

Rcr gt 'P q/'19: GEOGRAPHICAL INFORMATION SYSTEM (GIS)

Course Objectives

The course introduces components of geographical information system, global positioning system and data structures. Students also learn about data analysis and application of GIS for different land uses. The aim of this paper is to provide basic knowledge about various components of uses of GIS techniques.

1 Geographical Information System (GIS)

1.1 Definition and Components

1.2 Global Positioning System (GPS) – Principles and Uses

1.3 GIS Data Structures: Types (spatial and Non-spatial), Raster and Vector Data Structure.

- Burrough, P.A. and Mcdonnell, R.A. (1998) Principles of Geographical Information System, Oxford University Press, Oxford, Chapter 1.
- Kennedy, M. (2002) GPS and GIS: An Introduction, Taylor & Francis, London. Chapter 1
- Jochen, A. (2007) Key Concepts and Techniques in GIS, Sage Publications, New Delhi. Chapter 1 and 2

2. GIS Data Analysis

2.1 Input: Geo-Referencing

2.2 Editing and Output

2.3 Overlays.

- Longley, P. (2010) Geographic Information Systems and Science, John Wiley & Sons, New York. Chapter 5
- Panigrahi, N. (2008) Geographical Information System, University Press, Hyderabad. Chapter 8
- Jenson, J.R. and Jensen, R.R. (2012) Introductory Geographic Information System, Prentice Hall. Chapter 5 and 6

3. Application of GIS

3.1 Land Use Mapping

3.2 Urban Sprawl Analysis

3.3 Forests Monitoring

- Nygers, T.L. and Jankowshi, P. (2010) Regional and Urban GIS: A Decision Approach, Guliford Press, New York. Chapter 8 and 12
- Haywood, I., Cornelius, S. Carver, S. (2012) An Introduction to Geographic Information System, Prentice Hall. Chapter 7 and 11
- Longley, P. (2010) Geographic Information Systems and Science, John Wiley & Sons, New York. Chapter 2

Practical Record: A project file consisting of 5 exercises on using any GIS Software on above mentioned themes.

Further Readings

- Bhatta, B. (2010) Analysis of Urban Growth and Sprawl from Remote Sensing, Springer, Berlin Heidelberg.

- Jha, M.M. and Singh, R.B. (2008) Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.
- Nag, P. (2008) Introduction to GIS, Concept India, New Delhi.
- Singh, R.B. and Murai, S. (1998) Space Informatics for Sustainable Development, Oxford and IBH, New Delhi.