

Geography 3003: Quantitative Geography

Winter 2018

Instructor: Murray Richardson, B355 Loeb Building

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Office Hours: TBA

Meetings: Wed 9:35 am to 11:25 am Loeb A200; Wed 12:35 pm – 2:25 pm SA 505;

Teaching Assistant: TBA

Email: [TBA](#)

Office Hours: TBA

Prerequisites: GEOG 2006 (Statistical Methods in Geography) or Permission of the Department

Course Description:

This course focuses on quantitative methods for geographers using *R* - a popular, open-source statistical software and programming environment. Topics include data management, descriptive statistics, hypothesis testing, linear regression and correlation, multiple regression, principal component analysis, cluster analysis, descriptive *spatial* statistics and introductory geostatistics. A strong emphasis is placed on understanding and interpreting these statistical analyses and their results in relation to real-world questions, with a particular focus on geographically-varying phenomena such as climate, pollution and socio-economic and demographic indicators of health and well-being. Students will acquire new skills in data-management, statistical analysis and scripting using a powerful (and freely available), command-line statistics and graphing environment. The course does not require any previous computer programming experience or particular expertise in math, but an interest in problem-solving and computer-based learning is a must.

"I keep saying the sexy job in the next ten years will be statistician... The ability to take data—to be able to understand it, to process it, to extract value from it, to visualize it, to communicate it—that's going to be a hugely important skill in the next decades, not only at the professional level but even at the educational level for elementary school kids, for high school kids, for college kids."

— **Hal Varian**, Chief Economist, Google Inc.

Required Texts (available at Haven Books):

- 1) Harris and Jarvis, 2011 *Statistics for Geography and Environmental Science*.

Required readings from this text and any supplemental readings provided through cuLearn are outlined in the course schedule.

Evaluation:

Online Quizzes: 15%

Assignments: 50%

Midterm Test: 20%

Take-home exam: 15%

Online Quizzes: Approximately 7 short (~5-8 questions each) online quizzes will cover material in the assigned readings associated with the following week and fundamental R skills learned up to the quiz release date. You will have the opportunity to re-take the quiz up to 2 times to help you study, but only the mark from your first attempt will count. Quizzes completed after the start of class in which they are due will not count for marks and you will not have a chance to make up missed quizzes without good reason (i.e. medical note or other situation beyond your control that you speak to the instructor or TA about).

Assignments: These will generally require that you process data files, generate results, and interpret those results. The emphasis in grading will be on your results and interpretation. Detailed instructions will be supplied.

Mid-term test: This will cover all material up to the test date and will take place during the lab period.

Take-home examination: This will come in the form of a final project. The project will be distributed on April 1st and is due by 5pm on Friday April 10th.

For all submitted documents, please be sure to clearly indicate:

Course Number: GEOG 3003

Instructor: Murray Richardson

Teaching Assistant: TBA

Lab Assignment Number and Title: (Proper Title)

Date of Submission: (the date upon which you submitted your assignment).

It is your responsibility to retain both hard copies and computer files of your assignments. This will ensure that your work does not get lost. In addition, please take care to back-up your own computer files.

Late Policy: A hard copy of all lab assignments must be handed in to your TA or instructor no later than the BEGINNING OF THE scheduled meeting on the assignment due date, unless otherwise stated on the assignment sheet or syllabus. *Late assignments will be penalized at a rate of 5% per day and will not be accepted after 1 week (7 days) following the official due date. If circumstances beyond your control prevent you from handing in your assignment on time, or if you have already arranged for an academic accommodation as described in subsequent sections of this syllabus, the late penalty will be waived. In such cases you must make arrangements with the course instructor at least 24 hours prior to the due date and provide 3rd party documentation to him within 5 days of the due date verifying the particular circumstance leading to the late submission.* It is your responsibility to ensure that the instructor or TA receive your submitted hard copies. If you are unable to submit an assignment in

person, it is recommended that you email the instructor or TA with a digital version *in addition* to a hard copy left in the assignment drop slot on the door of the departmental mail room. However, this option should only be considered as a last resort.

Instructional & Conduct Offences

Instructional offences include among other activities cheating, contravening examination regulations, plagiarism, submitting similar work in 2 or more courses without prior permission, and disrupting classes. Conduct offences apply in areas of discrimination and sexual harassment. Further information about University regulations which define and regulate these offences is presented in the 2011-12:

UG Calendar: <http://www.carleton.ca/calendars/ugrad/current/regulations/acadregsuniv14.html>

Graduate Calendar: <http://www.carleton.ca/calendars/grad/current/regulations/#14>

The assignments you submit must clearly be your own composition. Talking with others about the assignments (including your TA) while you are analyzing the data is strongly encouraged, but it is expected that you work at your own work station throughout. You are also expected to work alone when you are composing your reports. In the body of your reports, acknowledge the use of sources other than the course material, and include a bibliographic list of works cited at the end of the assignment. For sources from the internet, give the URL (and the date you accessed it) both within the body of the assignment and in your bibliography at the end.

You are solely responsible for understanding Carleton's academic offence policy, available at http://www2.carleton.ca/studentaffairs/ccms/wp-content/ccms-files/academic_integrity_policy.pdf. If you are uncertain about whether or not something constitutes an academic offence, please ask the instructor or TA. To help determine when a citation is or is not required in your written work, try taking the academic integrity quiz at:

<http://www2.carleton.ca/sasc/advisingcentre/academic-integrity/integrity-quiz/>

Academic Accommodations:

Paul Menton Centre:

Location: Room 500, Unicentre, Monday-Friday, 8:30 a.m. – 4:30 p.m.

Tel.: (613) 520-6608

Students with disabilities requiring academic accommodations in this course are encouraged to contact a coordinator at the Paul Menton Centre for Students with Disabilities to complete the necessary letters of accommodation. After registering with PMC, make an appointment to meet and discuss your needs with me at least two weeks prior to the first assignment/exam. This is necessary in order to ensure sufficient time to set up for the needed arrangements. Please note the deadline for winter term courses as outlined in the Undergraduate Calendar

For Religious Observance: Students requesting academic accommodation on the basis of religious observance should make a formal, written request to their instructors for alternate dates and/or means of satisfying academic requirements. Such request should be made during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist, but no later than two weeks before the compulsory academic event. Accommodation is to be worked out directly and on an individual basis between the student and the instructor(s) involved. Students who have questions or

wish to confirm accommodation eligibility of a religious event or practice may refer to the Equity Services website for a list of holy days and Carleton's Academic Accommodation policies, or may contact an Equity Services Advisor in the ES Department.

For Pregnancy: Pregnant students requiring academic accommodation are encouraged to contact and Equity Advisor in Equity Services to complete a letter of accommodation. The student must then make an appointment to discuss her needs with the instructor at least two weeks prior to the first academic event in which it is anticipated the accommodation will be required.

Other Important Locations on Campus:

Writing Tutorial Service (215 Paterson Hall)

Student Life Services (510 University Centre)

Student Academic Success Centre (302 Tory Building)