

WDI Final Report
GGR463 Geographic Information Analysis and Processing

Damian Maddalena

Winter 2022

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Chapter 1

Final Report

1.1 Term Summary

The main goals of GGR463 include strengthening student thinking in terms of a complete geospatial analysis project and expanding the tools they are comfortable using. The course tasks the student with seeing a project from conceptualization, through analysis, to reporting, using genre appropriate writing and peer collaboration.

At key points during the term I explained project component expectations, taught the technical/theoretical skills needed for the execution of the project elements, discussed strategies for writing, and met with students as needed for project help. The TAs graded all project materials, met with students, and handled all grading.

The WDI-funded project consisted of the following five deliverables. (See Appendix D for detailed descriptions of each deliverable.)

1. Potential topic list
2. Project proposal
3. Project status report
4. Project workshop presentation
5. Final project report

The specific WDI project funded goals were:

- Document workflows and analysis outcomes.
- Collaborate with peers on analysis methods and writing.
- Communicate results using genre appropriate formats.

The proposed project was executed as described in the WDI proposal with only two minor changes: no peer feedback session was run during the proposal stage, and workshop presentations were moved online to a semi-asynchronous format.

For the project workshop session, students were grouped based on similarity of topic and analysis methods. Each member recorded a video presentation and posted it for their 3 to 4-member group

to review. This discussion took place on a Microsoft Team channel specific to each group (members could not access other groups). I was more than pleased with the level of discussion overall. Students asked and answered questions about projects and made thoughtful edit suggestions to their peers for the final paper. Example student discussions are found in Figures A.1, A.2, and A.3 in Appendix A. The student guide for workshop day can be found in Appendix B.

1.2 Evaluation of WDI Project

1.2.1 Objective Assessment

The project worked well overall. No major issues arose from instructional materials, coordination of project elements, or the final deliverable. Table 1.2.1 shows the mean grade and sd for each of the major project components.

Deliverable	mean	sd
Deliverable	Mean	sd
Potential Topic List	81.3	15.1
Proposal	81.5	16.6
Status Report	81.3	21.2
Workshop Presentation	91.6	14.5
Final Project Submission	78.3	18.5

Table 1.1: Mean and standard deviation of grades on major project deliverables (N=28). Zeros for no submission or plagiarism were dropped from the calculation of these values.

The Robert Gillespie Academic Skills Centre formerly evaluated TA comments on the project proposal and final submission for clarity, accuracy, and relevancy. Additionally, the writing center evaluated the degree to which TA feedback on the proposal was incorporated into the final report. Six students from the final group of 28 that turned in the final project were evaluated. (Full RGASC report is included in Appendix C.) It was found that there was slight improvement on student work from proposal to final paper, though the degree to which students incorporated specific TA feedback was low. This is a concern I would like to address next time the course is taught by specifically directing students to review TA comments and to incorporate suggestions into subsequent deliverables.

1.2.2 Subjective Assessment

On the whole the project went well. Most students did well with the proposal, analysis, and final report. The level of interaction and peer collaboration during class and online was high. Anecdotally, students enjoyed the project and peer interaction, and saw value in the stated learning goals. In reference to the latter, one student stated the following on the course evaluation: “ I genuinely do believe [Prof Maddalena] wants his students to succeed, not only in the course but in work life after graduation.”

1.3 Instructor Reflection

Overall, I feel the project was a generally a success. My motivations for proposing this project were rooted in the time I spent in the private sector before returning to academia. Clear communication of work to general audiences (internal and external) is a necessary set of skills. Students saw value in the stated learning objectives, especially those near to graduation and on the job market. Many were happy to have a project to use as part of their portfolio.

I was left thinking, though, that I can do a better job at in-class instruction. Specifically, the course should include relevant examples during lab time. I do not feel as though enough actual writing instruction was offered by me or the TAs. For next year, I will use lab time for both geospatial analysis instruction and writing instruction, incorporating process oriented writing instruction as part of lab/class time.

1.4 Going Forward

I will be running this project again with minor changes when GGR463 is offered during winter 2023. Going forward, I will incorporate changes that furthers process oriented writing instruction by incorporating explicit writing instruction during lecture or lab times. I feel this is necessary to clarify specific elements of the genre, and to help students see more explicitly how the report comes together incrementally over the term. Though this was discussed frequently in class no writing lab exercises were undertaken, which was a shortcoming.

The additions to in-class writing instruction should not affect the overall TA hours needed or change the project elements. I propose to devote lab time to writing instruction during the term. I will do this by reworking technical lab assignments to reduce the overall number, freeing some lab instructional time for writing time and writing instruction. The proposed budget for next year is listed in Table 1.4. There is very little change from the WDI proposal submitted. WDI funded project elements are marked with an *.

Category	TA Hours
Administration	
TA writing instruction (assuming two TAs)	8
TA-led workshop sessions	2
TA prep for workshops	1
Assignments	
lab assignments	33.3
topics list	3.3*
proposal	10*
status report	10*
workshop presentations	6.7*
final paper	6.7*
Summary	
allocated hours	60
extra hours	23.3
total hours	83.3

*WDI Funded

Table 1.2: Total GGR463 course hours proposed for winter 2023, calculated with an enrolment of 40 students. WDI funded hours are marked with an *.

Appendix A

Workshop Student Interactions

Figure A.1: Example student discussion on Microsoft Teams.

