

**THE UNIVERSITY OF CALGARY
FACULTY OF ARTS
DEPARTMENT OF SOCIOLOGY
(www.soci.ucalgary.ca)**

SOCIOLOGY 611 (Social Statistics: General Linear Model)

Course Outline, Fall 2015

Safewalk/Campus Security: 220-5333, ANYTIME

This course makes use of Desire2Learn to communicate information to students. To access D2L go to: d2l.ucalgary.ca OR my.ucalgary.ca

Instructor: Tom Langford langford@ucalgary.ca Office: SS 924
Office Hours between September 8 and December 8: Monday afternoons by appointment (between noon and 3:00 p.m.). It is best to send an email ahead of time to let me know you are coming, BUT feel free to drop in if you see my office door ajar! NOTE: Office hours are cancelled on Thanksgiving (October 12).

Teaching Assistant: Chris Esselmont
Office Hours: To be listed on D2L

COURSE DESCRIPTION and LEARNING OUTCOMES

Since this is a graduate course in social statistics, I assume that students have some familiarity with statistical logic and techniques. Students who are rusty on the basics of descriptive and/or inferential statistics should independently review the pertinent material in an introductory social statistics text during the first couple of weeks of classes. It is possible that you still own a statistics textbook from an undergraduate course you took in the past. If you liked this book, I encourage you to go back to it and reread pertinent sections. If you don't own an undergraduate statistics textbook ... well it just so happens that I have a few "loaners" available to be borrowed. You can borrow one of these books at the first class.

This course is designed to give students a general introduction to the use of linear statistical models in social research, a detailed working knowledge of the quantitative technique multiple regression analysis as it is used on data from non-experimental research, and a working knowledge of the quantitative technique logistic regression analysis (used when the dependent variable is measured at the nominal or categorical level). Among the topics covered in the course are:

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- (1) the statistical principles and assumptions underlying multiple regression;
- (2) how to check for violations of assumptions, and take corrective action when certain assumptions are violated;
- (3) how to include categorical independent variables in a multiple regression equation;
- (4) correct interpretations of the output from a multiple regression analysis;
- (5) how to test for and interpret interaction effects in multiple regression;
- (6) how to undertake a multiple regression analysis utilizing the statistical software package STATA;
- (7) the common errors, which are made by those who use multiple regression;
- (8) the extension of multiple regression analysis to structural equation models with observed variables (path analysis);
- (9) correct interpretations of the output from logistic regression analysis; and
- (10) how to undertake a logistic regression analysis using STATA.

By the end of this course, students will be able to:

- * knowledgeably read and comment on published research studies that deploy multiple regression analysis or logistic regression analysis for a dichotomous dependent variable
- * accurately interpret all of the descriptive and inferential statistics found in a multiple regression analysis
- * accurately interpret all of the descriptive and inferential statistics found in a logistic regression analysis for a dichotomous dependent variable
- * competently undertake multiple regression and logistic regression analyses using STATA
- * explain the assumptions underlying the techniques of multiple regression and logistic regression
- * test for violations of the assumptions of multiple regression and logistic regression
- * apply techniques that correct for violations of the assumptions of multiple regression and logistic regression
- * accurately calculate and interpret the indirect effects of a particular independent variable on a dependent variable, as mediated by one or more intervening variable as specified in a path model

REQUIRED BOOKS and CHAPTERS

- (1) An undergraduate statistics textbook for reference purposes. This book should include the four sampling distribution tables we will refer to: normal curve, t, chi-square and F.
- (2) Allison, Paul D. 1999. Multiple Regression: A Primer. Thousand Oaks CA: Pine Forge Press. [Referred to as ALLISON in the schedule of required readings.]
- (3) Hamilton, Lawrence C. 2013. Statistics with STATA, updated for version 12. Brooks/Cole. [Referred to as HAMILTON in the schedule of required readings.]

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(4) Fox, John. 1991. Regression Diagnostics. Quantitative applications in the Social Sciences, no. 79. Newbury Park, CA: Sage. [Referred to as FOX in the schedule of required readings.]

(5) Menard, Scott. 2002. Applied Logistic Regression Analysis, second edition. Quantitative applications in the Social Sciences, no. 106. Newbury Park, CA: Sage. [Referred to as MENARD in the schedule of required readings.]

(6) Pedhazur, Elazar. 1997. "Matrix Algebra: An Introduction." Appendix A in Multiple Regression in Behavioral Research: Explanation and Prediction, third edition. Fort Worth: Harcourt Brace. [A personal copy of this chapter will be available for photocopying from the Graduate Administrator. In addition I have asked that the Library's copy of this book be placed in the Reserve Room.]

(7) Pedhazur, Elazar. 1997. "Structural Equation Models with Observed Variables: Path Analysis." Chapter 18 in Multiple Regression in Behavioral Research: Explanation and Prediction, third edition. Fort Worth: Harcourt Brace. [Same arrangement as # 6.]

