

Basic GIS Mapping with QGIS : SEC-1		
Course Code:	Course Title: Basic GIS Mapping with QGIS (Practical)	
Credits: 02+01	No of Lectures= 30 Hours+10 Hours	CBPBU
Full Marks: 50 (Evaluated by External Expert+ Lab Note book + Project+ Attendance)		
Total No. of Lectures-Tutorials-Project (in hours per week): 2-0-1		
Course Objectives:		
<ol style="list-style-type: none"> To learn how to navigate the QGIS interface, load various types of geospatial data, and create basic maps and visualizations. To conduct essential spatial analysis tasks such as buffering, overlaying, querying, and geo-processing using QGIS tools and plugins. To learn how to build and manage geospatial databases, import/export data, and utilize QGIS as a powerful tool for data management and spatial data integration. 		
Unit	Topic (Value in parenthesis indicates Marks)	No. of Lectures
Unit I Introduction to GIS and QGIS	1.1. Definition and applications of GIS; Overview of QGIS software; Understanding spatial data and coordinate systems; QGIS Interface, Plugins and Basic Functions; Layer management and styling, 1.2. Sources of GIS Data; Downloading of LANDSAT, Bhuvan image, Sentinel 2 image and DEM 1.3. Basic Concept of Map Projection (10 Marks)	10
Unit II Basic Operations of QGIS	2.1. Georeferencing of Topographical Map 2.2. Digitizing features and creating new layers, editing spatial and attribute data, attribute table manipulation and queries, Spatial query and selection tools, exporting of data from excel. 2.3. Overlay operations (intersections, unions, etc.), Buffering and proximity analysis (10 Marks)	10
Unit III Application of GIS	3.1. Creating thematic maps using graduated and colour symbols 3.2. Creating thematic maps using proportional diagrams (Pie and Bar) 3.2. Data Input and Visualization, Importing and exporting data in various formats, Symbolizing and labelling spatial data, creating map layouts and adding map elements (10 Marks)	10
Unit IV	Case Study: Project Report and Viva Voce (This is an Internal Part) (10 Marks)	10

Suggested Reading:

- Kurt Menke, GISP, Richard Smith Jr., GISP, Luigi Pirelli (2016). Mastering QGIS - Second Edition, Publisher: Packt
- Tarafder Sujoy Kumar (2021). Learning GIS with QGIS Software (Paperback), A.S. Publication, Ranaghat, Nadia
- Graser, Anita (2016). Learning QGIS - Third Edition: Create great maps and perform Geoprocessing tasks with ease, Packt Publishing
- Andrew Cutts (2019). QGIS Quick Start Guide, Packt Publishing.

Basic GIS Mapping with QGIS : SEC-2		
Course Code:	Course Title: GIS Mapping with QGIS (Practical)	
Credits: 02+01	No of Lectures= 30 Hours+10 Hours	CBPBU
Full Marks: 50 (Evaluated by External Expert+ Internal Evaluation + Project+ Attendance)		
Total No. of Lectures-Tutorials-Project (in hours per week): 2-0-1		
Unit	Topic (Value in parenthesis indicates Marks)	No. of Lectures
Unit I Basic concept of Remote Sensing	1.1. Definition and scope of Remote Sensing, Principles EMR, Energy interactions with matter 1.2. Spectral Signature and its Response of Soil, Vegetation, Built-up and Water 1.3. Basic Concept of Visual, Thermal, Infra-Red, Microwave Remote Sensing (10 Marks)	10
Unit II GIS Models and Map Layout	2.1. Image Classification: Supervised and Unsupervised; 2.2. Accuracy Assessment, Class Editing; Change Detection Study and Layout of Maps (10)	10
Unit III Image Classification	3.1. Georeferencing of satellite image 3.2. Preparation of LULC Map. 3.3. Preparation of Different Indices map such as NDVI, NDBI, NDWI, MNDWI, EVI (10)	10
Unit IV Project	Case Study: Project Report and Viva Voce (This is an Internal Part) (10)	10

Suggested Reading:

1. Kurt Menke, GISP, Richard Smith Jr., GISP, Luigi Pirelli (2016). Mastering QGIS - Second Edition, Publisher: Packt
2. Tarafder Sujoy Kumar (2021). Learning GIS with QGIS Software (Paperback), A.S. Publication, Ranaghat, Nadia
3. Graser, Anita (2016). Learning QGIS - Third Edition: Create great maps and perform Geoprocessing tasks with ease, Packt Publishing
4. Andrew Cutts (2019). QGIS Quick Start Guide, Packt Publishing.