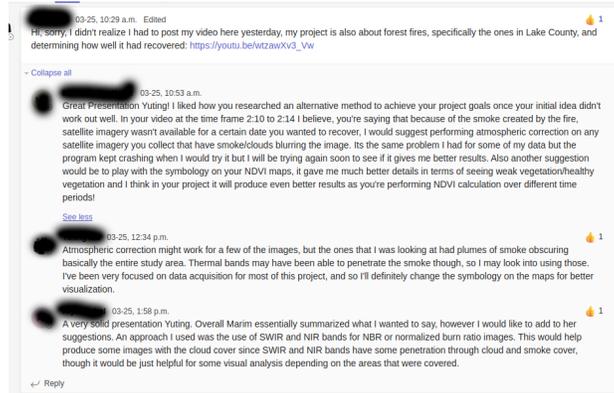


Figure A.2: Example student discussion on Microsoft Teams.

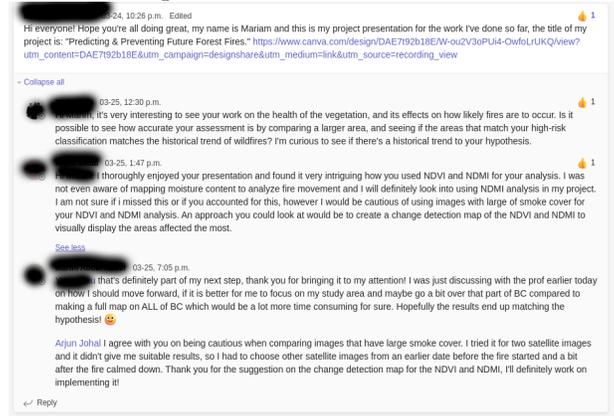
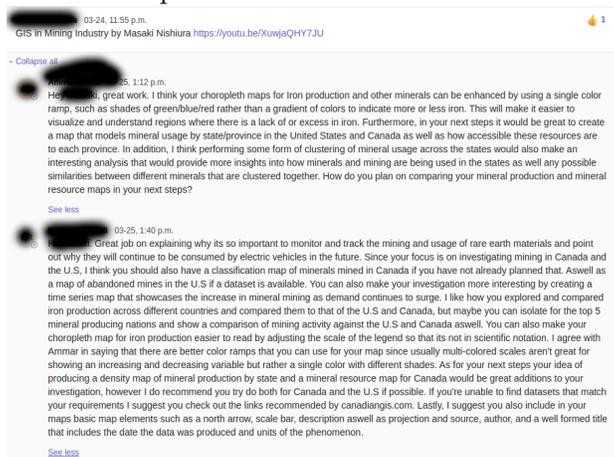


Figure A.3: Example student discussion on Microsoft Teams.



Appendix B

Workshop Instructions



Geography, Geomatics and Environment
UNIVERSITY OF TORONTO

MISSISSAUGA

GGR494H5: Open Source Geospatial Analysis Workshop Instructions

Dr. Damian Maddalena

Winter 2022

1 Introduction

The presentation review session is set up as a workshop, giving you the chance to collaborate with your classmates, offering feedback on their project and getting feedback on your own. You will view the recorded presentations of each of the members of your group, ask/answer questions about their work, and receive the same from them. All interactions will take place asynchronously on the course Microsoft Team.

Peer collaboration and feedback are important elements of work in many professional settings. Having the chance to discuss your work with colleagues is a valuable opportunity. Use this time wisely to learn from and and share with your peers. Your participation will make this exercise successful for you and for them.

2 Workshop Checklist

2.1 Before 3/25, 12:01 AM

Complete the following by the due date for slide submission:

- Find your project group on the class [Team](#).
- Prepare your presentation slides using the structure outlined in your syllabus and on Quercus.
- Record your slide presentation following the guidelines in your syllabus and on [Quercus](#).
- Upload your presentation video to the service of your choice. As long as you can provide a DIRECT URL and we do not have to set up an account on a 3rd party site to view it, it is acceptable.
- Submit your slides on [Quercus](#).
- Submit a URL to your presentation video on [Quercus](#).
- Send the presentation recording URL to your group channel on Teams, include the title of your presentation in the message.

2.2 During Class and Lab Time on 3/25

Complete the following before 11:59 PM on 3/25, local Toronto time.

- Review the videos submitted by your classmates.
- Ask/answer questions for each of your group members in your group Microsoft Teams channel.
- Consider the questions/comments provided to you by your group mates.
- Reply to your group mates' questions in your group channel.
- Consider potential project edits based on your group feedback.

Appendix C

RGASC TA Comment Review

Student A1*Comment typology*

Total comments: 11
Writing focused: 2
Methods focused: 5
Content focused: 4

Comment clarity/accuracy/relevance:

All comments seemed clear, accurate, and relevant for this proposal. There was one comment that was slightly unclear due to wording: “We are more looking for the expecting format of how you are going to show...”. This comment, while relevant to the “Expected Results” section, is difficult to understand and can cause miscommunication.

Comment efficacy:

The writing and content issues identified by the TA in the proposal, were for the most part not addressed. Student A1 made no changes to requests for more background information in the introduction, nor to the formality of their research question.

Student A1 best addressed the comments about their methods section and sought to fix the issues in the final project. Student A1 gave specific analysis types (spatial, network, and demographic), and supported their choices with explanation for their choices as well as the geospatial tools necessary to complete their study.

Student B1*Comment typology*

Total comments: 13
Writing focused: 3
Methods focused: 2
Content focused: 8

Comment clarity/accuracy/relevance:

The comments written by the TA are for the most part clear, accurate, and relevant to the project. A comment written “take care of grammar, some sentences are difficult to understand” points to a need to proofread and possibly rewrite some sentences but does not highlight specific examples to help the student identify and learn from their writing mistakes.

Comment efficacy:

A majority of the comments focus on issues with the content of the proposal, such as missing explanations and detailed information. These comments were not well addressed. Student B1 did, respond to requests for specific information such as the name of the project in the Toronto-Windsor corridor. The issues identified in the proposal were not fixed in the final submission.

