

**M.C.A. SEM – V**  
**MCA – EL1 : Geographic Information System**

Teaching Scheme (per week)		Examination Scheme					
		INT		EXT		TOTAL	
Th. (hours)	Pr. (hours)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)
4	--	30	--	70	--	100	--

**UNIT I (25%)**

**Fundamentals of GIS:**

Defining GIS, components of GIS, spatial data, spatial data-maps, characteristics, spatial data modeling, attribute data management-database data model, GIS applications and developments in database.

**UNIT II (25%)**

**Input-Output and Data Analysis in GIS:**

Data input and editing– methods, editing, integration, Data analysis-measurements, queries, reclassification, buffering, map overlay, interpolation, analysis of surfaces, network analysis, spatial analysis, Analytical modeling in GIS -physical, environment and human processes, output from GIS –maps, non-cartographic output, spatial multimedia, decision support.

**UNIT III (25%)**

**Issues in GIS:**

Development of computer methods for spatial data, Issues in GIS–data quality and errors, sources of errors, human and organizational issues, GIS project design and management–problem identification, designing a data model, project management, Implementation, evaluation, the future of GIS, Internet resources of GIS.

**UNIT IV (25%)**

**Remote Sensing:**

Principles of remote sensing, remote sensing system-classification, Imaging, characteristics, extraction of information from images–metric and thematic, Integration of RS and GIS.

**Global Positioning Systems (GPS):**

Introduction to GPS, Accuracy of GPS, Differential GPS, Applications of GPS, Integration of GIS and GPS.

**Books :**

1. An Introduction to Geographical Information Systems by Heywood, Cornelius and Carver (Person Education Asia 2000)
2. Concepts and techniques of Geographic Information Systems by C. P. Lo and Albert Yeung (PHI, New Delhi)
3. Fundamentals of Geographic information Systems 2<sup>nd</sup> Edition by Michael N. Demers (John Wiley & Sons (ASIA) Pte Ltd)
4. ArcGIS Developer’s Guide for Visual Basic Applications by Razvi (Onword Press, 2002)