4.	Map composition and presentation of results. Overlay and proximity analysis-clip, erase, intersect, union, buffer.
5.	Edge matching/spatial adjustment. Calculation of slope in degrees and percentages. Calculation of area, perimeter and distance using Arc GIS.
6.	Creation of 3D maps: TIN, Hill shade, Slope, and Aspect with Arc GIS.
DBMS	
1.	Outlines of DBMS and Applications of DBMS in Geoinformatics.
2.	Introduction to SQL and its application in GIS.SQL Queries (Alter, Insert, Update, Delete).
3.	Designing database: Creation of tables, inserting values in to the tables, updating the existing Value, modifying the structure of the database, Use of Drop and delete commands. Use of Numeric, Aggregate, Date, Conversion and character functions.
4.	C programming: Applications of C program in Geoinformatics.

GIE 457: GEOINFORMATICS (Open Elective)

Skills, employability and entrepreneurship: This course is open to other disciplines such as chemistry, physics, life sciences, statistics and computer sciences. Currently, remote sensing and GIS technology are being used in various disciplines. However, students can perform better in their career if they know some knowledge about this subject for interdisciplinary science. Students have employability opportunities in many branches of science in various government organizations and MNCs.

Unit 1	**Definition:** of data and information, historical evolution and need for information, Basic Concepts of Spatial Data and aspatial data, spatial information. Sources of spatial data-survey data, air photos, satellite imagesand field data.	6 hrs
Unit 2	**Scope and Importance:** of Geoinformatics; Basic concepts of Remote Sensing; aerial photography and satellite remote sensing. Indian Space Program and Indian Remote Sensing Satellites.	6 hrs
Unit 3	**Principles of Thermal and Microwave Remote Sensing:** Introduction, Black body Radiation, Temperature Radiations from the earth's surface and Applications of thermal remote sensing. Basic concepts of micro wave remote sensing, Real Aperture Radars and Synthetic Aperture Radars, Microwave sensors. Applications of Microwave Remote Sensing. Visual and digital image analysis techniques.	6 hrs
Unit 4	**Map Concept**: Map features, scale, resolution, accuracy, projection and data base extent. Map Projection and parameters: Geographical co-ordinate system, spheroid and spheres. Types of projection and parameters. Indian geodetic system and Everest spheroid, world geodeticsystem-084(WGS-084).	6 hrs
Unit 5	**Geographic Information System**: Definition, components, packages, capabilities and purpose of GIS. Spatial and non-spatial databases. Data Models: Vector and Raster models. Application and limitations of GIS.	6 hrs

Unit 6	**Fundamentals of GPS:** Introduction, space segments, user segments and control segments, observation principle and signal structure, accuracy of GPS measurements, point positioning and relative positioning, methods of surveying with GPS, Static and Kinematic positioning, navigation with GPS, differential GPS, navigational receivers.	6 hrs
Unit 7	**Geoinformatics and other Information Sciences**: Geoinformatics – Spatialand Non-spatial data Management. Spatial information Technology.	6 hrs
Unit 8	**Applications of Geoinformatics**: Geoinformatics technologies. Applications in Natural Resource Management, Agriculture, Solid Waste Management, Natural Disaster Management, Coastal Zone Management.	6 hrs

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