**ESRI ArcGIS Pro Training Resources – Review**

**Tracy Miller, CIO Geospatial Branch – March 31, 2018 *(Document will be updated frequently.)***

🟊Recommended

*Notes: All Times based on ESRI estimates. If you are unable to “Launch Tutorial” from your ESRI training Wish List, try clicking the training name and launching from the training’s description web page. Links in the Table of Contents go to the reviews in this document; links in the reviews go to the ESRI website for the training.*

**Trainings:**

**Introduction to Pro**

Download - [ArcGIS Pro terminology Guide](#DownloadsTerminology)

🟊Web Course - [Get Started With ArcGIS Pro](#GetStarted)

Web Course - [Getting Started with ArcGIS Pro](#GettingStartedWithPro)

🟊Video - [Going Pro: ArcGIS Pro Essentials for ArcMap Users](#VideoProEssentials)

Web Course - [Integrating Data in ArcGIS Pro](#IntegratingData)

🟊Instructor Led Class - [Introduction to ArcGIS Pro for GIS Professionals](#InstructorGISProfessional)

Video – [Streamline GIS Workflows with ArcGIS Pro](#VideoStreamlineWorkflows)

**Cartography and Display**

🟊Web Course - [3D Visualization Using ArcGIS Pro](#Visualization3D)

Video - [ArcGIS Pro: Using Imagery](#VideoUsingImagery)

🟊Web Course - [Cartographic Creations in ArcGIS Pro](#CartographicCreations)

🟊Web Course - [Creating and Sharing Animation in ArcGIS Pro](#Animation)

Web Course - [Displaying Data in ArcGIS Pro](#DisplayingData)

Web Course - [Displaying Raster Data Using ArcGIS Pro](#DisplayingRaster)

Web Course - [Download Imagery from an Online Database](#ImageryOnline)

Web Course - [Drawing Millions of Features in ArcGIS: Advanced Techniques](#VideoDrawingMillions)

Video - [Dynamic Image Processing in ArcGIS Pro](#VideoDynamicImage)

Web Course – [Fly-Through South America in a 3D Animation](#SouthAmerica)

Web Course - [Labeling Features Using ArcGIS Pro](#LabelingFeatures)

Web Course - [Querying Data Using ArcGIS Pro](#QueryingData)

**Editing**

🟊Video - [ArcGIS Pro Editing Essentials](#VideoEditingEssentials)

Web Course – [Editing Basics in ArcGIS Pro](#EditingBasics)

🟊Web Course - [Editing 3D Features Using ArcGIS Pro](#Editing3D)

**Analysis**

Web Course - [Aloha! A GIS Vacation](#Aloha)

🟊Web Course - [Assess Burn Scars with Satellite Imagery](#BurnScars)

🟊Web Course - [Calculate Impervious Surfaces from Spectral Imagery](#ImperviousSurface)

Web Course - [Classify Land Cover to Measure Shrinking Lakes](#ShrinkingLakes)

Web Course - [Creating Optimized Routes Using ArcGIS](#OptimizedRoutes)

Web Course - [Creating an Origin-Destination Cost matrix in ArcGIS Pro](#OriginDestination)

Web Course - [Extract Roof Forms for Municipal Development](#ExtractRoof)

Web Course - [Finding the Closest Facilities Using ArcGIS Pro](#FindingClosest)

Web Course - [Predict Floods with Unit Hydrographs](#PredictFloods)

Web Course - [Performing Line of Sight Analysis](#LineOfSight)

Web Course - [Performing Viewshed Analysis in ArcGIS Pro](#ViewshedAnalysis)

Web Course - [Preparing to Performa Analysis Using ArcGIS Pro](#PreparingAnalysis)

🟊Web Course – [Processing Raster Data Using ArcGIS Pro](#ProcessingRaster)

🟊Video - [Space Time Pattern Mining: A New Frontier in Spatial Analysis](#VideoSpaceTime)

🟊Video - [Spatial Data Mining II: A Deep Dive into Space Time Analysis](#VideoSpaceTimeII)

🟊Web Course - [Terrain Analysis Using ArcGIS Pro](#TerrainAnalysis)

**Web and Sharing**

Web Course - [Creating Vector Tiles in ArcGIS Pro](#VectorTiles)

Video - [Sharing 3D Content with ArcGIS](#VideoSharing3D)

🟊Web Course - [Sharing 3D Content Using Scene Layer Packages](#Sharing3D)

🟊Web Course - [Sharing Maps and Layers with ArcGIS Pro](#SharingMaps)

**Models and Scripts**

Web Course - [Build a Model to Connect Mountain Lion Habitat](#MountainLion)

🟊Web Course - [Building Geoprocessing Models Using ArcGIS Pro](#BuildingGeoprocessing)

Web Course - [Creating Python Scripts for Raster Analysis](#PythonRaster)

Video - [Extend ArcGIS Pro Functionality with Add-Ins](#VideoAddIns)

**Tasks and Workflow Management**

Video - [ArcGIS Pro Tasks: An Introduction](#VideoTasksIntro)

🟊Web Course - [Automating Workflows Using ArcGIS Pro Tasks](#AutomatingWorkflow)

🟊Video - [Create and Share ArcGIS Pro Tasks](#VideoCreateTasks)

Video - [Simplify Data Management with ArcGIS Workflow Manager](#VideoWorkflowMgr)

