GIS Seminar – Session 1

1. The first session will be used to find out if there are particular concerns that anyone may have about using ArcMap, taking a look at the new interface, going over nomenclature, and getting everyone up to speed on the more common tools and icons.
2. Start the computer, and log in with your NetID and password. To open ArcMap, you can either click on the globe and magnifying glass icon down in the taskbar or click on Start/All Programs/ArcGIS/ArcMap 10.1.
3. When it opens, there will be a dialogue box asking if you want to open an existing map, or to choose a template. If you have been working on a map or project, this is a handy tool, but for this exercise, we will simply choose Cancel.
4. There are drop-down menus across the top of the application as well as a row of command icons and the Tools toolbar. It is a good idea to take the Tools toolbar and move it to the left side of the application so that it is vertical rather than horizontal. There are 4 dots to the left of the  , and to move the toolbar, just point your cursor at the dots, click and hold the left mouse button, and drag the bar to a point just the left of  . This toolbar will be used every time that you use ArcMap, and we will save the area across the top for specialized toolbars that we will use only for specific exercises.
5. On the opposite side of the application, there are two tabs, Catalog and Search. Catalog is used for keeping track of and maintaining the files and folders that you will be working with, and Search will be used for finding files and searching for tools that we will need to use for some of the more advanced exercises.
6. The Icons across the top  are common commands, and if you hover your mouse over each of the icons, a little tag will pop up, naming the function of the icon.
7. Open Chrome and go to the seminar web page: http://www.geo.umass.edu/courses/geo592b/. Click on the ESRI Data link and when the blue circle around the icon at the bottom left of Chrome disappears, drag the ESRIDATA folder to the desktop and drop it.
8. Open the folder, and then open the USA folder and scroll down to the group of files named states.xxx. These are all of the files that it takes to make a shapefile, the basic building block of GIS. If you pick up the STATES.SHP file and drop it in the Table Of Contents (TOC) box, you will see the US show up in the main display (if this does not work, just go to step 9). Be aware that it takes all of the files (shp, sbn, sbx, dbf etc.) for ArcMap to be able to recognize and display the shapefile; so if you want to move or copy one or more, make sure that you select ALL of the states or roads before moving or copying.
9. There are 3 types of shapefiles, polygons, lines, and points. We have dragged a polygon shape to the TOC; now let’s add a line and a point shape using the normal method. Click on the icon and when the dialog box opens, click on the  (Add Folder) icon and click on Desktop and OK. Click on the Look in: drop-down, and select C:\Users\gisuser\Desktop if it does not come up auttomatically. Now double click on the ESRIDATA folder, and then the USA folder. Notice that even though there were multiple files for each of the shapefiles shown, only the shp shows up here.
10. Hold down the control key and select CITIES and Rivers and then click Add. Notice that ArcMap placed the point file on top, the line file next and the polygon on the bottom. If you click on the word STATES and drag it to the top of the list, you will understand why. Put it back, and then add the LAKES shapefile.
11. Whenever you add shapefiles to a map, you should make sure that the colors are correct. The cities just look like a bunch of blobs at this scale, so let’s turn them off by unchecking the box in front of the shapefile. Now look at the rivers; mine are brown as I do this write-up. Click on the line below RIVERS and you will get – guess what – a dialog box! The 4th line down has River written under it, so let’s click on the blue line and OK. Click on the rectangle below LAKES, and choose the Lake selection. My STATES came up as an unflattering shade of purple, and I switched to Beige but you can choose any light colored earth tone.
12. The map now looks quite a bit better, but the shape is wrong! The map is in a geographic projection, which means that there is no compensation of the image for the curvature of the earth. If we right click on Layers at the top of the TOC, and then click on Properties and the Coordinate System tab, you can see that the coordinate system is CGS\_North\_American\_1983. Use the scroll bar to the right to scroll down to Projected, then Continental, then North America and choose almost any of the North America or USA projections, but the USA Contiguous look the best (they all look pretty much the same). WHEW!
13. Now let’s do something about the cities. In the Tools toolbar (see #4 if you can’t remember) click on the
 (zoon in) icon. The most efficient way to use this tool is to do a marquee zoom; click and hold a little to the west of New York City, and then drag up toward the northeast corner of Maine. You will see a box being formed, use it to decide when what is inside the box is what you want to zoom to, then release the mouse button. If you made it a little too large or small, look down 4 or 5 icons, and use either the Fixed Zoom In or Out button, and if it’s off center, use the hand tool to move it around. You can also use the mouse wheel to zoom in and out – my favorite.
14. Make the cities visible by checking the box in front of CITIES. Now click on the little diamond and choose circle 1, change the color to red, and change the size to 4 and click OK. The cities are a little dense around Boston, but this is not too bad. About half way down the command toolbar (see #6) is a box that shows you the scale; which should be about 1:5,000,000. Click on the Fixed Zoom Out icon a few times until the cities get to be blobs again, which is about 1:10,000,000. We will now set the properties on CITIES so that it does not show up until we zoom in to this scale by right clicking on CITIES, choose Properties and the General tab. Check the Don’t show layer zoomed: button, and choose 1:10,000,000 in the Out beyond: drop-down box then OK.
15. On the Tools toolbar, click on the  Full Extent icon, and then do a marquee zoom (#13) of the lower 48 states, and then use the Fixed Zoom In tool to click until the cities show up.
16. Now that we have the map in a presentable state, we can save it to the Desktop. Right now, the upper left corner shows  so to change it to Exercise\_1 by clicking on File/Save, type in Exercise\_1 in place of Untitled and choose Desktop, then click Save. We use the \_ instead of a space, because older versions of ArcMap do not like location paths to have any spaces, and you will get an error when trying to open a file with a space in the path. Close ArcMap by clicking the X in the top right corner, and try opening it by clicking on Exercise\_1 on your desktop.
17. If you want to work on this exercise in an older version of ArcMap, you have to specify what version you want to save as by using Save A Copy… and in the Save as type: drop-down box choose your version. Also, you can copy the Esridata and Exercise\_1.mxd to a thumb drive for future use. NOTE: If you open your map file, and see a red ! next to the check box, don’t panic. Right click on the top shapefile and choose Data and then Repair Data Source, and navigate to the folder where that file has been moved to.