The three comments about writing—one about the spelling of the Professor’s name, one seeking more citations, and the other about grammar in general for clarity—were largely ignored. No

changes were made to the Professor's name, and there are no apparent changes to the general comment on grammar and clarity. In general, there was no improvement in writing. There was little to no improvement with regards to the comments about methods. The explanation remains vague without answering the questions highlighted by the TA.

Student B2

Comment typology

Total comments: 11 (1 comment held feedback for both written and content focused issues)

Writing focused: 3

Methods focused: 3

Content focused: 5

Comment clarity/accuracy/relevance:

The comments written by the TA are for the most part clear, accurate, and relevant to the project.

Comment efficacy:

The issues identified in the proposal comments were largely not fixed in the final submission. The writing focused comments were partially addressed. Student B2 did include in-text citation in their final submission and made an effort to not use "I" or "we" in their assignment (only one instance). However, no changes were made to the title.

The methods issues identified in the proposal were partially fixed. Student B2 did provide more explanation about their methods, but did not write out their explanations in paragraphs, and continues to use full URLs regardless of the comments written on their proposal. In general, content issues were not fixed in the final submission. The explanations given are superficial and lack many of the details and explanation requested in the comments on the proposal.

Student B3

Comment typology

Total comments:10

Writing focused: 3

Methods focused: 5

Content focused: 2

Comment clarity/accuracy/relevance:

The comments written by the TA are for the most part clear, accurate, and relevant to the project.

Comment efficacy:

Student B3 did not respond to writing focused comments about in-text citations but did respond to comments about the formality of bullet point writing. Feedback about content requested specific

details such as date, and naming conventions—question and table identified in the proposal were not present in the final submission.

In general, most of the comments referred to issues with the method. Although student B3 made an effort to expand on their methods and respond to comments asking for clarification such as “what numerical data do you have?”, their final submission lacked clarity on data collected and processed, and the explanation of their method did not directly line up with the topic of the assignment.

Student C1

Comment typology

Total comments: 9
Writing focused: 3
Methods focused: 3
Content focused: 3

Comment clarity/ accuracy/ relevance:

The comments written by the TA are for the most part clear, accurate, and relevant to the project.

Comment efficacy:

Student C1 for the most part addressed comments about their writing to include in-text citations, use specific language in their title, and avoid the use of “I” and “we” (“I” was used once). Comments that were content focused were moderately addressed, such as to include literature to support statements by including 2 citations, and introductory content was moved to more appropriate sections. Methods focused comments about data selection and processing tools were not addressed.

Student C2

Comment typology

Total comments: 11
Writing focused: 3
Methods focused: 5
Content focused: 3

Comment clarity/ accuracy/ relevance:

The comments written by the TA are for the most part clear, accurate, and relevant to the project.

Comment efficacy:

Student C2 addressed some of the comments that were writing focused such as including section titles. However, the student did not respond to comments about including in-text citations, and there was little improvement in grammar and clarity of statements. Comments about issues in content were for the most part not addressed, but the format and explanations offered did differ from the proposal. Finally, the comments about issues with methods were partially addressed. Data

and analysis were presented and described in the final submission but lacked detailed explanation as requested in comments in the proposal.

Overall Observations:

In general, there was a slight improvement in the quality of work between the final submission and the proposal. Of the six proposals observed, there were a total of 65 comments made, of which 25 referred to issues in content, 23 referred to issues with methods, and 17 referred to issues with writing. Although many of the issues identified were not addressed by the students in their final submission, the TA's comments were mostly clear, accurate, and relevant to the assignment. The comments were often suggestive of areas that students could improve with further reflection and research.

The issues highlighted for content asked students to clarify their objectives, give more details in their introduction and expected results, as well as further explain the connections between variables. In general, students did not directly address these comments. While they expanded their work, they often did not include enough detail, or connect ideas.

The comments that were methods focused often addressed questions of data specificity and analysis. Comments often asked where students would find data, which data they specifically hoped to use, and how the data related to their questions. Other comments asked how students intended to analyze their specific data and explain their choice of analysis. While students presented more detailed data and explanation of their analysis in the final submission, they did not respond directly to the comments made in the proposals and often submitted methods sections that required further explanation and clarity.

Finally, comments that focused on writing issues mostly asked for in-text citations/references, and requests for proofreading for grammar and sentence clarity. Students mostly responded to the request for in-text citations. However, the in-text citations were often few and not properly formatted. There was little to no improvement in the final submission with regards to grammar and clarity of language. In part, this may be due to the general nature of the comments, as students may not have known which sentences specifically required improvement, how to improve them, and what grammar errors needed correction.

Appendix D

Course Syllabus



Geography, Geomatics and Environment
UNIVERSITY OF TORONTO

MISSISSAUGA

GGR463H5: Geographic Information Analysis and Processing

Dr. Damian Maddalena

Winter 2022

Instructor: Dr. Damian Maddalena
E-mail: damian.maddalena@utoronto.ca
Office Phone: 905-569-4382
Office Hours: Tuesdays 10:00, or by appointment
Office: DV3265 or Zoom

Classroom: IB 210 or Zoom
Class Hours: Friday 09:00 - 10:00

Lab Room: CC 2160 or Zoom
Lab Hours (PRA0101): Friday 11:00-13:00
Lab Hours (PRA0102): Friday 14:00-16:00

TA: Priya Patel
E-mail: prp.patel@mail.utoronto.ca
Office Hours: Thursday at 09:00
Office: Zoom

TA: Xioameng Zuo
E-mail: xiaomeng.zuo@mail.utoronto.ca
Office Hours: Wednesday at 12:00
Office: Zoom

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1 Course Description

This course focuses on open source geospatial software and analysis. Emphasis will be on both the analysis and processing of geographic information using open source software. Topics from geographic information science will be presented.