**Self-paced, online tutorial or web course**

[Getting Started with ArcGIS Pro](https://www.esri.com/training/catalog/57630435851d31e02a43f007/getting-started-with-arcgis-pro/) – FREE Tutorial; 5 ½ hours; data from Southern California earthquakes

* User Interface
* Map Views, including 3D
* Editing Points
* Raster Functions
* Symbology basics
* Geoprocessing: IDW tool
* Map layouts
* Project packages
* Web layers and web map

*Review: Basic ArcGIS Pro Intro that could work for beginner or advanced GIS user; Map Layouts take a lot of getting used to so recommend another class and may need to* [*change display options*](http://pro.arcgis.com/en/pro-app/help/mapping/map-authoring/display-options.htm) *for performance.*

[Cartographic Creations in ArcGIS Pro](https://www.esri.com/training/catalog/592480f42a01eb14e793d0e7/cartographic-creations-in-arcgis-pro/) – FREE Tutorial; 2 hours; data from bombing missions in Vietnam

* Create layer from a CSV file
* Symbolize point & polygon features – advanced
* Add reference data from the Living Atlas of the World
* Advanced Labelling
* Create a time series bar Chart from CSV file
* Binning data into hexagons
* Configuring a layout for print maps
* Suitable for beginning GIS user because it contains some supplementary basic explanations (e.g. “projections”) for users

*Review: High end cartography so good for both Pro and Cartography training; probably takes longer than 2 hours.*

[Extract Roof Forms for Municipal Development](https://www.esri.com/training/catalog/57ae17316d09d4910aa8b2f6/extract-roof-forms-for-municipal-development/) – FREE Tutorial; 1 hour 20 minutes; Lidar data for buildings in Portland

* Use a Pro Task
* Working with LIDAR point clouds (LAS file) – Create elevation layers from points
* ESRI “Extract Roof Form” and related tools in CityEngine Rules Tool
* Applying a layer file symbology to layer
* Working in 3D-2D linked scenes
* Split polygon & edit attributes
* Create a multipatch (3D) Feature class

*Review: More advanced training, assuming some experience with 3D navigation and concepts. Provides some basics on Lidar (LAS) files. ArcGIS Pro Tasks control all workflow so not that useful as a learning tool.*

[Build a Model to Connect Mountain Lion Habitat](https://www.esri.com/training/catalog/5936d0e7cd76843f33e17898/build-a-model-to-connect-mountain-lion-habitat/) – FREE Tutorial; 1 hour 50 minutes; data related to mountain lion habitat in the Los Angeles Basin

* Very Intro level – Customize user interface “theme”; Pro interface basics
* Raster Analysis: Setting up a Geoprocessing Environment, Focal Statistics Tool, Reclassify Tool, Weighted Sum Tool, Euclidean Distance Tool, Cost Connectivity Cool
* Model Builder basics
* Least Cost analysis to identify potential wildlife corridors based on suitability surface

*Review: Suitable for staff with very little GIS experience. Very good introduction to spatial analysis tools and some of the theory behind these tools.*

[Classify Land Cover to Measure Shrinking Lakes](https://www.esri.com/training/catalog/576609f1ed5a246c117f0f98/classify-land-cover-to-measure-shrinking-lakes/) – FREE Tutorial; 1 hour 50 minutes; Landsat Satellite Imagery for China’s Lake Poyang

* Unsupervised Classification
* Note: Pro crashed when changing display extent while tool was running – unable to delete remnant dataset
* Majority Filter & Boundary Clean tools for generalizing raster
* Add a field to attribute table and calculate value – Failed to get this to function –problems with calculate function (field type conversion) and exclusive schema locks (ArcGIS Pro v2.0)

*Review: Some introduction to raster calculations and analysis but fairly cookbook instructions (not much background info). I had major problems running the final step of the project in Pro…need more experience to see if this was related to the particular data format or more general table editing.*

[Integrating Data in ArcGIS Pro](https://www.esri.com/training/catalog/57630436851d31e02a43f0fd/integrating-data-in-arcgis-pro/) – FREE Tutorial; 1 hour 15 minutes; city infrastructure data for Aurora, CO.

* Data formats and geodatabase basics
* Create geodatabase and add data sets

*Review: Assumes some basic knowledge of working in Pro so not for total beginner in Pro. Very simplistic so not much use for GIS professional staff.*

[Calculate Impervious Surfaces from Spectral Imagery](https://www.esri.com/training/catalog/57ae15e742de278c0a035567/calculate-impervious-surfaces-from-spectral-imagery/) – FREE Tutorial; 1 Hour 30 minutes; aerial photography and parcel data for a subdivision

* Raster functions – Extract Bands
* Classification Wizard for doing a Supervised Classification of land cover
* Pro Task: assess accuracy of classification, calculate impervious areas

*Review: Basic instructions for Pro with very good background information on supervised classification of land cover. Highly recommended!*

[Creating Optimized Routes Using ArcGIS](https://www.esri.com/training/catalog/57ae3ba542de278c0a03657f/creating-optimized-routes-using-arcgis-pro/) – Free Course with FS organizational account; 1 hour; San Francisco routed street network.

* **Required Extension: Network Analyst**
* Network Analysis based on network dataset: Stops, routes, barriers
* Digitize a polygon barrier

*Review: Very brief introduction to the Network analyst functions. Little use for developing skills in Pro.*

[Terrain Analysis Using ArcGIS Pro](https://www.esri.com/training/catalog/57630436851d31e02a43f18f/terrain-analysis-using-arcgis-pro/) – Free Course with FS organizational account; 2 hours 45 minutes; elevation data related to vineyard locations in Southern California.

