1. Title:

Working with Data in ArcGIS Pro

2. Critical Resources:

An internet connected computer; a computer with ArcGIS Pro, a zip tool like 7-zip.

Video demonstration of this GIS laboratory exercise is available as a YouTube playlist located here:

https://www.youtube.com/playlist?list=pltrmeevdgsnr8crl5yv07qu7fxgj5_r5k

3. Purpose:

The purpose of this lab will be for you gain experience and knowledge with how to work with GIS data sets in ArcGIS Pro. You will also gain basic experience with manipulating GIS data sets in ArcGIS Pro.

4. Learning Objectives:

After completing the lab, you will know:

- How to find, download, and add vector and raster data sets into ArcGIS Pro;
- How to create new vector datasets in a File Geodatabase;
- Basic skills for working with and managing data sets once they are in ArcGIS Pro.

5. Deliverables:

A write-up of your response to the instruction questions.

6. Instructions:

Before you begin, define a study area or topic you are interested in such as natural disasters, climate change or something that you can potentially find GIS datasets for.

6.1 Task 1 – Acquire GIS datasets from the web and create a new dataset

You must download one ArcGIS Online resource two vector and one raster GIS datasets. The datasets must be spatially related to one another. For example, roads, streams, and a quad map for a county. You will also create your own dataset.

6.1.1 Step 1 – Download ArcGIS Online Dataset

Use the ArcGIS online search tool inside of catalog to find one resource (web map, feature layer etc). dataset relevant to your study area. The dataset must be able to be displayed in arcgis Pro.

6.1.2 Step 2 – Find Two Vector Datasets

Find two vector datasets from the Global GIS data websites.

Download and add the two vector datasets to ArcGIS Pro, make sure that they overlap/matchup correctly in ArcGIS Pro. For example, if one of the datasets is missing the .prj file, use the metadata of dataset to find the projection/coordinate system and the Set Projection tool to define the projection

Modify the symbology of the datasets so they are easier to view in ArcGIS Pro. For example, if you downloaded a roads layer, make the lines thicker so they can be seen better. If you downloaded some type of polygon layer, modify or remove fills as need be for ease of viewing.

6.1.3 Step 3 – Find a Raster dataset

Download a raster dataset that is spatially related to the vector datasets you downloaded in part A.

Add the raster layer to ArcGIS Pro along with the vector layers you added in part A.

Arrange the layers in a logical order so all can be seen. If need be, re-adjust the symbology of any layers so all the layers can be seen easily.

6.1.4 Step 4 – Create a File Geodatabase, Domain Table, Feature Dataset, and Feature Class

For this part, create a File Geodatabase with a Feature Dataset that contains a Feature Class inside it. The feature class should use a domain table for one of the attribute fields. In step 6, you will populate the feature class with features you digitize from the raster dataset.

6.1.5 Step 5 – Export datasets into File Geodatabase

Center your map on your study area. Export the two vector datasets from step 2 and the raster dataset from step 3 based on the current map extent into the File Geodatabase you created in step 4.

6.1.6 Step 6 – Digitize Vector Features

Digitize four features into the feature class you created in step 4 and based on from the raster dataset you imported in step 3 and exported to the FGDB in step 5. This is widely open to interpretation. For example, digitizing population areas from a raster as one example.

6.2 Task 2 – Document your efforts

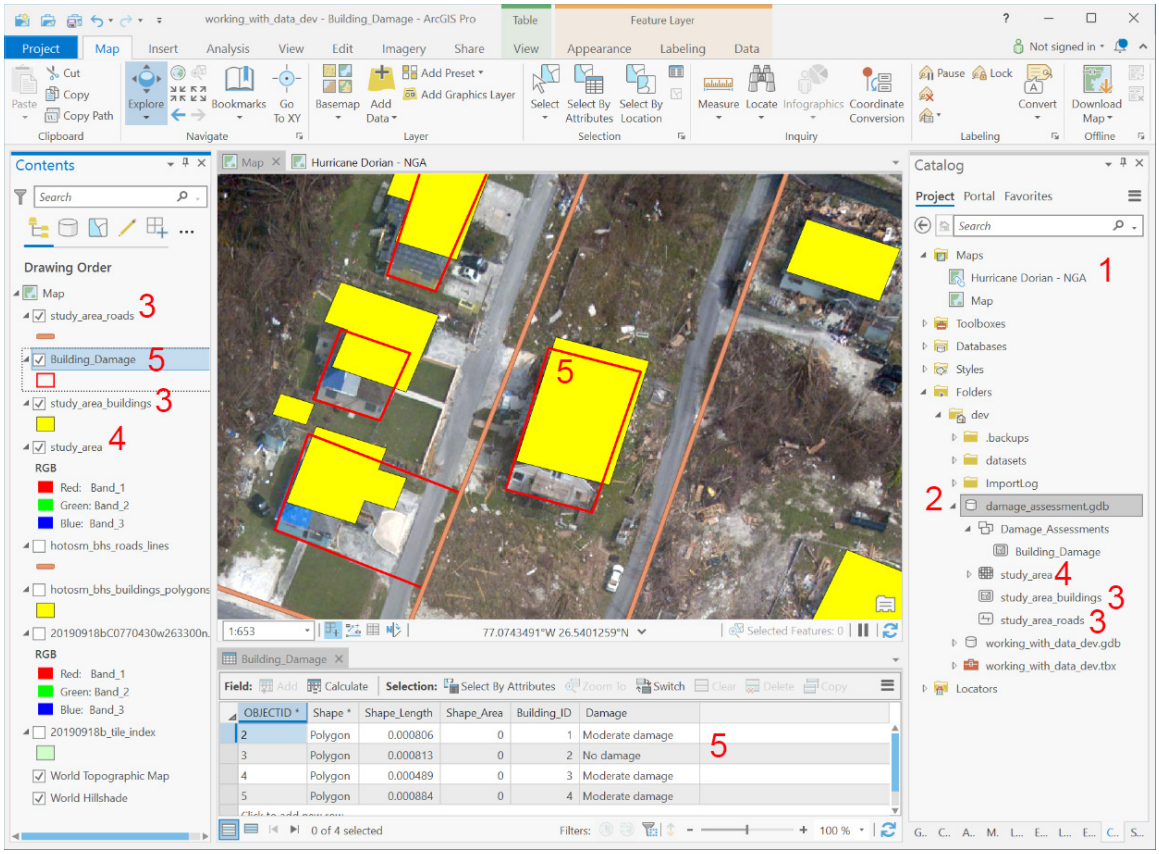
Add your response to each of the following steps into a single MS Word document. To be clear, you will submit **one (1)** MS Word document that has each Task 2 step.

