps - Power point presentation - Quiz - Discussion	- Blij, H. J. de, & Muller, P. O. (2010). Geography: Realms, Regions, and Concepts. John Wiley & Sons. - Clifford, N., Cope, M., & Gillespie, T. W. (2016). Key Concepts in Geography. Sage. D. K. (2017). Geography: A Visual Encyclopaedia. DK. ▀ Dikshit R.D. (2000) Geographical Thought -A Contextual History of Ideas, P. Hall of India Pvt. - Das Gupta and Kapoor. (2004) Principles of Physical geography. S. Chand, New Delhi - Fouberg, E. H., Murphy, A. B., & Blij, H. J. de. (2016). Human Geography: People, Place, and Culture. John Wiley & Sons. - Getis, A., Bjelland, M., Getis, V. A., & Fellmann, J. D. (2015). Introduction to Geography. McGraw-Hill Education. ▀ Goh Cheng Leong: Certificate Physical and Human Geography, Oxford University Press, New Delhi. - Harvey, David. (1969). Explanation in Geography. Edward Arnold.
June	29/06/2026	04/07/2026	2	Introduction to QGIS: Installation, Graphical User Interface, and Basic Components			
July	06/07/2026	11/07/2026	2	Fundamentals of Remote Sensing: Principles, Signals, and Electromagnetic Spectrum			
July	13/07/2026	18/07/2026	2	Electromagnetic Radiation: Terms, Units of Measurement, and Radiation Laws			
July	20/07/2026	25/07/2026	2	Characteristics of Remote Sensing Data: Spatial, Spectral, Radiometric, Temporal, and Angular Resolution			
July	27/07/2026	01/08/2026	2	Sources of Remote Sensing Data and Raster–Vector Data Models			
August	03/08/2026	08/08/2026	2	Interacting with Spatial Data: Identifying Features, Measuring, Querying, and Selecting			

				Data
August	10/08/2026	15/08/2026	2	Creation and Editing of Shapefiles: Snapping, Topology, and Attribute Table Management
August	17/08/2026	22/08/2026	2	Field Calculator, Data Joins, Coordinate Reference Systems, and Map Projections
August	24/08/2026	29/08/2026	2	Geoprocessing Techniques: Clipping, Buffer Analysis, and Spatial Data Extraction
September	31/08/2026	05/09/2026	2	Terrain Analysis: Elevation, Slope, Aspect, Hillshade, and Spatial Interpolation
September	07/09/2026	12/09/2026	2	Raster Layer Visualization: Styling Terrain, Satellite Images, and Land Cover Maps
September	21/09/2026	26/09/2026	2	Vector Layer Visualization: Styling and Labeling Point, Line, and Polygon Features
September	28/09/2026	03/10/2026	2	3D Visualization and Cartographic Output: Creating 3D Maps and Print Layouts
October	05/10/2026	10/09/2026	2	Raster Analysis: Raster Calculator, Raster–Vector Conversion, and

				Zonal Statistics		
October	12/10/2026	14/10/2026	2	Advanced Raster and Vector Spatial Analysis and Applications in Geographical and Economic Studies		

*** Assessment Rubrics**

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
Practical	25
Semester End Exam	60