**Practical Plan**

**Name of the college: 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-305 Fundamentals of Geographical Information System** | **Program: TYBA** | **Division: Batch 2** |
| **Academic year: 2025 - 2026** | **Semester: VI** | **Total Practicals/Labs: 15** |

**Credits: 1**

**Course Objectives:**

This course provides an introduction to the fundamental concepts and applications of Geographical Information Systems (GIS). Students will learn the principles of spatial data, GIS technology, data analysis, and cartographic representation. Through a combination of lectures, hands-on exercises, and projects, students will develop practical skills in utilizing GIS tools for spatial analysis and decision-making.

**Expected Course Outcome:**

At the end of the successful completion of this course, students will be able to:

1. **Understand** the primary objectives of GIS in terms of spatial data management, analysis, and visualization.

2. **Apply** knowledge of spatial and non-spatial data models to solve real-world problems in various domains.

3. **Integrate** knowledge of coordinate systems and map projections to ensure accurate and meaningful spatial analysis.

4. **Identify** the methods of map creation and **Create** map using different elements of map making

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

**Define GIS and explain its evolution, components, and objectives.**

**Differentiate spatial and non-spatial data and explain raster, vector, and database data models.**

**Understand coordinate systems and map projections and their importance in GIS analysis.**

**Use basic GIS software tools for data input, editing, and visualization.**

| Month | Practicals/Labs Scheduled Date | No. of Practicals/Labs planned | List of Experiments | Reference books |
|---|---|---|---|---|
| January | 06-01-2026 | 1 | Creating User Accounts and Data Download (DIVA-GIS and SOI Naksha portals: data access and download procedures) | 1. George Joseph: Fundamentals of Remote Sensing, Second Edition, Universities Press, Hyderabad<br>2. Jensen J. R.: Remote Sensing of the Environment: An Earth Resource Perspective, Pearson Education, Singapore.<br>3. Lillesand, Kiefer and Chipman: Remote sensing and Image Interpretation. 5 Ed. Wiley& sons.<br>4. Reddy Anji M.: Text Book of Remote Sensing and Geographical Information System, BS Publications, Hyderabad, AP |
| | 13-01-2026 | 1 | Introduction to QGIS Interface and Workspace (Exploring menus, toolbars, panels, and project settings) | |
| | 20-01-2026 | 1 | Understanding and Managing QGIS Plugins (Installing, enabling, and using essential plugins) | |
| | 27-01-2026 | 1 | Importing Raster Data into QGIS (Supported formats and layer management) | |

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| | | | Raster Georeferencing Techniques (Geographic and Projected Coordinate Systems) | 5. Rees, W. G.: Physical Principles of Remote Sensing, Second Edition, Cambridge University Press, UK.<br><br>6. Robinson A. H., Sale, R. D., Morrison, J. L., Muehrcke, P. C.: Elements of Cartography, John Wiley & Sons, New York. |
| February | 03-02-2026 | 1 | Creation of Vector Datasets (Point, line, polygon layers and database formats) | |
| | 10-02-2026 | 1 | Basic Digitization Techniques (On-screen digitization and feature creation) | |
| | 17-02-2026 | 1 | Error Identification in Vector Data (Common digitization errors and detection methods) | |
| | 24-02-2026 | 1 | Topology Building and Error Correction (Snapping, topology rules, and corrections) | |
| March | 03-03-2026 | 1 | Symbology and Thematic Mapping (Simple features, categorized and graduated symbols) | |
| | 10-03-2026 | 1 | Geoprocessing Operations in QGIS (Split, merge, dissolve, clip, and intersect tools) | |
| | 17-03-2026 | 1 | Attribute Data Handling and Queries (Table management, selection, and basic SQL queries) | |
| | 24-03-2026 | 1 | Field Calculations and Map Layout Preparation (Field calculator, title, legend, scale bar, north arrow, and grids) | |
| | 31-03-2026 | 1 | Creating User Accounts and Data Download (DIVA-GIS and SOI Naksha portals: data access and download procedures) | |