Working with ArcGIS Spatial Analyst

Three Days

Overview

ArcGIS Spatial Analyst software provides tools for conducting sophisticated spatial analyses and creating different types of spatial models. This course covers fundamental raster data concepts and shows how to use ArcGIS Spatial Analyst tools to create, process, and analyze spatial data. You focus on problems that are best solved in a raster environment such as surface analysis and distance measurement. The use of ArcGIS Spatial Analyst tools in the ArcGIS geoprocessing framework is emphasized.

Audience

This course is designed for experienced ArcGIS users who want to conduct raster-based analysis, conversion, and editing.

Prerequisites and recommendations

Students should have completed ArcGIS Desktop II: Tools and Functionality or Learning ArcGIS Desktop or have equivalent knowledge.

Goals

- Understand fundamental raster concepts.
- Display and query raster data.
- Georeference, transform, and project raster data.
- Create geodatabase raster datasets and raster catalogs.
- Understand how ArcGIS Spatial Analyst tools are organized.
- Apply ArcGIS Spatial Analyst tools for surface and distance analyses.
- Use groundwater hydrology tools.
- Use map algebra functions.
- Interpolate surfaces from sample points.
- Understand basic suitability modeling methodology.
- Use ModelBuilder to create suitability models.

Topics Covered

Basics of ArcGIS Spatial Analyst: Overview of the extension; Understanding raster concepts; ArcGIS Spatial Analyst interface; Comparing rasters and feature layers; Querying rasters.
Structure of rasters: How to create raster datasets; Raster storage and management.
Aligning data: Raster registration and georeferencing; How projection affects analysis; Importing and

exporting raster datasets.

Conducting surface analyses: Calculating density; Choosing an interpolation method; Interpolating a continuous raster from sample points; Contours and hillshading; Visibility analysis.

Map algebra functions: Writing expressions; Expression syntax.

Calculating distance measurements: Euclidean distance; Cost–distance; Finding the least-cost path.

Surface hydrology: Identifying watershed basins; Determining surface runoff characteristics.

Designing and implementing GIS models: Spatial modeling concepts and issues.