## Lecture Plan

**Name of the college:** Government College of Arts, science and Commerce Sanquelim Goa

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| **Name of Faculty: Dr. Arati Panshekar** | **Subject:** Geography | |
| **Paper code and title: GOG-307 Project** | **Program: BA** | **Division:** |
| **Academic year: 2025-26** | **Semester: VI** | **Total Lectures: 2** |

**Course Objectives:**

To understand the topographic characteristics of Sattari Taluka through the use of DEM-based analysis.
To develop skills in applying geospatial technologies (GIS and remote sensing) for terrain evaluation and mapping.
To interpret elevation, slope, and relief parameters for understanding regional physical geography and planning aspects.

**Expected Course Outcome:**

**Students will be able to generate and analyze DEM-based thematic maps such as elevation, slope, and aspect for Sattari Taluka using GIS tools.**
**Students will be able to interpret topographic parameters to explain terrain characteristics and their influence on drainage, land use, and settlement patterns.**
**Students will acquire practical competence in applying geospatial technologies for basic terrain evaluation and geographical analysis at the taluka level.**

**Student Learning Outcome: After completing this course, students will be able to:**

**Students will be able to use DEM data in GIS software to prepare topographic maps of Sattari Taluka.**
**Students will be able to analyze and explain elevation, slope, and relief characteristics using geospatial techniques.**
**Students will be able to apply topographic analysis results to understand local physical geography and planning-related issues.**

| Month | Lecture From | Lecture To | No. of lectures allotted | Topic, Subtopic to be covered | Exercise/ Assignment | ICT Tools | Reference books |
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| January | 01-01-2026 | 01-01-2026 | 2 | Introduction to Topography and Terrain Analysis Concept of topography, relief, elevation, slope, and their geographical significance with reference to taluka-level studies. | Mind Mapping, Question bank | Classroom Discussion, survey | 1. Burrough, P. A., & McDonnell, R. A. (1998). *Principles of Geographical Information Systems*. Oxford University Press.<br>2. Chang, K. T. (2016). *Introduction to Geographic Information Systems* (8th ed.). McGraw-Hill Education.<br>3. Jensen, J. R. (2015). *Introductory Digital Image Processing: A Remote Sensing Perspective* (4th ed.). Pearson Education.<br>4. Wilson, J. P., & Gallant, J. C. (2000). *Terrain Analysis: Principles and Applications*. John Wiley & Sons.<br>5. Government of India. (2019). *CartoDEM Version 3 – User Guide and Technical Documentation*. ISRO–NRSC, Hyderabad. |
| | 05-01-2026 | 10-01-2026 | 2 | Physiographic Setting of Sattari Taluka Location, geological background, climate, drainage, and regional physical characteristics of Sattari Taluka. | | | |
| | 12-01-2026 | 17-01-2026 | 2 | Basics of Digital Elevation Models (DEM) Concept, types of DEM (SRTM, ASTER, CartoDEM), resolution, accuracy, and limitations. | | | |
| | 19-01-2026 | 24-01-2026 | 2 | Sources and Acquisition of DEM Data Open-source DEM data portals, data formats, downloading procedures, and metadata understanding. | | | |
| | 26-01-2026 | 31-01-2026 | 2 | Introduction to Geospatial Technologies Fundamentals of GIS and remote sensing and their role in topographic and terrain analysis. | | | |
| February | 02-02-2026 | 07-02-2026 | 2 | DEM Pre-processing Techniques Data projection, clipping to study area, error | | | |

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| | | | | correction, sink filling, and resampling methods. | | | |
| | 09-02-2026 | 14-02-2026 | 2 | Elevation Analysis of Sattari Taluka Preparation and interpretation of elevation maps and hypsometric classification. | | | |
| | 16-02-2026 | 21-02-2026 | 2 | Slope Analysis Using DEM Methods of slope calculation, slope classification, and its relevance to land use and hazard assessment. | | | |
| | 23-02-2026 | 28-02-2026 | 2 | Aspect and Relief Analysis Aspect mapping, relative relief, ruggedness, and terrain morphology interpretation. | | | |
| March | 02-03-2026 | 07-03-2026 | 2 | Drainage and Watershed Analysis from DEM Drainage extraction, stream ordering, watershed delineation, and terrain–drainage relationships. | | | |
| | 09-03-2026 | 14-03-2026 | 2 | Applications of Topographic Analysis Role of terrain analysis in agriculture, settlement planning, infrastructure development, and disaster management. | | | |
| | 16-03-2026 | 21-03-2026 | 2 | Case Study Interpretation and Project-Based Learning Integrated interpretation of DEM-derived maps of Sattari Taluka, report writing, and | | | |

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| | | | | presentation techniques for TYBA projects. | | | |
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*** Assessment Rubrics**

| Component | Max Marks |
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| ISA 1 | |
| ISA 2 | |
| Practical | |
| Project | 100 |
| Semester End Exam | |