* **Required Extension: Spatial Analyst**
* Spatial Analyst Extension tools to create datasets of slope & aspect rasters
* Setting the analysis environment (Note: Need to create the Scratch.gdb in the p1 folder first)
* Note: for all raster outputs, make sure you navigate to a geodatabase; if not, the output raster is created in a grid format
* Raster calculator for Binary Suitability Analysis (Note: When building expression in v2.0, click out of the “expression box” to resolve the Python Syntax Error message (as long as your expression is actually valid)
* Raster Functions to create hillshade
* Note: “Remove Edge Effect” now called “Disable default edge pixel interpolation”.
* Generate & label contours
* Viewshed Analysis
* Viewing in 3D

*Review: Very good training with lots of background on elevation-related raster concepts. Assumes basic Pro skills so this is not a beginner level class.*

[Creating and Sharing Animation in ArcGIS Pro](https://www.esri.com/training/catalog/58517380d33f8b0b47b78e3f/creating-and-sharing-animation-in-arcgis-pro/) – Free Course with FS organizational account; 1 hour 30 minutes; data of climbing routes on Mt Everest

* Animation basics – ribbon, Properties Pane, Timeline Pane
* Create and edit a fly through animation
* Create and edit a time-series animation
* Export animation to Draft & YouTube formats; export frames to still images

*Review: Fun and fantastic functionality, very inspiring, intro to animation concepts is very brief though*

[Querying Data Using ArcGIS Pro](https://www.esri.com/training/catalog/57630433851d31e02a43eeaa/querying-data-using-arcgis-pro/) – Free Course with FS organizational account; 30 minutes; data for health care facilities in Washington

* Field data types
* Attribute Queries

*Review: Very basic beginner GIS – way too easy for GIS staff; not worth the time.*

[Predict Floods with Unit Hydrographs](https://www.esri.com/training/catalog/598a43865bed191d3a9bc732/predict-floods-with-unit-hydrographs/) – FREE Tutorial; 1 hour 55 minutes; stream and rainfall data in Vermont

* Uses a Pro Task to create unit hydrograph
* Identify Flow direction, identify and fill sinks
* Flow Accumulation to identify potential waterways, Snap Pour Point Tool and Watershed Tool
* Measure Tool
* Table Tools: Table to Table, Add Field, Calculate Field
* Raster Tools: Slope tool, Con tool (Conditional Raster calculations), clipping a raster, Reclassify tool
* Raster Calculator to implement velocity model
* Create Chart from Table

*Review: Some (but not a lot of) background on the concepts and uses a predefined Task, therefore people that try to apply this lesson should plan on spending more time researching tools. However, lessons works through an advanced example of using GIS for analysis with good practice using Pro raster tools. Not for beginners to GIS or Pro. Will probably take longer than 2 hours to complete.*

[Displaying Data in ArcGIS Pro](https://www.esri.com/training/catalog/57630433851d31e02a43ee9e/displaying-data-in-arcgis-pro/) – Free Course with FS organizational account; 1 hour 15 minutes; ski area data in Utah

* Change symbology for Points, Lines and Polygon
* Single Symbol, Unique Values and Quantitative Symbols

*Review: Targeting beginners in GIS with concepts on choosing the right display method; assumes some knowledge of Pro (navigating, general layout). Recommended for the cartographically challenged beginner. Also good as a quick review on a basic Pro skillset if you are feeling lost.*

[Download Imagery from an Online Database](https://www.esri.com/training/catalog/57660b74bb54adb30c9453e7/download-imagery-from-an-online-database/) – FREE Tutorial, 1 hour; Landsat (satellite) imagery of Singapore

* Using the USGS LandsatLook Viewer to find and download a satellite image

*Review: Requires the creation of an EROS account with USFS (free). Downloads image of about 800mb which I was unable to do successfully over the network; therefore, I was unable to evaluate the rest of the course.*

[3D Visualization Using ArcGIS Pro](https://www.esri.com/training/catalog/5763042d851d31e02a43ed91/3d-visualization-using-arcgis-pro/) – Free Course with FS organizational account; 2 hours 15 minutes; Data for Crater Lake, San Diego urban area

* Navigating a 3D Scene
* Global vs Local 3D Scene types
* 3D Basics: 3D Features, Multipatches for capturing surfaces; Rule Packages (RPK), Extrusion, Illumination
* Default Elevation Surface
* 3D Tools: Convert 2D to 3D, Extrude, Preset layers (thematic trees), illuminate scene to show shadows (local & global)
* Checklist for authoring 3D scenes
* Accessing/using an on-line ESRI Rule Package to create 3D building models from footprints (Note: may need to refresh folder or reopen project to “see” Rule Package (.rpk); initially got an error accessing rule package but was able to access fine after cancelling the first error)
* Multipatch feature class (for buildings)
* Create Bookmarks
* Create Layout and export to PDF

*Review: Intermediate level class that assumes some basic ArcPro skills. Great exposure to a range of 3D concepts. Highly recommend.*

[Creating Vector Tiles in ArcGIS Pro](https://www.esri.com/training/catalog/5851736fd33f8b0b47b78e26/creating-vector-tiles-in-arcgis-pro/) – Free Course with FS organizational account; 1 hour 30 minutes; San Diego geologic data

