MERCURY

Digital Terrain Model (DTM) Analysis with the ArcGIS Pro Training

15 – 19 August 2027
Dubai (UAE)



Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

Digital Terrain Model (DTM) Analysis with the ArcGIS Pro Training

Ref: 15256_283191 **Date:** 15 – 19 August 2027 **Location:** Dubai (UAE) **Fees:** 4900 Euro

Introduction:

This digital terrain model DTM analysis with the ArcGIS Pro program is meticulously crafted to thoroughly elucidate the concepts and applications of the Digital Terrain Model DTM and Digital Elevation Models DEM.

Throughout this digital terrain model DTM analysis with the ArcGIS Pro training, participants will acquire the expertise to utilize these models to represent the earth's terrain variations accurately. By mastering how to extract terrain parameters such as slope, aspect, and roughness, trainees will also be proficient in conducting complex spatial analysis, including line-of-sight analysis and creating watershed structures.

The curriculum encompasses training in proficiently using ArcGIS Pro and the powerful ArcGIS Spatial Analyst tools to manipulate elevation raster data and generate useful information. These operations are essential for creating realistic models of the earth's surface for visualization, conducting robust analysis, and facilitating informed decision-making for diverse real-world applications.

Targeted Groups:

- Engineers.
- Architects.
- Individuals keen to delve into the intricacies of DEM and DTM applications.

Course Objectives:

Upon successful completion of this digital terrain model DTM analysis with the ArcGIS Pro course, participants will have the capacity to:

- Derive and analyze slope, hill shade, and aspect surfaces.
- Pinpoint specific locations that meet predefined elevation, slope, and aspect criteria.
- Create detailed contour lines on a map to represent different elevation levels.
- Produce a comprehensive viewshed raster to assess visibility across a landscape.

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Targeted competencies:

At the successful completion of this digital terrain model DTM analysis with the ArcGIS Pro training, participants competencies will:

- Understand Digital Terrain Models DTM.
- Proficiency in ArcGIS Pro Interface.
- Import and Manage DTM Data.
- Analyze Terrain Features.
- Create and Interpret Contour Lines.
- Perform Slope and Aspect Analysis.
- Generate Hillshades and Shaded Relief Maps.
- Conduct Hydrological Analysis.
- Use Geoprocessing Tools for DTM.
- Integrate DTM with Other Spatial Data.
- Visualize and Present Terrain Data.
- Troubleshoot Common DTM Issues in ArcGIS Pro.

Understanding Digital Terrain Model DTM and ArcGIS Pro:

A Digital Terrain Model DTM digitally represents ground surface topography or terrain. It is a pivotal tool in geospatial analysis, allowing professionals to create 3D terrain models for various applications, such as environmental studies, urban planning, civil engineering, and resource management. Understanding DTMs is fundamental for anyone working with geographical information systems, especially within the context of modeling and analyzing the physical characteristics of the landscape.

ArcGIS Pro is a modern, powerful single-desktop GIS application known for its intuitive and user-friendly interface. It's part of the Esris ArcGIS suite, offering advanced visualization, data management, and spatial analysis capabilities, including tools designed explicitly for DTM analysis. Participants in this course will become adept at using ArcGIS Pro and its analysis tools to create and manipulate DTMs and extract meaningful insights from terrain data, which is essential for informed spatial decision-making.

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Course Content:

Unit 1: General Introduction:

- Understand the distinction between DTM and DEM.
- Various forms of DEM representation.

Unit 2: The primary representation models of DEM:

- Regular grid model.
- Contour model.
- The intricacies of the Irregular Triangulation TIN model.
- Hierarchical model and its significance in DTM analysis.

Unit 3: Inter-transformation between DEM Models:

- Techniques for generating TIN from irregular point sets.
- Convert a grid DEM to TIN effectively.
- Methods to retain important points during conversion.
- Implement the Heuristic Discarding Method DH-Drop Heuristic.
- The process of converting contours to grid DEM.
- Extract contours from grid DEM.
- Transformation from TIN to Grid DEM.

Unit 4: Acquisition Methods of DEM Data:

- Obtain DEM via digital photogrammetry.
- Ensure the quality of DEM data.

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Unit 5: Analysis and Applications of DEM:

- Leverage Grid DEM for various applications.
- Fit the topographic surface for accurate representations.
- Stereoscopic perspective in digital terrain analysis.
- Comprehensive visibility analysis using digital terrain models.
- Geomorphological extraction of watershed features and automatic segmentation of terrain.
- Compute terrain properties with DEM.

Unit 6: Analysis and Application of Triangular Network DEM:

- Interpolation within a triangular network.
- Contour tracing and its vital role in terrain modeling.