3D Analyst – Mapping the Next Dimension

Course Length:	*2 days*
ArcGIS Version:	*10.x*
App:	*ArcMap*

Overview

This class introduces students to the 3D Analyst extension and to 3D visualization techniques using ArcScene. Students learn how to display 2D data in 3D by utilizing elevation values from surface data and how to convert 2D data to 3D data with z values. Topics include the editing and digitizing of 3D features, the display of 3D feature data, and the analysis capabilities of the 3D Analyst toolbox. Students will learn to create and manage TINs (triangulated networks) and will learn the differences between a raster surface and a TIN surface. A series of exercises using a variety of different 3D data will provide students with an opportunity to utilize concepts discussed during the lectures.

Audience

This course is for those who are already comfortable with the basics of ArcGIS, but who want to learn about 3D data display and analysis.

Topics Covered

Day 1

- **Introduction to 3D Analyst and ArcScene** (Components of 3D Analyst; Types of 3D Data; Functional Surfaces; Hardware Requirements; ArcScene Basics)
- **Displaying Rasters in ArcScene** (Base Heights; Raster Resolution; Rendering; Display Setttings; Resampling for Display; Visible Extent; Symbology; Eliminating Background Values; Add Hillshading; Draping Imagery over Elevation Datasets)
- **3D Feature Data** (Sources of Z-values; Ways to Create 3D Feature Data; Converting 2D Features to 3D; 3D Model to Multipatch; Adjusting Z-values; 3D Graphics; Displaying 3D Feature Data; Extrusion; 3D Layer Files)
- **Triangular Irregular Networks (TINs)** (TIN Overview; Delaunay Triangle Criterion; Parts of a TIN/TIN Topology; Surface Feature Types; TIN Symbology; Creating / Editing TINs; Delineating TIN Data Area; Conversion From/To Raster and To Features; TIN Surface Analysis;)

Day 2

- **Terrains** (Overview of Terrains; Terrain Symbology; Terrain Display Properties; Interactive Surface Analysis; Identify Tool; Terrain Profile Graph; Conversion to TINs/Rasters; Editing Terrain Feature Classes; Terrain Toolset; Importing Terrain Data; Terrain Creation; Terrain FYI and Additional FAQ's)
- **Interactive 3D Analysis** (Contour Graphics; Steepest Paths; Line of Sight; Interpolation Tools; Profile Graphs; Select By Location)
- **3D Analysis Tools** (Raster Toolsets; Visibility Toolset; Functional Surface Toolset; 3D Features Toolset)
- **Editing 3D Feature Data** (Creating a New 3D Feature Class; 3D Editing Basics; Vertical Lines; Editing 3D Polygons; 3D Editing Tools and Commands; Draped Features; 3D Editing Considerations/Tips; 3D Digitizing in ArcMap)

Prerequisites

Students should have knowledge of Microsoft Windows® and be familiar with the basic use of ArcGIS, including the topics covered in **Fundamentals of ArcGIS** and in **Intermediate GIS Concepts.**