GGR272: Geographic Information and Mapping I
Online Summer Edition

Course Description

This course is an introduction to digital mapping and spatial analysis using a geographic information system (GIS). You will learn how to create your own maps and how to use a GIS to analyze geographic problems using methods that can be applied to a wide variety of subject areas within geography and in other disciplines. In the lectures, we discuss mapping and analysis concepts and how you can apply them using GIS software. The practical assignments provide an opportunity for you to learn how to use the software, gaining hands-on experience with ArcGIS from Esri Inc., the most popular GIS software and an industry standard in many fields. Course website: http://portal.utoronto.ca.

There is no prerequisite for this course. There is very little math in this course. A basic familiarity with computers and the Microsoft Windows operating system is assumed.

Orientation to the Course

The course is structured around weekly topics and activities. Each Monday morning, new lecture recordings (also known as podcasts) will be made available for that week's main topics (as listed in the course schedule). The PowerPoint slides used will be made available as PDF files. Online videos will demonstrate how to use the software and help you to prepare for the assignments.

There is no required textbook for this course. Links to online readings will be provided by the instructor.

There is no scheduled lecture time. Over the course of each week, you are expected to watch the lecture and demonstration videos, read all assigned readings, complete assignments, and participate in discussions on the course website as needed. All of the necessary material for each topic is clearly organized and available on the Blackboard course website (under "Course Materials").

In this course, you have the option to gain experience with a variety of communication tools including webinars, videoconferencing, screen sharing, discussion boards, and chat windows. Think of this as another aspect of your learning and take the opportunity to learn how to use them effectively.

Please keep in mind: Many of the concepts and skills learned in this course are cumulative. It is essential that you complete all work each week so that you are properly prepared to begin the next week's material. This course is designed to provide great flexibility as to when you work on it, but online courses require more time than a regular course, not less (because you're working more independently) and it's also easier to procrastinate and fall behind. This is why online courses have higher drop rates - don't let this happen to you! If you find you are getting behind, ask for help from your TA or instructor as soon as possible.

Online discussion: There is a lot to learn in this course, and you will find that interacting with other students, the teaching assistants, and the instructor will make your learning experience more efficient and more enjoyable. You are strongly encouraged to ask and answer questions on Piazza, a separate discussion board website. You can subscribe to the discussion board so that you are notified when there is a new post, to save you having to check it all the time. You will not be evaluated based on your level of participation in online discussions, but it will likely help you with the other aspects of the course in which you *are* being evaluated.

Instructor

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Please feel free to contact me, but be sure to first check the course website and the discussion board and course files to see if the answer to your question is there.

Office hours

All office hours are held online. Since online students have such varied schedules, I don't have set hours as it's hard to find times that work for everyone. Instead, just e-mail me to set up an appointment and we can find a time when we're both available.

Online office hours are held using Adobe Connect web conferencing software (the URL will be available on Blackboard). The instructor can show PowerPoint slides, do live software demonstrations, and meet with students individually or many at the same time (you can ask questions by typing in a chat window or with a microphone or webcam).

Evaluation

Online quizzes: 5%

Quizzes will be provided in Blackboard to help you assess how well you are learning and to prepare you for the final exam. You are not assessed on correct answers, but only on the total number of quizzes completed. Each quiz can be taken as many times as you like, but will only be available for one week.

Assignments: 45%

The assignments are designed to help you see the connections between the concepts discussed in the lectures and how those concepts are applied in the software. By the end of the course, you should be able to make informed decisions about what tools to use and how to use them, both individually to answer specific questions, and in a sequence to solve larger problems. You should also be able to communicate your results as maps and in other formats, and interpret and discuss their meaning.

The time required to complete the assignments varies a lot depending on the person. You will be learning how to use complex software, and gaining practical skills in mapping and problem solving, so you should be prepared to commit a substantial amount of time (likely several hours) to this each week.

Final exam: 50%

Students will be responsible for all course material for the entire term. The exam format will be multiple choice and short answer questions. The questions asked in the lectures, in the quizzes, and in the assignments are all meant to provide examples of the types of questions you may encounter on the exam in order to help you prepare for it.

Note: The final exam must be written **in person** during the regular exam period in June. Students in the Greater Toronto Area must write the exam on the St. George campus. For students outside the GTA, arrangements will be made for proctored exam writing. If you are eligible and require off-site proctoring, **please contact the Arts and Science Registrar's Office as soon as possible**.

