

**SEMESTER 1<sup>st</sup>**  
**MAJOR COURSE**  
**GIF122J GEO-INFORMATICS (COMPUTERS AND GEOINFORMATICS)**

**(CREDIT HOURS: 4+2)**

**COURSE GOALS:**

- *Develop basic skills and understanding of the computer operations.*
- *Expose students to the basic techniques of digital cartography*
- *Visualization and presentation of the remote sensing and GIS data.*
- *Geospatial data handling and management.*

**THEORY (04 CREDITS)**

**UNIT I: INTRODUCTION TO GEOINFORMATICS**

Geoinformatics: definition and scope. Role of computers in remotely sensed and GIS data. **Online:** Spatial and non-spatial data.

**Assignment:** Applications of geoinformatics in natural resources assessment (forestry, fisheries and mining).

**UNIT II: MAP MAKING**

Maps: Introduction, types and uses of maps. Cartography: analogue and digital. Map projections.

**Online:** Elements of map composition: map design and layout, map scale, legend, annotations.

**Assignment:** Generation of maps.

**UNIT III: DATA SOURCES AND VISUALIZATION**

Data sources for mapping: remote sensing, field observations, GPS, maps and other ancillary data.

**Online:** Integration of different data sources for mapping.

**Assignment:** Visualization techniques: Visual exploration for different features/surfaces.

**UNIT IV: GEOSPATIAL DATA MANAGEMENT**

Data, information and knowledge; Overview of data management in GIS; Database management systems (DBMS).

**Online:** Database; spatial and non-spatial databases; meta-data.

**Assignment:** Representation of real-world data in GIS (Raster and Vector data).

**PRACTICAL (02 CREDITS)**

- Computers: Handling and maintenance.
- Hands on MS Office (MS Word, M S Excel, MS Power point).
- Map design and layout.
- Data conversion in GIS.
- Assignment: Digitization of college campus from Google Earth and preparation of GIS database

**BOOKS RECOMMENDED:**

- Srivastava, G. S. 2014. An introduction to Geoinformatics. McGraw-Hill Education.
- Gupta. R.K. 2014. Principles of Geoinformatics. Jain Brothers.
- Awange. J., Kiema, K. John, B. 2013. Environmental Geoinformatics: Monitoring and Management. Springer Berlin Heidelberg.
- Chandra. A. M. 2016. Geoinformatics. New Age International (P) Ltd Publishers.