

ArcGIS[®] Desktop III: GIS Workflows and Analysis

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Introduction

- Introduction
- Course goals
- Using the course workbook
- Additional resources
- Installing the course data

1 Course workflow

- Lesson introduction
- Course workflow

2 Getting data into the geodatabase

- Lesson introduction
- What is the geodatabase?
- Geodatabase elements
- Adding data to the geodatabase
- Coordinate systems and datums
- Exercise 2: Get data into the geodatabase
 - Migrate data between geodatabases
 - Import a single shapefile
 - Import multiple shapefiles in batch mode
 - Change map projections
 - Load data into a geodatabase feature class
 - Create feature class from x,y data
 - Create an OLE DB connection to an Access database
- Lesson review
 - Answers to Lesson 2 questions

3 Geodatabase behaviors

- Lesson introduction
- Attribute behavior
- Subtypes and domains
- Spatial behavior
- Topology
- Exercise 3: Explore geodatabase behavior
 - Summarize a field in the attribute table
 - Create a domain
 - Apply the domain to a field
 - View the new domain in the Catalog window and ArcMap
 - Explore subtypes in the Catalog window
 - Explore subtypes in ArcMap
 - Import domains from XML
 - Apply domains to subtypes
 - Explore a topology in the Catalog window
 - View the topology in ArcMap

Lesson review
Answers to Lesson 3 questions

4 Editing GIS data

Lesson introduction
Preparing a map for editing
Creating and editing features
Common editing tasks
Editing with behavior
Exercise 4A: Work with editing tools and tasks
 Explode a multipart feature
 Generalize a flood polygon
 Create a new polygon adjacent to an existing one
 Reshape a feature
Exercise 4B: Edit using behaviors
 Edit using subtypes
 Edit using range domains
 Digitize a new storm feature
 Edit topological data using the Error Inspector
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Lesson review
Answers to Lesson 4 questions

5 Aligning spatial data

Lesson introduction
Data alignment problems
Spatial adjustment methods
Georeferencing
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 Explore adjacent data layer boundaries
 Add displacement links
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 Append data layers
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 Add a CAD layer to ArcMap
 Add control points using the Georeferencing toolbar
 Update georeferencing information
 Define the map projection
 Add a CAD layer to ArcMap
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Lesson review
Answers to Lesson 5 questions

6 Preparing for analysis

- Lesson introduction
- Geoprocessing toolboxes
- Geoprocessing tools
- Environment settings
- Exercise 6: Preparing for analysis
 - Explore toolbox structure
 - Create a custom toolbox
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 - Explore tool parameters
 - Work with environment settings
 - Manage geoprocessing errors and warnings
 - Work with tool layers in ArcMap
 - Explore geoprocessing results
- Lesson review
 - Answers to Lesson 6 questions

7 Analyzing GIS data

- Lesson introduction
- Why analyze GIS data?
- GIS analysis workflow
- Exercise 7A: Extract and overlay data and join tables
 - Extract data for analysis
 - Join attributes from another table
 - Locate flooded block groups
 - Analyze attributes of flooded blocks
 - (Optional) Graph information on flooded block groups
- Exercise 7B: Perform proximity analysis
 - Locate features within a single distance of the hurricane path
 - Locate features within multiple distances of the hurricane path
 - Find hospitals closest to shelters
 - (Optional) Construct Thiessen polygons
- Lesson review
 - Answers to Lesson 7 questions

8 Using ModelBuilder for analysis

- Lesson introduction
- What is ModelBuilder?
- Model elements and variables
- Model parameters
- Working with ModelBuilder
- Exercise 8: Analyze GIS data using ModelBuilder
 - Start ArcMap and modify a custom toolbox
 - Create a new model and set properties
 - Add the Select Layer By Attribute tool and set parameters

- Add the Clip tool and set parameters
- Create a feature layer
- Add the Make Query Table tool and set parameters
- Add the Intersect tool and set parameters
- Set additional model properties
- Run the model from ModelBuilder
- Edit item description
- Lesson review
- Answers to Lesson 8 questions

9 GIS analysis projects

- Lesson introduction
- Course workflow
- Exercise 9A: Find the best site for a new shelter
 - Start ArcMap and create a new file geodatabase
 - Create a new model and set the current workspace
 - Select parishes for shelter locations
 - Locate schools in the study area parishes
 - Remove schools located in flooded areas
 - Extract evacuation routes from study area parishes
 - Buffer evacuation routes
 - Extract schools in the evacuation routes buffer
 - Run the model and explore results
 - Select schools north of Interstate 10
 - Locate schools in highly populated block groups
 - (Optional) Create a map layout of the analysis results
- Exercise 9B: Find the mileage of flooded roads
 - Create a new file geodatabase
 - Find flooded roads
 - Explore the Flooded Roads layer
 - Dissolve road features based on name
 - Add a mileage field and calculate geometry
 - Calculate the total mileage of flooded roads
 - Create a report of the analysis results
 - (Optional) Create a map layout of the flooded roads
 - (Optional) Calculate the total mileage of flooded scenic byways
 - Answers to Lesson 9 questions

Appendixes

- Appendix A: ESRI data license agreement