ASSIGNED READINGS

The schedule of assigned readings can be found on D2L. It is subject to change depending upon how quickly we move through particular course components. My recommendation is to glance at upcoming assigned readings before our lecture period and then read them in detail after the lecture is concluded.

STUDENT EVALUATION

First Assignment (due Tuesday 29 September at the beginning of class)
-- worth 5%

First Mid-Term Test (Thursday 8 October at 12:30 p.m. in SS 921)
-- covers all course material between September 8 and October 8
-- worth 20% or 30% (whichever is most favourable to you)

Second Assignment (due Tuesday 3 November at the beginning of class)
-- worth 5%

Second Mid-Term (Tuesday 10 November at 12:30 p.m. in SS 921)
-- covers all course material between September 8 and November 10
-- worth 20% or 30% (whichever is most favourable to you)

Third Assignment (due Tuesday 1 December)
-- worth 5%

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Take-Home Practice Research Study

- you will be asked to undertake an original secondary data analysis employing multiple regression, path analysis or logistic regression and submit an academic report on your analysis
- guidelines handed out no later than October 8
- due date is Wednesday December 23 (in SS 924; please hand in between 1 and 4 p.m.)
- worth 35%

IMPORTANT CONVENTIONS

(1) Except in the cases of documented illness, or extenuating circumstances brought to the attention of the teaching assistant (in the case of Assignments) or instructor (in the case of the Take-Home Practice Research Study) prior to the due date of a particular course component, there will be a penalty for late work of 5% of the assigned grade per day.

(2) A student who is unable to write a Mid-Term Test must discuss an alternative course of action with the instructor. At his discretion, the instructor will transfer the percentage weight to another component of the course, or set another Test.

(3) The quality of a student's writing is a factor in the evaluation of a student's work in this course. This is particularly the case in the evaluation of the Take-Home Practice Research Study.

(4) The Mid-Term Tests are closed book and will include a mix of True/False, multiple choice, problem solving, short answer and interpretation questions. The instructor will provide a list of formulae and statistical tables that students can consult during the writing of each Mid-Term. The use of calculators is permitted during a Mid-Term although all information in the calculator's memory must be deleted prior to the beginning of a test.

(5) *Deferred Term Work Form:*

Deferral of term work past the end of a term requires a form to be filled out. It's available at <https://www.ucalgary.ca/registrar/forms>

Once an extension date has been agreed between instructor and student, the form should be taken to the Faculty of Arts Program Information Centre (SS 102) for approval by an Associate Dean (Students).

(6) *Deferred Final Exam Form:*

Please note that requests to defer the Registrar-scheduled final exam are dealt with through the Registrar's Office. Further information about deadlines, and where paperwork should be taken, is available on the form, which is available at:

<https://www.ucalgary.ca/registrar/forms>

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(7) “Intellectual honesty is the cornerstone of the development and acquisition of knowledge” (*Calendar 2015-16*, p. 48). Please review the University of Calgary’s policies for dealing with student misconduct, particularly plagiarism and cheating at

<http://www.ucalgary.ca/pubs/calendar/current/k-2-1.html>

(8) The main Sociology Department office does not deal with any course-related matters. You must contact me if you have any questions about the evaluation of your work, etc.

(9) Your mid-term tests and assignments will be returned in class. You can pick up your take-home practice research study from Professor Langford’s office during the first two weeks of January. Please email to make an appointment or just knock when the door is ajar.

(10) Academic Accommodation

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services (MSC 452, telephone 220-8237). Student Accessibility Services will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit: <http://www.ucalgary.ca/access/>

Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their instructor. The full policy on Student Accommodations is available at:

http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy_0.pdf

(11) The quality of a student’s writing is a factor in the evaluation of a student’s work in this course.

(12) 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 Faculty 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.

(13) **Emergency evacuations.** In the case of fire or other emergency evacuation of any classroom in Social Sciences, please proceed to the assembly point in the Professional Faculties Food Court. Please check the assembly point locations for all of your classes at:

<http://www.ucalgary.ca/emergencyplan/assemblypoints>

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(14) **Student Representation.** The 2015-16 Students' Union VP Academic is Stephan Guscott: email: suypaca@ucalgary.ca. The Faculty of Arts has four SU representatives who may be contacted at any of the following email addresses: arts1@ucalgary.ca, arts2@ucalgary.ca, arts3@ucalgary.ca, and arts4@ucalgary.ca. You may also wish to contact the Student Ombudsperson for help with a variety of University-related matters: <http://www.ucalgary.ca/provost/students/ombuds/role>

LETTER GRADE ASSIGNMENT

At the end of the term numerical marks are totaled and a final letter grade is assigned on the following basis:

Percentage Range	Letter Grade	Percentage Range	Letter Grade
49 or less	F	62-69	B-
50-55	D	70-75	B
56-61	C	76-81	B+
		82-87	A-
		88-93	A
		94 or higher	A+