ArcGIS® Pro: Essential Workflows

STUDENT EDITION

Copyright © 2019 Esri

All rights reserved.

Course version 7.0. Version release date February 2019.

Printed in the United States of America.

The information contained in this document is the exclusive property of Esri. This work is protected under United States copyright law and other international copyright treaties and conventions. No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage or retrieval system, except as expressly permitted in writing by Esri. All requests should be sent to Attention: Director, Contracts and Legal, Esri, 380 New York Street, Redlands, CA 92373-8100, USA.

Export Notice: Use of these Materials is subject to U.S. export control laws and regulations including the U.S. Department of Commerce Export Administration Regulations (EAR). Diversion of these Materials contrary to U.S. law is prohibited.

The information contained in this document is subject to change without notice.

Commercial Training Course Agreement Terms: The Training Course and any software, documentation, course materials or data delivered with the Training Course is subject to the terms of the Master Agreement for Products and Services, which is available at http://www.esri.com/~/media/Files/Pdfs/legal/pdfs/ma-full/ma-full.pdf. The license rights in the Master Agreement strictly govern Licensee's use, reproduction, or disclosure of the software, documentation, course materials and data. Training Course students may use the course materials for their personal use and may not copy or redistribute for any purpose. Contractor/Manufacturer is Esri, 380 New York Street, Redlands, CA 92373-8100, USA.

Esri Trademarks: Esri trademarks and product names mentioned herein are subject to the terms of use found at the following website: http://www.esri.com/legal/copyright-trademarks.html.

Other companies and products or services mentioned herein may be trademarks, service marks or registered marks of their respective mark owners.

Course introduction

Introduction
Course goals
Additional resources
Installing the course data
Icons used in this workbook
Understanding the ArcGIS Platform

1 Getting started with ArcGIS Pro

Lesson introduction
Sign in to ArcGIS Pro
Exercise 1: Locate and use common functionality
- Start ArcGIS Pro without a template
- Add a folder connection and add data
- Use ArcGIS Pro Help to find tools
- Use the Explore tool to navigate the map
- Explore feature attributes
- Select features interactively
- Modify project properties
- Locate features

Lesson review

2 Creating data

Lesson introduction
Common GIS data sources
Data properties to consider
Explore data sources
Geoprocessing in ArcGIS Pro
Getting data into the geodatabase
Exercise 2A: Convert data into a geodatabase format
- Copy and paste feature classes from one geodatabase to another
- Convert a shapefile into a geodatabase feature class
- View data in ArcGIS Pro

Importing subsets of data
Creating spatial and attribute queries
Exercise 2B: Create and export subsets of data using queries
- Create an attribute query and export features
- Create a spatial query and export features

Lesson review

3 Working with spatial reference

Lesson introduction
Shape of the earth
Datums
Setting vertical datums
Two types of coordinate systems
Exercise 3A: Set the spatial reference of a map
- Create a project using a template
- Import a map file and examine spatial reference
- Examine the coordinate system of a layer
- Enable the geographic transformation warning
- Apply a geographic transformation

Map projections
Distortion and spatial properties
UTM and national coordinate systems
Exercise 3B: Apply a new spatial reference to a feature class
- Add layers to a map
- Reproject a feature class
- Turn off the transformation warning

Lesson review

4 Using ModelBuilder for data conversion

Lesson introduction
Uses of ModelBuilder
Exploring a model
Using models to automate processes
Exercise 4: Build a model to convert multiple shapefiles
- Create a model and set its properties
- Add an iterator to the model and set its parameters
- Add a conversion tool to the model and set its properties

Lesson review

5 Visualizing data

Lesson introduction
Symbolizing layers
Viewing symbolized data
Classifying numeric data
Exercise 5A: Symbolize vector data
- Symbolize data using unique values
- Symbolize data using graduated colors
- Symbolize points using graduated symbols
- Symbolize features by density

Setting scale dependencies and definition queries

Exercise 5B: Control the visibility of features
Add a map to a project, and then add layers
Set scale dependencies
Create definition queries
Showing raster symbology options
Lesson review