* Basics of Vector Tiles for sharing Basemaps: Requirements, best practices for authoring, Vector tile index
* Note: Exercise refers to Catalog Pane as Project Pane. Other small problems with instructions
* Authoring tools: scales, scale-based sizing for symbols, labels
* Create Vector Tile Index tool
* Create & share a vector tile package; publish the package for use in AGOL

*Review: Advanced level functionality and fact that it consumes ESRI credits to create tiles makes this targeted primarily to GIS managers. Doesn’t provide much background on concepts or tool parameters but good general introduction. No discussion on customizing or using Vector Tile Packages in Pro.*

[Labeling Features Using ArcGIS Pro](https://www.esri.com/training/catalog/57630437851d31e02a43f232/labeling-features-using-arcgis-pro/) – Free Course with FS organizational account; 30 min; land parcel data

* Maplex Label Engine
* Basics of label placement, position, fitting, conflict resolution
* Note: Opening the project, the initial labels would not load (stuck processing); closed and reopened and they loaded within 20 seconds. Opened very quickly after project was upgraded to current version of Pro.
* Label Properties pane – land parcel placement, overrun, reduce font size, remove duplicates

*Review: Very brief intro to labeling properties using Maplex parameters. Not much substance and doesn’t cover label classes, fields so I wouldn’t recommend for either it’s cartographic or ArcGIS Pro benefits.*

[Finding the Closest Facilities Using ArcGIS Pro](https://www.esri.com/training/catalog/57eb07e1ee85c0f5204b5253/finding-the-closest-facilities-using-arcgis-pro/) – Free Course with FS organizational account; 1 hour; San Francisco road network

* **Required Extension: Network Analyst**
* Network datasets & analysis – cutoff, barrier, direction, mode
* Closest Facilities Tool: import facilities, incidents & barriers using the Add Location Tool, Directions Pane

*Review: Basic intro to the Closest Facility tool. Very narrow focus and assumes basic ArcGIS Pro knowledge. Depends on networked dataset which may not exist for local units so probably limited use to FS staff.*

[Sharing 3D Content Using Scene Layer Packages](https://www.esri.com/training/catalog/58471aa5fb83aeb761847d7f/sharing-3d-content-using-scene-layer-packages/) – Free Course with FS organizational account; 2 hours; Portland city data

* **Required Extension: 3D Analyst**
* 3D basics: Global vs local scene, 3D features, extrusion multipatch geometry type, navigating
* Workflow/Best Practices for authoring a 3D scene
* 3D Project Template
* Tools: Add Surface Information Tool, Layer 3D to Feature Class, Feature to 3D by Attribute
* 3D Basics: Extrusion, adding layer with preset symbology
* Publishing & sharing in AGOL – Note: user must have Publisher privileges, don’t recommend sharing (can do exercise without cluttering up FS organizational AGOL space)
* Workflow to publish from a scene layer package
* Editing an AGOL item details page
* Create and edit a web scene – Note: It may take 15-45 minutes to publish

*Review: Very good course that walks user through some of the basics of 3D functionality as well as some of the basics of ArcGIS Pro. User will need to know how to navigate in a 3D scene. Course is somewhat difficult; can get a bit confusing following the various steps used to determine final height values for features.*

[Building Geoprocessing Models Using ArcGIS Pro](https://www.esri.com/training/catalog/57630433851d31e02a43eebc/building-geoprocessing-models-using-arcgis-pro/) – Free Course with FS organizational account; 2 hours 30 minutes; Data for Ft. Collins

* Model and Model Builder Basics: elements, states, environment settings
* Model Builder Tab, Editing, Running, Model Parameters
* Suitability analysis for siting a land fill – create model
* Set up parameters for input datasets

*Review: Very good course that can be used as an introduction to models and ModelBuilder as well as an orientation to running ModelBuilder tools in Pro. Assumes some basic knowledge about Pro (e.g. symbology) but not a lot.*

[Performing Line of Sight Analysis](https://www.esri.com/training/catalog/57fd7a465413c49402a2dd9b/performing-line-of-sight-analysis/) – Free Course with FS organizational account; 1 hour 15 minutes; data for parade route through Philadelphia

* **Required Extension: 3D Analyst**
* Background on vector-based Line of Sight analysis: basics, requirements, curvature & refraction, visible distance
* Tools: Construct Sight Lines, Line of Sight, Add Z Information, Select by Attributes, Delete Features
* Types of obstructions accepted by analysis
* Note: New length field is named Length3D by default
* Quick introduction to model builder: Running a Visibility model

*Review: Walks user through a fairly simple analysis process (i.e. is a line between an observer and target obstructed). Analysis training tool but not much use for learning ArcGIS Pro.*

[Performing Viewshed Analysis in ArcGIS Pro](https://www.esri.com/training/catalog/57d8718d8b3e1ff2376bf91c/performing-viewshed-analysis-in-arcgis-pro/) – Free Course with FS organizational account; 1 hour; lights in a campground data

* **Required extension: 3D Analyst, Spatial Analyst**
* Background on raster-based viewshed analysis: basics, model parameters
* Add a field, update values manually and with Field Calculator
* Viewshed Tool
* Raster Function to Select Raster Cells

*Review: Walks user through a fairly simple analysis process (i.e. what areas of the landscape can be seen by an observer). Analysis training tool but not much use for learning ArcGIS Pro.*

[Assess Burn Scars with Satellite Imagery](https://www.esri.com/training/catalog/576609bded5a246c117f0f90/assess-burn-scars-with-satellite-imagery/) – FREE Tutorial; 2 hours; Data from Glacier National Park

