



## Geographic Information Systems SYLLABUS (USIT606)

Unit I	<b>Spatial Data Concepts</b> Introduction to GIS, Geographically referenced data,	Chapter 1	1
	<b>Co-ordinate Systems</b> Geographic coordinate system, Projected and planer coordinate sys, Map projections, Plane coordinate systems	Chapter 2	2
	<b>Vector data model</b> Georelational Vector Data Model Object Based Vector Data Model	Chapter 3 Chapter 4	3,4
	<b>Raster data model</b>	Chapter 5	5
Unit II	<b>Data Input</b> Existing GIS data, Metadata, Conversion of existing data, Creating new data	Chapter 6	6
	<b>Geometric transformation</b> Geometric transformation, RMS error and its interpretation, Resampling of pixel values.	Chapter 7	7
Unit III	<b>Attribute data input</b> Attribute data in GIS, Relational model, Data entry, Manipulation of fields and attribute data	Chapter 9	8
	<b>Data Display &amp; Cartographic Symbolization</b> cartographic symbolization, types of maps, typography, map design, map production	Chapter 10	9
Unit IV	<b>Data exploration</b> Exploration, attribute data query, spatial data query, raster data query, geographic visualization	Chapter 11	10
Unit V	<b>Vector data analysis</b> Introduction, buffering, map overlay, Distance measurement and map manipulation	Chapter 12	11
	<b>Raster data analysis</b> Data analysis environment, local operations, neighbourhood operations, zonal operations, Distance measure operations	Chapter 13	12
Unit VI	<b>Spatial Interpolation</b> Elements, Global methods, local methods, Kriging, Comparisons of different methods	Chapter 16	13

### Reference Book:

Introduction to Geographic Information Systems by Kang-tsung Chang, 5th Edition, Tata McGrawHill.

## Geographic Information Systems Practical List (USIT6P6)

- 1) 1. Create map of your surrounding using vector data model(point, line, polygon)
- 2) Creation of geo-relational data model for area.
- 3) To fire spatial query(contains, disjoints, within, overlap, touches)
- 4) 4a.To fire SQL queries using Query Builder  
4b.Using analysis tools
- 5) To perform vector data classification
- 6) To create map using print composer
- 7) To perform raster data analysis (slope, aspect, hillshade, ruggedness)
- 8) To perform Image Registration using Matlab