Course Content

Course Description:

With ModelBuilder, you can automate workflows in ArcGIS without writing code! By graphically connecting tools together, and connecting those tools to input datasets, you can create your own custom workflows (your own tools) in ArcToolbox. From repetitive data loading (i.e. loading new competitor data once a month) to complex analysis (site investigation studies, play assessments), geoscientists and geoscience technicians are using Model Builder to help them in their daily tasks. This course teaches you the basics of building models and handling data in ModelBuilder, then shows you how to take your models to the next level by including variables and looping constructs. For example, you can build a model that automatically renames all of the feature classes in a particular geodatabase or one that loops through all of the unique values in an attribute table.

Audience:

This course is designed for those who are comfortable with ArcGIS and want to learn how to automate tasks in ArcMap.

Prerequisites:

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

Topics:

Day 1
Geoprocessing - An introduction to ArcToolbox and the geoprocessing environment in ArcMap
- GIS Data Types Review;
- ArcToolbox Structure;
- Running the Tools;
- Finding Tools;
- Tool Help;
- Tools and Licensing)

Working with ModelBuilder - An introduction to the Model Building Process
- How Model Builder is Used;

- Creating Custom Toolboxes;
- Creating Your First Model;
- Adding Tools;
- Connecting Tools to Datasets;
- Using Multiple Tools

Geoprocessing Tools – A discussion of some of the most useful tools for data manipulation, cleanup, analysis, finding errors

- Data Creation Tools;
- Tools for ModelBuilder - Custom Tools and Automated Workflows 1-101-304

- Data QC and Cleanup;
- Filtering Tools;
- Attribute Management Tools;
- Environment Settings

Building Flexible Models – Setting your models to accept variables as input

- Model Parameters;
- Model Settings;
- Simple Variables

Day 2
Consuming Data in ModelBuilder – Dealing with the datasets that are created and used by your model

- Intermediate Data;
- Managed Data;
- Tools for working with various data types;
- Feature Class vs. Feature Layer;
- Table vs. Table View;
- Raster vs. Raster View;
- Converting Between the Supported Data Types

Variables and Parameters – Create variables to allow SQL Expressions, Buffer Distances and other user inputs to be specified at run-time

- Variables from Input Parameters;
- Custom Variables;
- Using the Variable Value Later in the Model

Basic Project

Day 3
Iteration and Looping – Repeat parts of a model

- Looping Over All the Feature Classes in a Geodatabase;
- Looping Over All of the Attribute Values in One Field of an Attribute Table;
- Other Loop Constructs

Branching and Merging – Build a model that makes decisions

- Branching a Model;
- Merging Model Branches;
- Assuring that Both Branches Complete Before the Merge Happens

Exporting Models to Python – Convert a model into code to be part of a larger Python script, or vice versa

- Python;
- Script Tools;
- Exporting Models

Final Project