The course is structured as a series of modules that culminate in a final project. Course materials consist of synchronous lectures, readings, hands-on exercises, homework assignments, and a major project. Students are encouraged to incorporate individual areas of interest into class discussion and assignments. Successful students will expand their GIS toolset, increase the flexibility of their work, and finish the course with a project suitable for use in a professional portfolio.

2 Course Outcomes

1. Compare and contrast current open source geospatial software and analysis methods.
2. Design and execute a GIS project from start to finish using open source tools.
3. Document workflows and analysis outcomes.

3 Course Materials

There is no required textbook for this course. Reading material and exercises come from resources available through the University of Toronto library or from the wider internet. Reading lists and exercises will be posted in each week's learning module on Quercus.

4 COVID Safety

4.1 Vaccinations and UCheck

U of T community members who come onto campuses or premises must be fully vaccinated against COVID-19 and are required to upload proof of vaccination via UCheck. If you are a community member – meaning a student, post-graduate or staff, faculty or librarian – please use [UCheck online](#) to provide proof of vaccination and for health screening. To access UCheck online, you must have a UTORid and be active in at least one of U of T's student, post-graduate, or human resources (for staff/faculty/librarians) systems.

To provide your proof of vaccination, log into UCheck, select the option to complete your vaccination status form, and follow the on-screen instructions. UCheck is accessible via web browsers on computers, tablets, and smartphones.

Once you have completed the vaccination status form, you will be able to continue to the UCheck COVID-19 self-assessment, which is also **required before every trip to campus**.

4.2 Masks

Like the other divisions at the University of Toronto, UTM will require masking while on campus.

Students and instructors may remove their masks in order to take quick sips of water during classes but must replace the mask immediately between sips.

All student masking accommodations will be handled through UTM Accessibility.

Masks are available for sale in vending machines in the Davis Building and other locations.

5 Student Technology Requirements and Connection Tools

Students are expected to review and be in compliance with the University’s requirements for online learning (<https://www.viceprovoststudents.utoronto.ca/covid-19/tech-requirements-online-learning/>). More resources are available on the UTM Library’s Learn Anywhere website (<https://utm.library.utoronto.ca/students/quercus/learn-anywhere>).

5.1 Zoom

Zoom may be used in the delivery of components of this course (lectures, tutorials, practicals and office hours). Students are required to register for a UTM Zoom account (<https://utoronto.zoom.us>) prior to the first lecture. Only authenticated users can join the zoom meetings; please follow the [instructions](#) to ensure that your account is authenticated.

5.1.1 Class Meeting Zoom Info

Time: Fridays, 09:00-10:00

URL: <https://utoronto.zoom.us/j/81359301026>

Meeting ID: 813 5930 1026 Passcode: usegrass

5.1.2 PRA0101 Lab Meeting Zoom Info

Use class connection information until further notice.

5.1.3 PRA0102 Lab Meeting Zoom Info

Use class connection information until further notice.

5.1.4 Damian Maddalena’s Office Hours Zoom Info

Time: Tuesdays 10:00, or by appointment

URL: <https://utoronto.zoom.us/j/86494069289>

Meeting ID: 864 9406 9289 Passcode: utmosgeo

5.1.5 Priya Patel’s Office Hours

Time: Thursday at 09:00

URL: <https://utoronto.zoom.us/j/89593199143>

Meeting ID: 895 9319 9143 Passcode: NA

5.1.6 Xioameng Zuo’s Office Hours

Time: TBD

URL: <https://utoronto.zoom.us/j/9949807821>

Meeting ID: 9949807821 Passcode: 123456

5.2 Microsoft Teams

[Microsoft Teams](#) will be used for asynchronous communication and discussions in this course. You have access to Teams through your University of Toronto Microsoft Office account.

Microsoft Teams is the preferred method of communication for this course. Ask questions about course material in the public channels so that your classmates can also take part in the conversation. Reserve emails for personal matters. **For best results, tag your instructors when you post questions on Microsoft Teams.**

The course Team is private. Use the following link to request to join the UTM Open Source Geospatial Team (**REQUIRED**) <https://teams.microsoft.com/l/channel/19%3a4487c33e54be4e83b683ba726509840thread.tacv2/General?groupId=776f43bb-b731-4901-9425-ea4118b1fee0&tenantId=78aac226-2f03-4b4d-9037-b46d56c55210>

5.3 Geospatial Software

We will be using QGIS, GRASS-GIS, R. Follow the links below for install information specific to your operating system.

Though it is encouraged, you are not required to install the software. You may also use lab computing resources in person or by connecting to the remote lab environment. See instructions on Quercus for information on connecting to the GGE online compute resources.

5.3.1 QGIS

<https://qgis.org/en/site/>

5.3.2 GRASS-GIS

<https://grass.osgeo.org/>

5.3.3 R

<https://www.r-project.org/>

6 Tentative Schedule

Table 1: Tentative schedule. Instructor reserves the right to modify as needed.

Date	Topic	Notes
01/14	Orientation, Introduction to Open Source	
01/21	Geospatial Data Models	Potential topics list due
01/28	Open Source Cartography and Project Design	
02/04	Data Acquisition and Creation	
02/11	Global, Zonal, and Focal Operations	Project proposal due
02/18	Least Cost Path and Network Analysis	
02/25	Reading Week	No class meeting
03/04	Interpolation and Approximation I	
03/11	Interpolation and Approximation II	Project status report due.
03/18	Viewshed and Solar Energy Potential	
03/25	Project Workshop Presentations	Workshop presentations
04/01	Peer Review Writing Workshop	Peer review sessions
04/08	Wrapping Up	Projects due

7 Term Work - Descriptions and Grading Policies

Table 2: Coursework, due dates, and grading breakdown.