* Download a project package from AGOL
* Imagery display settings, maximizing visibility of fire scars, preconfigured band combos, adding individual bands for raster calculations
* Save a custom band combination
* Landsat Imagery Background
* Calculate Normalized Burn Ratios and determine change between two images using Raster Calculator tool
* Create and edit a polygon feature class, add fields, field calculator
* **Note: To edit vertices, on Edit Tab Features Group, click Modify. Modify Features Pane will open and Vertices is under the All Tools Tab Reshape Group**
* Share fire polygons as a web layer on AGOL. **Note: User should share only with “My Content” to prevent Agency clutter on the web.**

*Review: Very good training for staff involved in post-fire analysis or those that need a basic intro to working with satellite imagery in ArcGIS Pro. Assumes basic ArcGIS Pro skills in map navigation.*

[Automating Workflows Using ArcGIS Pro Tasks](https://www.esri.com/training/catalog/57957ed130a990c02999b51c/automating-workflows-using-arcgis-pro-tasks/) – Free Course with FS organizational account, 4 hours 30 minutes; data for Search & Rescue (SAR) in Yosemite

* Task background
* Importing and using a task file to simulate a SAR incident response
* Create/edit tasks using Task Designer
* Create a new task
* Add manual and automatic steps to create new feature and edit attributes
* Use the record action option
* Add actions before and after task step is run
* Use a task variable to control selection
* Use a Palette Step to access multiple tools
* Share as task file; repair errors encountered (broken links) when sharing a task

*Review: Excellent introduction to creating and troubleshooting ArcGIS Pro tasks. This functionality is fairly advanced and limited to ArcGIS Pro. The class does not require previous Pro experience but the definitely not for beginners.*

[Fly Through South America in a 3D Animation](https://www.esri.com/training/catalog/57f44f19362fd58367ab4d7a/fly-through-south-america-in-a-3d-animation/) – FREE Tutorial, 1 hour 30 minutes; Only satellite imagery and elevation data.

* Realistic 3D Global Scenes - Global\_Scene.aptx, atmospheric effects
* Adding cloud imagery (from AGOL Portal) – **Note: I waited 10 minutes for download/display of cloud layer over VPN; ArcGIS Pro would not let me cancel load with “ESC” so I when I tried to close project by opening task manager, the layer suddenly appeared.** **Ended up removing layer because it was slowing down performance too much on my PC.**
* ESRI Locator (**Note: There is no Chimborazo, Chimborazo, ECU; used Chimborazo, ECU instead … mountain is a bit north of this bookmark**), Zoom Elevation box
* Create Bookmarks, Map Notes (for map annotations), Labels
* Animation – Key Frames, Transitions, Maintain Speed Tool
* **Note: In ArcGIS Pro, my computer or internet connection could not render the 3D imagery quick enough to work with view this animation as described in the exercise. However, the exported .MP4 file looked good.**
* Export to YouTube

*Review: Assumes some basic ArcGIS Pro project & 3D navigation knowledge. Frustrating training, depending on your computer specs and/or internet speed. Missing some key concepts about animation. Recommend taking the “Creating and Sharing Animation in ArcGIS Pro” course instead!*

[Editing 3D Features Using ArcGIS Pro](https://www.esri.com/training/catalog/5763042e851d31e02a43edc4/editing-3d-features-using-arcgis-pro/) – Free Course with FS organizational account; 1 hour 15 minutes. Data for rooftop garden in Philadelphia.

* Introduction to 3D Elevation property
* Z Mode button
* Manage Templates
* Editing: Trace tool, Height attribute, Snapping, Select All
* 3D Move & Rotate
* Add and change display of a 3D Model

*Review: Take “3D Visualization for ArcGIS Pro” first or at least have a broader introduction to 3D concepts and navigation beforehand. Course provides an introduction to some of the concepts in 3D editing, particularly the Move & Rotate function.*

[Get Started with ArcGIS Pro](https://www.esri.com/training/catalog/57660c6ebb54adb30c945412/get-started-with-arcgis-pro/) – FREE Tutorial; 2 Hours 30 Minutes, Data for Venice Italy.

* Map.aptx project template
* Add data from layer package stored on AGOL
* 2D Map navigation; creating bookmarks; Symbolizing features, changing base map
* Create point data and edit attribute table, delete features
* Convert 2D Map to 3D Local Scene; Alter default project settings
* 3D Scene navigation; convert 2D layers to 3D; extrude features
* Adding high resolution elevation data; Using a Preset Layer for elevation
* Geoprocessing Tools: Raster Calculator, Set Null, Zonal Geometry, Raster to Polygon, Copy Features, Select by Location
* Using and modifying a Rule Package to create more realistic buildings
* Add a 3D Model

*Review: Excellent course; very well written with basic explanations on ArcGIS Pro and general GIS topics; requires no GIS experience – even provides simple definitions of concepts like “rasters”. Also, fun data! Could take this first or later into your training as a way to reinforce skills learned in previous training.*

[Sharing Maps and Layers with ArcGIS Pro](https://www.esri.com/training/catalog/57630436851d31e02a43f0eb/sharing-maps-and-layers-with-arcgis-pro/) – Free Course with FS organizational account; 3 hours 30 minutes; data for disaster mapping in Japan

