

Working with Geometric Networks for Utilities

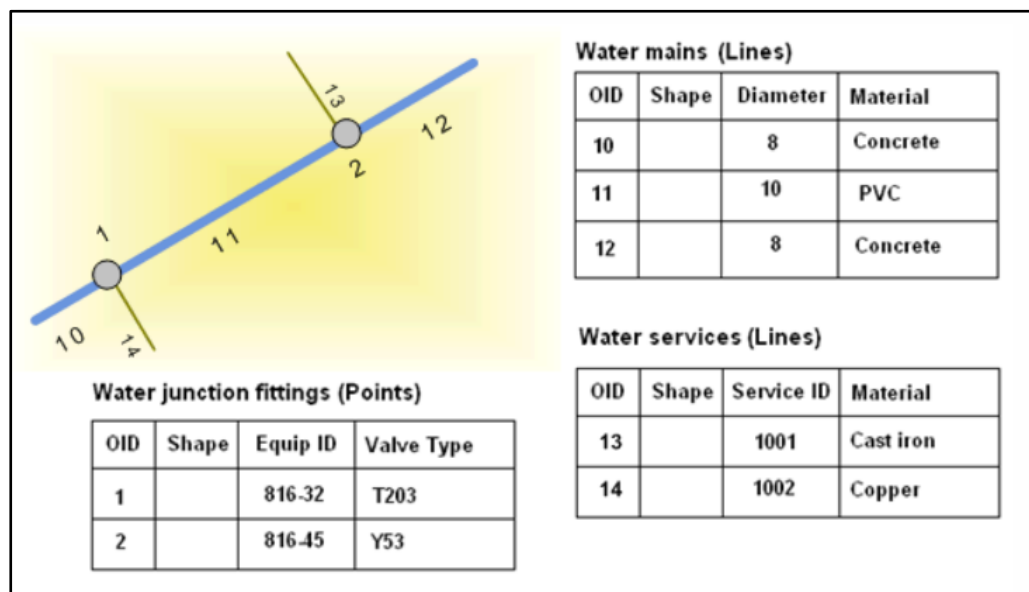
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SGD\$960 / pax

ArcGIS desktop extensions

Level: Advanced | Course duration: 2 days

Geometric networks offer a way to model common networks and infrastructures found in the real world. Water distribution, electrical lines, gas pipelines, telephone services, and water flow in a stream are all examples of resource flows that can be modeled and analyzed using a geometric network.



What is the course about?

Utility companies' users can learn how to inspect the logical consistency of a network and verifying connectivity between two points

Water utilities' users can determine which valves to shut off when a pipe burst.

Environmental monitoring stations can hone in on a source of pollution in streams.

Electric companies' users can check which part of the network is disconnected and use that information to figure out how to reconnect it or how to discover an electrical short circuit.

Electric utility companies can use the phone calls of customers experiencing an outage to locate suspect transformers or downed lines.

Who is the target audience?

Managers or Engineers who want to examine the direction of flow along edges, and ArcGIS who want to use the flow directions to perform flow-specific network analyses.

Are there any prerequisites?

- Completion of [ArcGIS 1: Introduction to GIS](#) and [ArcGIS 2: Essential Workflows](#) or equivalent knowledge is required

What skills will I learn?

After completing this course, you will be able to:

- Calculate the shortest path between two points
- Find all connected or disconnected network elements
- Find loops or circuits in the network
- Determine flow direction of edges when sources or sinks are set
- Trace network elements upstream or downstream from a point
- Calculate the shortest path upstream from one point to another
- Find all network elements upstream from many points and determine which elements are common to them all

Course topics

Geometric networks overview

- What is a network?
- What is a geometric network?
- Storage of the geometric network
- Geometric network features
- Features and storage
- Coincidence connectivity
- Junctions
- Edges: Simple and Complex
- Connectivity Rules
- Network weights
- Geometric network Analysis

Building a geometric network

- Design considerations
- Schema decisions
- Methodologies
- Build on existing features
- Build on an empty network
- Building from a data model
- Geometric network workflow
- Connectivity with snapping
- Determine edges
- Sources and sinks
- Network weights and types

Course topics (cont.)

Defining rules and behavior

- Data models
- Geometric networks
- Subtypes
- Connectivity rules
- Edge-edge rule
- Edge-edge connectivity matrix
- Edge-junction rule
- Edge-junction connectivity matrix
- Defining rules
- Creating subtypes
- Completing the network
- Validating the network

Network analysis

- Utility Network analysis workflow
- Utility Network Analyst toolbar
- Trace tasks
- Network flow
- Types of network flow
- Performing a trace
- Network solving options
- Ways to optimize a trace:
 - Use a weight filter
 - Trace on selected features
 - Use temporary barriers
 - Disable features

Editing a geometric network

- Managing network schema
- Adding a feature class to a network
- Changing connectivity rules
- Network connectivity
- Editing edges
- Editing junctions
- Junction subsumption
- Editing attributes
- Additional network editing functionality