ArcGIS® 1: Introduction to GIS

Student Edition
Course introduction

Introduction
Course goals
Additional resources
Installing the course data
Icons used in this workbook
Understanding the ArcGIS Platform

1 The ArcGIS platform

Lesson introduction
The ArcGIS platform
Using GIS
Getting to know the ArcGIS platform
Components used in this course
Lesson review

2 The basics of GIS

Lesson introduction
What is GIS?
The geographic approach
What can you do with GIS?
Think of ways to apply GIS
Exercise 2: Create and share a map with ArcGIS Online
   Training Services account credentials
   Sign in to ArcGIS Online
   Choose a basemap
   Add a data file to your map
   Save and share your map
   View a classmate's version of the map
   (Optional) Locate a user group related to your work or area of interest
Lesson review

3 Understanding GIS data

Lesson introduction
Turning geographic information into GIS data
GIS data models
Explore GIS data models in ArcMap
Which data model fits better?
Working with tables
Documenting your data
Exercise 3A: Explore GIS data using ArcMap
   Open ArcMap and create a folder connection
   View data in a GIS
Identify various file types
View an item description
Correct an error in an item’s metadata
Preview a dataset’s geography and table
Add data to the map

ArcGIS Online content
GIS services and web maps
Web mapping applications and mobile apps
Tools and data from ArcGIS Online

Exercise 3B: Explore GIS content using ArcGIS Online
  - Browse ArcGIS Online for web content
  - Browse ArcGIS Online for desktop content
  - View an item’s details
  - Examine options for opening ArcGIS Online items

Lesson review

4 The importance of coordinate systems

Lesson introduction
What is location?
How spatial data stores location
Geographic coordinate systems
Working with data in different geographic coordinate systems
Projected coordinate systems
Spatial properties and distortion
Understanding distortion
Exercise 4: Work with coordinate systems
  - Identify the coordinate system for a dataset
  - Identify the coordinate system for another dataset
  - Identify a dataset with a different coordinate system
  - Identify a dataset with an unknown coordinate system
  - Assign a coordinate system to a dataset without a spatial reference
  - Change the coordinate system for a dataset

Three key concepts
Lesson review

5 Acquiring and selecting GIS data

Lesson introduction
Methods for obtaining GIS data
Accessing GIS data
Considerations for creating GIS data
Creating data
Considerations for choosing GIS data
Evaluating GIS data
Exercise 5: Gather and evaluate GIS data

Consider the data you need
Examine the data you have
Add data from another organization
Add data from ArcGIS Online
Transfer files from one geodatabase to another
Import shapefiles into the geodatabase

Lesson review

6 Interacting with a map

Lesson introduction
Symbology and visualization
Finding, identifying, and selecting features
Asking questions and getting answers
Getting information from a GIS map

Exercise 6A: Explore a map using ArcMap
- Navigate the map
- Modify symbology
- Identify features
- Find features
- Export selected features from a file to a geodatabase
- Select features
- Examine an attribute table
- View data change over time

Exercise 6B: Explore a map using ArcGIS Online
- Navigate the map
- Modify symbology
- Identify features
- Locate addresses and features
- Select features and view an attribute table

Lesson review

7 Performing spatial analysis

Lesson introduction
The geographic approach - revisited
Questions you can answer with GIS
What is spatial analysis?
Geoprocessing in analyses
Common analysis tasks
Perform spatial analysis with common analysis tools

Exercise 7: Analyze hurricane storm surge data
- Open ArcMap and examine the map document
- Extract features in your area of interest
- Identify vulnerable facilities in Lee County
Overlay the Cat3 layer with Lee County
Identify hospitals close to the storm surge inundation polygon

Lesson review

8 Sharing results

Lesson introduction
The importance of sharing results
Sharing content through ArcMap
Sharing content through ArcGIS Online
Exercise 8: Share hurricane analysis results
   Export the map as a PDF
   Create a map package and upload it to ArcGIS Online
   Create a web map
   Customize map symbology and save the map
   Create a web mapping application
   (Optional) Access the web mapping application on a mobile device

Lesson review

Appendixes

Appendix A: Esri data license agreement
Appendix B: Suitable projections
Appendix C: Course roadmap
Appendix D: Answers to lesson review questions
   Lesson 1: The ArcGIS platform
   Lesson 2: The basics of GIS
   Lesson 3: Understanding GIS data
   Lesson 4: The importance of coordinate systems
   Lesson 5: Acquiring and selecting GIS data
   Lesson 6: Interacting with a map
   Lesson 7: Performing spatial analysis
   Lesson 8: Sharing results