GEOGRAPHY AND ENVIRONMENTAL STUDIES
Carleton University

COURSE OUTLINE – Fall/Winter 2019-20

COURSE: **GEOM 4906 Honours Research Project [1.0 credit]**

COORDINATOR: **Murray Richardson**
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PREREQUISITE: Fourth-year Honours standing in B.Sc. Geomatics, and an approved research topic and adviser.

PRECLUSIONS: GEOG 4904/GEOM 4904 (no longer offered), GEOG 4906, GEOG 4909, GEOM 4909, ENST 4906, and ENST 4907.

HOURS: To be arranged with faculty adviser.

COURSE DESCRIPTION:
A research project based on a modeling, laboratory or field problem. The project is supervised by a member of the department and a written thesis and poster must be submitted. (From Carleton University, Undergraduate Calendar).

The purpose of this course is to provide an experience conducting research in geomatics under the supervision of a faculty adviser. This adviser will guide students through the process of developing and implementing an original research project. It is a capstone experience that is expected to demonstrate your ability to manage and produce a major work of personal interest to you that builds on the research, analytical and writing skills you have developed over your previous three years. Students should keep in mind that most of the work toward the final research thesis will be done independently, but that they should seek guidance from their adviser on a regular basis.

SUPERVISION:
As early as possible and before registering in this course, each student should have found a faculty adviser (usually a physical geography faculty member in the Department of Geography and Environmental Studies). The faculty adviser and student should come to a mutual agreement about an acceptable topic. Permission to register in the course will be granted after your faculty adviser informs the Undergraduate Administrator, Judy Eddy that you have agreed to work together. If you are unable to find a suitable faculty adviser or you are having problems with your adviser, please contact the course coordinator.

Your faculty adviser will help you formulate your research project, will help you examine the literature related to your research topic, and meet with you regularly to answer questions and provide feedback on your progress. While ideally a faculty adviser has some expertise in your broad area of interest, it is not necessary that he or she be an expert on your particular topic. Depending on student demand and faculty availability, a close match is not always possible. It is important to meet with your faculty adviser on a regular basis for guidance until the final research report is completed. Weekly meetings are particularly helpful during the first several weeks of the fall term, as you move from what is usually a more general topic to a well-defined project. It is the responsibility of students to get in touch with their faculty adviser to schedule meetings, either through email, by telephone, or in person, and to always conduct themselves in a professional manner. Your faculty adviser, however, may check-in with you at times, and you are expected to reply promptly to email correspondence. If you have any difficulties with your project, it is important to let your faculty adviser know as soon as possible. Please also keep your faculty adviser informed of any health, work or other situations that may impede your progress or which make it necessary to reschedule meetings.

TEXTBOOK: None required. However, a good writing style guide is recommended. Some examples of such books are on reserve or available in the reference collection of the MacOdrum Library.

Recommended writing guides:

Hay, Iain and Philip Giles. 2012. Communicating in Geography and the Environmental Sciences. 4th Edition. Oxford University Press: Don Mills, Ontario. (G70 .H35 2012)

Northey, Margot, Draper, Diane and David B. Knight. 2012. Making Sense: A Student's Guide to Research and Writing. Geography and Environmental Sciences. Fifth edition. Don Mills, Ontario: Oxford University Press. (G74 .N67 2012)

Public Works and Government Services Canada. 1997. The Canadian Style: A Guide to Writing and Editing. Toronto, Ontario: Dundurn Press http://www.btb.termiumplus.gc.ca/tpv2guides/guides/tcdnstyl/index-eng.html?lang=eng

For the content of your thesis, you will search for journal articles and books that are suited to your particular research topic or methodology. You must consult and properly cite appropriate peer-reviewed academic journal articles among other sources. If you require assistance finding these resources, please contact your faculty adviser or a reference librarian.