Options for Using the GIS Software

To complete the assignments, you will need to use ArcGIS for Desktop 10.2 or 10.3 (Advanced version) made by ESRI Inc. You have several options for accessing ArcGIS:

Install ArcGIS on your own computer

Students in this course can download and install a free, one-year student edition of ArcGIS on your own Windows computer. Since all of the assignments and necessary data will be available for download from the course website, many students find using ArcGIS on their own computer to be a convenient option. You can download the software from the University of Toronto Map and Data Library. For Instructions, go to http://mdl.library.utoronto.ca/services/gis-software/esri-software-access and if you need installation assistance, contact gis.maps@utoronto.ca. An internet connection is not required to run ArcGIS once it is installed.

Mac: ArcGIS is Windows-only, but it is possible to install it on a Mac. Apple computers with OS X or later come with a free utility called Boot Camp that allows you to install Windows on a Mac (you will need a valid copy of Windows). For information on how to install ArcGIS on a Mac, go to http://edcommunity.esri.com/software-and-data/mac-os-support.

Run ArcGIS over the Internet

If you are unable to install ArcGIS on your own computer (or just prefer not to), you have the option of running it over the internet. Using XenApp by Citrix, your ArcGIS session runs remotely on a server, and you interact with it using a "thin client" window that can be used on a Mac or PC with nothing to install on your computer other than the small and simple Citrix Receiver (and Windows is not required if you're using a Mac). An internet connection is required in order to use ArcGIS via Citrix. Instructions on how to get started with Citrix can be found by clicking on the GIS Software menu link in Blackboard.

Note: Before you can access ArcGIS over the Internet, you will need to verify your UTorID password at https://www.utorid.utoronto.ca/cgi-bin/utorid/verify.pl **(fill in your UTorID and password and click the "Check" on that page). You have to do this even if you have previously activated your UTorID**, as this synchronizes your password with the Citrix server, and then you will be able to log in (you will only have to do this once).

You will find the course data on the N: drive in Citrix, and your student workspace (where you can save your files) is the G: drive. Remember that, in order to access any drive in ArcMap, you have to first click on the Connect Folder icon in the Catalog pane in ArcMap and select the drive.

Note: assignments are completed in Blackboard using a web browser. If you are using Citrix, it is best to complete your work in ArcGIS and then use a browser inside Citrix to complete the assignment.

Note: you can only run one ArcGIS instance at a time. If you close ArcGIS, you will have to wait 3 minutes before you can start it again, as this gives the server enough time to close it properly.

Warning: you may experience slow performance if there is heavy demand on the Citrix server, such as the night before an assignment deadline. Please plan accordingly.

Use ArcGIS in Robarts Library

Two computer labs in Robarts Library have ArcGIS installed. The Map and Data Library (fifth floor) has 20 workstations. The staff there are available to help with any problems or technical questions you may have with ArcGIS, and can provide general advice, but they are not able to provide any specific help related to your assignments. There are another 40 computers with ArcGIS on the fourth floor.

Getting Help

Learning how to use software to complete various tasks can sometimes be challenging. The ability to work independently is a valuable skill for all GIS users, and it is important that you take advantage of all available resources, including lecture recordings, video demonstrations, and readings in the specified ArcGIS Help sections. However, if you are stuck and are not able to find a solution from the resources provided, you are encouraged to post a question to the course discussion board. Chances are that another student or a TA has encountered a similar problem and will be able to offer advice.

Lecture questions

You are strongly encouraged to use the discussion board to ask your fellow students and/or the course instructor questions. Students sometimes feel isolated and that they have no one to talk to about the course. Don't let this happen! If you participate in conversations online, you'll have a much easier time understanding the material, keeping up, and you will likely find the course experience more enjoyable. Using the discussion board also allows other students to benefit from the discussion and dramatically improves efficiency in communication. E-mail to your TA or the instructor should only be used for personal questions, such as requests for deadline extensions due to illness, or if you have to include information related to an assignment that would not be appropriate to post to the discussion board, such as specific methods or maps.

Assignments and the Help Desk

- Consult the readings, software demonstrations, and video lectures, all found under Course Materials

- ArcGIS Help

- Ask your fellow students via the discussion board (you are encouraged to ask and answer questions, keeping in mind that you cannot describe your methods or post images of your maps, or provide answers to specific assignment questions – if you need to do this, post your question privately, or send an e-mail to your TA instead and they will be happy to answer your question)

- **Help Desk:** The TAs will have several online Help Desk sessions each week during the term and we have tried to find times that will work for everyone. You are welcome to attend as many sessions as you like (the link to them is on the Help Desk page in Blackboard). If you are not able to attend any of them, or would like a one-on-one session with your TA, then just contact them to set up a time.