Component	Due Date	% Grade
Module Assessments	weekly	25
Potential Topics List	1/21	5
Project Proposal	2/11	15
Project Status Report	3/11	10
Workshop Presentation	3/25	15
Project Submission	4/8	30

**Unless otherwise noted, all items must be submitted via Quercus by 12:01 AM on the due date.*

**Lab assignments are due at 12:01 AM on the day of the next class meeting after they were assigned.*

7.1 Module Assessment

Each module will conclude with a self-assessment quiz on Quercus. These quizzes may contain multiple choice, fill in the blank, short/answer, and/or map/figure components. You will have 2 submission attempts. If you attempt a question a second time your first answer will be discarded. **No additional attempts will be rewarded for any reason**, so please be mindful when answering the self-assessment quizzes.

Lab assignments are due at 12:01 AM on the day of the next class meeting after they were assigned.

7.2 Project

There are no exams for this course. Your main efforts this semester will be devoted to a project of your own design. You are expected to devise a topic, design your analysis using the tools of your choice, and write a final report.

In part, this is a course on open source GIS software. **You may not use proprietary software (ArcMap, ERDAS Imagine, etc) to do this project.** You are required to use open source tools—QGIS, GRASS GIS, R, or any other **open source** tool out there you are interested in. You will be required to include screenshots in the appendix of your final report as evidence you have used open source tools.

Unless otherwise noted, all project deliverables are to be written using a single-spaced, 12-pt font. Include a complete header on all documents (your name, document title, date, course title, and your professors name). Only your Proposal and Final Project Report need a cover page.

See Table 1 on page 7 and Table 2 on page 7 for the due date and weight of each project component.

7.2.1 Potential Topics List

You will turn in a numbered list of three potential topics. This is meant to help you narrow down your ideas. Your instructors will comment and help you make your final selection. Rank your three ideas in order from most interested to least interested. (IE, list your preferred topic first.) For each topic, include 3-5 sentences describing the topic and your interest in it. Include a complete header with your name, your project title, the date, the course title, and your professor's name. No need for a cover page.

7.2.2 Project Proposal

You will submit an initial proposal as part of your term project. A proposal is a common first step when writing in an educational, academic, or professional setting in which research is expected. It serves two functions:

1. it communicates your scholarly intentions to your instructor/colleagues, and
2. it requires that you pin those intentions down for yourself—you may be able to say “I’m writing a paper about such-and-such,” but when you head to the library, the such-and-such section may be enormous. Your proposal, which defines the focus of your inquiry, will help you at that moment.

Proposal Formatting

- 2-3 pages, single-spaced, 12-point font text excluding figures, tables, and references.
- Cover page with your name, title of the project, date, course title, and your professor's name.

Proposal Layout

1. **Title Page:** Include your name, project title, date, course title, and your instructor's name.

2. **Introduction:** Start by broadly introducing the topic in the context of your question, then lead the reader to your research statement and question(s). This section should describe in detail the specific need/desire/missing piece that your project will address.
3. **Objective:** Succinctly state the purpose of your project. State the question(s) and/or engineering outcome(s) of your project.
4. **Methods:** Present the methods you plan to use. This may change as you work on your project, but be sure to list the tools and analysis steps you envision at this point. Include a flow diagram of the major steps of your analysis.
5. **Data:** A description of the data you have already and additional data you think you think you will need. Do you have all the data you need? Have you loaded it into a GIS and examined it? Have you created any maps? (Include them if so.) If you don't have all your data yet, what do you plan to use? Where will you get it? Include a data table with the following column headers: File Name, Description, Type, Projection, Extent, and Source.

Table 3: Example data table. You are required to include this information in your proposal and final paper submissions.

file name	description	type	projection	source
croatan.shp	Croatian NF boundaries	polygons	NC SP feet	Croatian National Forest
roads.shp	roads in NC	lines	NC SP meters	Croatian National Forest
stations.shp	air quality monitoring stations in NC	points	NC SP feet	Croatian National Forest

6. **Timeline:** A Gantt chart of your projected work schedule.
7. **Expected Results:** A short statement of your expected outcomes.
8. **References:** Include at least 3 references to relevant research papers. Additionally you can include references to technical guides and/or websites. It is **strongly recommended** that you use citation management software. Consult the UTM Library's guide for more information: <https://utm.library.utoronto.ca/content/tools/citation-management>.

7.2.3 Project Status Report

The status report should build upon the major elements of your proposal. Discuss your progress so far, your next steps, and what issues you have encountered. Include figures, maps, and/or tables to highlight your work so far.

Status Report Formatting

- 1-2 pages of text, excluding figures
- 12-pt font, single spaced
- no cover page needed

Status Report Structure

1. **Project Status:** What have you done so far? What, if anything, has changed since your proposal?

2. **Next Steps:** What are the next steps in your analysis? Your project as a whole?
3. **Issues and Roadblocks:** What issues have you encountered so far. Data? Methods? Software? State questions you have at this point and how you will try to solve them. Etc.

7.2.4 Project Workshop Presentation

All students will give a short presentation in a small group workshop setting where your colleagues offer you constructive feedback to help you improve your work. Peer collaboration and feedback are important elements of work in many professional settings. Having the chance to discuss your work with colleagues is a valuable opportunity. Use this time wisely to learn from and and share with your peers. Your full participation will make this exercise successful for both you and them.

The class will be divided into groups of roughly 4-6 students. Each student will give a short presentation to the group, followed by questions and comments from your group members.

