BC107 - GIS 3D Mapping and GeoVisualization Course

Course Duration: 5 Days
Training Fee: KSH 40,000 | USD 400
Course Registration: **Register Here>>**

1.0. Introduction

Most maps are two-dimensional (2D), and two-dimensional maps will always be useful. Many real-world features, such as wells, underground transportation lines, flight paths, elevator shafts in a building, and subsurface geological formations, have more meaning when visualized in 3D. 3D GIS maps depict objects in greater detail by adding another dimension (z). For instance, 3D maps can show the height of a hotel or a mountain and not just its location. Over the years, GIS has made a significant impact in creating mapping as an essential tool to solve problems. Incorporating 3D technology in GIS customizes the whole experience, allowing its operators not only envisage and evaluate, but also manage geographical facts and figures. This third dimension opens fresh possibilities for fields ranging from urban planning to earth sciences to disaster response.

1.1. Course Overview

In this course, learners will be introduced to tools for creating, visualizing, and analyzing GIS data in a three-dimensional (3D) context, using ArcGIS desktop, incorporating ArcMap, ArcScene and ArcGlobe. They will also learn about the types of data that are used to model the real world in 3D scenes, including functional surfaces and 3D feature types.

1.2. Course Objectives

- To be introduced to the ArcGIS 3D analyst extension in ArcMap
- To learn about different 3D data, their sources and application
- To work with 3D data in creating, managing editing and visualizing it
- To be introduced to ArcScene and ArcGlobe

1.3. Course Content/Outline

i. **Introduction to GIS 3D Analyst:** ArcGlobe and ArcScene user interface; 3D Analyst viewing environment application settings; Saving and opening a 3D document; Adding data; 3D Analyst geoprocessing tools; Enabling the ArcGIS 3D Analyst extension; The 3D Analyst toolbars.

ii. **Fundamentals of 3D Analyst;** Creating 3D views; Understanding the observer and target; Understanding visibility analysis; Understanding feature-based heights in 3D; Fundamentals of 3D symbols and styles; 3D Analyst and ArcGlobe; 3D Analyst and ArcCatalog; 3D Analyst and ArcScene; 3D Analyst and ArcMap.

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iii.   **Types of 3D Data;** Features – 3D point features, 3D line features, 3D polygon features; Surfaces- Contours, Breaklines, TIN-based surfaces, discrete and continuous surfaces.

iv.   **Creating and managing 3D data;** Editing in 3D, Creating and managing a 3D document; Sharing in 3D.

v.   **Visualizing data in 3D;** Working with ArcGlobe and ArcScene; Creating 3D animations.

vi.   **Analysis in 3D;** Fundamentals of geoprocessing with the ArcGIS 3D Analyst extension.

vii.   **ArcGlobe;** The ArcGlobe user interface; Working with layers in ArcGlobe; 3D symbology; 3D navigation; ArcGlobe display options; Optimizing ArcGlobe.

viii.   **ArcScene**; Introducing the ArcScene user interface; Working with layers in ArcScene; Displaying 3D layer types; 3D symbology; 3D navigation; Optimizing ArcScene.

1.4. Case Study: Creating a 3D Model for Nairobi City CBD

1.5. Expected Outcomes

At the end of this learning module, learners should;

- Understand GIS 3D analyst extension in ArcMap, as well as different types of 3D data
- Be proficient in working with 3D data in creating, managing editing and visualizing it
- Be familiar with ArcScene and ArcGlobe, and be able to use these to work with 3D data

1.6. Training Material

- GIS desktop
- 3D Extension
- A Laptop/PC