

University of Manitoba
Department of Sociology
Winter (3 Credit Hour Course) 2009

SOC 7400 ADVANCED QUANTITATIVE RESEARCH METHODS A01

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Class: Tuesday 1-4 p.m. (335 Isbister Building)
Office Hours: Tuesdays and Thursdays 11:30-12:30, or by appointment

Required Text:

Tabachnick, Barbara G. and Fidell, Linda S. (2007). *Using Multivariate Statistics*. Fifth Edition. Boston: Allyn and Bacon.

Recommended Texts:

Boslaugh, Sarah (2005). *An Intermediate Guide to SPSS Programming: Using Syntax for Data Management*. Newbury Park: Sage.

George, Darren and Mallery, Paul (2007). *SPSS for Windows Step by Step: A Simple Guide and Reference*. Boston: Allyn and Bacon.

Norusis, Marija J. (2009). *SPSS 16 Statistical Procedures Companion*. Upper Saddle River: Prentice Hall.

Spicer, John (2004). *Making Sense of Multivariate Data Analysis*. Thousand Oaks: Sage.

Vogt, W. Paul (2005). *Dictionary of Statistics and Methodology: A Non-Technical Guide for the Social Sciences*. Third Edition. Newbury Park: Sage.

Course Prerequisite:

All students must have completed an undergraduate course in research methods and statistics. This is an absolute minimum requirement. Students who only meet the basic criteria will probably not do well in this course. As such, students should have completed (and received a high grade) the equivalent of SOC4570.

Course Objectives and Description:

This is an advanced quantitative course in research methods. Emphasis will be placed on the practical application of statistical techniques, and students will have plenty of opportunity to apply these methods to data. In this regard, SPSS will be used extensively in this course. Students should have proficient knowledge of this statistical software package.

The goal of this course is to cover a wide range of multivariate topics in a conceptual, rather than a mathematical approach. Sociology students are not statisticians, and the reality is that most will not (appropriately so) become statisticians. To this end, the focus of this course will be on the applied applications of multivariate research methods with emphasis on design and interpretation, rather than specific mathematical computations. However, some knowledge towards mathematical concepts is required, especially matrix algebra. To learn more about matrix algebra, Appendix A in the Tabachnick and Fidell's text is a good guide.

It is assumed that students will have a comprehensive understanding of univariate and bivariate research methods. In particular, students should be able to speak comprehensively about the following material: level of measurements, descriptive statistics, inferential statistics, analysis of variance (ANOVA), bivariate categorical data, correlation, and OLS regression.

In order to ensure that students comprehend these terms and statistics, I suggest that students 'dust off' their undergraduate research methods texts in an effort to re-acquaint themselves. For individuals who are still not confident with statistical reasoning, I suggest reading either of the following:

Sirkin, R. Mark (2006). *Statistics for the Social Sciences*. Third Edition. Newbury Park: Sage.

Field, Andy (2005). *Discovering Statistics Using SPSS*. Second Edition. Newbury Park: Sage.

Given that this is an advanced course, primary focus will be on multivariate statistical analysis. Specific topics to be covered are:

- 1) OLS Regression, including interaction terms
- 2) Path analysis
- 3) Data screening prior to analysis (including missing values analysis)
- 4) Principal components/Factor analysis
- 5) Discriminant analysis
- 6) Logistic regression
- 7) Time series analysis or survival/failure analysis
- 8) Confirmatory factor analysis
- 9) Structural equation modelling

Course Evaluation

Grades:

A+	=	90% and over	4.5
A	=	80% to 89%	4.0
B+	=	76% to 79%	3.5
B	=	70% to 75%	3.0
C+	=	66% to 69%	2.5
C	=	60% to 65%	2.0
D	=	50% to 59%	1.0
F	=	Under 50%	0.0

Students should be aware that the above grades are only guidelines. Different cut-off percentages may be used depending on final grade distributions.

Critical Review of Scholarly Articles	February 24 th , 2009	15%
Ownership of a multivariate statistic	February 3 rd to March 24 th , 2009	30%
Research project	April 13 th , 2009	50%
Participation	Ongoing	5%

Critical Review of Scholarly Articles: Students are required to read **three** scholarly research articles and write a review for each article. It is recommended that students select articles from their field. Articles must be peer-reviewed from an academic journal. Such journals can be found online or in the library. It is your responsibility to select and locate the articles. Each write-up should include a discussion (not a summary) of the: (1) research question(s)/hypothesis(es); (2) methodology/measures/data; (3) analysis used; (4) findings; and (5) conclusions. Students should also be prepared to discuss what other statistics could have been used to examine the problem outlined by the author(s) and whether or not this would have improved the article. Please find at least one article using statistics concerned with relationships between independent and dependent variables (regression, discriminant analysis, logistic analysis, longitudinal analysis, structural equation modeling) and one dealing with interdependence among variables (principle components/factor analysis; confirmatory factor analysis). Remember that the primary focus should be on statistical procedures used in the article (including meeting assumptions, measurement issues, and data screening). Each review should not exceed 3 typed, double-spaced, pages. Students must submit the full article with their write-ups.