6 Adding text to the map

Lesson introduction
Labeling basics
Exercise 6A: Add and modify labels
Create a map and add a layer
Label the features
Change the label field
Modify the label font
Change the label position
Label classes
Exercise 6B: Create label classes and scale dependencies
Explore attributes
Create label classes
Set scale dependencies on label classes
Geodatabase annotation feature classes
Standard or feature-linked annotation
Characteristics of annotation
Exercise 6C: Convert labels to annotation
Add new layers
Add new labels
Convert labels to annotation
Modify annotations
Create new annotations
Lesson review

7 Visualizing data in 3D

Lesson introduction
Why should you use 3D?
Local and global scenes
Scene elevation source
Ground elevation surface
Custom elevation surface
Extruding features
Exercise 7: Work with 3D scenes
Open a map file
Set the vertical coordinate system
Convert a map to a scene

Set elevation properties for the scene
Create a hillshade layer and set elevation properties
Set the display properties
Extrude features based on an expression
Display the earthquakes in 3D
Link a 2D view and a 3D scene
Lesson review

8 Create features from tabular data

Lesson introduction
Ways to create points from tabular data
Adding x,y event data
Exercise 8A: Display x,y coordinate data
Explore tabular data
Create point features from a table containing x,y coordinates
Geocoding addresses
Geocoding steps
Address locators
Exercise 8B: Geocode address locations
Add and explore data
Create an address locator
Geocode addresses
Explore output data
Lesson review

9 Relating tabular data

Lesson introduction
Associating tables
Cardinality
Joins
Relates
Creating a relate
Exercise 9: Join and relate tabular data
Add a table and explore its attributes
Convert an Excel file to a geodatabase table
Add and calculate a field
Join the tables
Use the joined fields
Export the joined layer
Create a relate
Choose join or relate
Lesson review

10 Creating new features

Lesson introduction
Creating features and attributes
Exercise 10: Edit features and attributes
- Modify a feature template
- Digitize a polygon feature
- Update attributes
- Digitize line features

Lesson review

11 Modifying existing features

Lesson introduction
Modifying features
Feature modification tools
Exercise 11: Use feature modification tools
- Modify vertices
- Reshape a feature
- Split a polygon
- Merge polygon features

Lesson review

12 Using ModelBuilder for analysis

Lesson introduction
Types of analysis
ModelBuilder and analysis
Selecting by attributes and buffering
The Clip and Intersect tools
Exercise 12: Create a model to analyze robberies
- Insert a map and create a model
- Query robberies
- Add the Buffer tool to the model and set parameters
- Add the Clip tool to the model and set parameters
- Add the Intersect tool to the model and set parameters
- Run the model and view the results
- Modify parameters and rerun the model
- Prepare the model for sharing

Lesson review

13 Sharing a static map

Lesson introduction
Overview of sharing in ArcGIS Pro
What is a map layout?

Map layout objectives
Layout design
An improved map design
Creating a layout and adding map elements
Exercise 13: Create and share a map
    Create a layout
    Add a map frame to the layout
    Add map elements to the layout
    Create another layout in the project
    Export the map to PDF
Lesson review

14 Sharing dynamic maps

Lesson introduction
Dynamic sharing
Sharing roles and permissions
Sharing content to ArcGIS Online
Exercise 14: Package data using ArcGIS Pro
    Share a map package
    Share a web map
    Access shared content
Lesson review

Appendixes

Appendix A: Esri data license agreement
Appendix B: Answers to lesson review questions
    Lesson 1: Getting started with ArcGIS Pro
    Lesson 2: Creating data
    Lesson 3: Working with spatial reference
    Lesson 4: Using ModelBuilder for data conversion
    Lesson 5: Visualizing data
    Lesson 6: Adding text to the map
    Lesson 7: Visualizing data in 3D
    Lesson 8: Create features from tabular data
    Lesson 9: Relating tabular data
    Lesson 10: Creating new features
    Lesson 11: Modifying existing features
    Lesson 12: Using ModelBuilder for analysis
    Lesson 13: Sharing a static map
    Lesson 14: Sharing dynamic maps