

This evaluation asks you to synthesize the concepts learned in the Schurrman and Mitchell texts, the software functions learned in *Getting to Know ArcGIS*, and your review of Delaware GIS data. Save any maps or new shape files you create in your own directory. A sheet of land use codes for Delaware County is page 4 of this evaluation, and the blog provides a link to a DBF data file (address.dbf) for the last question in part II. Just save the file to your personal folder, don't open it.

Please do your own work. You may have to figure things out that go beyond the specifics of what you have learned so far in the class (try using the ArcGIS online help). **Don't freak out or get frustrated!** Ask your instructor or fellow classmates if you are really stuck on a particular question, but give it your own go first. Turn in typed answers (space and a half, normal margins) and print applicable maps.

I. GIS Concepts

1. Distinguish **GISystems** and **GIScience**. Provide at least **two** examples of issues related to these two facets of GIS. Draw from any of our readings. (1 page)
2. Briefly describe your sense of what Environmental Justice is and why it is relevant. Use the Delaware PA handout and any other sources you find. (one page)
3. Define and distinguish **discrete** and **continuous features** and provide **examples** from the Delaware Data. (1 paragraph)
4. Define and distinguish **vector data** from **raster data** and provide **examples** from the Delaware Data. (1 paragraph)
5. Define and distinguish geographic **features** from geographic **attributes** and provide **examples** from the Delaware Data. (1 paragraph)
6. Schurrman goes on and on about **epistemology** and **ontology** and GIS. Describe these two terms and provide **examples** of why they are relevant to GIS. (1 page)
7. **GIS Analysis** is the core of GIS in general. From Schurrman ch. 4 and Mitchell chs. 5 & 6 describe **three** specific kinds of GIS analysis and **examples** of applications. (2 pages)

II. GIS Applications

Some of the problems below require you to make up a problem or scenario then use GIS analysis to solve that problem. Feel free to be as creative as you want to be. Less boring is always better. Make sure to create decent looking maps with appropriate symbols and legends as part of each step.

1. Selecting and Classifying Land Uses: Create a map that shows the 6 different major categories of land uses (agricultural, mineral, commercial, residential, exempt). These land use codes are in the Parcels data (the class column). Select one of the categories, and create a second map showing all the sub-classifications in that category. Refer to the Land Use key (p. 4 below) for category and subcategory information. Symbolize each category with an appropriate color. Add appropriate additional data (such as road centerlines) for reference and make your map look decent. (1 paragraph description + 2 maps)

2. Making New Shape Files from Existing Shape Files: Choose two Delaware data shape files relevant to your class project, select a relevant subset of the data on those shape files, and create new shape files of the subset of data. For example, you could select all wetlands and soils within a particular township, or all wetlands and soils of a particular type in the entire county. Create a map using your new shape files, add appropriate additional data (roads, etc.) and describe how what you did could actually be useful. (1 page + map).

3. What's Inside? Review ch. 5 from Mitchell ("Finding What's Inside") and pay particular attention to the section "Three Ways of Finding What's Inside" on pages 96-97. Describe a scenario where such analysis would help solve a particular problem, then perform that analysis using actual Delaware data layers. More creative and sophisticated analyses will be rewarded. Please model what you do after the example on pp. 96-97 (including classification and basic summary statistics and a decent finished map). (1 page + map).

4. What's Nearby? Review ch. 6 from Mitchell ("Finding What's Nearby") and pay particular attention to the section "Creating a Buffer" on pages 124-5. Describe (1 page each) three scenarios - buffering a point features, line features, and area features - where such analyses would help solve a particular problem, then perform those analyses using actual Delaware data layers. Use multiple buffers in at least one of the examples. More creative and sophisticated analyses will be rewarded. Please include things like classification, basic summary statistics and a decent finished map. (3 pages + 3 maps)