Ownership of a Multivariate Statistic: Research has shown that students tend only to retain 5% of the information acquired when lectured to; yet, when students are required to teach a topic back to someone (i.e., the class), they tend to retain 90% of the information (Gair, 1993*). Given such a compelling statistic, this class will be taught in a traditional seminar format where each student will take ownership of one multivariate research method and teach it back to the class. A list of multivariate research methods will be distributed and students are to select the statistic they wish to teach to the class. Details will be discussed in class.

Research Project: Students will be required to design and develop a research project using secondary data. Students are responsible to select a dataset to analyze. The research project will involve generating testable research hypotheses that can be empirically evaluated. Students must select at least one multivariate statistic discussed in class, but not the research method they taught in class. Students must also create at least one composite index for their final research paper, and some evidence must be given confirming its shared variance.

This research paper will form a substantial part of your final grade (50%). The grade will be divided into three parts. First, 5% of the grade will be on data analysis. Students must submit a SPSS syntax file (along with the appropriate data file), which follows the specific organizational structure taught in class. Students must also submit all their relevant SPSS output files, which have been properly formatted and organized.

* Presented at the Society for Teaching and Learning Annual Conference, Winnipeg, Manitoba.

Second, the last two classes will involve in-class presentations of your work. The presentations will be done using PowerPoint or equivalent software. The goal is to allow students to present their work as well as provide students with an opportunity to solicit feedback before the final paper is due. The presentation should simulate a conference presentation and should be 20 minutes in length. The presentation will form 15% of the final grade (grade will be attached to your final paper).

Finally, the research paper will form 30% of the final grade. The format of the research paper should replicate quantitative articles that are published in sociological journals. It is hoped that the final project will result in a publishable-quality paper. The length of the paper should not exceed 25 pages with references, tables, and figures. The final product should take the following form:

- 1) A brief review of the sociological (or other relevant) literature applicable to your topic.
- 2) The deduction of hypotheses and research questions.
- 3) A description and evaluation of the sample and its suitability.
- 4) A discussion of the measures and constructs to be used in the analysis.
- 5) Attention to the reliability and validity of the measures (evidence that assumptions have been met). This would include a discussion of the potential flaws in the measurement procedure and what you have done to correct (or reduce) it.
- 6) An overview of the analytical procedures.
- 7) A test of the hypotheses should be conducted using appropriate statistical techniques.
- 8) A discussion of the results should be presented with appropriate conclusions (including limitations of the study, policy implications, and suggestions for future research).

Given the expected complexity of the assignment, it is advised that students select their topic, consult with the instructor, find a dataset, and start the data analysis early in the term. There are plenty of places to find a secondary dataset. Below are some suggested data sources:

- University of Manitoba Data Library (Gary Strike)
 - www.umanitoba.ca/libraries/units/datalib
- Inter-University Consortium for Political and Social Research (ICPSR)
 - www.icpsr.umich.edu
- National Archives of Canada
 - www.archives.ca
- Council of European Social Science Data Archives (CESSDA)
 - www.cessda.org/accessing/catalogue
- European Social Survey (ESS)
 - www.europeansocialsurvey.org
- ZA Online Study Catalogue (ZACAT)

- <http://zacat.gesis.org/webview/index.jsp>

Participation: Students will be graded on their class attendance and participation (5%). Active participation is expected in the class. For example, students should come to class with a few questions or comments based on the required readings. Students are also encouraged to ask questions or provide comments when their classmates are presenting their research projects.

Late assignments and papers:

Late papers and assignments will be penalized 10% per day (including weekends and holidays) unless permission is granted *prior* to the due date. Papers or assignments more than five days late will not be accepted under any circumstances.

Tentative Course Schedule

- I. Review of Statistics
- II. Navigating through SPSS/Introduction to SPSS Syntax
- III. Introduction to multivariate analyses
- IV. Individual presentations of selected multivariate research methods
- V. Presentations of final research paper

Student Conduct and Academic Regulations of the University

Voluntary Withdrawal: The final date for voluntary withdrawal from this course is March 19th, 2009.

Academic Dishonesty: Students should acquaint themselves with the University's policy on 'Examination: Personations' (p. 26) and 'Plagiarism and Cheating' (p. 27) found in the Undergraduate Calendar.

Electronic Devices: Students are required to silence all electronic devices (cellular phones, PDA's, pagers, etc.) when in the classroom.

Accommodations

Special Needs: Special needs services are provided through Disability Services (474-6213). Students with special needs should introduce themselves to the instructor at the beginning of the term in order to arrange suitable delivery dates of required assignments.

Holy Days: The University recognizes the right of all students to observe recognized holidays of their faith, which fall within the academic year. With instructor discretion, necessary arrangements can be made to ensure studies are not jeopardized. The instructor should be notified of a student's intended absence in advance. At least three weeks notice of absence should normally be given where special arrangements are sought.