Length: 10 min presentation, 5 min discussion.

Presentation structure is dependant on current COVID protocols. If we are online, presentations will be recorded (video). You will view the recorded presentations of each of the members of your group, ask/answer questions about their work, and receive the same from them. All interactions will take place asynchronously on the course Microsoft Team.

We will make a decision on online vs in-person in early March based on current University and Provincial guidelines.

Presentation Structure The presentation will follow a similar content structure as the proposal, but should be further along in completion. Verbiage that said “I will” in your proposal will now say “I have,” or “I have tried” for the most part. (You are not expected to be finished, only to have made progress.) It may be helpful to have a question or two to bring to the group such as “Do my analysis steps makes sense here?” or “These results look odd, here is what I have tried.”

1. **Introduction:** 1-2 slides. Introduce the topic, explain your motivation, state your question or engineering effort explicitly.
2. **Methods:** 1-2 slides. Outline your analysis steps, your data, and site (if applicable). Include a flow diagram and/or bulleted steps/pseudocode.
3. **Current Results/Status:** 2-4 slides. Outline current results and project status. List your next steps. Present questions or roadblocks you would like to discuss.

7.2.5 Project Report

Your project report should follow the structure and formatting of a white paper or scientific journal. Look at your references for examples.

Formatting

- 4-6 pages of 12-pt, single spaced text, excluding tables and references.
- Images, maps, and/or graphs, should be of a readable size and use professional formatting.
- Include a cover page with your name, title of the project, date, course title, and your professor’s name.

- Use scientific, succinct language.
- Proofread your paper very carefully.

Report Structure

1. **Introduction/Background:** Brief literature review, motivation for the research, research question/objective. Start by broadly introducing the topic and context of your question, then lead the reader to your research statement and question(s). This section should describe in detail the specific question(s) or engineering effort(s) that your project addresses.
2. **Methods:** Outline the analysis/workflow used to arrive at the results in the next section. The reader should have a clear picture of how you performed your work so that they can feel confident in your interpretation/description of the outcomes. Your methods should include a description of the study site (extent, location, characteristics, etc) and a description of the data used (sources, coordinate systems, formats of the original data, transformations and format conversions, resolution, preprocessing, etc.).
3. **Results and discussion:** Present and explain your results. Use tables, figures, maps/images as is appropriate. Compare your results with results from other efforts or studies – confirms previously observed phenomena, shows something new, which questions remain unresolved, etc.
4. **Conclusion:** Present a summary of the most important findings and outcomes, and how you might expand on your analysis in the future.
5. **References:** Include at least 5 papers from scientific journals, other citations can be reports, web documents, and similar. It is strongly recommended that you use citation management software. Consult the UTM Library’s guide for more information: <https://utm.library.utoronto.ca/content/tools/citation-management>.
6. **Appendix:**
 - Workflow documentation in at least one of the following formats: diagram(s), text, annotated commands, scripts/programs. Expand on what is included in the body of the work.
 - Metadata for all data used. Use the table format from the proposal. See Section 7.2.2 on page 8 for clarification.
 - OPTIONAL: Additional maps, figures, and/or diagrams not included in the body of the report but valuable in documenting your efforts.

8 Term Work - Department and University Policies

8.1 Missed Term Work

8.1.1 Assignment/Lab – as per Department of Geography policy:

Late assignments will be subject to a late penalty of 10% per day (including weekends) of the total marks for the assignment. Assignments submitted five calendar days beyond the due date will be assigned a grade of zero.

8.2 Term Work - Accommodations

1. Accommodations due to late registration into the course will NOT be approved.
2. In courses with final exams, there will be no re-writes or make-ups for term tests or quizzes missed for University-accepted, verifiable reasons. Instead, the final exam will be re-weighted by the value of the term test or quiz.
3. For in-class or online quiz or test, students **CANNOT** petition to re-write a quiz/test once it has begun. If you are feeling ill, please do not start the online or in-class test and seek medical attention immediately.
4. For extension requests, maximum extension (where/when possible) is ONE week.
5. Extension requests must be made IN ADVANCE of the assignment due date.
6. Assignments handed in AFTER the work has been returned to the class cannot be marked for credit.
7. Students are responsible in ensuring a strong, reliable internet connection. Special consideration requests due to poor internet connection (ie. unable to complete online quiz or unable to submit assignment before deadline) will not be accepted.
8. Students are expected to back up their work at all times. As such, extension requests due to computer issues (stolen, crashed, damaged etc.) will not be considered.
9. Extension requests will NOT be approved for Group Assignments.
10. It is every student's responsibility to ensure that their online submission is submitted successfully by the due date. Accommodations will not be made for unsuccessful submissions due to, but not limited to: i) the system timing out ii) submitting the incorrect document(s) iii) poor internet connection / no internet connection etc.
11. Holidays and pre-purchased plane tickets, family plans, your friend's wedding, lack of preparation, or too many other tests/assignments are not acceptable excuses for missing a quiz, a test, an item of term work, or requesting an extension of time.
12. For extensions of time beyond the examination period you must submit a petition through the Office of the Registrar at <https://www.utm.utoronto.ca/registrar/forms>.

8.3 How to Request an Accommodation

In the Geography, Geomatics and Environment department, professors cannot grant extensions on term work or allow makeups for missed items. Instead, you must follow the following steps:

1. Submit an online Special Consideration Request using the following link: <https://utmapp.utm.utoronto.ca/SpecialRequest> within 24 hours. Note: The system only supports Microsoft Internet Explorer and Firefox for the time being.
2. Email your course instructor.
3. Submit your absence using the ACORN absence declaration tool. Each day that you are absent must be recorded. The ACORN absence declaration tool lets you record absences for up to 14 consecutive days, one of which must be the day you access the tool (if you are still absent) or the day prior (if you have returned). If you need to record an absence outside

of this range, please contact the Office of the Registrar. More information about Absence Declarations can be found at: <https://www.utm.utoronto.ca/registrar/utm-absence>.

