

# SOCI 611: The General Linear Model

The University of Calgary, Faculty of Social Sciences, Department of Sociology  
Course Outline, Fall Semester, 2010

<p><b>Instructor</b> Alex Bierman, Ph.D. <b>Office:</b> SS 902 <b>Phone:</b> 403-220-6226 <b>E-mail:</b> aebierma@ucalgary.ca <b><u>E-mail is the best way to reach me.</u></b> <b>Office Hours:</b> Wednesdays 12:15 pm – 1:15 pm or by appointment. <b>Teaching Assistant</b> Parv Hira-Friesen; phirafri@ucalgary.ca <b>Office:</b> SS 943: <b>Office Hours:</b> By appointment.</p>	<p><b>Lecture Schedule:</b> 9:00 am - 11:50 am Wednesdays SS 921</p> <p><b>Lab Schedule:</b> 9:00 am - 11:50 am Fridays Social Sciences computer lab</p> <p><b>Final:</b> 9:00 am Monday, December 17th, 2010 <b>LAB</b></p>
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## Required Text

Gordon, Rachel A. (2010). *Regression Analysis for the Social Sciences*. Routledge.

**NOTE:** There will also be several additional readings assigned. Two to three copies of these readings will be made available in the main office on a **two-hour loan basis**.

## Recommended Text

Accock, Alan C. (2008). *A Gentle Introduction to Stata, Second Edition*. Stata Press.

- Unless you have extensive experience with Stata, consider this text **very strongly** recommended.

Allison, Paul A. (1999). *Multiple Regression: A Primer*. Pine Forge Press.

- One chapter from this text will be required and made available for photocopying for students who did not purchase the text.

## Course Description and Objectives

This course covers the fundamentals of multiple regression with a focus on the ordinary least squares (OLS) regression model. It also includes an introduction to more complex linear regression models, including models with limited dependent variables (e.g. logistic regression). Relevance for sociological research is discussed through examples drawn from the literature. The course also includes a laboratory component where students will have opportunities to apply the techniques learned in class. The software Stata is used for the laboratory component of the course. This course is intended to provide students with the statistical skills to (1) successfully complete a quantitative Master's thesis, (2) understand and critique the wider sociological literature, (3) be prepared for more advanced courses (including SOCI 711).

## Prerequisites

SOCI 311 and SOCI 315 or equivalent

## Staying in Contact

Class announcements may occasionally be sent out over e-mail. It is your responsibility to ensure that the university has your correct e-mail address and that your e-mail account is in working order. Outside of office hours or pre-scheduled appointments, the best way to reach us is through e-mail. We cannot guarantee that phone calls will be answered or returned. When e-mailing, please put "SOVI 611" in the subject line of your e-mail to help us reply more efficiently to your e-mails. We will make every effort to reply to your e-mails within 24 hours.

## Grading System

A+ = 95 and over	B+ = 80-84	C+ = 67-71	D+ = 54-58
A = 90-94	B = 76-79	C = 63-66	D = 50-53
A- = 85-89	B- = 72-75	C- = 59-62	F = 49 and lower

Please note that a grade of A indicates excellent performance, and therefore indicates a comprehensive and thorough grasp of the material. A grade of B indicates a strong grasp of the material. I reserve the right to use the full scale of grades available.

## Grade Distribution

Lab	10%
Exam 1	30%
Exam 2	30%
Final Paper	30%

## Course Format

The course setup consists of one two-hour and fifty-minute lecture, along with one two-hour and fifty-minute lab. It is entirely possible that lab time may be devoted to lecturing by either the instructor or the T.A. You will be expected to know any material presented in labs for exams. This includes knowing how to use Stata and Stata-based syntax, as well as knowing how to interpret output from Stata.

## Lab Fee

Please note that a \$15.00 lab fee is a part of this class. This fee is payable (in cash) to your T.A. This fee will cover printing **during lab**. We have been instructed that this fee will not cover printing fees outside of lab hours, even if printing is done in the lab, and even if printing is done immediately following lab.