Useful university web links:

MacOdrum Library subject guide for Geography:
http://www.library.carleton.ca/research/subject-guides/geography
Maps, Data, & Government Information Centre web site:
http://www.library.carleton.ca/contact/service-points/madgic
Writing Tutorial Service Writing Resources page:
http://www2.carleton.ca/sasc/writing-tutorial-service/

COURSE STRUCTURE:

The Honours Research Project is a one full-credit course and accordingly requires an average of eight to ten hours of work per week over two terms, or equivalent. This work is done independently by the student in consultation with a faculty adviser. At the end of the winter term, the student will submit a poster and a thesis document for evaluation. Stude2nts will participate in the Faculty of Science Research Day. As part of this day the student will produce a poster on their Honours Research and be available during Research Day to present their poster and answer questions related to their research. Students are asked to submit a PDF version of their thesis and poster to their adviser.

COURSE DELIVERABLES:

This course will culminate in the delivery of a substantial written document that is typically in the form of a thesis (see below for a suggested format), but can take on different formats as mutually agreed upon by the student, supervisor and course coordinator. The final product should reflect scholarly input from the student that is equivalent to a full credit course (i.e., approximately 8 hours of work a week for 24 weeks). In addition, a poster must be submitted at the end of the second term that presents the work to an audience of student peers and professors. In addition to these key deliverables each student shall submit a 1 page thesis proposal in early October, a 1 page progress update in early January and a draft thesis in early March. These will be graded by the supervisor.

All course deliverables (including a pdf of the poster) must be submitted online via culearn by the deadlines provided below, unless otherwise agreed upon by your thesis advisor.

EVALUATION (Please note, your adviser may choose to use a slightly different assessment than what is shown below– please discuss the specific details of the evaluation process with him/her):

Proposal	10% (assessed by the supervisor)
Progress update	5% (assessed by the supervisor)
Draft thesis	15% (assessed by the supervisor)
Thesis (written component)	60% (assessed jointly by the faculty adviser and a second/independent reader)
Optional Poster	10% (assessed by at least two faculty members)

Standing in a course is subject to the approval of the Faculty Dean. This means that grades submitted may be subject to revision. No grades are final until they have been approved by the Dean.

SUGGESTED TIMELINE:

Finding a faculty adviser	March to August 2019
First day of classes	September 5 2019
Last day to register	September 19, 2019
1 Page Proposal	October 15, 2019
Progress update	January 7, 2020
Draft thesis	March 9, 2020
Poster presentation at the Faculty of Science Research Day	TBA
Final thesis submission for grading	April 9, 2020
Last day to withdraw without academic penalty	April 9, 2020

If the student has made substantial progress but cannot meet the final deadline, they should discuss the matter with their faculty adviser and the course coordinator. If they have not made substantial progress, the student should withdraw from the course; otherwise, failure to provide a final copy of the thesis will normally result in a grade of F.

Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://www2.carleton.ca/equity/

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://www2.carleton.ca/equity/

Academic Accommodations for Students with Disabilities: The **Paul Menton Centre** for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your ***Letter of Accommodation*** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (*if applicable*) at http://www2.carleton.ca/pmc/new-and-current-students/dates-and-deadlines/

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at http://www2.carleton.ca/equity/

Student Conduct:
The University has adopted a policy to deal with allegations of academic misconduct. This policy is expressed in the document Carleton University Academic Integrity Policy, effective July 1, 2006. The policy describes in detail its scope of application, principles, definitions, rights and responsibilities, academic integrity standards, procedures, sanctions, transcript notations, appeal process, and records implications.
The complete policy is available at: http://www2.carleton.ca/studentaffairs/student-rights-and-responsibilities/

Academic Integrity/Plagiarism:
The University Senate defines plagiarism as "presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one's own." This can include:

- reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source;
- submitting a take-home examination, essay, laboratory report or other assignment written, in whole or in part, by someone else;
- using ideas or direct, verbatim quotations, or paraphrased material, concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another's data or research findings;
- failing to acknowledge sources through the use of proper citations when using another's works and/or failing to use quotation marks;
- handing in "substantially the same piece of work for academic credit more than once without prior written permission of the course instructor in which the submission occurs."

