Basic GIS Mapping with QGIS: SEC-3

Course Code:	Course Title: Basic GIS Mapping with QGIS (Practical)		
Credits: 02+01	No of Lectures= 30 Hours+10 Hours	Year -2	Semester-III

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

A) Course Objectives:
   i.   Understand vector and raster data analysis in QGIS.
  ii.   Develop practical GIS skills.
 iii.   Perform topographical and spatial analysis.
  iv.   Create thematic maps like LULC.
   v.   Apply GIS tools to real-world projects.

B) Course Outcomes:
   i.   Navigate QGIS for data analysis.
  ii.   Perform attribute and spatial calculations.
 iii.   Conduct DEM-based spatial analysis.
  iv.   Create land use and topographical maps.
   v.   Apply QGIS skills in projects and reports.

Unit	Topic (Value in parenthesis indicates Marks)	No. of Lectures
Unit I **Vector Data Analysis**	1.1. Add vector layer in QGIS 1.2. Visualization of vector layers 1.3. Reading Excel files & data joining with attribute table 1.4. Attribute table operations: add new column, calculate descriptive statistics, use of field calculator, compute geometry (10 Marks)	10
Unit II **Raster Data Analysis**	2.1. Add raster layers in QGIS 2.2. Visualization of raster layers 2.3. Reclassification of raster data using SAGA Toolbox 2.4. Resampling of raster data in QGIS 2.5. Filtering of raster data: low pass and high pass filter (10 Marks)	10
Unit III **Application of GIS**	3.1. Preparation of Land use/Land cover map 3.2. Change detection of Land use/Land cover pattern from satellite images of two different years 3.3. Extraction of topographical variables from DEM (10 Marks)	10
Unit IV	**Case Study**: Project Report and Viva Voce (This is an Internal Part) (10 Marks)	10

References:
   1. Andrew Cutts (2019). QGIS Quick Start Guide, Packt Publishing.
   2. Graser, Anita (2016). Learning QGIS - Third Edition: Create great maps and perform Geoprocessing tasks with ease, Packt Publishing
   3. Kurt Menke, GISP, Richard Smith Jr., GISP, Luigi Pirelli (2016). Mastering QGIS - Second Edition, Publisher: Packt
   4. Kutub Uddin, H. M. (2022.). *Remote Sensing, GIS & QGIS (Concept & Application) [CBCS Syllabus]*. Kalyani Publisher.
   5. Tarafder Sujoy Kumar (2021). Learning GIS with QGIS Software (Paperback), A.S. Publication, Ranaghat, Nadia