## Raising Your Hand

Graduate classes are often conducted in a seminar format, which tends to facilitate a more informal style of class discussion. I highly support this. However, this approach is less conducive to learning in statistics. In my own experience, stopping in the middle of explaining a concept often confuses others who are trying to grasp this concept. Also, I frequently find that questions are answered as I explain the concept. Because of this, I ask that you raise your hand in class and wait to be called on. Please note that I strongly encourage you to ask questions

during class, and even question me if you do not believe that a point that I am making is correct. I just ask that you raise your hand and wait to be called on. Please also note that I will often call on students immediately when a hand is raised.

## **Calculator**

You will need a calculator for the exams. Your calculator must have exponent (square) and square root functions. If you fail to bring your calculator, I will not provide a calculator. Calculators on cell phones will not be permitted for exams.

## **Exam and Term Paper Policies**

You must provide advance notice to the instructor if you are unable to take an exam or submit your term paper. All requests for deferral of an examination/term paper due to health reasons must be accompanied by written documentation as outlined in the University Calendar and should be obtained while the student has the physical or emotional problem rather than after recovery. Deferred exams/papers may be allowed in the following circumstances: illness, domestic affliction or religious conviction. If you have missed an exam deadline for a legitimate reason, you will be able to write a “make up” exam as close to the original exam date as possible. Deferred exams/papers will not be granted if it is determined that just cause is not shown by the student. Travel arrangements and misreading of the course outline are not valid reasons for requesting a deferred exam/paper. Without appropriate documentation or a university valid reason for missing an exam, you will receive a zero for that portion of your grade. Refer to the University of Calgary Calendar for additional information on the deferral of exams: ([http://www.ucalgary.ca/pubs/calendar/2006/how/How\\_HF.htm](http://www.ucalgary.ca/pubs/calendar/2006/how/How_HF.htm)).

All exams will be open note and open text. Please note that this will allow me to ask fairly in-depth questions. In other words, you won't be able to simply start going through your notes and text at the time of the exam and do well in this class. Please note that the schedule in this syllabus is tentative. It is your responsibility to be aware of when an exam will be given.

Please note that unless alternative arrangements are made *prior* to the due date, papers must be turned in to the professor in person on the day of the due date. Papers turned in after the due date, even if it is on the same day but after the time they are due, will be given a grade penalty of 10% per 24 hour period they are late. Papers will typically not be accepted over e-mail, and arrangements for turning in the paper prior to the due date or over e-mail must be made in advance of turning in the paper.

## **Labs and the Final Paper**

Lab is your opportunity to learn to apply the concepts discussed in class to real-world data. For in-class exercises, the class will work from a large probability sample of residents from the U.S., the MIDUS. For lab assignments, students may work with three data sets, one of which they will use in their final projects. These three data sets are the MIDUS, the Panel Study of American Religion and Ethnicity (PS-ARE), and the 1999-2004 wave of the World Values Survey/European Values Survey (WVS). Please note that I have made available data on six countries from the WVS: Canada, the U.S., Mexico, Great Britain, France, and the Republic of Moldova. However, the WVS includes about 70 nations, and you should feel free to ask me if you would like to study an additional nation.

Early on in the semester, you should pick out a set of variables that speaks to a research question that is sociologically interesting and theoretically motivated. Throughout the semester, you will learn how to analyze your data to answer this research question. Labs will take the form of (a), reviewing Stata procedures that accompany the concepts discussed in lecture, (b) analyzing a predetermined set of variables from the MIDUS using these procedures, and (c) analyzing your own unique set of variables using these procedures.

Please note that labs are pass/fail. In respect to the graduate level of the class and the presence of a T.A. to facilitate these assignments, competent completion of all parts of the lab will be the only grounds for a pass. Also in respect to the graduate nature of the class, passing all labs will be necessary to receive the 10% of the grade to which your labs are devoted.