Plagiarism is a serious offence which cannot be resolved directly with the course's instructor. The Associate Dean of the Faculty conducts a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of "F" for the course (see: http://www2.carleton.ca/studentaffairs/academic-integrity and http://www.library.carleton.ca/howdoI/plagiarism.html).

Other Important Locations on Campus:
Paul Menton Centre (500 Unicentre) for students needing accommodation
Academic Writing Centre and Writing Tutorial Service (4th Floor, Library, 613-520-6632)
Student Academic Success Centre (SASC, 302 Tory, 613-520-7850)
The Learning Commons (4th Floor, Library, 613-520-2600, ext.1125)
Useful Safety Websites:
Carleton Foot Patrol: www.cusaonline.com/footpatrol
Carleton Safety Programs: www.carleton.ca/safety/programs/index.html
Carleton Working After Hours Program Brochure:
www.carleton.ca/safety/publications/_pdfs/Working-After-Hours.pdf

THESIS STRUCTURE:

The thesis structure and layout normally follows a traditional thesis format (see below); however, other formats may be followed. It is up to the faculty adviser and the student to decide under which format to prepare the thesis.

The following is a guide to the sections that are commonly found in a thesis. Please use this as a starting point to discuss where your content should be placed with your faculty adviser. The length of each section (double spaced text *without figures/tables*) is given as a rough guideline only. The lower limit assumes that your writing is very dense. **A typical thesis is about 25 pages of double-spaced text (Introduction to Conclusion section, with no figures or tables). This will translate into between 45 and 80 pages in the final document (including appendices).** Note that the length of the thesis doesn't necessary reflect the amount of work that went into it; please do not add fluff to make your thesis longer.

Title page

Abstract 150-300 words
This gives an overview of your thesis and includes the context, purpose, major findings and overarching conclusions. Write this section last!

Acknowledgements - Thank those who helped you in a short statement
Table of contents - Easily created if you use proper headings (styles) in your word processor
List of figures - Easily created if you use 'insert caption' with your word processor
List of tables - Easily created if you use 'insert caption' with your word processor

Introduction 3-5 pages
Lead the reader to the crux of your research problem by giving background information, explain the significance of the issue and declare the purpose and scope of your thesis. Start this section with a 'hook' – a general statement to get the reader interested in the issue. Then continue by stressing what is known about the issue at hand and what knowledge gaps there are (background and context). Lastly, lay out your purpose, the approach you will take and provide specific research objectives or hypotheses.

Literature review 3-5 pages
This section provides detailed background on several topics related to your thesis. For example, you could explore your special method that you plan to use, and/or critical processes in the system you are studying, etc. in greater detail than you would cover in the Introduction. All theses should review the literature, but not all theses must have a literature review section. You can choose to put this background information in the Introduction if it is general enough and the reader won't bog down wading through it. Otherwise, a literature review section is a good idea.

Methods 3-6 pages
This section will detail the methods (field, laboratory, modeling, analysis) you used to answer the research questions or fulfil the research objectives that were declared in the Introduction. It must be written in the past tense (this is what you did, not what you are doing). Cite appropriately where your methods mirror, contrast or are inspired by other scientific work. You may wish to include a description of the study site at the beginning of the section to give the reader some relevant context.

Results 4-6 pages
This section will detail the results that were produced by the Methods. Each method should have a result (and vice versa). Begin with a general statement about all your results in the opening paragraph and report on each result in turn (organized sensibly, of course). You can report findings using a combination of text, figures and tables. Make sure that you write enough text to contextualize figures and tables properly. Reproducing your results in both figures and tables is seen as redundant (choose the most appropriate format, but note that complete data tables can be placed in an Appendix). Highlight both representative and/or surprising findings in the text, but avoid interpreting these results as this should be done in the Discussion. Write this section in past tense.

