

**The University of Calgary  
Faculty of Social Sciences  
Department of Sociology**

Selected Topics in  
Advanced Quantitative Analysis I  
Sociology 711.01  
Winter, 2011  
**Course Outline**

Instructor: Alex Bierman

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Office: SS 902

Office Hours: Wed. 12:15-1:15, or by appointment.

Please note that because the labs are self-guided, I will have additional office hours.

We will discuss as a class when it is most appropriate to have these additional hours.

### **Course Objectives**

This quarter course represents the first half of a course designed to survey a variety of statistical techniques that are popular in sociology or growing in popularity. We will focus largely on structural equation modeling and associated techniques (path analysis, principal components analysis, common factor analysis, confirmatory factor analysis, and (time permitting) latent growth curve modeling). The overall goal of this class is not for you to simply learn a variety of statistical methods, but to gain an appreciation of how to use these methods in your own research. To this end, a central focus as we cover each method will be how the method has been and can be applied in research. The ultimate goal for this class is for each student to produce a paper that can be submitted for publication at a peer-reviewed, sociologically-based journal.

### **Prerequisites**

SOCI 611 or equivalent

## Required texts

There are no specific textbooks for this class. However, each week there are likely to be a number of assigned readings. Some of these readings will be methodological in nature, while others will be empirical papers. Students should carefully examine the empirical papers as examples of ways to approach their own research. Unfortunately, some readings will not be in electronic format. In this case, they will be available for photocopying in the main office. Students should take the readings from the main office only to immediately photocopy and return.

Although not required, a recommended text that addresses many of the techniques we will cover in the class is:

Kline, Rex B. 2011. *Principles and Practice of Structural Equation Modeling, Third Edition*. New York: The Guilford Press.

Note that the publisher offers Mplus syntax for many of the examples used in the Kline text:

[http://www.guilford.com/cgi-bin/cartscript.cgi?page=etc/kline/files.html&dir=research/MSS\\_series&cart\\_id=940973.13316](http://www.guilford.com/cgi-bin/cartscript.cgi?page=etc/kline/files.html&dir=research/MSS_series&cart_id=940973.13316)

## Computer programs

The two main programs we will use in this class are Stata and Mplus, although we will also examine how to perform exploratory factor analysis and principal components analysis using SPSS. You are welcome to use other programs, but I am unlikely to be able to help you with coding or running analyses. Please also note that other programs may have some substantial deficits in important areas. For example, Mplus is the only structural equation modeling program that can accommodate complex survey sampling. If you are familiar with other programs, Stata and Mplus are often fairly straightforward to learn. One book that I recommend for learning Stata is:

Acock, Alan C. (2010). *A Gentle Introduction to Stata, Third Edition*. College Station, TX: Stata Press.

## Grading System

A+ = 95 and over	B+ = 80-84.9999	C+ = 67-71.9999	D+ = 54-58.9999
A = 90-94.9999	B = 76-79.9999	C = 63-66.9999	D = 50-53.9999
A- = 85-89.9999	B- = 72-75.9999	C- = 59-62.9999	F = 49.9999 and lower

## Labs

Labs will comprise 40% of your final grade. Assignments will be pass/fail, and you must obtain an 80 or better to pass the lab assignments. Some labs will cover multiple weeks of class, and you will be told in class when the labs are due. Please note that, after the first week, there will be no set day or time for lab. Instead, labs will be self-guided. You will be able to download data from the course Blackboard and use the lab to analyze these data. The labs will include syntax and screenshots, as well as detailed descriptions of how to analyze and interpret the data. The lab assignments will be based on analyzing additional data (which can also be downloaded from the Blackboard) using similar procedures, as well as conceptual questions regarding the methods under study. Lab assignments must be typewritten in 12 point font. When discussing specific output, you should paste this output in *with your answer*. Please don't write "See page xx." Also include only the relevant output. If you need help figuring out how to get your output into your answer, please let me know. You may complete lab assignments with a partner, but a maximum of two people may complete an assignment together. You must turn in one assignment with both names, and both students will receive the same grade, regardless of the proportional amount of work each student put into the assignment.

## Papers

Papers will comprise 60% of your grade, and each student must complete a paper. Because I strongly encourage you to use this class as a means of writing a paper that can be submitted to a journal, I am willing to read your paper more than once before assigning a grade. For those individuals who are taking only one 711 quarter-course, I am willing to read the paper once before a final version is graded. For those individuals who are taking both quarter-courses, I am willing to read the paper twice before assigning a final grade. For those individuals taking one quarter-course, a final version is due six weeks after the last class. For individuals taking both quarter-courses, a final version is due by July 20<sup>th</sup>, 2011. These differences are because individuals taking both quarter-courses will be expected to integrate methods from both quarter-courses into their papers, and therefore have longer and more complex papers. Please note that, even if you make all the changes I suggest, you are not guaranteed an "A" on the paper.

There is no specific data assigned for your final papers. You are encouraged to seek out data that addresses a subject that is of interest to you. There are several data "warehouses" available to you online at no cost. Two are:

*The Interuniversity Consortium for Political and Social Research (ICPSR)*

[www.icpsr.umich.edu](http://www.icpsr.umich.edu)

*The Association of Religion Data Archives*

[www.thearda.com](http://www.thearda.com)

You may also be interested in the U.S. General Social Survey, particularly the longitudinal component they recently release:

<http://www.norc.uchicago.edu/GSS+Website/>

Several data sources provide data that is particularly useful for multi-level analysis:

*The World Values Survey*

<http://www.worldvaluessurvey.org/>

*The European Values Study*

[www.europeanvaluesstudy.eu](http://www.europeanvaluesstudy.eu)

*The East Asian Social Survey*

[www.eass.info](http://www.eass.info)

*The International Social Survey Program*

[www.issp.org](http://www.issp.org)

Although I can help you with analyzing data, it is your responsibility to find an appropriate data set and become familiar with its particulars and peculiarities.

Please note that, as you write your paper, it would be best to have a specific journal in mind, and you should format your paper to meet this journal's specifications. This journal must be either based in sociology or, if an interdisciplinary journal, heavily focused on sociology. For example, *Journal of Marriage and Family*, *Journal for the Scientific Study of Religion* and *Journals of Gerontology: Social Sciences* are interdisciplinary, but many of their papers are written by sociologists. This journal must also publish papers of a "typical" length for sociology. Typical length will vary by sub-discipline and journal, but a six-page paper for a health journal is too short, and a ninety-page *American Journal of Sociology* paper is too long.

### **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.

## Tentative Calendar

*Please also note that this schedule is indeed tentative.* Given the interests of the class, I may choose to change the time spent on some subject matter, add some topics, or delete others. This will also allow me to slow down or speed up, based on the students' comprehension of the material. Readings will be announced the week prior to when they will be addressed in class.

Weeks 1-3: Path Analysis

Week 4: Principal Components Analysis and Exploratory Factor Analysis

Week 5: Confirmatory Factor Analysis

Week 6: Structural Equation Modeling

Week 7: Latent Growth Curve Modeling

### ***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 Department of Sociology.

### ***Deferred Final Exam Form:***

Please note that requests to defer a 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 can be found at:

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

### ***Deferred Term Work Form:***

Deferral of term work past the end of a term also requires a form to be filled out. It’s available at <http://www.ucalgary.ca/registrar/files/registrar/defTW.pdf>

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 110) for approval by an Associate Dean (Students).

***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.

***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.