SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (CA & IT) Semester: II Syllabus with Effect from: June-2019

Paper Code: PS02EIIT32	Total Credit: 4
Title Of Paper: Geographic Information System	

Unit	Description in Detail	Weightage (%)
I	**Introduction to GIS and Digital Geographic Data & Maps** Introduction to Digital Geographic Data: Introduction to Geographic Information Systems, Spatial Measurement, Spatial Location and Reference, Spatial Patterns, Geographic Data Collection Map Basics: Abstract Nature of Maps, Map Scale, More Map Characteristics, Map Projection, Grid Systems for Process, Map Symbolism GIS Data Models: Computer File Structure, Database Structure, Graphic Representation of Entities and Attributes, GIS data Models for Multiple MAPS	25%
II	**Input, Storage, Editing and Introduction to Analysis** The Input Subsystem: Primary Data, Input Devices, Vector Input, Raster Input, Remote Sensing Data Input, GPS Data Input, Metadata and Metadata Standards. Data Storage and Editing: Storage of GIS Databases, Detecting and Editing Errors of Different Types, Dealing with Projection Changes, Edge Matching, Rubber Sheeting. Elementary Spatial Analysis: GIS Data Query, Defining Spatial Characteristics, Working with Higher – Level Objectives. Measurement: Measuring Length of Linear Objectives, Polygons, Shape and Distance.	25%
III	**Classification and Analysis of Surfaces** Classification: Classification Principal, Elements of Reclassification, Neighborhood Functions, Roving Windows. Buffers Statistical Surfaces: Surface Mapping, Sampling the Statistical Surface, The DEM, Raster Surface, Interpolation, Terrain Reclassification, Slicing the Statistical Surface, Cut and Fill Spatial Arrangement Point, Line and Area Arrangement, Point Patterns, Thiessen Polygons, Area Patterns, Distance and Adjacency, Polygon Arrangement Measures, Linear Patterns, Directionality of Linear and Areal Objective, Connectivity of Linear Objects, Gravity Model, Routing and Allocation, The Missing Variables.	25%
IV	**Maps & GIS Output** Comparing Variables among Maps: The Cartographic Overlay, Point-inPolygon, Line-in-Polygon, Polygon Overlay, Automating the Overlay, Types of Vector Overlay, CAD-Type Overlay, Dissymmetric Mapping Cartographic Modeling: Model Components, The Cartographic Models, Types of Cartographic Models, Inductive and Deductive Modeling, Factor Selection, model Flowcharting, Model implementation, Model Verification The Output from Analysis: Output: The Display of Analysis, Cartographic Output, The Design Process, Map Design Controls, Non-cartographic Output	25%

Basic Text & Reference Books:-

- Michael N DeMers: "Fundamentals of Geographic Information Systems", Wiley India Education, 4th Edition, 2009.
- Kang-tsung Chang: "Introduction to Geographic Information Systems", McGraw-Hill Publication, 4th Edition, 2009.
- YEUNG, ALBERT K. W., LO, C. P., "Concepts and Techniques of Geographic Information Systems", PHI Learning, 2nd Edition, 2009.