TIPS FY 2025 Training Course Descriptions



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## Geospatial Classes

### ArcGIS Online: Essential Workflows

*PREREQUISITES:* FOUNDATION- For new users

Foundational class for new ArcGIS Online users. This course introduces web maps, apps, and other authoritative content that may be available through your ArcGIS Online organizational site. You will learn how to discover, use, create, and share content that infuses projects with geographic context, additional business intelligence, and visual impact. Course concepts also apply to ArcGIS Enterprise portals.

### ArcGIS Pro: Essential Workflows

*PREREQUISITES:* FOUNDATION- For new users

Extend your foundational GIS knowledge, get comfortable with the ArcGIS Pro application, and explore some of the most common GIS workflows. This course introduces techniques and general best practices to map, manage, analyze, and share data and other GIS resources. Hands-on exercises will give you the experience needed to efficiently work with ArcGIS Pro.

1. **Creating and Editing Data with ArcGIS Pro** *PREREQUISITES:* ADVANCED - For advanced users

Maintain the accuracy of your authoritative GIS data. This course teaches best practices to create accurate geographic data and maintain it over time. You will get ample hands-on practice with a variety of ArcGIS Pro tools that streamline the editing process and decrease the potential for errors when updating your GIS database.

1. **Creating Story Maps with ArcGIS**

*PREREQUISITES:* ADVANCED - For Intermediate ArcGIS Online Users

ArcGIS Online users who need to create Story Maps. Thanks to their engaging user experience, digital stories have achieved mass appeal as a vehicle to inform the public, engage stakeholders, and inspire an audience. This course-for anyone that wants to tell stories with maps-teaches the concepts, best practices, and decisions that need to be made when creating and sharing a story.

**Topics include:**

* + Design a story based on your purpose and audience.
	+ Add web maps, images, multimedia, and text to create an engaging story.
	+ Apply best practices to share and promote your stories.

### Field Data Collection and Management Using ArcGIS

*PREREQUISITES:* ADVANCED - For advanced users

Efficiently collect accurate data that supports real-time decision making.

Learn how ArcGIS supports a complete field data management workflow-from the office to the field, in the field, and back to the office. You will learn best practices to configure and deploy ArcGIS field-productivity apps to meet your data-collection needs. You will have the opportunity to use your own iOS or Android device to complete some course exercises.

### Introduction to Global Mapper

*PREREQUISITES:* FOUNDATION - For new users

This class is intended for beginners or users who are relatively new to Global Mapper. The course will begin by introducing the principal components of the software and the various configuration options that are available. It will include an overview of the procedures for importing or accessing data from a variety of sources and will cover the essential file and data management tools.

The course will then explore the use of the Digitizer for vector data creation and editing, as well as the vector attribute management functionality. This will subsequently lead to an examination of the software's thematic mapping tools along with other data visualization options.

The class will conclude with quick look at feature labeling before exploring the page layout and data export options.

Dispersed throughout this course, the instructor will share numerous Tips and Tricks to introduce a wide array of Global Mapper's capabilities.

### Lidar and Point Cloud Processing in Global Mapper

*PREREQUISITES:* INTERMEDIATE - For Experienced Global Mapper users

Requires a working knowledge and experience with Global Mapper and/or successful completion of the Introduction to Global Mapper course.

This course will specifically focus on Global Mapper's powerful lidar and point cloud processing tools.

The class will begin by importing a lidar layer for the purpose of introducing the structural characteristics of the data, as well as Global Mapper's lidar-specific configuration and visualization options.

Attendees will then have an opportunity to explore the Pixels to Points tool, which applies the principals of Structure from Motion to overlapping drone-collected images for the purpose of creating a 3D point cloud.

The course will subsequently introduce numerous lidar filtering and editing procedures, including manual point reclassification, noise removal, vertical and horizontal rectification, cropping, and thinning, before exploring several automatic classification and feature extraction options.

The final section will expand on the terrain functionality by looking at several tools for creating and analyzing raster terrain data derived from a point cloud. This will include hydro-flattening, change detection, and terrain painting.

### Managing Geospatial Data in ArcGIS

*PREREQUISITES:* INTERMEDIATE - For Experienced ArcGIS Pro users

Target Audience: Staff who have attended Pro foundational courses who will be responsible for managing geospatial data across OSMRE. This course takes you on an in-depth exploration of the geodatabase, the native data storage format for ArcGIS software. Best practices to create a geodatabase to centrally store and efficiently manage your organization's authoritative geospatial data are covered. You will develop skills needed to configure unique geodatabase features that ensure data integrity and accuracy over time and a thorough understanding of file and enterprise geodatabase capabilities.

