

Introduction to Geoprocessing Scripts Using Python®

**WLIA Annual Conference
Madison Marriott West
February 11-12, 2014**

About the course

Esri, in conjunction with Wisconsin Land Information Association, will be presenting an abridged version of *Introduction to Geoprocessing Scripts Using Python (10.2)*. The three-day course has been modified to a two-day course to align with the conference schedule.

The following pages outline the abridged sequence of the lectures and associated exercises. The instructor worked with WLIA to ensure a logical progression of core concepts, features and functions in the use of ArcGIS 10 software that would be most valuable to attendees of the conference.

Each day will include 8 hours of instruction. Students will acquire hands on experience with the software and will receive a copy of all the course lectures and exercises. Hardware, software and course materials will be provided.

Prerequisite knowledge

Python syntax and experience creating Python scripts is required. For those new or not confident in their Python skills, [Python for Everyone](#) is strongly recommended. This free, web course will introduce fundamental Python concepts and the Python scripting environment in ArcGIS.

Course introduction

Introduction

Course goals

Additional resources

Installing the course data

1 Running scripts in Python

Lesson introduction

Integrated Development Environment (IDE)

Running scripts in Python window

Exercise 1A: Use the PyScripter IDE (Instructor-led)

- 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

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 Cursors

Lesson introduction

The arcpy.da cursors

Using the SearchCursor

Using the UpdateCursor

Using the InsertCursor

Using the arcpy.da.Editor

Tips and best practices for arcpy.da Cursors

Exercise 5: Work with cursors

Research the da Cursors

- Work with the da.SearchCursor

- Work with the da.UpdateCursor

- Work with the da.InsertCursor

Lesson review

5 Sharing scripts

Lesson introduction

Terms commonly used when sharing scripts

Scripting advantages in ArcMap

Making scripts dynamic

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

- Share results as a geoprocessing package

- Verify the geoprocessing package

Lesson review

6 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

Customizing symbology for map layers

Exercise 9: Work with map document contents

- Access map document in ArcMap

- Access map document in script

- Update layer symbology

- Update layout text elements

- Verify changes in ArcMap

- Challenge: Automate script for multiple mxds

Lesson review