Department of Geography and Planning
University of Toronto

GGR272: Geographic Information and Mapping I
Summer 2019

Instructor: Kristian Larsen
Office: SS 5030
Office Hours: Tues and Thurs - 12:30pm-2pm; or by appointment (email to set up a time)
Email: kristian.larsen@utoronto.ca (will usually answer within 24 hours)

PREREQUISITE
There are no prerequisites for this course.
A basic familiarity with computers and the Microsoft Windows operating system is assumed. A general understanding of geography is helpful, but no prior geography courses are required.

SOFTWARE:
The course uses ArcGIS software from Esri Inc., the most popular GIS software and an industry standard in many fields.

LECTURES
Tuesday 2:00pm-4:00pm, Location: Wilson Hall 1017
Thursday 2:00pm-4:00pm

COURSE DESCRIPTION
Geographical Information Systems (GIS) has emerged as an extremely useful, state-of-the-art and popular tool to study and manage geographical problems. Over the past years, researchers and professionals have increasingly turned to GIS for acquiring, processing, analyzing and mapping environmental and socio-economic data. This course offers a comprehensive introduction to the principles of GIS, provides a hands-on experience to using GIS, and how to create maps that effectively communicate data meanings. The lectures will cover the fundamental theory of GIS, and will discuss examples of how it is implemented in GIS software. Much of the course will also deal with GIS based methods for problem solving. Students will learn and complete case studies that are not only relevant to Geography, but also Public Health, Transportation Planning and other disciplines. The labs will give the students an opportunity to learn and practice GIS through practical assignments. They will learn how to produce attractive and informative maps.

LEARNING OBJECTIVES
• Develop an understanding of GIS and its application in the fields of natural and social sciences.
• Acquire hands-on experience with using ArcGIS, the most popular GIS software.
• Learn how to communicate geographical information using maps.
• Develop an understanding of the GIS data structure.
• Begin to understand the methods of spatial analysis using GIS.
• Learn basic cartography and map making.

READINGS
Required:
Note: The most recent and earlier edition of the text will suffice, but you will then be responsible for any content that may have changed.
Additional assigned readings will be posted on quarcus.

You will be assigned weekly readings from the course text and from other sources. You are expected to have read the assigned materials prior to lecture. Online tests and final exam will include questions to assess your ability to recall, define, and apply concepts and methods drawn from the assigned readings.

**COURSE WEBSITE**
Quercus: q.utoronto.ca
Log in using your UTORid and password.

**EVALUATION**
Laboratory Assignments: 50%
Lab 1: (10%)
Lab 2: (10%)
Lab 3: (15%)
Lab 4: (15%)

Online test: 10%
Online Test 1: 5% available May 21st until May 28th
Online Test 2: 5% available June 4th to June 11th

Final Examination (during exam schedule): 40% (Cumulative)

**EXAM**
The final exam will be written during the exam period in June and will cover the content of the entire course.

**TESTS**
You will have two open book online tests. You will be challenged to locate, define, explain and apply concepts and methods from both lectures and assignments. Test availability in the table above refers to the time over which each quiz will be available for completion online. Each test will be available from 9:00 a.m. on the start date, until 5:00 p.m. on the end date, as posted in the course schedule. You can start or continue your test anytime while it is available. Keep in mind, once you answer a question (even if you leave it blank) you will not be able to change your answer.

**ASSIGNMENTS**
There will be 4 practical assignments in this course. Assignments will be submitted electronically and due at 2pm on Tuesday the week it is due, details on online submission to follow.

**HELP DESK:** You are not required to attend scheduled tutorials or lab sessions. Instead, there will be scheduled “Help Desk” times each week when a teaching assistant will be available to assist you in the GIS Lab. These are informal drop-in sessions and you are welcome to attend as many as you like. Please keep in mind that, there are a limited number of computers available in the lab and they are used on a first-come, first-served basis. The Help Desk schedule is posted below. Please note that the teaching assistant’s role is to guide you and make suggestions but in order to learn the concepts and software, you must be prepared to try things on your own. The TAs will not give you the answers to assignment questions, as this would deny you the chance to learn for yourself.
Helpdesk starts on Thursday May 16th

Room: SS561
Times:
M 1 pm - 3 pm
T 11 am - 1 pm
R 10 am - 12 pm

Note: May 23rd -- will be in Carr Hall Lab

TA INFO
Jordan Aharoni - jordan.aharoni@mail.utoronto.ca
Naomi Schwartz - naomir.schwartz@mail.utoronto.ca
Anna Shadrova - anna.shadrova@mail.utoronto.ca
Alvin Xiong - alvin.xiong@mail.utoronto.ca

ONLINE SUBMISSIONS FOR TERM WORK
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 / hydro outage etc.

