

Using ArcGIS® for Geospatial Intelligence

Student Edition

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Course introduction

- Introduction
- Course goals
- Additional resources
- Icons used in this workbook
- Understanding the ArcGIS Platform

1 Geospatial analysis workflow

- Lesson introduction
- Analytical methodologies
- Geospatial analysis workflow
- Scenario-based approach
- Lesson review

2 Terrain analysis

- Lesson introduction
- Scenario
- Geospatial analysis workflow
- Raster surfaces and DTED
- Avoiding errors with the Slope tool
- Two types of coordinate systems
- Determining which projection tool to use
- Exercise 2A: Reproject the input DTED file
 - Create a folder connection
 - Import a raster surface
 - Reproject the raster file
 - Verify projection parameters
- Exercise 2B: Create a slope file and hillshade overlay
 - Derive a slope surface from DTED
 - Create a hillshade
 - Create a simple visualization overlay
- Lesson review

3 Tactical viewshed analysis

- Lesson introduction
- Scenario
- Geospatial analysis workflow
- Finding optimum sites for enemy observation posts
- Using Buffer to create an input area
- Resampling elevation data to improve resolution
- Exercise 3A: Create observation points for viewshed analysis
 - Install the Visibility and Range Toolbox
 - Set the data frame's coordinate system

- Create a geodatabase
- Add data
- Prepare files for analysis
- Create observation points using the Find Local Peaks tool
- Export to KMZ
- Quiz
- Scenario
- Viewshed
- Activity
- Exercise 3B: Create and analyze a viewshed
 - Set viewshed parameters
 - Derive a viewshed from enemy observation points
 - Visualize a viewshed
 - Quiz
- Lesson review

4 Area delimitation modeling

- Lesson introduction
- Scenario
- Geospatial analysis workflow
- Exercise 4A: Determine potential target sets
 - Select targets based on spatial location
 - Select targets based on attributes
 - Export selected targets
- Pathfinders: What makes a suitable drop zone?
- Exercise 4B: Find suitable drop zones
 - Install the Military Aspects of Terrain Toolbox
 - Compute suitable drop zones
- Distance analysis and avenues of approach
- The Raster Calculator tool
- Exercise 4C: Analyze avenues of approach
 - Convert vector to raster
 - Create a cost surface of speed
 - Weight speed with terrain
 - Convert speed into time
 - Determine cost distance
 - Determine the cost of traversing a certain path
- Military symbology (UEI features)
- Exercise 4D: Create a mapping product
 - Begin the map layout
 - Size and position the map
 - Add the map title
 - Add a subtitle
 - Group elements
 - Add military symbology

- Edit military symbology
- Create a map legend
- Adjust the legend properties
- Add an overview map
- Add a scale bar
- Add a north arrow
- Add dynamic text
- Add a map border
- Export the map
- Create a map package
- Challenge: Challenge

Lesson review

5 Area reduction

- Lesson introduction
- Scenario
- Geospatial analysis workflow
- The Predictive Analysis add-in
- The Set Null tool
- Extracting by mask
- Density analysis
- Labels
- Exercise 5A: Reduce the threat area
 - Install an add-in file
 - Enable the Predictive Analysis add-in toolbar
 - Add files
 - Set the data frame coordinate system
 - Symbolize data for analysis
 - Isolate the water
 - Label features
 - Use the Predictive Analysis add-in
 - Conduct a density analysis
- Annotation
- Create a graph from a table
- Exercise 5B: Create a map
 - Symbolize data for map display
 - Convert labels to annotation
 - Edit annotations
 - Create and edit feature-linked annotation
 - Configure page size and add a graticule
 - Add map elements
 - Add a legend
 - Create a graph
 - Export your map
- Analyze results

Lesson review

6 Homeland defense using temporal analysis

Lesson introduction

Scenario

Geospatial analysis workflow

Analyzing time in GIS

Temporal layers

Track ID and timestamps

The Playback Manager tool

Table relationships

Exercise 6A: Enable and view temporal data

- Perform a table join

- Add temporal data to the map

- Symbolize temporal data

- Play back AIS temporal data

Using geoprocessing packages

The Farthest on Circle tool

Exercise 6B: Perform analysis of intercept locations

- Determine intercept locations

Analysis of Alternatives

Exercise 6C: Create products for a briefing

- Create a table of COAs

- Edit COA information table

- Add a table to a map

- Create an animated output

Lesson review

7 Hot spot analysis

Lesson introduction

Geospatial analysis workflow

Exercise 7A: Add data and symbolize layers

- Add files

- Create bookmark

- Add symbol styles with the Style Manager

- Symbolize layers

Identify initial assumptions and develop hypotheses

The Optimized Hot Spot Analysis tool

Using styles

Exercise 7B: Perform hot spot analysis of Ciudad Juarez cartel activity

- Quantify qualitative data

- Run the Optimized Hot Spot Analysis tool

- Compare initial hypotheses with Optimized Hot Spot Analysis results

- Create map layout

- Add map elements
- Add an MGRS grid
- Challenge: Challenge

Incident Analysis Template

Lesson review

Appendixes

- Appendix A: Esri data license agreement
- Appendix B: Supplemental instructions for adding a basemap
- Appendix C: Answers to lesson review questions
 - Lesson 1: Geospatial analysis workflow
 - Lesson 2: Terrain analysis
 - Lesson 3: Tactical viewshed analysis
 - Lesson 4: Area delimitation modeling
 - Lesson 5: Area reduction
 - Lesson 6: Homeland defense using temporal analysis
 - Lesson 7: Hot spot analysis