* Background on Sharing: picking the right solution
* Share a map package with attached Readme.txt
* Tools: Select by Attributes, Import Symbology, Definition Query
* **Note: Users should Share with just “My Content” to prevent cluttering up the FS AGOL environment**
* Background on authoring web maps
* Author and share a web map: create bookmarks, change label appearance, configure pop-ups, configure web feature layer, set map projection
* Author and share a web feature layer: create a feature template
* Author and share a map series: create a layout and add text elements, create a template from layout

*Review: Long course that will expose you to a wide range of sharing options – it may get confusing to keep track of all the options but there are lots of good nuggets of info that go deeper than just the basics. Also contains lots of links to ESRI websites for additional information.*

[Displaying Raster Data Using ArcGIS Pro](https://www.esri.com/training/catalog/57c5a9c375decdca2d2b7cfe/displaying-raster-data-using-arcgis-pro/) -- FREE with FS organizational account, 2 hour 45 minutes; raster data for Big Bear, California and Glacier Bay Natl Park

* Introduction to raster data: Raster grids, cell size, scale, rendering, stretching, resampling, swipe tool
* Change renderer – color, classify into ranges
* Intro to multispectral imagery: Landsat 8, spectral band combinations, brightness, contrast, gamma, transparency, dynamic range adjustments
* Using Band Combinations button and custom band combinations to emphasize burn scars

*Review: Suitable for beginners to GIS and Pro, especially with long intro to raster. Lots of supporting explanations so very thorough. Focuses on visualization, not processing.*

[Creating an Origin-Destination Cost Matrix in ArcGIS Pro](https://www.esri.com/training/catalog/582253de4c37b1a46f677c0b/creating-an-origin-destination-cost-matrix-in-arcgis-pro/) – FREE with FS organizational account, 1 hour; data for San Francisco.

* **Required Extension: Network Analyst**
* Overview of origin-destination cost matrix analysis and comparison to Closest Facility analysis
* Very simple intro exercise with input data for origins and destinations,
* Discussion of output matrix attribute table
* **Note: Review menu item does not open.**

Review: Assumes basic ArcGIS Pro skills. Way to simple; just not worth the time.

[Aloha! A GIS Vacation](https://www.esri.com/training/catalog/5a1da36f73ca5830269bc48e/aloha!-a-gis-vacation/) – FREE, 45 min; data related to viewsheds & trails for Hawaii

* **Note: Workflow in Pro is found in the second half of the tutorial; Instructions written for version 1.2 need to be interpreted a bit**
* Geoprocessing Tools: Apply Layer Symbology, Batch Project, Topo to Raster, Viewshed, Raster to Polygon, Summary Statistics, Focal Statistics Tool, Raster Calculator
* Very brief intro to 3D navigation
* Create viewsheds & calculate area from lookout points. **Note: Use the 3D Analyst Tools version of Viewshed (not Spatial Analyst Tools)!**
* Using Model Builder to model roughness of terrain (Topographical Position Index)
* **Note: Had to set number of classes using another method before switching to Manual Interval.**

*Review: Strange “tutorial” because it requires a strong knowledge of Pro with very little explanations; more for review and practice than training; takes longer than 45 minutes*

[Preparing to Perform Analysis Using ArcGIS Pro](https://www.esri.com/training/catalog/57630435851d31e02a43f022/preparing-to-perform-analysis-using-arcgis-pro/) – Free with FS organizational account, 1 Hour 15 Min; data related to observation points in Dinosaur National Park

* Intro to environment settings
* Setting environment variables at the project level for output: extent, coordinate system
* Geoprocessing tools: Buffer, Clip, Intersect, Select Layer By Location, Copy Features

*Review: Good for FS users just starting to do analysis since it is easy (but not always correct) to just use the tool’s default settings. Will probably take less than 1 hour to complete.*

[Editing Basics in ArcGIS Pro](https://www.esri.com/training/catalog/5a9f11d1c5c7c34872fcc218/editing-basics-in-arcgis-pro/) – Free with FS organizational account, 2 hours; data on buildings

* Editing basics for feature templates, snapping, workflow for creating features
* Create polygon & point features with attributes
* Modify features – split line, move
* Modify snapping options

*Review: Very basic and will likely take only 1 hour or less; assumes some basic Pro skills but geared towards beginner GIS. Brief intro to creating and editing feature workflows in Pro.*

[Processing Raster Data Using ArcGIS Pro](https://www.esri.com/training/catalog/57e19a8eed0f3a861c100985/processing-raster-data-using-arcgis-pro/) – Free with FS organizational account; 2 hours

* **Required Extension: Spatial Analyst**
* Using raster functions to process raster image on the fly – overview
* NDVI Analysis Raster Functions: NDVI Indices, Differences Process, Remap Function, Attribute Table Function
* Changing how rasters are displayed
* Chaining raster functions and saving as a template
* Function Editor for chaining functions
* Note: If you can’t see the new raster function under Custom, try closing and reopening the project.

