

BACHELORS WITH GEOGRAPHY AS MAJOR (CT – II)
7th SEMESTER

GGY622J2 GEOGRAPHY _ FUNDAMENTALS OF GIS & GPS

CREDITS: 4 =THEORY; 2= PRACTICAL

COURSE OUTCOME:

The course aims to familiarize the students with various key concepts and applications of GIS and GPS. This course provides the necessary skills, aptitude and training to the students in different domains of geospatial technologies. It prepares the students adequately in different techniques of spatial data interpretation and analysis for real time problem solving.

THEORY (4 CREDITS)

UNIT I

- GIS: Concept, Development & Components
- GIS Software and Applications
- Data types: Raster & Vector
- Geospatial Database: Generation and Organization

UNIT II

- Geographic Data: Types & Characteristics
- Spatial Data Analysis in GIS
- Overlays Analysis in GIS
- Technology Trends in GIS

UNIT III

- Introduction to Global Positioning System (GPS)
- Development of GPS System: Navstar and GLONASS
- Introduction to Global Navigation Satellite System (GNSS)
- Basics of Geodesy: Geoid, Datum and Ellipsoid

UNIT IV

- GPS Segments: Space, Control and User
- Fundamentals of GPS Positioning
- Sources of Errors: RMSE
- Applications of GPS: Forestry, Natural Resource, Land Surveying and Civil Engineering

PRACTICAL (2 CREDITS)

- Preparation Of Thematic Layers Using Point, Line and Polygon in GIS Environment
- Spatial Analysis of Relief data using Interpolation techniques in GIS Environment
- Collection of Point, Line and Polygon data using Handheld GPS
- Prepare the Campus Map of your Institution Using Handheld GPS with all Available Attributes.

SUGGESTED READINGS

- Campbell, J. B., Introduction to Remote Sensing, (2nded.), Taylor and Francis, London, 1996.
- Curran, P., Principles of Remote Sensing, Longman, London, 1985.
- Fazal S. and Rahman A., GIS Terminology, New Age International Publishing, New Delhi, 2007.
- Fazal S., GIS Basics, New Age International Publishing, New Delhi, 2008.
- Fazal S., Remote Sensing Basics, Kalyani Publishers, New Delhi, 2009.
- Jenson, J. R., Remote Sensing and Environment. Pearson India, 2013.
- Joseph George., Fundamentals of Remote Sensing, (2nded.) University Press, Hyderabad, 2005.
- Kumar, S., Basics of Remote Sensing and GIS, Laxmi Pub, 2005.
- Lo, C. P. and Yeung A K W., Concepts and Techniques of GIS (2nded.), Prentice Hall of India, New Delhi, 2006
- Leick. A., GPS Satellite Surveying (2nded.), John Wiley and Sons, New York, 2003.
- Lilles and T. Mand Keifer R. W., Remote Sensing and Image Interpretation (6thed.) John Wiley and Sons, New York, 2008.
- N.K. Agarwal., Essentials of GPS, Spatial Network Pvt. Ltd, 2004.
- Sabins, J. F. F., Remote Sensing: Principles and Interpretation, W. H. Freeman & Co., New York, 1997
- Sabins, F. F., Remote Sensing: Principles and Interpretation. Freeman, New York, 1986.
- Siegal, B. S. and A. R Gillespie., Remote Sensing in Geology, Wiley, New York, 1980