GEOG 5561: Principles of Geographic Information Science
Fall 2014
Graduate project
v1.0

Learning to write is a lifelong process. Many studies have shown that learning can greatly benefit from learning activities that are centered on writing. For the practicing scientist, communicating knowledge through writing is a crucial component of the process of scientific discovery and analysis. Furthermore, beyond academia, it is hard to imagine any professional environment that would not expect, and often demand, effective and efficient engagements with costumers, supervisors, and clients (among many others) through written communication.

The graduate level of the course is almost identical to the undergraduate course. You will meet for the lecture twice a week and attend a lab meeting along with your undergraduate colleagues. In terms of your grade, you will be evaluated using the same point system (including labs, exams, and in-class assignments). As is typical for graduate credit in a co-listed course, you are required to complete a final project and a number of related writing assignments. Completing all written assignments is in addition to the work expected of the undergraduate students in the class. The total for all grad-student related assignments is 150 points. In turn, your labs, exams, and other 3561 assessments are worth slightly less than the percentages that are listed in the syllabus:

Labs (x9; 20 pts.)	180	(~30%)
Lab practicals (x2)	40	(~ 7%)
Midterms (x2)	130	(~21%)
Final exam	100	(~16%)
Intake assignment	10	(~ 2%)
Project statement	10	(~ 2%)
Paper outline	10	(~ 2%)
Revision memo	10	(~ 2%)
Presentation	10	(~ 2%)
Project paper	100	(~16%)
TOTAL	**600**	**(100%)**

All of the assignments are to be uploaded to the Moodle course website before the beginning of class on the due day.

The writing assignments in this course will give you the opportunity to deepen your knowledge in GIScience and improve your critical thinking skills. I am committed to helping you succeed and grow as (academic) writers.

FINAL PROJECT

Imagine that you were hired by a company as a GIS consultant. In that capacity, you are asked to write a proposal for a GIS (research) project that might potentially be funded by one of your clients. Hence, the audience for your proposal will be your imaginary (managerial) client, so you should write at a level appropriate for an educated reader with minor knowledge of/expertise in GIS and spatial analysis. It is unlikely that the individual in charge of funding decisions would be a highly trained GIS practitioner (though s/he might be of course). As such, special attention should be given to the persuasive description of the motivation for and the merit of your project.

Apart from preparing the written project proposal of 5 to 10 double-spaced pages (excluding non-text matter such as tables, figures, and the bibliography) , you are asked to give a 10-15 minute in-class presentation. I have

allocated several time slots at the end of the semester for such presentations. The in-class presentation is a great opportunity to share your work with your peers, both graduate and undergraduate (think of yourself as ambassadors for GIScience!). It is about sharing knowledge and provides for valuable experience in public speaking.

This is to be an independent project. The TAs and I can provide limited help as far as the technicalities of your project are concerned (e.g., we might tell you "yes, GIS can do that"). Identifying a topical area of interest, working out the motivation and overall structure of the project, discovering the tools and data that you will need, and conceptualizing the project from start to finish are very important deliverables in their own right.

As stated before, in your course paper you should clearly explain the motivation for the project and outline the project objective(s). Why should your client spend any money on your project? Make sure to define uncommon terms (from the realm of GIS or the application domain). To give greater credibility to your proposal, you should cite applications and/or work (from scholarly outlets) on which you based your methodology and/or overall plan. Without such evidence, you might want to put greater attention on making a case for the innovativeness of your project in order to appeal to your client.

Another important aspect that needs to be address in your paper is the retrieval and/or generation of data required for your project. Data makes or breaks any GIS project: no data, no project, and no money. Some (but not necessarily all) of the data for your project must *be independently researched*, that is, you cannot *only* reference data that we have used in class.

In addition, you should describe the methods of analysis used in your project. Similar to the data case, some of the spatial analysis and manipulation operations that you propose *must extend* beyond what was covered in class. The paper should also discuss the expected results, limitations, and challenges that have to be considered. Only full disclosure of the deliverables and "risks" will guarantee an informed and happy client. You certainly do not want to lose your credibility and the trust of your client once the project has been approved--with things not going according to plan.

The final paper should be structured as follows:

1. Introduction, statement of problem; challenge, purpose, motivation; definition of terms
2. Data: types and sources; generated, acquired; field work, digitizing
3. Methods: description of the analysis techniques (e.g., interpolation, generalization, transformations, registrations, geocoding)
4. Data analysis: description and discussion of the <u>expected</u> outcomes
5. Data presentation: strategy for presentation of results; if presentation as map: projection, scale, symbolization, colors; graphs, reports

Remember that you are asked **to propose** and not actually execute the project.

The final project paper needs to be proofread for spelling and clarity. It is due on **Thursday, December 11**, though you may turn it in earlier.

BREAKING IT DOWN

In preparation for your final project paper, I have devised writing assignments that will help you to advance towards the successful completion of the final project paper. These can be seen as strategic milestones that divide the final paper workload into manageable parts.

Intake assignment

Conduct background research on **the usage of GIS applications in a topical area that you are interested in.** Once you have identified an application**, write a half-page, single-spaced description of the characteristics of the application**, why the application is worthwhile, and why you consider it worthwhile and/or what its limitations are. Ideally, the chosen topical area/application should inform your work on the subsequent writing assignments and, ultimately, the final paper. The intake assignment is due on **Thursday, October 23** and is worth 10 points.

Project statement

You will **prepare a one-paragraph statement of interest**, stating your choice concerning the nature of the project that you would like to work on. I will do my best to review your statements in a timely manner and return them to you with comments regarding the scope and depth of your proposed project. The project statement is due on **Thursday, October 23**. It is worth 10 points.

Paper outline

Extending from you project statement you will generate a paper outline. In a few sentences for each section, the outline should state (1) the general description of the project as well as the justification for or purpose/merit of the project, (2) the required data and its sources, (3) the methods that will be used to complete the project, and (4) the expected results. The outline should have content for all of the required sections that will be part of your final paper. The outline is due on **Tuesday, November 18** and is worth 10 points.

Group peer-review workshop

As part of the writing process, you are asked to get together with two to three of your peers to engage in a peer-review workshop of your paper drafts. For such purpose, I will assign random groups of three to four individuals and make available on Moodle specific guidelines for the workshop, including information on the structure of the workshop and a revision memo form. You are asked to arrange a meeting time with you group outside of class on your own terms. Expect to spend about 60 minutes talking to your peer group. Based on the feedback from your peers, you will complete an individual revision memo form in which you will recap and reflect on the feedback. The due date for the revision memo is **Thursday, December 4**. It is worth 10 points.

Presentation

Towards the last weeks of the semester I will ask you to present your project proposal to the class (specific dates will be circulated during the semester). Please expect to talk about your project for now more than 15 minutes, in addition to no more than three minutes for questions. Since I will not be lecturing during the weeks of the graduate student presentations, I would like to encourage you to approach your presentation from a pedagogical standpoint. In particular, were there techniques/topics that you came across while working on your project that you might weave into your presentation? The presentation is worth 10 points.

Final project paper

The final project paper is due on **Thursday, December 11**. It is worth 100 points.