LATE PENALTIES
Late submission of assignments will result in a deduction of 10% per calendar day (weekends included) for a maximum of 7 days. If an assignment has been marked and handed back to the class, no other assignments will be accepted (even if it has not been 7 days). No re-writes will be provided if you miss the online test, if proper documentation is provided the marks will be redistributed to your final exam.

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).

INSTALL ARCGIS ON YOUR OWN COMPUTER
PC: Students can download and install a free, one-year student edition of ArcGIS on a Windows computer. Since all of the assignments and data will be available for download online, many students find this to be a convenient option. You can download the software from the University of Toronto Map and Data Library here 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 can be installed on a Mac using a free utility called Boot Camp that comes with OS X and later (but 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.
Use ArcGIS in Robarts Library
The Map and Data Library (fifth floor) has 20 workstations with ArcGIS and there are another 40 computers on the fourth floor. The staff there are available to help with any problems or technical questions you may have with ArcGIS, but are not able to provide specific help with assignments. Note: files stored on your drive in the GIS Lab cannot be accessed from the library.

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. For other needs (i.e. Religious, Illness, etc.) please see the professor in private before the assignment or exam due date.

Academic Integrity
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 photograph, record audio and/or video, 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.

Technical Problems
This course uses computers, and there are many things can go wrong when using them. You are responsible for ensuring that you maintain regular backup copies of your files and schedule enough time when completing an assignment to allow for delays due to technical difficulties. Computer viruses, crashed hard drives, broken printers, lost or corrupted files, incompatible file formats, and similar mishaps are common issues when using technology, and are not acceptable grounds for an extension.

Remarking Requests
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.

Expectations and Course Policy
Students are expected to demonstrate their knowledge of all course material (e.g., lecture notes, readings). Students are required to engage in a significant amount of independent study. To be successful, students will have to commit to working on assignments and papers outside of regularly scheduled class time. All assignments are due at the times indicated by your professor.
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<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Lecture</th>
<th>Reading</th>
<th>Tutorial</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>May 7</td>
<td>Introduction</td>
<td>No readings</td>
<td>No help desk</td>
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<tr>
<td></td>
<td></td>
<td>What is GIS?</td>
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<td>2</td>
<td>May 9</td>
<td>Intro to ArcGIS</td>
<td>Chapter 1</td>
<td>No help desk</td>
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<td>Basic map design</td>
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<td>3</td>
<td>May 14</td>
<td>Coordinate systems</td>
<td>Chapter 2</td>
<td>Lab 1</td>
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<td>The shape of the earth and map projections</td>
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<td>4</td>
<td>May 16</td>
<td>Mapping and GIS data 1</td>
<td>Chapter 3</td>
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<td>Vector data model</td>
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<td>5</td>
<td>May 21</td>
<td>Mapping and GIS data 2</td>
<td>Chapter 4</td>
<td>Lab 2</td>
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<td>Raster data model</td>
<td>Lab 1</td>
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<td>6</td>
<td>May 23</td>
<td>Creating a digital world</td>
<td>Chapter 5</td>
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<td>Digitization and spatial data editing</td>
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<td>7</td>
<td>May 28</td>
<td>Data accuracy and quality</td>
<td>Chapter 7</td>
<td>Lab 3</td>
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<td>Steps to using “good” data</td>
<td>Lab 2</td>
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<td>8</td>
<td>May 30</td>
<td>Mapping quantitative data</td>
<td>Chapter 9</td>
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<td>Displaying data</td>
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<td>9</td>
<td>June 4</td>
<td>Data exploration</td>
<td>Chapter 10</td>
<td>Lab 4</td>
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<td>Data acquisition and queries</td>
<td>Lab 3</td>
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<td>10</td>
<td>June 6</td>
<td>Understanding spatial processes 1</td>
<td>Chapter 11</td>
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<td>Vector data analysis</td>
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<tr>
<td>11</td>
<td>June 11</td>
<td>Understanding spatial processes 2</td>
<td>Assigned</td>
<td>Lab 4</td>
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<td>Vector data analysis</td>
<td>readings</td>
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<tr>
<td>12</td>
<td>June 13</td>
<td>Course review</td>
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**Note:**
1. All labs will be assigned during the lectures. Each assignment will be digitally available through the course website on the day of that week’s lecture. No paper copies will be handed out.
2. The assignments are due at 2pm on Tuesdays.
3. The instructor may change the topic and content of the lectures at a later time.