

# Introduction to ArcGIS I

Two days

## Overview

This two-day course introduces participants to ArcGIS™ and provides the foundation for becoming a successful ArcView®, ArcEditor™, or ArcInfo™ user. Participants learn how to use ArcMap™, ArcCatalog™, and ArcToolbox™ and explore how these applications work together to provide a complete GIS software solution. The course covers fundamental GIS concepts as well as how to create, edit, and work with georeferenced spatial data. Participants learn how to manipulate tabular data, query a GIS database, and present data clearly and efficiently using maps and charts.

## Audience

This course is for those who are new to ArcGIS or to geographic information systems in general.

## Goals

- Display feature and tabular data
- Work with georeferenced spatial data
- Query features using logical expressions
- Find features using spatial relationships
- Edit spatial and attribute data
- Associate tables with joins and relates
- Produce maps, reports, and graphs

## Topics covered

ArcGIS overview: Capabilities and applications; Interacting with the interface; Basic display

Spatial data concepts: Representing spatial data and descriptive information

ArcGIS data model: Geodatabases; Shapefiles; Coverages; Feature types; Attributes

GIS software: Components; Functions; Applications

Spatial coordinate systems and map projections: Georeferencing data; What map projections are; How ArcMap works with map projections

Querying data: Selecting and identifying features; Creating reports and graphs

Map displays: Creating; Symbolizing; Scaling; Adding map elements

## Prerequisites and recommendations

Participants should know how to use windowing software. This course provides the fundamental ArcGIS knowledge and experience needed to enroll in *Introduction to ArcGIS II (for ArcView 8, ArcEditor 8, and ArcInfo 8)* as well as several other ESRI courses. Many of the topics covered in this course are similar to those in *Migrating from ArcView 3.x to ArcView 8*. Participants who complete this course should not enroll in *Migrating from ArcView 3.x to ArcView 8*. Participants who have worked with prior versions of ArcView and want to learn about ArcView 8 applications should take *Migrating from ArcView 3.x to ArcView 8*.

## **Outline of Topics**

### Introduction

- What is a GIS?
- GIS functions
- Capturing data
- Storing data
- Query
- Analysis
- Display
- Output
- Organizing spatial data
- Representing features in vector data
- Map scale
- Components of geographic data
- Using spatial relationships
- Overview of ArcGIS
- Overview of applications: ArcCatalog, ArcMap, ArcToolbox
- Getting help
- *Exercise 1A: Install the class database*
- *Exercise 1B: Explore a sampling of GIS concepts*

### Displaying Data

- The ArcMap interface
- Data View or Layout Views
- Layers, data frames, and maps
- Managing the Table of Contents
- Layer symbology in ArcMap
- Saving a layer file
- Labeling features
- Scale-dependent display
- Magnifier and overview windows
- *Exercise 2: Displaying data*

### Querying your database

- Map tips and hyperlinks
- Identifying
- Finding
- Measuring
- Available selection tools
- Interactive selection options
- Interactive selection methods
- Selection methods and layers
- Attribute selection
- Select by location (spatial query)
- Location selection methods
- Selection by graphics
- Calculating summary statistics
- *Exercise 3: Query your GIS database*

#### Working with tables

- Tables
- Understanding table anatomy
- Tabular data field types
- Table manipulation
- ArcGIS tabular formats
- Associating tables
- Table relationships
- Connecting tables with joins
- Connecting tables with relates
- Graphs
- Reports
- The ArcMap Report Writer
- Seagate Crystal Reports
- *Exercise 5A: Relate and join tables*
- *Exercise 5B: Create a graph and report in ArcMap*

#### Working with spatial data

- Representing geographic features
- Introducing feature classes
- Linking features and attributes
- Spatial data formats

- Data format: Shapefile
- Data format: Coverage
- ArcInfo coverage organization
- Data format: Geodatabase
- Data format: CAD files
- Tabular locations
- Images and grids
- Introducing metadata
- Using Geography Network data
- *Exercise 4: Explore spatial data formats*

### Editing data

- Editable data formats
- Navigating the Editor
- Managing edit sessions
- Selecting features
- Simple editing functions
- Working with sketches
- Using the Sketch tool
- Edit tasks
- Create New Feature task
- Distance and Intersection tools
- Trace
- Extend/Trim Features task
- Editing attribute data for selected features
- Editing tables using the Field Calculator
- *Exercise 6A: Edit features with the Editor toolbar*
- *Exercise 6B: Edit attribute data*

### Working with georeferenced data

- What is georeferencing?
- Coordinate systems
- Datums and datum conversion
- Referencing locations
- Map projections
- Projection distortion
- Types of projections

- Coordinate system components
- Storing projection information
- Viewing projection information
- ArcMap and projections
- Changing projections
- *Exercise 7: Work with map scale and projections*

### Presenting data

- Map and design objectives
- Factors controlling cartographic design
- Communication in maps
- Types of maps
- Issues in cartographic design
- Creating maps in ArcMap
- Setting up the page
- Identifying map elements
- Inserting map elements
- An example of the Legend Properties window
- Adding a north arrow and a scale
- Incorporating a reference system
- Graticules or button index grids
- Inserting textual information
- Layout tools
- Grids and rulers
- Creating and using map templates
- Printing and plotting maps
- *Exercise 8: Create a map*

*Class information taken from [www.esri.com](http://www.esri.com)*