### Migrating from ArcMap to ArcGIS Pro

*PREREQUISITES:* INTERMEDIATE - For Experienced ArcMap users

With faster tools and integrated 2D and 3D capabilities, ArcGIS Pro will streamline your GIS projects. This course prepares experienced ArcMap users to be productive right away. Learn essential ArcGIS Pro terminology and concepts and how to efficiently complete a variety of tasks related to mapping, editing, analyzing, and sharing geospatial data and resources.

### Raster and Terrain Analysis in Global Mapper

*PREREQUISITES:* INTERMEDIATE - For Experienced Global Mapper users (Requires a working knowledge and experience with Global Mapper and/or successful completion of the Introduction to Global Mapper course.)

This class will primarily focus on the analysis of imagery and other raster layers before shifting attention to terrain or elevation data.

The first section will explore several raster or image processing tools including raster calculation, raster classification, and feature extraction. It will also cover

some of the basic raster configuration procedures, such as cropping, feathering, and blending.

The remainder of this course will explore Global Mapper's extensive collection of terrain visualization, editing, and analysis tools. This section will begin by walking through the procedure for creating a Digital Elevation Model (DEM) from lidar data and will subsequently introduce numerous terrains rendering tools including the 3D Viewer, Path Profile tool, and terrain shader options.

The course will then follow a series of terrain analysis procedures including contour generation, watershed analysis, viewshed analysis, breakline delineation, volume calculation, and cut and fill calculation.

To conclude this section, the class will cover the creation of a 3D fly-through recording and the various options for exporting or sharing 3D data.

### ArcGIS Enterprise: Administration Workflows

*PREREQUISITES:* INTERMEDIATE - For Experienced ArcGIS users

Master techniques to configure and maintain an ArcGIS Enterprise solution that meets your organization's business needs. You will learn about ArcGIS Enterprise architecture, server licensing roles and extensions, and the capabilities that support common GIS patterns of use. Best practices to manage servers, data, and services while ensuring high availability and system performance over time are covered.

### Location Analytics Using ArcGIS Insights

*PREREQUISITES:* INTERMEDIATE - For Experienced ArcGIS users

Build skills to quickly identify data patterns and relationships using drag-and-drop functionality, powerful analysis tools, and interactive maps, charts, and tables. This course provides a solid grounding in ArcGIS Insights capabilities and components. Learn how to structure an analysis and dynamically visualize and analyze nonspatial and spatial data together, then share your work using attractive visual themes and repeatable analysis workflow models. Course concepts apply to all ArcGIS Insights deployment options. Attendees will use Insights desktop in course exercises.

### Mapping and Visualizing Data in ArcGIS

*PREREQUISITES:* INTERMEDIATE - For Experienced ArcGIS users

Learn cartographic techniques and ArcGIS Pro and ArcGIS Online workflows to create and share a variety of professional-quality information products, including print maps, web maps, 3D scenes, animations, and charts.

### Working with ArcGIS Dashboard

*PREREQUISITES:* INTERMEDIATE - For Experienced ArcGIS users

Learn how to present data simply and effectively to monitor key metrics and activities in progress and provide decision-makers with easy access to the data that matters most to them. This course covers the essential concepts and workflows you need to understand to create an ArcGIS Dashboards dashboard from scratch, configure it to meet your data users' needs, and share it with stakeholders.

## CAD

### AutoCAD and LT Level I: Essentials

*PREREQUISITES:* FOUNDATION - For new users

This class provides attendees with a strong foundation for making AutoCAD or AutoCAD LT an effective and value addition to their professional skill set. Devised for professional who need to use AutoCAD or AutoCAD LT as a daily production tool, this class introduces students to the two-dimensional (2D) drafting environment, and the techniques required to edit existing drawings as well as create new drawings from scratch. Students will learn how to take a drawing file from its initial setup, through creating and modifying simple and complete objects, to detailed page setup and final printing.

### AutoCAD II Beyond the Basics

*PREREQUISITES:* INTERMEDIATE - For Experienced AutoCAD users (Requires a working knowledge and experience with AutoCAD and/or successful completion of the AutoCAD Essentials course.)

Take your AutoCAD® skills to the next level with AutoCAD Level II: Beyond the Basics. During this in-depth, two-day class you will discover techniques designed to reduce work, increase productivity, heighten organization, and ease project collaboration with a host of AutoCAD's most advanced commands. Prior knowledge of basic AutoCAD commands and techniques is necessary.

### AutoCAD Map 3D & AutoCAD Raster

*PREREQUISITES:* INTERMEDIATE - For Experienced AutoCAD users

This class explores the capabilities of AutoCAD® Map 3D® in mapping and GIS, facilities management, civil engineering, and planning applications. You will learn the essentials of manipulating multiple drawing files, attaching and editing tabular data, natively accessing and working with external GIS data types (SHP, SDF, etc.), map creation and stylization, as well as Map Book generation. Knowledge of basic GIS concepts as well as a working knowledge of basic AutoCAD® commands and techniques is required.

