Course introduction

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

1 Running scripts in Python

Lesson introduction
Understanding Python fundamentals
Integrated Development Environment (IDE)
Running scripts in Python window
Exercise 1A: Use the PyScripter IDE
   Open and configure PyScripter
   Run the script
The ArcPy site package
ArcPy functions and classes
The ArcPy modules
Choosing a scripting environment
Tips and best practices
Exercise 1B: Run scripts in Python
   Buffer schools in Python window
   Update script in PyScripter
   Verify results in ArcMap
Lesson review

2 Describing data

Lesson introduction
The Describe function
Generic Describe object properties
Feature class Describe properties
Raster Describe properties
Describing a feature class and raster
Fill-in-the-blank
Exercise 2: Work with the Describe object
   Describe a feature class and a geodatabase
   Describe a list of feature classes
   Clip raster datasets with Describe object properties
   Challenge: Describe dataset and coordinate system properties
Lesson review
3  Automating scripts with lists

Lesson introduction
The ArcPy List functions
Explore the ArcPy List functions
Working with List functions
Working with da.Walk
List data
Exercise 3: Automate scripts with the ArcPy List functions
   List field properties
   Buffer feature classes
   Verify script results
Lesson review

4  Working with selections

Lesson introduction
Selection tools in ArcMap
Terms commonly used when working with selections
Tools that accept feature layers
Working with a selection
The MakeFeatureLayer tool
The FieldInfo object
The AddFieldDelimiters function
Determining a workflow
Create a feature layer and get feature count
Exercise 4: Work with feature layers and selections
   Create new script
   Create feature layers
   Perform spatial selection
   Create feature class from selection
Lesson review

5  Working with cursors

Lesson introduction
The arcpy.da cursors
Exploring the data access cursors
Tips and best practices for arcpy.da Cursors
Using the SearchCursor
Exercise 5A: Evaluate data with the SearchCursor
   Work with the da.SearchCursor
Using the UpdateCursor
Exercise 5B: Alter existing data with the UpdateCursor
   Work with the da.UpdateCursor
Using the InsertCursor
6 Working with geometry objects

Lesson introduction
Creating geometry objects
Creating Point geometry objects
Creating Polyline geometry objects
Creating Polygon geometry objects
The geometry object
Constructing multipart geometry
Constructing multipart polygons
Creating and updating feature geometry
Using a geometry object with geoprocessing tools
Accessing geometry objects
Exercise 6: Work with geometry objects and cursors
  Create geometry objects
  Access Shape geometry
  Update existing features
  (Optional) Create new features
  (Optional) Use a geometry object with a geoprocessing tool
Lesson review

7 Sharing scripts

Lesson introduction
Terms commonly used when sharing scripts
Scripting advantages in ArcMap
Making scripts dynamic
Debugging scripts in PyScripter
Creating and sharing a script tool
Advantages of attaching a script to a custom tool
Using the Add Script wizard
Running a script
Sharing a script
Plan out a project
Exercise 7: Share scripts through geoprocessing packages
  Add pseudocode to the script
  Write script code
  Attach script to custom tool
  Run script in ArcMap
8 Automating map production

Lesson introduction
The arcpy.mapping module
Terms commonly used when working with the arcpy.mapping module
Using the arcpy.mapping module to modify map document contents
Referencing the map document
Listing map document contents
Managing layers
Managing layout elements
Publishing maps
Exporting maps and reports
Migrating scripts to ArcGIS Pro
Customizing symbology for map layers
Exercise 8: Work with map document contents
  Access map document in ArcGIS for Desktop
  Access map document in script
  Update layer symbology
  Update layout text elements
  Verify changes in ArcGIS for Desktop
  Challenge: Automate script for multiple map documents
Lesson review

Appendixes

Appendix A: Esri data license agreement
Appendix B: Answers to lesson review questions
  Lesson 1: Running scripts in Python
  Lesson 2: Describing data
  Lesson 3: Automating scripts with lists
  Lesson 4: Working with selections
  Lesson 5: Working with cursors
  Lesson 6: Working with geometry objects
  Lesson 7: Sharing scripts
  Lesson 8: Automating map production