Discussion 5-10 pages
This section takes the results you generated and discusses them with respect to: what other scientists have found (cite the literature), what significance the results have (are they surprising; do they support your hypothesis?) and if (and why) there are any shortcomings in the data (there are almost always shortcomings!). As you discuss your results, you should synthesize different aspects of your work by noting how these components fit together to answer your research questions (or fulfil your research objectives). For example, if you had two different ways of determining some value, compare the answers… Known limitations of the current study are often highlighted in the Discussion. This section does not need to be written in past tense. Do not introduce new methods or results in this section.

Conclusions 0.8-2 pages

Relating back to your thesis objectives/hypotheses, synthesize the knowledge you have gained with the significance/broader implications of your findings. Enumerate any outstanding knowledge gaps and make recommendations for future work, as appropriate. Do not simply summarize what you did.

References 2-5 pages

This section lists all the references that you cited in your thesis (no more and no fewer). It should be formatted consistently. You are encouraged to use a reference manager like Zotero or Mendeley (free software) to handle this. References should be single-spaced but separated by a line. You should have at least four pages of references (approximately 40 references) and the vast majority of them should be academic (peer-reviewed) literature.

Appendices 0-10 pages

You can include appendices if you feel you have more to say about a certain methods or results that are too specific or lengthy for the main part of your thesis. Commonly raw data tables or lists of data sources (e.g., air photo numbers) are provided here.

Aside from the formal milestones discussed above, the following informal deadlines should keep your process on track. You should discuss setting formal deadlines for complete drafts of these sections with your faculty adviser.

Literature review	End of September
Introduction	End of October
Methods	End of November
Results	Mid-February
Discussion	Mid-March
Complete draft w/ Abstract and Conclusions	End of March

Thesis Evaluation Form - GEOG 4906

Student _____

Thesis title_____

Evaluator _____

Please consider the following elements:

A) Presentation, style and attention to detail

Weighting: 25%

Overall appearance
Consistency of fonts, units, capitalization, etc.
Figures and tables, including captions
Spelling, grammar
Writing style and flow of ideas
Organization of material (in appropriate sections)
Reference and citation style consistent

B) Academic content

Weighting: 65%

Introduction provides context, rationale along with clear and tractable research objectives or hypotheses
Background information sufficient and appropriate
Methods adequate and appropriate to address objective/hypothesis
Results presented clearly and effectively
Discussion insightful, comparisons to literature appropriate, significance of results explained
Conclusion synthesizes and contextualizes the major findings
Abstract captures the thesis purpose, main methods/approaches, main findings and significance of the work
Reference quality and quantity; ideas properly cited
Quality and depth of research

C) Participation/professionalism

Weighting: 10%

Adherence to mutually agreed upon deadlines
Met regularly with adviser and/or worked effectively in an independent manner

Strengths

Weaknesses

Overall Grade_____

Poster Evaluation Form - GEOG 4906

Presenter _____

Poster Title_____

Evaluator _____

Please consider the following elements:

Graphic/layout	**approx. 40%**
Overall appearance	
Text/graphic balance	
Text size	
Spelling, grammar	
Layout/Text justification	
Graphic appropriateness	
Graphic quality	
Organization and flow	
Author ID	

Academic content	**approx.60%**
Research objective (clear, appropriate)	
Main Points (clear, appropriate for nature of topic and mandate)	
Quality and depth of research	
Academic level (too simple, too complex)	
Effectiveness of communication, clarity and quality of writing	
Academic structure (eg, clear intro., appropriate sections, conclusion)	
References	
Oral explanation/defence (familiarity with material, ability to answer questions, ability to succinctly summarize findings)	

Strengths

Weaknesses

Overall Grade _____ (Poster final grade will be the mean of all poster evaluations)