### AutoCAD and LT Level I: For Project Managers

*PREREQUISITES:* INTERMEDIATE - For Experienced AutoCAD users

This class is intended for individuals who wish to use AutoCAD® or AutoCAD LT to view, markup and print existing drawings as part of their supervisory or management role. In this class, attendees will gain the skills necessary to find, open, navigate, markup (redline), save, and print AutoCAD or AutoCAD LT drawings. Building upon this essential foundation, they will also receive an overview of drawing navigation commands as well as basic editing and annotation techniques.

### AutoCAD Civil 3D: Level 1 Essentials

*PREREQUISITES:* INTERMEDIATE - For Experienced AutoCAD users

This class introduces the model-based design technology in Autodesk® Civil 3D® and provides the core for its application in civil engineering projects of any type. Students will examine the Autodesk Civil 3D interface and environment, the development of civil project data, and the application of settings and styles. A working knowledge of standard commands and techniques is necessary.

# Hydrology

### Hydraulic Engineering Center - River Analysis System (HEC-RAS) for Permitting and Reclamation

*PREREQUISITES:* FOUNDATION - For new users

This course provides an overview of HEC-RAS modeling capabilities and shows each attendee how to use the model as a permitting/evaluation tool in flooding investigations. The course covers the most common uses of HEC-RAS such as water surface profiles, floodplain delineation, and the effects of bridges and culverts. The hands-on exercises allow participants to enter/edit flow and geometric data, perform flow simulations, develop water surface profiles and generate reports and graphics.

### Hydrologic and Hydraulic Analysis Using ArcGIS

*PREREQUISITES:* INTERMEDIATE - For Experienced ArcGIS Pro or ArcMap and HEC-RAS users

Learn GIS techniques for terrain analysis, hydrologic and hydraulic characteristics extraction, numerical model input and output, modeling process automation, and result mapping. The class will take full advantage of ArcGIS and its extensions to support requirements that H&H analyses pose to GIS technology. You will gain hands-on experience developing HMS and RAS model inputs and analyzing and mapping model results. Utilization of GIS infrastructure for support of other H&H models will also be discussed. While H&H analyses are at the core of this class, the focus is on the functionality that GIS provides to H&H modeling, not on performing H&H analyses. Opportunities for using GIS for post-model analyses such as mapping and flood damage estimation will be discussed.

1. **Model Mine Drainage Geochemistry and Treatment Using GeoChemist Workbench** *PREREQUISITES:* FOUNDATION - For new users (Attendees need to have a prior understanding of geochemistry. Prior experience with mine drainage is desired, but not necessary.)

This course is aimed at providing an understanding of how to use Geochemist Workbench to model mine drainage chemistry and treatment. The workshop is focused on the practical application of modeling and will use data collected from various coal mine discharges and treatment systems to cover the following topics:

* + Creating activity and Eh/pH diagrams to identify solubility controls on mine drainage;
	+ Developing strategies to constrain a model to produce usable "real-world" results;
	+ Modeling chemical consumption, treatment pH, and effluent chemistry for NaOH, CaO, Ca(OH)2, CaC03, and Na2C03 treatment systems and predicting the treatment costs (both active and passive treatment systems);
	+ Modeling kinetics of CO2 exsolution, for passive and active aeration devices, and its effect on iron oxidization kinetics;
	+ Analyzing the effect of exsolving CO2 (decarbonation step) prior to alkali dosing. The effect on chemical consumption, mineral precipitation, and treatment costs will be analyzed;
	+ Using a model to develop a comprehensive watershed restoration strategy to achieve in-stream restoration goals for abandoned mine land scenarios;
	+ Modeling heterogeneous and homogenous ferrous iron oxidation to size ferrous reactor tanks and passive treatment

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# Modeling

### Introduction to EarthVision 2D and 3D Modeling

*PREREQUISITES:* FOUNDATION - For new users

An introduction to EarthVision ®, with a primary emphasis on the

program's WorkFlow Manager®. The class uses 2D and 3D data and grids for faults and horizons as components in building 3D structure and property models. Class topics include: data visualization and validation, data editing in 3D, constructing fault hierarchies, building stratigraphic sequences, and constructing the final 3D volume model. The extraction of 2D maps and cross sections from the finished model completes the sequence of activities. Other topics include the calculation of precise volumes, Formula Processor operations for file manipulation, and exploring the program's powerful Graphic Editor. Upon completion of the course, students will have a solid introduction to building three-dimensional faulted models and will be comfortable using the 3D visualization tools.