Your final paper will take the form of a mini-article. This will involve a set-up which describes your research question and why it is theoretically and sociologically meaningful, a short literature review, a methods section (including description of plan of analysis), a results section, and a discussion section. Please also note that a project proposal will be due on Oct. 29<sup>th</sup>. Although this proposal will not be graded, it will be critical for successfully completing your final paper. More detail on the format of the paper and proposal will be given closer to the due dates.

Please note that papers will be assigned a letter grade, with the smallest value of the numerical range for the letter used as the numerical grade when the paper grade is combined with exam grades. However, towards the end of the semester I will give students an opportunity to complete a short extra credit assignment that will allow them to shift the numerical grade to highest value of the numerical range for the letter.

### ***Emergency evacuations:***

In the case of fire or other emergency evacuation of this classroom/lab, please proceed to the assembly point by [check link to find assembly point for your building: <http://www.ucalgary.ca/emergencyplan/node/75>]

### ***Deferrals:***

If at all possible you must provide *advance* notice to the instructor if you are unable to take a test or pass in an assignment or essay on time. All requests for deferral of a course component due to health reasons must be accompanied by written documentation as outlined in the University Calendar and should be obtained while the student has the physical or emotional problem rather than after recovery. Deferrals will be allowed in the following circumstances: illness, domestic affliction or religious conviction. Travel arrangements and misreading of the syllabus are not valid reasons for requesting a deferral. Deferrals will not be granted if it is determined that just cause is not shown by the student.

If you have missed a test for a legitimate reason, the instructor can require you to write a “make up” test as close in time to the original test as possible or can choose to transfer the percentage weight to another course component. If the instructor schedules a “make up” test for you, its date and location will be at the convenience of the Sociology Department.

Please note that requests to defer a final examination or to defer term work past the end of a term go through the Undergraduate Programs Office (UPO) and must be processed by the deadlines that are established in the U of C Calendar. You can find the forms you need online:

*Deferred Final Exam Application:*

[http://www.ucalgary.ca/registrar/files/registrar/APP%20FOR%20DF%20EXAM\\_0.pdf](http://www.ucalgary.ca/registrar/files/registrar/APP%20FOR%20DF%20EXAM_0.pdf)

*Deferred Term Work Form:*

<http://www.ucalgary.ca/registrar/files/registrar/defTW.pdf>

You must submit these deferral forms to the Faculty of Arts Associate Dean (Students) through the UPO office: Undergraduate Programs Office, 4th Floor, MacEwan Student Centre. Only the Associate Dean approves requests for deferrals which extend beyond the end of a term. Instructors are not involved in such decisions. To make an appointment with the Associate Dean, phone (403) 220-8155.

***Ethics Research:*** Students are advised that any research with human subjects--including any interviewing (even with friends and family), opinion polling, or unobtrusive observation--must have the approval of the Departmental Ethics Committee. In completing course requirements, students must not undertake any human subjects research without discussing their plans with the instructor, to determine if ethics approval is required.

***Academic Misconduct:*** Plagiarism, cheating and other academic misconduct are regarded as serious academic offences. Students are advised to consult the University Calendar which presents a Statement of Intellectual Honesty and definitions and penalties associated with cheating, plagiarism, and other academic misconduct.

***The Freedom of Information and Protection of Privacy (FOIP)*** legislation disallows the practice of having students retrieve assignments from a public place, e.g., outside an instructor’s office or the Department main office. Written assignments must be returned to students individually, during class, or during the instructor’s office hours; if a student is unable to pick up her/his assignment s/he may provide the instructor with a stamped, self-addressed envelope to be used for the return of the assignment.

***Safewalk:*** The University of Calgary provides a “safe walk” service to any location on Campus, including the LRT, parking lots, bus zones, and campus housing. For Campus Security/Safewalk call 220-5333. Campus Security can also be contacted from any of the “Help” phones located around Campus.

