

## **Module 7 Assignment 2 – ArcGIS Path Analysis**

### **Instructions for this assignment**

Download *ArcGISPathAnalysis.zip* and unzip the file. Follow the instructions starting from the next page.

### **Due Date**

By midnight EST of February 26, 2023, Sunday.

### **Grading**

This assignment is worth 10 points for the 3 screenshots taken as required.

### **File naming convention for the assignment**

Save the screenshots in a Word or PDF file and use the following file naming convention:

GIS\_Part2\_Assignment2\_your-first-name\_your-last-name.doc

or

GIS\_Part2\_Assignment2\_your-first-name\_your-last-name.pdf

Be sure to use the underscores as you see in the example.

### **How to hand in the assignment**

When you have finished your assignment, you will upload (submit) it to the same assignment area where you found it. You may only submit this assignment one time. I remind you that if you do not submit the assignment before the due date, you will not be able to submit it.

1. Complete the assignment in a Word or PDF document.
2. Return to the dropbox folder for this assignment.
3. Look for the “Add a File” button in the Submit Files area.
4. Browse for the assignment that you have on your computer, and select it so that it uploads to the assignment area.
5. Click “Submit”.

## Task: Compute the Least Accumulative Cost Distance

**What you need:** *sourcegrid*, and *costgrid*, the same rasters as in Figure a and Figure b in Slide 34 of the *Lecture Notes – GIS Part 2.pdf* document; and *pathgrid*, a raster to be used with the shortest path function. All three rasters are sample rasters and do not have projection file.

In this task, you will use the same inputs as in Figure a and Figure b in Slide 34 of the *Lecture Notes – GIS Part 2.pdf* document to create the same outputs as in Figure d in Slide 34, as well as Figure a and Figure b in Slide 35.

1. Make connection to the ArcGISPathAnalysis database in ArcCatalog. Launch ArcMap. Rename the data frame Task, and add *sourcegrid*, *costgrid*, and *pathgrid* to Task.
2. Make sure that the Spatial Analyst toolbar is available. Click the Spatial Analyst Tools/Distance, and select Path Distance Allocation. In the Path Distance Allocation dialog, do the following:
  - a. select *sourcegrid* for input raster or feature source data,
  - b. enter *allocation* for the output allocation raster under the directory of ArcGISPathAnalysis,
  - c. select *costgrid* for the input cost raster,
  - d. enter *distance* for the output distance raster under the directory of ArcGISPathAnalysis,
  - e. enter *direction* for the output backlink raster under the directory of ArcGISPathAnalysis.

Click OK to run the operation.

3. *distance* shows the least accumulative cost distance from each cell to a source cell. You can use the Identify tool to click a cell and find its accumulative cost.
4. *direction* shows the least cost path from each cell to a source cell. The cell value in the raster indicates which neighboring cell to traverse to reach a source cell. The directions are coded 0 to 8. If the path is to pass into the right neighbor, the cell will be assigned the value 1, 2 for the lower right diagonal cell, and continuing clockwise. The value 0 is reserved for source cells.

6	7	8
5	0	1
4	3	2

5. *allocation* shows the allocation of cells to each source cell. The output raster is the same as Figure b in Slide 35 of the *Lecture Notes – GIS Part II.pdf* document.
6. **Take three screen screenshots of *distance*, *direction*, and *allocation*.**