5. Mapping Change: Review ch. 7 from Mitchell ("Mapping Change") and create a time-change map of subdivisions in Delaware Co. View the subdiv.shp file (in Delaware Data) and look at the table: there is temporal information here: the date that the subdivision was established (in a peculiar format). Create a graduated color map of subdivisions based on this temporal data. Classify the data so it makes some sense (1850-1900, 1900-1930, etc.) and choose an appropriate color. (1 page description + 1 map)

6. Creating new Features: Review Section 6 in the Getting to Know ArcGIS text and describe a scenario (a problem) which would lead you to create new point, line, and polygon features on new shape files. Select a particular area of Delaware County, and use the 2002 Orthophoto as the source for your new map layers. Add some basic information to the attribute tables associated with each new map layer you create. (1 page description + map with new point, line, and area features).

7. Address Matching: Review chapter 17 in the *Getting to Know ArcGIS* text. You have been emailed a DBF file (address.dbf) of Delaware County addresses of sites that have a faulty septic system (a copy of the file is on a CD - ingeniously labeled **flapjack** - in the top right map drawer in the back of the room). You have to first locate the sites (using the master.shp file in the Delaware Address Pts folder in Delaware Data), the address.dbf file sent to you, and a address locator style "US One Address (file)" and then find out which of the addresses are located within 200 feet of bodies of water. This means that you have to first geocode the file, then create a buffer, then extract all the addresses within the buffer. This is a special challenge for all of you special students! (1 page description of project + map).

Good Luck!

Don't Panic!

Don't put this off until the last minute: it will take some effort to complete some parts of this fascinating and evocative evaluation!

Codes in **class** column of **parcels** map. Ex) 108=nurseries Ex) 600=owned by USA

1 AGRICULTURAL	41 funeral homes
00 vacant land	42 med clinics & offices
01 cash grain/gen farm	44 full service banks
02 livestock o/t 03 & 04	45 savings and loans
03 dairy farms	47 office bldg - 1 & 2 story
04 poultry farms	48 office o/t 47- walk up
05 fruit & nut farms	49 office o/t 47 - elevator
06 vegetable farms	52 auto service station
07 tobacco farms	54 auto sales & service
08 nurseries	55 Comm garage
09 greenhouses	56 parking lot or struct
20 timber	60 theaters
99 other agricultural use	61 drive-in theaters
2 MINERAL (see detail)	62 gold range/ min course
3 INDUSTRIAL	63 golf courses
00 vacant land	64 bowling alleys
10 food & drink	65 lodge halls/ amuse pks
20 foundries & heavy mfg	80 Comm warehouses
30 medium mfg & assembly	82 Comm truck terminals
40 light mfg & assembly	90 marine svc facilities
50 Ind warehouses	96 marinas (small boats)
60 Ind truck terminals	99 other Comm structures
70 small shops	5 RESIDENTIAL
80 mines & quarries	0 vacant land
90 grain elevator	1 one-family dwelling
99 otherInd structures	2 two-family dwelling
4 COMMERCIAL	3 three-family dwelling
00 vacant land	4 house trailer (real)
01 04-19 apt rental units	5 condominium unit
02 20-39 apt rental units	0 platted lot
03 40 or more families	1 unplatted0-09-99 acs
10 motels/tourist cabins	2 unplatted 10-19-99 acs
11 hotels	3 unplatted 20-29-99 acs
12 nursing hms/hospitals	4 unplatted 30-39-99 acs
15 mobile home parks	5 unplatted 40 +
16 Comm camp grounds	99 other res structures
19 otherComm housing	6 EXEMPT
20 small det retl (-10000)	00 owned by USA
21 supermarkets	10 owned by State of Ohio
22 discnt/jr dept stores	20 owned by Counties
24 full line dept stores	30 owned by Townships
25 neighborhd shop center	40 owned by Municipalities
26 community shop center	50 owned by Bd of Education
29 other retail struct	60 owned by Park District
30 rest, café and/or bar	70 owned by colleges, etc
35 drive-in restaurant	80 charitable exemptions
39 other food service struct	85 churches, public worship
40 dry clean plant/laundry	90 cemetery/monuments