5120
M.A. (Final) Geography
Practical - II : GIS & Digital Cartography

<u>Unit - I</u>
a) Introduction to GIS and Cartography -
   i. Concept of GIS
   ii. History of Cartography and GIS.
b) The Structure of Geospatial Data.
   i. GIS file types and organization, Metadata.
   ii. The Geodatabase.

   Lab Work
c) Using and Making Maps
   i. Open and save a Map Document.
   ii. Work with Map Layers.
   iii. Measure Distances.
   iv. Work with Feature Attributes.
   v. Select Feature.
   vi. Label Feature.

<u>Unit - II</u>
   i. Measuring the Surface of the Earth
   ii. Geodesy
   iii. Coordinate Systems
   iv. Shape and Scale - The Map Compromise
   v. Projections
   vi. Scale

b) Map Design
   i. Create Choropleth Maps
   ii. Create Point Maps
   iii. Create a point map based on a definition query

<u>Unit - III</u>
c) Cartographic Principles in GIS Map Design
   i. Map Lay-out
   ii. Labels
b) Vector Data Points, Lines and Polygons
   i. Vector analysis and symbols
   ii. Cartographic Generalization
   Lab Work
c) GIS Outputs
   i. Create Map Layouts
   ii. Add a report to layout
   iii. Add a Grapy to layout

Unit - IV
   a) Raster Data
         i. Satellite Imagery
   b) Colour and Modelling Terrain
         i.   Aspects of Colours
         ii. DEM and Hill shading
      Lab Work
   c) Digitizing
         i.   Digitize polygon Features
         ii. Digitize point Features
         iii. Digitize line Features
Unit - V
   a) The Display of Spatial Data - Thematic Maps
         i. Choropleth and Graduated Symbols Maps
         ii. Dot Density Maps
      Lab Work
   b) Geoprocessing
         i. Clip Features
         ii. Merge Features
         ii. Union Layers

Distribution of Marks   Total Marks 50

Practical – Assessed by External Examiner

GIS & Digital Cartography – 30 marks
   I.   A -Test paper Lab exercise – 30 marks.
   II. Practical exercise shall be of three hours duration and of 30 marks and candidates will be
        required to attempt any 2 exercises out of 4. One based on computer.
                        B - Record work – 10 marks
                        C - Viva-voce – 10 marks

Suggested Readings:

- Atkinson, Peter M. Nicholas J. Tate (Ed.), 1999: Advances in Remote Sensing and GIS Analysis, John Wiley & Sons, Inc., New York.
- Burrough, Peter A. and McDonnell, Rachael A., 2000: Principles of Geographical Information Systems, Spatial Information Systems and Geostatistics, Oxford University Press, Noida, Delhi, India.
- Berry, Joseph K., 1996: Beyond Mapping: Concepts, Algorithms, and Issues in GIS, John Wiley & Sons, Inc., New York.
- Chang, Kang-tsung, 2006: Introduction to Geography Information Systems, Tata McGraw-Hill Edition, New Delhi, Third Edition.
- Clarke, Keith C., 1999: Getting Started with Geographic Information Systems, Prentice Hall Series in Geographic Information Science, Prentice Hall, New Jersey, Second Edition.
- Chrisman, Nicholas, 2001: Exploring Geographic Information Systems, John Wiley & Sons, Inc., New York, 2nd Edition.
- Cromley, Robert G., 1992: Digital Cartography, Prentice Hall, New Jersey.

- DeMers, Michael N., 2004: Fundamentals of Geographic Information Systems, John Wiley & Sons, Inc., New York, Third Edition.
- David, Grahame, Shane, Brian McGrath (Ed.), 2005: Sensing the 21st Century City: The Net City Close-up and Remote, John Wiley & Sons, Inc., New York.
- Heywood, Ian, Cornelius, Sarah, Carver, Steve and Raju, Srinivasa, 2006: An Introduction to Geographical Information Systems, Pearson Education, Inc., Delhi, Low Price Edition, Second Edition.
- Harmon, John E. and Steven J. Anderson, 2003: The Design and Implementation of Geographic Information Systems, John Wiley & Sons, Inc., New York.
- Longley, Paul A., Goodchild Michael F., Maguire, David J. and Rhind David W., 2001: Geographic Information Systems and Science, John Wiley & Sons, Ltd., England.
- Mather, Paul M., 2004: Computer Processing of Remotely-Sensed Images: An Introduction, John Wiley & Sons, Inc., New York, 3rd Edition.
- Mesev, Victor, 2008: Integration of GIS and Remote Sensing, John Wiley & Sons, Inc., New York.
- Mather, Paul M., 1991: Computer Applications in Geography, John Wiley & Sons, Inc., New York.
- Stillwell, John and Graham Clarke (Ed.), 2003: Applied GIS and Spatial Analysis, John Wiley & Sons, Inc., New York
- चौनियाल, डॉ. देवीदत्त, सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली के सिद्धांत, शारदा पुस्तक भवन, इलाहाबाद