Please note that students are required to submit their assignment/lab as soon as they are able and they should NOT wait for the decision of the committee.

It is your responsibility to follow the appropriate procedures and submit requests for special consideration on time. Failure to do so may result in the committee denying your request. Should you require further information regarding Special Considerations, please contact Sabrina Ferrari (sabrina.ferrari@utoronto.ca) Academic Counselor.

Please note that the written explanation and documentation that you submit represents an appeal from you, requesting the opportunity to account for that portion of your grade in some other manner. If a special consideration request is not received, or if the special consideration request is denied, you will receive a grade of zero for the item you missed. If the special consideration request is granted – that is, your reason for missing the item is considered acceptable by the committee – your grade will be accommodated accordingly.

A Departmental committee evaluates each request. **Decisions will be communicated by email within two weeks of receipt of all completed documents.** Note: It is your responsibility to ensure your email account is working and able to receive emails. Claims that a Departmental decision was not received will NOT be considered as a reason for further consideration. Contact Sabrina Ferrari (sabrina.ferrari@utoronto.ca) Academic Counselor, should you NOT receive notification of your decision within 2 weeks of submission.

Should you require further information regarding Special Considerations, please contact the Academic Counselor, Sabrina Ferrari:

Undergraduate Academic Counselor
Room 3282, Davis Building
Telephone: 905-828-5465
email: sabrina.ferrari@utoronto.ca

8.4 Dropping Courses

The last date to drop winter courses without academic penalty is March 13, 2022.

9 Communications Policy

Students are encouraged to avail of the posted virtual office hour(s). Note that virtual office hour visits will not be recorded. Correspondence by email or requesting a meeting outside of the scheduled office hour(s) is also acceptable. I will endeavor to respond to email within two workdays.

In all email correspondence regarding this course, please note the following:

1. Always use your University of Toronto email address (...@mail.utoronto.ca) for all course-related communications.
2. Include the course code (e.g., GGR463H5) as part of your subject line, and include your full name and student number in the body of the email.

3. Check the course Quercus site before emailing a question, to make sure that it has not already been answered.

Please contact the department's Academic Counsellor, Sabrina Ferrari (sabrina.ferrari@utoronto.ca), for any department- or program-related queries or to submit documentation regarding a missed quiz or test.

10 Inclement Weather

If a snow day is declared, all classes are cancelled, whether online or in-person. Campus closures are posted on the Campus Status page.

Instructors may not schedule additional “make-up” class meetings beyond the class hours already in the UTM Timetable.

11 Privacy and Use of Course Materials

This course, including your participation, will be recorded on video and will be available to students in the course for viewing remotely and after each session. Course videos and materials belong to your instructor, the University, and/or other source depending on the specific facts of each situation, and are protected by copyright. In this course, you are permitted to download session videos and materials for your own academic use, but you should not copy, share, or use them for any other purpose without the explicit permission of the instructor. For questions about recording and use of videos in which you appear please contact your instructor.

12 Equity Statement and Academic Rights

The University of Toronto is committed to equity and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect. As a course instructor, I will neither condone nor tolerate behaviour that undermines the dignity or self-esteem of any individual in this course and wish to be alerted to any attempt to create an intimidating or hostile environment. It is our collective responsibility to create a space that is inclusive and welcomes discussion. Discrimination, harassment and hate speech will not be tolerated. If you have any questions, comments, or concerns you may contact the UTM Equity and Diversity officer at edo.utm@utoronto.ca or the University of Toronto Mississauga Students' Union Vice President Equity at vpequity@utmsu.ca.

12.1 Academic Rights

You, as a student at UTM, have the right to:

- Receive a syllabus by the first day of class.
- Rely upon a syllabus once a course is started. An instructor may only change marks' assignments by following the University Assessment and Grading Practices Policy provision 1.3.
- Refuse to use turnitin.com (you must be offered an alternative form of submission).

- Have access to your instructor for consultation during a course or follow up with the department chair if the instructor is unavailable.
- Ask the person who marked your term work for a re-evaluation if you feel it was not fairly graded. You have up to one month from the date of return of the item to inquire about the mark. If you are not satisfied with a re-evaluation, you may appeal to the instructor in charge of the course if the instructor did not mark the work. If your work is remarked, you must accept the resulting mark. You may only appeal a mark beyond the instructor if the term work was worth at least 20
- Receive at least one significant mark (15% for H courses, 25% for Y courses) before the last day you can drop a course for H courses, and the last day of classes in the first week of January for Y courses taught in the Fall/Winter terms.
- Submit handwritten essays so long as they are neatly written.
- Have no assignment worth 100% of your final grade.
- Not have a term test worth 25% or more in the last two weeks of class.
- Retain intellectual property rights to your research.
- Receive all your assignments once graded.
- View your final exams. To see a final exam, you must submit an online Exam Reproduction Request within 6 months of the exam. There is a small non-refundable fee.
- Privacy of your final grades.
- Arrange for representation from Downtown Legal Services (DLS), a representative from the UTM Students' Union (UTMSU), and/or other forms of support if you are charged with an academic offence.

13 Academic Integrity/Honesty or Academic Offenses

It is your responsibility as a student at the University of Toronto to familiarize yourself with, and adhere to, both the Code of Student Conduct and the Code of Behaviour on Academic Matters.

This means, first and foremost, that you should read them carefully.