***Academic Accommodation:*** Students with a disability, who require academic accommodation, need to register with the Disability Resource Centre (MC 295, phone 220-8237). Academic accommodation letters need to be provided to course instructors no later than fourteen (14) days after the first day of class. **It is a student’s responsibility to register with the Disability Resource Centre and to request academic accommodation, if required.**

*Office of the Student Ombuds* can be found at <http://www.su.ucalgary.ca/services/student-services/student-rights.html>.

***Handing in papers outside of class, return of final papers, and release of final grades:***

1. When students are unable to submit papers in class, they should make arrangements to hand in their papers directly to the instructor or teaching assistant. Papers will not be accepted in the main Sociology Department office.
2. Final papers will not be returned through the main Sociology Department office. The Freedom of Information and Privacy (FOIP) legislation disallows the practice of having students retrieve assignments from a public place (i.e. outside an instructor's office, the department office etc.) Students who want their final papers returned by mail must attach a stamped, self-addressed envelope with the paper. Otherwise final papers will be available for pick-up only during the instructor's office hours at the end of this term or at the beginning of the next term.
3. Final grades are not posted by the Sociology Department. They are available only online.

## Tentative Course Schedule

*Please also note that this schedule is indeed tentative.* Given the pace of the class, I may choose to change the time spent on some subject matter, add some topics, or delete others. I will try to do my best to maintain the dates on which exams are given and papers due, but these may change as well. Please note that unless otherwise stated, a lab will be held on the Friday following lecture.

Week	Lecture Date	Topic/Material
1	Sep. 15	<b>READ THE SYLLABUS!!!</b> A review of everything you should have learned as an undergraduate about statistics, but didn't (or, at least, don't remember). <b>LAB:</b> Gordon Chapters 3-4; Acock: Chapters 1, 3-4
2	Sep. 22	Bivariate and multiple regression: Gordon pg. 4-8 and Chapters 5, 6, and 10 (note that we will cover mediation later); Allison Chapters 1, 2, and 5. This is a bit of reading, but it is for two weeks of lectures.
3	Sep. 29	Finish multiple regression; hypothesis testing in regression. Gordon pgs. 385-392; Allison Chapter 7
4	October 6	Assumptions, tests of assumptions, and effects on models: Allison Chapter 6 ( <b>IMPORTANT</b> ) and Gordon chapter 11; Allison Chapter 5.
5	Oct. 13	Principal Components Analysis. Note that an extra reading will be assigned. Lab will be review for Exam 1. PCA will not be on the first exam.
6	Oct. 20	<b>EXAM 1!!!</b> We will discuss the paper in lab. Lab will also be on PCA.
7	Oct. 27	Mediation. We will have several extra readings. <b>Project proposals due IN LAB!</b>
8	Nov. 3	Dummy variables and interactions. Gordon Chapters 7 & 8; Allison 162-170.
9	Nov. 10	Finish dummy variables and interactions. Empirical readings by Kim and Ross (2009), Pudrovska et al. (2005) and Bierman (2009)
10	Nov. 17	<b>REMEMBRANCE DAY &amp; READING DAYS. NO CLASS OR LAB.</b>
11	Nov. 24	Non-linear models and dichotomous logistic regression. Note that we will have an extra reading. Gordon Chapter 9. Allison 153-162.
12	Dec. 1	Time permitting: Extending models of limited and categorical dependent variables. Note that we may have an extra reading.
13	Dec. 8	Time permitting: Matrix algebra. Note that we may have an extra reading. .  <b>PROJECTS DUE BY NOON IN MY OFFICE ON DEC. 13<sup>TH</sup>.</b>  <b>FINAL IN LAB 9:00 AM, ON FRIDAY, DEC. 17<sup>TH</sup>.</b>