Technical (software) support

- ArcGIS Help, ArcGIS online forums (GeoNet)

- Ask your TA, through the discussion board, by e-mail (see the Contacts link on Blackboard), or during Help Desk sessions

- Ask your course instructor

Learner Support Available at the University of Toronto

The university provides a range of student support related to student life and academic success. Learner supports include services related to University Life, Library, Academic skills support, IT support and more. See Learner Support Available at the University of Toronto.

Course Policies

Late penalty

A penalty of 5% of the total mark for the assignment will be applied per day, up to 7 days (including weekends and holidays), after which assignments will not be marked. Penalties are calculated for each 24-hour period after the deadline. If an assignment has been handed back, no other assignments will be accepted, even if it has not been 7 days.

Technical problems

This course requires the use of computers, and many things can go wrong when using them. You are responsible for ensuring that you maintain regular backup copies of your files, use antivirus software (if using your own computer), and schedule enough time to allow for delays due to technical difficulties. Computer viruses, crashed hard drives, lost or corrupted files, incompatible file formats, etc. are common issues when using technology, and are not acceptable grounds for a deadline extension.

In case of illness

Requests for assignment deadline extensions must be made to the instructor within five business days after the deadline, and must be accompanied by an original copy of the official university medical form. Medical forms are accepted at the discretion of the instructor, and must clearly indicate that you were incapacitated for the date of a test or for several days in the case of an assignment (being ill immediately prior to the deadline for a two-week assignment is not sufficient grounds for a deadline extension).

Inquiries about graded term work

Any inquiries about marking must be made within two weeks of the return date of the work. This is in accordance with Arts and Science rules as stated in the calendar. Please contact the person that did the marking first. If, after discussing the issue with the marker, you are still not satisfied with the explanation for your mark, you should then contact the instructor.

Accessibility needs

The University of Toronto and the course instructor are committed to accessibility. If you require accommodations or have any accessibility concerns, please visit the Accessibility Services website.

Academic offences

Plagiarism and other academic offences including impersonating another student or providing false or altered medical forms, death certificates, or similar documents will not be tolerated. For more information, please refer to the Code of Behaviour on Academic Matters.

Use of class materials and copyright notice

The materials used in this class, including, but not limited to lecture notes, video recordings, exams, quizzes, and assignments are copyright protected works. If a student wishes to tape-record, photograph, video-record or otherwise reproduce lecture presentations, course notes or other similar materials provided by the instructor, he or she must obtain the instructor's written consent beforehand. Otherwise, all such reproduction is an infringement of copyright and is absolutely prohibited. In the case of private use by students with disabilities, the instructor's consent will not be unreasonably withheld.

Course Schedule

Date	Topic	Assigned[1]	Due
May 9	**Course introduction:** what's this course about, and why take it? **What is a GIS?:** definition of a GIS, and why you might want to use one **Introduction to ArcGIS:** getting started with ArcMap and ArcCatalog	Exercise (not marked)	
May 16	**Map design:** cartographic methods to improve map communication **The Earth and its coordinate system:** how to specify a location on the surface of the Earth, and why it is so important to mapping	Map Design (5%)	
May 23	**Map projections:** creating a 2D map of a 3D world **Mapping quantitative data:** colour models and how to use them with different data types; exploring, calculating, and classifying attribute data	Map Projections (10%)	Map Design
May 30	**Quantitative map types:** making an effective map with quantitative data **Queries and data preparation:** selecting data based on location or values in a table; tasks often performed when making a map	Quantitative Mapping (15%)	Map Projections
June 6	**Distance and overlay:** methods for determining distance from features and for comparing different map themes found at the same location	Overlay Analysis (15%)	Quantitative Mapping
June 13	**Data acquisition:** finding map data online and using metadata to assess its value **Course review:** discussion of the final exam including tips on how to prepare		Overlay Analysis
June 20	**Final exam during exam period June 20-24**		

[1] **Assignments are assigned and due on Monday morning at 10:00 am during the corresponding week listed above. Please keep in mind that the instructor is generally not available on weekends.**

The instructor reserves the right to modify the topics and schedule during the term.

Should an unexpected technical issue with university system availability or functionality arise, it may be necessary to revise the timing or weighting of the assessments.