- [The Code of Student Conduct](#) is available from the U of T Mississauga website (Registrar→Academic Calendar→Codes and Policies) or in your print version of the Academic Calendar.
- [The Code of Behaviour on Academic Matters](#) is available from the U of T Mississauga website (Registrar→Academic Calendar →Codes and Policies) or in your print version of the Academic Calendar.

Another helpful document that you should read is [How Not to Plagiarize](#), by M. Proctor.

With regard to remote learning and online courses UTM wishes to remind students that they are expected to adhere to the Code of Behaviour on Academic Matters regardless of the course delivery method. By offering students the opportunity to learn remotely, UTM expects that

students will maintain the same academic honesty and integrity that they would in a classroom setting. Potential academic offences in a digital context include, but are not limited to:

1. Accessing unauthorized resources (search engines, chat rooms, Reddit, etc.) for assessments.
2. Using technological aids (e.g. software) beyond what is listed as permitted in an assessment.
3. Posting test, essay, or exam questions to message boards or social media.
4. Creating, accessing, and sharing assessment questions and answers in virtual “course groups.”
5. Working collaboratively, in-person or online, with others on assessments that are expected to be completed individually.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources.

University Plagiarism Detection Tool Conditions of Use Statement Normally, students will be required to submit their course essays to the University’s plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the tool’s reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University’s use of this tool are described on the Centre for Teaching Support & Innovation web site (<https://uoft.me/pdt-faq>).

14 How to Challenge a Mark

Please note that, according to UTM policy, you have one month from the date an item is returned to you, during which time you may query the mark or submit the item for remarking. Contact the Course Instructor in person or by email (@utoronto.ca) for all queries about course marks, or if you wish to challenge a mark. Absolutely no item will be remarked after the one-month period has passed.

Material submitted for remarking must be accompanied by a brief written explanation detailing your reasons for dissatisfaction with the original mark (such as an addition error, or something you think the marker may have missed). The item may be returned first to the TA who originally marked it. If you are still dissatisfied, it may be passed on to the Course Instructor for reconsideration. If a remarking is granted by an instructor, the student must accept the resulting mark as the new mark, whether it goes up or down or remains the same.

15 Accessibility

U of T Mississauga and the AccessAbility Resource Centre are committed to the full participation of students with disabilities in all aspects of campus life. The AccessAbility Resource Centre provides academic accommodations and services to students who have a physical, sensory, or learning disability, mental health condition, acquired brain injury, or chronic health condition, be it visible or hidden. Students who have temporary disabilities (e.g., broken dominant arm) are also eligible

to receive services. All interested students must have an intake interview with an advisor to discuss their individual needs.

Students who require accommodation are advised to visit the AccessAbility Resource Centre as early as possible to have their needs assessed, as it may take some time to process the application.

For more information please contact the centre at: Room 2047, South Bldg.

Tel/TTY: 905-569-4699

E-mail: access.utm@utoronto.ca

Web: www.utm.utoronto.ca/access

16 Policy on Religious Observances

As noted in the the [Policy on Scheduling of Classes and Examinations and Other Accommodations for Religious Observances](#), the following provisions are included:

“It is the policy of the University of Toronto to arrange reasonable accommodation of the needs of students who observe religious holy days other than those already accommodated by ordinary scheduling and statutory holidays.”

Students have a responsibility to alert members of the teaching staff in a timely fashion to upcoming religious observances and anticipated absences. Instructors will make every reasonable effort to avoid scheduling tests, examinations or other compulsory activities at these times. If compulsory activities are unavoidable, every reasonable opportunity should be given to these students to make up work that they miss, particularly in courses involving laboratory work. When the scheduling of tests or examinations cannot be avoided, students should be informed of the procedure to be followed to arrange to write at an alternate time.

It is most important that no student be seriously disadvantaged because of her or his religious observances. However, in the scheduling of academic and other activities, it is also important to ensure that the accommodation of one group does not seriously disadvantage other groups within the University community.”

With respect to minimum advance notice, the Policy provides that ”Students have a responsibility to alert members of the teaching staff in a timely fashion to upcoming religious observances and anticipated absences.” Since students would normally be aware of upcoming religious observances as well as examination schedules in advance, a minimum of three weeks advance notice will be considered sufficient.

More information and some dates of potential relevance for the U of T community are available at: www.viceprovoststudents.utoronto.ca/publicationsandpolicies/guidelines/religiousobservances.htm.

As with any academic accommodation request, students must submit an on-line Special Consideration Request at: <https://utmapp.utm.utoronto.ca/SpecialRequest>.

17 RGASC Statement

The Robert Gillespie Academic Skills Centre (RGASC) is located in Room 3251 on the third floor of the Maanjiwe nendamowinan Building. The RGASC offers individual consultations, workshops

(many CCR-accredited), and a wide range of programs to help students identify and develop the academic skills they need for success in their studies. Much of their programming has shifted online while their physical office is closed to help prevent the spread of COVID-19. Visit the [RGASC](#) website to explore their online resources, book an online appointment, or learn about other programming such as Writing Retreats, the Program for Accessing Research Training (PART), Mathematics and Numeracy Support, and dedicated resources for English Language Learners.

18 UTM Library Statement

UTM Library - The University of Toronto Library provides access to a vast collection of online and print resources to faculty, staff, and students and is the largest academic library in Canada. The UTM Library offers [Reference and Research Help](#) virtually, through chat, Zoom, and individual research consultations, to help students navigate library databases, find relevant articles for their research, and cite correctly. The [Library Workshops and Events](#) help students learn about the search techniques and specialized software, needed to be successful in their academic journey. For more information, visit <https://library.utm.utoronto.ca/>.