Number	Homework #1
Title	Intro/Recap How to Use ArcGIS Desktop and Online
Year	Spring 2022
Course	G0800 GIS in Water Resources
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Date out	02/03/2022
Date due	02/17/2022
Objective	Use the online courses to get an intro or recap of basic ArcGIS concepts; also learn about some of the newest features of version 10.1 and online versions of GIS.

Goals of the Homework

This Homework is intended for you to (re)-familiarize yourself with ArcGIS and then how to use new features introduced in ArcGIS 10. This is clearly an introduction and may be redundant for some you to some degree or another. But perhaps it is not a bad idea to revisit and review what GIS is, how to display geographic information on a GIS map, to recognize relate different geographic features, and how to solve geographic problems.

Computer and Data Requirements

To complete this exercise, you'll need online access, access to ArcGIS desktop version 10.8, and a little bit of time. The first exercise course is scheduled to be of 9 hours length the second one 3 hours. I found the 9 hours to be a very generous time allotment needing a lot less time going through this exercise. But key is to set your own pace and just progress along in whatever pace you feel comfortable with. For both training modules you will need access to desktop software, i.e. ArcGIS on PCs in Steinman 424 which have ArcGIS version 10.8 installed on them. Please note that we also have the possibility to install a stand-alone ArcGIS 10.8 license on your laptop which is good for that computer only (ONE installation limitation for 12-month duration), in case you cannot make lab times.

Procedure for the Assignment

These two exercises require you to sign up and create an account for you. This is free of charge and can be done in just a few minutes. The first online course is intended to provide you with quick overview of the capabilities of GIS in general. It can be found here:

Unit 1: Getting Started with GIS (using 10.7)

https://www.esri.com/training/catalog/57630434851d31e02a43ef28/getting-started-with-gis/

The first part is narrated, and you will need some speakers, at the very least a headset to listen to the voice. Further down the list of modules you will be prompted to download some data sets that need to be unzipped for use with ArcMap.

After completing this course, you will be able to
- Explain what a GIS is.
- List some ways that GIS is being used to address real-world problems.
- Display geographic data on a GIS map.
- Query a GIS database to gain information and locate features.
- Understand different types of spatial relationships among real-world features.
- Use analysis tools to create new data.
- Apply a standard approach to solving geographic problems.

The second unit will introduce you to new features that got added in version 10. This concern improved mapping capabilities, improved search options, new basemap layers, and data driven pages to create map series.

Unit 2: Python and ArcGIS:
https://www.esri.com/training/catalog/57630436851d31e02a43f13c/python-for-everyone/

After completing this course, you will be able to
- Automate geoprocessing tasks.
- Correct common scripting errors.
- Choose the Python scripting environment that meets your needs.
- Apply Python syntax rules when writing scripts.

Unit 3: Use ONLINE Versions of ArcGIS
www.arcgis.com/home
www.arcgis.com/explorer

For this exercise I ask you to create a layered map of your own. Pick a nice base map and start adding **three** layers on top of it. Think about a theme you want to do. You can use other base maps to help you out and add features to that map and you can use even those that are already provided. What I need you to do however is that you at least create one layer on your own where you need to add new features that not yet there in the palette offered up to you. You could go to your country of origin for example and do something there, or you could pick something in NYC or anywhere in the US for that matter.

Do not go overboard, view this more as a sandbox to tinker around with and get something off the ground real quick. This is just to familiarize yourself with this option, and perhaps you may it useful for a project later on.

Items to turn in

During both courses you are required to execute some small quizzes and exams in addition to some hands-on exercises. Please turn in as one pdf file:

1) Copies of the successful completion of the exams. They are fairly short and have a number of multiple-choice questions in there.

2) A copy (screen shots) of the exercise outcomes.
   - (unit 1) K-12 Schools map with census blocks (end of Part I)
   - (unit 1) map with the selected parcels highlighted (Part II step 4)
   - (unit 2) in the road construction exercise you end up with a set of PDF files, please print one of them (parcel information).

3) A printout of your new map, preferably with separate print outs for each layer, so it is easier to identify what you did.