GISC 4317/6317: GeoComputation/Computer Programming For GIS

**Instructor: Dr. Bryan Chastain**

**Final Project: A Custom Application Defined and Developed by Students**

OBJECTIVES

For final project, instead of working on an assigned program that is same for all students, you will need to come up with an idea on your own. To avoid limiting your imagination and creativity, you are given the liberty to decide what you want to do for your final project. An appropriate project would meet the basic requirements listed below, but does not guarantee a good grade, which depends on the originality of the project, the implementation of your program, and your relative ranking during final presentation. The basic requirements are listed as follows:

**Requirements:**

* Your program needs to have a specific purpose, for example, to solve a problem that cannot be done with ArcGIS user interface, or to automate a repetitive process, which can be done with existing software but is very time consuming. You should have a specific user or user group in mind. The user of your program can be your coworkers or yourself. You need to spell out the benefit gained from using your program. (**Note: please no more house/apartment/restaurant/park-finder applications.**)
* You have to come up with the idea for your final project. It is YOUR project. You can consult the instructor or TA for general guidance, and they may tell you if the project meet the minimum requirement or not. They may also give suggestion, but they will not be responsible for providing you an idea for the whole project. They will not assume any responsibility to help you with the debugging or implementing any part of your final project either.
* Undergraduates: You will work in teams of two to three to complete your project. Each person should contribute an equal amount of work to the final product. Team members will be able to report how much work was done by each student, which will be factored in to the final grade. Graduates: Your project has to be an independent one, which means you have to complete the program independently without any team work. You can search for reference code on the Internet though, and starting everything from scratch is not encouraged. If you do use a reference code, you need tell me the source of reference in the readme file. Your project should have substantial alteration and/or improvement to the reference code. Complete or partial copying a code from a reference source without sufficient modification or enhancement will be considered plagiarism, which will be reported to Judicial Affairs.
* You should use Python to implement your final project. GIS students are encouraged to have their program call GIS geoprocessing tools/functions to manage, process or analyze a geospatial data.
* You are required to turn in the source code of your project and an associated readme file into the drop box before final project deadline. Your readme file should describe the purpose and potential user of your program, the programming and executing environment, the sources of the reference code if there is any, and any other information that can help your instructor to evaluate your project. If your program uses any dataset that has to be there for the program to run, please also submit it to eLearning. If your dataset is too big for eLearning, you can send it via CometSpace (aka Box). However, you still have to turn in your source code and the readme file onto the eLearning drop box.
* Each student will be given five minutes to perform the demo to the class and answer questions from the audience. PowerPoint presentation is not needed unless it is absolute necessary. You will also need to give an evaluation score and comments on the project of all other students and email it to the instructor by the end of the due day (before 11:59 pm), which comprise part of the requirements of your final project.

**Final Project Deliverables**

1. **Assemble a Team (Undergraduates)** 
   1. Find classmates to work with. Any undergraduate student who has not found a team by Tues Oct 10th should contact me immediately so that I can assign you to a team.
2. **Project Idea (5 pts)**
   1. Write a paragraph or two describing the idea for your final project. You should focus on how to use programming to investigate/solve a topic of personal or professional interest. The project should demonstrate your ability to apply concepts and techniques learned in this course to a problem of your own choice. Consider the availability of appropriate datasets, as well as the limitations of your computer resources. Focus on the application of methods, not on a particular end result.
   2. Undergraduates, also include the names of the team members. Only one idea needs to be submitted per team.
   3. Post your idea to the **Final Project Idea Discussion** board.
   4. **Due Tues Oct 31st**
3. **Project Idea Peer Reviews (5 pts)**
   1. Write at least two short peer reviews of your fellow classmates’ ideas. To ensure everyone gets feedback, please review someone’s who has not already been reviewed. You are not limited to just reviewing two; the more feedback the better! Comment specifically on the use of principles and methods covered in the course, and offer any helpful suggestions you might think to enhance the project. Put some thought into this – just saying “This sounds like a great project!” will not suffice.
   2. Undergraduates: Even though you are on teams, you should still do the peer reviews individually. Undergraduates are welcome to post reviews of graduate ideas and vice versa.
   3. Reply to the **Final Project Idea Discussion** threads.
   4. **Due Fri Nov 3rd**
4. **Project Proposal (10 pts)**

Your final project proposal should in the format of a poster (PDF format, made in PowerPoint) and should include (but is not limited to):

* 1. Project Purpose
     1. Provide 1-2 paragraphs describing the purpose of the project
  2. Area of Interest
     1. Identify the geographic area of study. Why this area?
  3. Methodology
     1. Provide a brief, conceptual outline for your processing & analysis
  4. **Undergraduates only: Distribution of Labor**
     1. **Describe who will be responsible for handling which parts of the assignment. Please give some thought to this division of labor. (Include this in a separate word document, not on the poster PDF)**
  5. End Product Description
     1. Describe the form and usage of your proposed final deliverable

**Maps, charts and other graphics are encouraged for a good-looking poster.**

**Proposal is due Tues Nov 14th**

1. **Final Project Presentation (40 pts)**
   1. 5-minute presentation/demonstration of program
   2. Answer questions from audience
   3. Will also evaluate your classmates
   4. **Presentations will be during class time on Tues Dec 5th**
2. **Final Project Source Code & Readme files (40 pts)**
   1. Turn in all files needed to run your program to eLearning.
   2. Undergraduates: Attach an additional file reporting what percentage of the final product was contributed by each person. For example, if Adam, Brad and Charles were on a team together and Adam felt that he and Brad did most of the work, he might give a final percentage of: Adam=40%, Brad=40%, Charles=20%. Also give a brief explanation as to your reasoning behind the numbers.
   3. **Deliverable is due Tues Dec 12th at 11:59pm.**