Learning Objectives:

- Learn the fundamentals of GIS
- Apply GIS tools to spatial environmental data.
- Develop communication skills using GIS.
- Construct and edit spatial databases, create maps of spatial data.
- Analyze GIS data.
- Derive spatial information.
- Display spatial information effectively.
- Construct and use models to examine spatial processes. Develop a decision framework.
- Solve geospatial problems.

Week 1  Introduction to Geographic Information Systems
Navigating ARCMap & ArcCatalog

Week 2  Online resources - ArcGIS Online, adding online data to Desktop
Coordinate systems – geographic vs. projected systems, defining projections

Week 3  Displaying Data – Data types, using symbols for raster and feature data
Displaying Data – Classifying raster and feature data

Week 4  Displaying Data - Labeling features, label placement, annotation
Presenting data – templates, adding x-y data and graphics, page layout

Week 5  Creating features – creating geodatabases, feature classes, fields and domains
Adding/editing features – drawing and feature construction tools

Week 6  Editing features and attributes
Extracting Information – Querying attribute data, hyperlinks, reports

Week 7  Extracting Information – Joining and relating tables, geometry relations/functions
Creating features – point features I

Week 8  Creating features – point features II
Creating features – polygons I (& probably line)

Week 9  Creating features – polygons II, using topology (i.e., relationship rules)
Analyzing feature relationships – Selecting features by location

Week 10 Data analysis – dissolving, clipping, exporting
Data analysis – buffering, overlaying, calculating attribute values

Week 11 Spatial Analyst & Modelbuilder
Creating raster surfaces – georeferencing a raster file, rubbersheeting

Week 12  Draping images over surfaces, 3D visualizing, animation (3D Analyst)
ArcGlobe, Tracking Analyst

Week 13  More animation techniques
Creating rasters from point features (Geostatistical Analyst)

Week 14  Contouring, spatial autocorrelation, volume calculations (Geostatistical Analyst)
Converting raster data to features (ArcScan) and/or Lidar data