SEMESTER-II

GEOG. 658: PRINCIPLES OF GEOGRAPHIC INFORMATION SYSTEM 3(2-1)

Course Objectives

The course contents are designed to impart practical experience in use and interpretation of spatial data. This course will provide comprehensive instructions, concept and principles of GIS technology and its applications to the analysis of spatial data.

Learning Outcomes

The students will be able to generate various types of digital maps and reports in laboratory work session.

Course Outline

1. **Introduction to GIS**
   - Concept of GIS
   - Evolution of GIS
   - Components of GIS
   - Functions of GIS
   - Applications of GIS in Policy Making
2. **GIS Database**
   - Data Structure/types
   - Sources of data acquisition
   - Global Positioning System
   - Geo-referencing
   - Digitization
   - Data Conversion
3. **Data Manipulation and Analysis**
   - Data quality
   - Accuracy Assessment Tests
   - Geo-processing
   - Model Development
4. **Digital Mapping Concept**
   - Map Design
   - Charting and Tabular representation,
   - Map Projection-coordinate system and projection system.
5. **Open Source GIS & Computing**
   - General softwares of GIS special emphasis on QGIS.
   - Word, Excel and Power point skills.

Lab. Work

GIS: Spatial data reference: Vector data; Raster data, Introduction to Geo-processing tools, generating digital maps,
GPS: Exercise Geo-referencing, Coordinates: Geographic and matric, datum, projection system, Processing and Analysis:

Exercises

Use of GIS in Agriculture Land use planning, forestry, Geology, Socioeconomic, Environmental management and monitoring, change detection, Global Scale applications.

Recommended Books

1. Longley.Paul. (2005) "Geographical Information System and Science", Wiley & Sons, USA.
2. Singh R.L. (2004) "Elements of Practical Cartography", Kalyani Publishers, Delhi.
3. Lawrence (2003) "Cartographic Methods", Methunen UK.
4. Pradeep Mool et.al. (2000)" Application ofGIS & RS", ICIMOD, Nepal.
5. Khan lA. (2002) "Map Projections", Rahber Publisher, Karachi.
6. Dorling (1997) "Ways of Representing the World", Longman London.
7. Birch (1995) "Maps and Air Photos", Longman, UK
8. Lillesand (1994) "Remote Sensing and Image Interpretation", Wiley & Sons, USA.
9. Bernhardson,T. (1991) "Geographic Information System", Viak IT Myrene. Norway.
10. Smisth (1990) "Aerial Photographs and their Applications", Reading Arnold.