*Review: Pretty good intro to accessing raster functions and chaining functions together. Needs more information on imagery bands, image metadata and parameters for raster function. Assumes basic knowledge of ArcGIS Pro and rasters.*

**Self-paced, online video**

[Going Pro: ArcGIS Pro Essentials for ArcMap Users](https://www.esri.com/training/catalog/590901ecdb250232197d2326/going-pro%3A-arcgis-pro-essentials-for-arcmap-users/) – FREE Video with FS organizational account, 62 minutes

* Why Pro, Importing from ArcMap and new organizational model, what’s different and same from ArcMap (concepts the same but user interface has changed); changes in workflows
* Demos using Pro2.0: some discussion of what is/isn’t implemented at Pro 2.0 level
* New stuff – e.g. Animation to create videos, group editing templates, Analysis Gallery
* Migrating models & Python
* Integrating with on-line Portals (e.g. AGOL): accessing info, sharing

*Review: Great, very motivating but sound advice as well*

[ArcGIS Pro Tasks: An Introduction](https://www.esri.com/training/catalog/57eb1a11ee85c0f5204ba56a/arcgis-pro-tasks%3A-an-introduction/) – FREE Video with FS organizational account, 1 hour 13 minutes

Tasks: sequential steps that guide you through a repeatable interactive workflow

* Using a Create Building Task – sets selection layer, turn on layers, populate appropriate attributes, validate topology
* Creating the create building task: using Task Designer , record actions as Task steps, storing variables, error checking
* In Options, can track Tasks (Task History) – how long the workflows take
* Step Palettes – non-linear workflow in Task (e.g. geoprocessing tools, topology)
* Sharing Tasks, including through AGOL, setting user connections task
* Tips & Tricks

*Review: Fast introduction to Tasks to see capabilities but will need a tutorial to reinforce concepts*

[ArcGIS Pro: Using Imagery](https://www.esri.com/training/catalog/57eb1694ee85c0f5204b971a/arcgis-pro%3A-using-imagery/) – FREE Video with FS organizational account; Duration: 1 hour 8 minutes

* ESRI Living Atlas image services
* Advantages of Pro: on-the-fly processing, exposing image metadata, in-memory dynamic layers from image metadata; raster functions
* Raster Layer Ribbon & Options
* Image Services
* Mosaic Dataset – sort display based on image metadata (e.g. percent cloud cover)
* Publish Image Services
* Image Classification Wizard

*Review: Intro to Pro & imagery; felt disorganized and scattered – not great as a learning tool*

[Sharing 3D Content with ArcGIS](https://www.esri.com/training/catalog/57630431851d31e02a43ee29/sharing-3d-content-with-arcgis/) – FREE Video with FS organizational account; 60 minutes

* 3D ESRI products and terminology
* AGOL – 3D web scenes/story map examples in Gallery
* Create 3D web scene in AGOL using web scene viewer: search for shared layers, change 2D to 3D, customize 3D layer, group layers for toggling; create “Slides” to control viewing of Scene
* ArcGIS Pro – Share map Web Scene to create feature service or Share as Web Layer (individual layers)
* 3D symbology, configure popups in Pro
* Brief intro to ArcGIS Earth – standalone Windows app

*Review: Nice intro to web-based 3D including both AGOL and Pro; a bit out of date (ArcGIS Pro version 1.1) since capabilities are changing quickly; info on customization is not very useful to most FS staff*

[Space Time Pattern Mining: A New Frontier in Spatial Analysis](https://www.esri.com/training/catalog/57b3c46754c097bb74d3e6c3/space-time-pattern-mining:-a-new-frontier-in-spatial-analysis/) – FREE Video with FS Organizational account; 60 minutes

* Inferential Statistics – Are patterns random or “real”?
* Hotspot & Outlier Analysis
* Adding the dimension of time into analysis
* Space Time Cubes – create, visualize, export
* Space Time Cube Explorer Addin – free from ESRI
* Communicating results

*Review: Excellent, organized and thought-provoking presentation. Currently, tools require point data collected over a time span that can be broken into at least 10 intervals for stats to work. FIA data would be a great input for this type of analysis. Also, wildlife surveys?*

[Dynamic Image Processing in ArcGIS Pro](https://www.esri.com/training/catalog/5763042c851d31e02a43ed8c/dynamic-image-processing-in-arcgis-pro/) – FREE Video with FS organizational account, 60 minutes

* Raster functions for dynamic image processing basics & when to use – processed by client as data is drawn on the screen
* Raster Function Pane
* Demos – Image Differencing to Identify Change in Landsat Images using Functions: Apparent Reflectance, NDVI, Minus, Remap, Attribute Table; Chaining; Sharing Template through AGOL
* Raster Function Editor – to create Raster Function Chains & Template
* Change Detection background, including image preprocessing
* Custom functions
* Sharing functions

*Review: Need more explanations*

[Extend ArcGIS Pro Functionality with Add-Ins](https://www.esri.com/training/catalog/57630431851d31e02a43ee57/extend-arcgis-pro-functionality-with-add-ins/) – FREE Video with FS organizational account, 60 minutes

* Example Add-ins from ESRI Community
* Accessing, Managing and Sharing Add-ins
* Alternatives to Add-Ins for Customization
* Creating an Add-In using Visual Studio, customizing the UI through the DAML, Controlling Processes in a multi-thread system

*Review: Great overview of the new approach to building customized applications in ArcGIS Pro. Targeted towards developers or high level GIS users who might accesses Add-Ins for themselves or their users. Very professional presentation!*

[Creating Python Scripts for Raster Analysis](https://www.esri.com/training/catalog/57f44b70362fd58367ab41ee/creating-python-scripts-for-raster-analysis/) – FREE Video with FS organizational account, 60 minutes; Peregrine falcon habitat

* **Required Extension: Spatial Analyst**
* Introduction to raster objects and available raster properties in Python
* Python Window
* Create raster object and use in geoprocessing tool
* Save Python Script

*Review: Brief intro to working with the python window in ArcGIS Pro. Really needs to be longer but did not see any other python scripting in ArcGIS Pro trainings available.*

