Syllabus—GEOG 9029

Processing GIS Data with Model Builder and Python

Description

This course explores the visual tools and methods used for processing data in GIS. The course introduces students to the geoprocessing concept, and its framework (tools, scripts and models), and will focus on model use not just for advanced analysis but also for common repetitive procedures common in GIS manipulation. Topics will include the Geoprocessing framework, the analytical method, Tools, Toolboxes, Scripts, Models using the ArcGIS Model Builder, and process documentation. Class Format: Approximately 50% lecture, 50% software applications.

Instructor

Dara O'Beirne

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Course Objectives

Introduce both Model Builder and Python for ArcGIS to conduct efficient geoprocessing analysis:

• Have a strong grasp of the geoprocessing framework within ArcGIS Pro.

• Build basic and advanced models with ArcGIS Pro's Model Builder.

• Understand the introductory and basic concepts of Python programming for GIS.

• How to use ArcPy, the Python programming library for the ArcGIS Desktop suite.

We will use Esri's ArcGIS Pro (Version 2.8.0) but will be focusing on the Python and Model Builder aspects of geoprocessing within the software package.

Grading

This course is graded Credit/Non-Credit. To receive a Credit grade, students must demonstrate completion of each section by turning screen shots or their code and if applicable screen shots of maps.

All forum participation must be finished, and assignments must be submitted by 11pm Saturday, October 30th, 2021.

Course Sections

Lecture(s)	Lab Exercise(s)	Suggested Completion Date
Review of ArcGIS Pro and Introduction to Geoprocessing	Lab 1	October 29th, 2021
Introduction to Model Builder	Lab 2	October 29th, 2021
Model Parameters and Intermediate Data	Lab 3	October 29th, 2021
Model Groups, Iterators and Nesting Models	Lab 4	October 29th, 2021
Introduction to Python and Programming Concepts	Lab 5	October 30th, 2021
Python in ArcGIS and Introduction to ArcPy	Lab 6	October 30th, 2021

Working with Lists, For loops and if-then-else logic	**Lab 7**	**October 30th, 2021**
Cursors in ArcPy	**Lab 8**	**October 30th, 2021**
Create a Python Script Tool in ArcGIS Pro	**Lab 9**	**October 30th, 2021**
Introduction to ArcGIS Python API and Summary	**Lab 10**	**October 30th, 2021**

GIS Licensing Policy

San Francisco State University has excellent educational discounts for ArcGIS software and we are fortunate to be able to provide our students with the installation and licensing files needed to install the software up on a home computer.

Please remember that when you use ArcGIS Online or install ArcGIS software on your computer, you are agreeing to only use the software only for your own teaching and learning purposes. You should not use or permit others to use ESRI education products for consulting or any other form of commercial or profit-generating activities with your license. Please review our full site license agreement in the link below for a more comprehensive understanding of this policy.

ESRI ArcGIS Permitted Uses

(https://sfsu.box.com/s/7i3319kej7f8qlxuhnnbk0pxuw959s6q)

SF State Policies

Disclosures of Sexual Violence (Title IX)

SF State fosters a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. If you disclose a personal experience as an SF State student, the course instructor is required to notify the Dean of Students. To disclose any such violence confidentially, contact:

• The SAFE Place – (415) 338-2208; psyservs.sfsu.edu/content/safe-place

• Counseling and Psychological Services Center – (415) 338- 2208; psyservs.sfsu.edu

Disability Access

Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/TTY 415-338-2472) or by email to dprc@sfsu.edu.