

**Course objectives**

This course provides a detailed examination of the common spatial analytical tools used in a Geographical Information Systems environment. The students will understand the both vector and raster data analysis in a spatial context. Spatial analyses will be carried out using mainly ESRI's ArcGIS.

**Course Outline**

- 1. Understanding the concepts**
  - o Vector data
  - o Raster data
  - o Statistical analysis
- 2. Thematic Mapping**
  - o Thematic mapping
  - o Data input sources, vector and raster data
  - o Spatial data input
- 3. Spatial Data Management**
  - o Handling attribute data
  - o Spatial data analysis
  - o Import and export of data
  - o Handling satellite images
  - o Data-base development
  - o Data-base management
  - o Data query
- 4. Development of Models**
  - o TIN models
  - o Digital Elevation Model (DEM)
- 5. Data Presentation**
  - o Data display, presentation of result in the form of maps, diagrams and tables.

**Recommended Books**

1. Burke, R., Napoleon, E. and Ormsby, T. (2004) "Getting to Know ArcGIS Desktop: The Basics of ArcView, ArcEditor, and ArcInfo Updated for ArcGIS 9". ESRI Press, New York.
2. Dent, D. B. (2002) "Cartography with Arc View GIS Software". McGraw-Hill, New York.
3. Environmental Systems Research Institute (ESRI) (1999) "Arc-view (version 3.1) user's guide book". Environmental Systems Research Institute, Inc. New York.
4. Environmental Systems Research Institute (ESRI) (2001-2002) "Arc-GIS (version 8.2) user's guide book". Environmental Systems Research Institute, Inc. New York.
5. ESRI (1999) "Arc-view 3D Analyst application user's guide-book". Environmental Systems Research Institute, Inc. New York.
6. ESRI (1999) "PC Arc-info user's guide 1999". Environmental Systems Research Institute, Inc. New York.
7. ESRI (2001-2002) "Arc map (version 8.2) user's guide book 2001-2002". Environmental Systems Research Institute, Inc. New York.
8. ESRI (2001-2002) "Arc-Catalogue (version 8.2) user guide book 2001-2002". Environmental Systems Research Institute, Inc. New York.
9. ESRI (2001-2002) "Arc-GIS (version 8.2) application user's guide book". Environmental Systems Research Institute, Inc. New York.
10. Maginr, D. J. (1991) "Geographic Information System". Longman, London.