[Drawing Millions of Features in ArcGIS: Advanced Techniques](https://www.esri.com/training/catalog/57630434851d31e02a43ef39/drawing-millions-of-features-in-arcgis:-advanced-techniques/) – FREE VIDEO with FS organizational account; 64 minutes; point data on tornado locations in US, stream flow time series

* Discussion of aggregation techniques – pre-generated and on-the-fly
* Demo of steps needed to aggregate point data using artificial geography (hexbins): Tessellation Tool (v10.4 or Pro), Spatial Join Tool
* Demo of steps needed to create on-the-fly aggregation based on standardized boundaries (states): building query in SQL Server Studio; creating query layer, publishing to Server
* Demo for time-series data: enable time-aware layer, Time Slider, Scale Range with Definition query to control display of features

*Review: All demos in ArcMap not ArcGIS Pro; interesting concepts if want ideas for displaying large numbers of features but this doesn’t really belong under ArcGIS Pro category.*

[ArcGIS Pro Editing Essentials](https://www.esri.com/training/catalog/5a01f9d077179c47d977f270/arcgis-pro-editing-essentials/) – FREE video with FS organizational account, 1 hour

* Major Changes to editing from ArcMap
* Editing User Interface and ways to control editing options
* Editing Templates
* Editing Tools in ArcGIS Pro
* 3D Editing – some of the basics
* Demos for editing topology, annotation, create and modify 2D features, templates, 3D editing

*Review: Great introduction to editing but moves very fast. Would be daunting to a beginner or GIS newbie. Will probably need to supplement with on-line help, major experimentation or other training!*

[Spatial Data Mining II: A Deep Dive into Space-Time Analysis](https://www.esri.com/training/catalog/57eb2165ee85c0f5204bbf46/spatial-data-mining-ii:-a-deep-dive-into-space-time-analysis/) – FREE video with FS organizational account; 1 hour 23 min

* Space Time Cube basics and vocabulary
* Dealing with bins that have no data
* Deciding on a temporal aggregation
* Interpreting the space Time Cube Report
* Temporal Bias
* Analysis: Emerging Hot Spot & Local Outlier
* Space Time Cube Explorer Add In for improved visualization

*Review: A second fascinating look at the new capabilities to visualize and display point data that has been collected over a series of time. Can’t wait to see someone start using this in the FS.*

[Create and Share ArcGIS Pro Tasks](https://www.esri.com/training/catalog/57630431851d31e02a43ee58/create-and-share-arcgis-pro-tasks/) - FREE video with FS organizational account; 1 hour

* General intro to Tasks: Task Design, Tasks vs Model Builder, Controlling how the task interacts with the user, edit a Task, sharing tasks to file or to Portal
* Demo - creating and running a task to import an mxd, select bird observations and export to a new feature class
* Demo – Creating building polygons from CAD data

*Review: Nice introduction and excellent question/answers section. Tasks were interesting so overall, good video and worth the time.*

[Simplify Data Management with ArcGIS Workflow Manager](https://www.esri.com/training/catalog/58ae268c074116516d46950d/simplify-data-management-with-arcgis-workflow-manager/) - FREE video with FS organizational account; 1 hour

* From ESRI: “ArcGIS Workflow Manager extends ArcGIS Desktop by providing a centralized enterprise job management and tracking system to streamline your daily tasks. “
* General description of how workflow manager is organized
* Demo in ArcGIS Pro – Workflow View, Jobs View, Update Users and Groups (controls access)

*Review: Personally, I don’t see a whole lot of use for this for the Forest Service…designed for large GIS shops with repetitive tasks. Presentation cuts off window preventing viewer from seeing parts of demo.*

[Streamline GIS Workflows with ArcGIS Pro](https://www.esri.com/training/catalog/57630433851d31e02a43eead/streamline-gis-workflows-with-arcgis-pro/) – FREE; 1 hour

* New functionality in Pro (vs ArcMap)
* Mapping and visualization: layouts, import .mxd, applying symbology, displaying 3D, adding data from Portal, 3D Rule Packages
* Project management and editing: Edit tab, setting a default geodatabase, running a Task file, editing options
* Analysis and sharing: Infographic tool, Geoprocessing Tools (Pane and Gallery), share a web map

*Review: Older introduction out-of-date (Version 1.0 release). Mostly focuses on new functionality; touches lightly on many parts of the software.*

**Instructor-Led Classes**

[Introduction to ArcGIS Pro for GIS Professionals](https://www.esri.com/training/catalog/57630436851d31e02a43f15f/introduction-to-arcgis-pro-for-gis-professionals/) – Approximately $1000 with FS discount; 16 hours; data on earthquakes, San Juan National Forest, Florida storm surges

* User interface
* Sharing maps, layers and processes
* Pro Tasks
* Editing schemas and data
* Symbology
* Raster Functions
* Visualizing 3D
* Analysis and model builder
* Layouts

*Review: Excellent class, more thorough than 5 hour online class with several exercises based on National Forest data, access to teacher’s knowledge and he was able to followup with other ESRI experts on questions. It might be good to get a little basic knowledge first so you can bring some questions to the class.*

Downloads

[ArcGIS Pro terminology Guide](https://www.esri.com/training/catalog/5949c0c3debdf6699b595553/arcgis-pro-terminology-guide/) – FREE Download – Definitions and side by side comparison crosswalks between ArcGIS Pro and other ESRI platform terminology

*Review: Helps with the transition from ArcMap to ArcGIS Pro; look at after you have done some training to help reinforce learning.*