6.2.1 Step 1 – URLs

Provide the URLs to the 3 datasets you downloaded in task 1 and list the name of the datasets you downloaded

6.2.2 Step 2 – Visual Documentation

Using the image below as an example where the red numbers refer to what should be seen:



Take a screen shot[1] of the ArcGIS Pro showing:

1. A reference to an ArcGIS Online resource you found (Task 1, Step 1);

2. The file geodatabase and feature dataset you created (Task 1, Step 4);

3. The two vector datasets you downloaded and exported into your file geodatabase (Task 1, Steps 2, 4, and 5);

4. The raster dataset you downloaded and exported into your file geodatabase (Task 1, Steps 3, 4, and 5);

5. Features you digitized from your raster image and populated with values from a domain table.

[1] For instructions on how to make a screen shot, see http://take-a-screenshot.org/

Be sure that each layer can be seen distinctly, thus adjust your viewing scale accordingly.

6.2.3 Step 3 – Reflection

Write a 50-70 word essay where you discuss: (a) problems, if any, you had working with any of the data layers (for example, you couldn't get one layer to line up with others layer. etc), and solutions (if applicable) you used to solve the problem, (b) any insights you gained about the datasets and/or the area you chose based on the datasets, and (c) brief ideas/thoughts the exercise gave you for possible ideas for your final project.

DO NOT:

1. Submit the individual images
2. Submit datasets or project files
3. Submit .zip files
4. Submit PDF file

DO: Submit one (1) MS Word document that has each Task 2 step

7. Rubric

Grading Criteria				
Excellent (A and A-)	***Good (B+, B, B-)***	***Satisfactory (C+, C, C-)***	***Unsatisfactory (D)***	***Poor (F)***
90-100 points All data operations tasks are successful – student was able to acquire one ArcGIS Online resource and two vector and one raster GIS datasets as per assignment instructions. Student was able to successfully create a file geodatabase, domain table, feature dataset, and feature class as per visual documentation provided. All datasets were exported successfully into a file geodatabase as per visual documentation provided. Student was able to digitize four features from raster dataset that was downloaded	**80-89 points** Most data operations tasks were successful – student was able to acquire some form(s) of ArcGIS Online resource and two vector and one raster GIS datasets as per assignment instructions but some problems were encountered. Student was able to create some aspects of a file geodatabase, domain table, feature dataset, and feature class as per visual documentation provided. Most datasets were exported successfully into a file geodatabase as per visual documentation provided.	**70-79 points** Few data operations tasks were successful – student was not able to acquire some form(s) of ArcGIS Online resource and two vector and one raster GIS datasets as per assignment instructions, problems were encountered were not addressed. Student was not able to create some aspects of a file geodatabase, domain table, feature dataset, and feature class as per visual documentation provided, which was unclear. Few, if any, datasets were exported successfully into a file geodatabase as per visual documentation provided.	**60-69 points** No data operations tasks were successful – student struggled to work with ArcGIS Pro. Essay is incoherent. Many assignment directions were not followed correctly.	**<60 points** No data provided. Assignment directions not followed at all.

as per visual documentation provided. Essay is clear and succinct and demonstrates genuine insight the student had with the assignment. All assignment directions are followed correctly as specified in the instructions.	Student was able to digitize less than four features from raster dataset that was downloaded as per visual documentation provided. Essay is somewhat clear demonstrates genuine insight the student had with the assignment. Most assignment directions are followed correctly as specified in the instructions.	Student was not able to digitize less than four features from raster dataset that was downloaded as per visual documentation provided. Essay is not clear and does not demonstrates genuine insight the student had with the assignment. Many assignment directions were not followed correctly.		