



GLOBAL
INDUSTRIES
INTELLIGENCE



ARC GIS PRO

(UTILITY NETWORK)

COURSE OUTLINES

This course provides a detailed introduction to the Utility Network capabilities in ArcGIS Pro, focusing on how to use it for efficient management of utility systems like water, electricity, gas, and telecom networks. Participants will learn how to model, analyze, and manage utility networks using ArcGIS Pro tools, as well as how to integrate spatial data with network tracing, asset management, and maintenance workflows.

DAY 1: INTRODUCTION TO ARCGIS PRO AND UTILITY NETWORKS

- **Overview of ArcGIS Pro**
 - Introduction to ArcGIS Pro interface and workflow
 - Key concepts in GIS: Layers, symbology, and map creation
 - Navigating ArcGIS Pro for utility mapping
 - Key differences between ArcGIS Desktop and ArcGIS Pro
- **Introduction to Utility Networks**
 - What is a utility network?
 - Use cases for utility networks (water, electric, gas, telecom)
 - Components of a utility network: Networks, network datasets, and utility network topology
 - Key benefits of using ArcGIS Utility Network for utilities
- **Creating and Managing a Utility Network**
 - Overview of the Utility Network data model
 - Setting up a utility network in ArcGIS Pro
 - Configuring and establishing domains, asset types, and network features
 - Data requirements and preparation for utility network creation

DAY 2: BUILDING AND EDITING A UTILITY NETWORK

- **Utility Network Configuration**

- Setting up a utility network and defining subnetwork, tiers, and connectivity rules
- Configuring association rules: How network features are connected and interact
- Setting and managing network topology for asset integrity

- **Editing Features in a Utility Network**

- Editing utility network features (pipes, cables, meters, etc.)
- Advanced editing techniques for network features
- Managing versioned data and editing in multi-user environments
- Handling complex network edits: Splitting and merging network features, updating network connections



- **Creating and Managing Subnetworks**

- Understanding subnetworks: What they are and why they are essential in utilities management
- Creating subnetworks for different system components (water mains, electric circuits)
- Managing subnetwork traces and ensuring asset management

DAY 3: ANALYZING UTILITY NETWORKS

- **Utility Network Tracing**

- Introduction to network tracing: Types of network traces (connected, isolation, downstream, upstream)
- Running network traces for fault detection, system analysis, and operational planning
- Performing complex trace tasks in ArcGIS Pro: Fault detection, flow analysis, and system diagnostics
- Using tracing results to identify critical network issues or maintenance needs

- **Network Analysis Tools**

- Using the Utility Network Analyst toolbox
- Performing "Trace" operations to analyze network behavior and find connectivity issues
- Troubleshooting network connectivity problems using trace diagnostics
- Managing and interpreting trace results and reports

- **Advanced Analysis: Modeling and Predicting Network Behavior**

- Analyzing network performance: Predicting and optimizing network behavior
Using geospatial analysis for utility modeling
- Integrating network analysis with asset performance data (such as service interruptions)

DAY 4: UTILITY NETWORK MANAGEMENT AND INTEGRATION

- **Asset Management in Utility Networks**

- Managing assets in a utility network: Inventory management, asset condition, and lifecycle
- Tracking asset changes over time: Historical data integration
- Configuring maintenance schedules and integrating with CMMS (Computer ized Maintenance Management Systems)

- **Utility Network Data Management and Best Practices**

- Best practices for data management and quality control
- Utility network data integrity: Ensuring accuracy and consistency across datasets
- Versioning and managing change within utility networks

DAY 4: ADVANCED TOPICS AND CUSTOMIZATION IN UTILITY NETWORKS

- **Advanced Utility Network Configuration and Customization**

- Setting up advanced rules for utility networks: Custom connectivity rules and restrictions
- Creating custom tools for analysis and management
- Customizing utility network properties to fit specific utility models (water, electricity, gas)



- **ArcGIS Pro Extensions and Utility Network Performance**

- Leveraging extensions such as ArcGIS Utility Network Management and ArcGIS Enterprise
- Optimizing network performance and scaling the system for large utility networks
- Managing large-scale utility networks across multiple regions and jurisdictions

- **Future Trends and Technologies in Utility Networks**

- The role of AI, IoT, and predictive analytics in utility networks
- Future developments in utility network management
- Integrating real-time data and decision-making into utility networks
- Industry trends: Smart grids, water management, and predictive maintenance

- **Target Audience:**

- GIS professionals working with utilities and infrastructure management
- Engineers and managers in utilities (electricity, water, gas, telecommunications)
- ArcGIS Pro users looking to enhance their expertise with utility networks
- Utility asset managers, planners, and technicians involved in GIS-based network design and analysis

- **Learning Methodology:**

- This course combines interactive lectures, practical demonstrations, and hands-on exercises in ArcGIS Pro. Participants will work with real-world utility network datasets to create, edit, analyze, and manage utility systems. The course also includes case studies and discussions to highlight best practices and successful applications of utility network management. Participants will leave with the skills necessary to use ArcGIS Pro's Utility Network tools effectively in their organizations.