Course Description: This course describes basic concepts underlying geographic information systems and science (GIS) and introduces students to spatial analysis with GIS. Although the course will include hands-on laboratory exercises using ArcGIS software, the focus is on the “science behind the software” (e.g., types and implications of functions and analysis, rather than just how to do the analysis).

Day 1:

Overview of Geographic Information Systems and Science
Conceptualization of space
Data Models used in GIS
Properties of spatial data
Spatial reasoning
Basics of ArcGIS

Day 2:

Getting data into the computer
Downloading and using common datasets
Projections and coordinate systems
Working with geographic databases

Day 3:

Managing, analyzing, and visualizing GIS data
Exploring and describing data with GIS
Vector overlay analysis
Raster overlay analysis (map algebra)
Creating spatial information products (maps, charts, other graphics)

Day 4:

GIS Applications
Solving spatial problems with GIS.