Multivariate Analysis for Industrial Relations and Human Resources
16:545:614:01 Spring 2014

Professor Stanley M. Gully
203 Janice H. Levin Building
E-mail: gully@rci.rutgers.edu
Tel: (848) 445-5830

Lecture: Wednesday 1:00 pm – 3:40 pm 006 Levin
Office hours: By appointment – contact via email

Course Description:
This course is designed to help you to effectively apply, interpret, and evaluate different multivariate statistical techniques. Throughout the course there will be an emphasis on both conceptual understanding and the development of practical "how-to" skills. Topics covered in the sequence are organized in terms of complexity, beginning with a broad overview, moving into regression, and ending with HLM and structural equation modeling.

Traditionally, our discipline has made use of an unusually broad range of methods and analytical strategies to address questions of interest. Because each approach to answering research questions involves trade-offs, researchers have often found it necessary to employ a combination of analytical techniques to reach any firm conclusions. A major goal of this course is to facilitate decision making within these constraints.

If your goal is to do quality work, whether you are in a research or applied domain, then you will need tools to help you make sense of your data or of the effectiveness of your chosen approach to a problem. We will discuss a variety of advanced statistical tools, examining the pros, cons, and assumptions associated with each. You will be exposed to tests for violations of regression assumptions, mediation and moderation in regression, regression with categorical independent variables, regression with dichotomous variables, MANOVA/discriminant analysis, factor analysis, path analysis, structural equation modeling, hierarchical linear modeling, and network analysis.

Throughout the semester, you will gain hands-on experience through a number of different projects and learn how to draw statistical and substantive conclusions from the results of various analyses. You will be asked to prepare written summaries of results using either APA or Academy of Management style. These are common publication formats for journals germane to our field.

Grades:
Course Requirements:

The course requirements for this semester include: (1) attendance at sessions; (2) a series of project assignments and brief write-ups of the results in appropriate format; (3) midterm exam; (4) final exam.
Grades are determined as follows:
40% Evaluation of the assigned projects
25% Midterm exam (take home)
25% Final exam (take home)
10% Attendance/participation

Final grades: A(90%); B(80%); C(70%); D(60%); F(below 60%)

Each new topic builds on previous material, so it is important that you try to remain current throughout the course. All of you are encouraged to work together, preparing for exams and discussing projects. However, all exams and assignments are to be conducted and written individually.

There are 8 assigned projects but you are allowed to completely drop one of them with no penalty. Projects are due approximately every two weeks. You are expected to complete at least 7 assigned projects. I strongly recommend completing all 8. Turning a project in a day or two late is fine but projects that are more than a week late will be docked 10% a week, for every week they are late, barring extenuating circumstances. If there is a particular and compelling reason that they will be late then please communicate with me about it.

You will find the required reading list attached to this syllabus. Required texts are available at the bookstore or online. Other readings will be made available for individual use. Please note that the readings listed in the course outline are to be read before the next class.

I will be honest. If you get behind in this course it will crush you. Even if you stay on top of everything you will feel like we are zooming from one complex topic to the next…because we are. This is a course in which it is normal to feel some degree of confusion as you read the assigned readings and go about doing the projects. It is more important to try a project and complete it than to spend tremendous hours trying to do a project perfectly but getting stuck in the minutiae of what you are doing and then falling behind on the next one. Try to focus on the big picture, do the core of the analyses, and keep moving forward. Also, there are probably more readings than you have time to complete. First, always read T&F if assigned. Second, if you are interested in econometrics, always read K if assigned. For the articles, I will try to highlight key articles to read in detail (remind me if I don't). You can skim the others.

Notes:
1. Although I believe in making myself accessible, I cannot engage in one-on-one tutoring if you miss class.

2. I would like to maintain flexibility and understanding of your work and life schedules. Please speak to me privately if you have an unusual circumstance that would require some alternative arrangement.
3. You are encouraged to work together throughout the class, However, it should be noted that academic integrity, as outlined in the SMLR handbook (pp. 24-25), is a requirement of this course. Exams are to be completed individually.

Required Materials:

Texts:

K Kennedy, P. (2008). A guide to econometrics (6th edition). Wiley-Blackwell.

TF Tabachnick, B. G., & Fidell, L. S. (2012). Using multivariate statistics (6th edition). Pearson.

Recommended Materials

You can write in either AMJ or APA format, I don't care which. Please be consistent within your chosen format. If you wish to select a different format (other than APA or AMJ), simply let me know.

Academy of Management Journal Style Guide.
Go to: http://mc.manuscriptcentral.com/amj
Click on: Instructions and Forms to the right
Select "Style Guide for Authors"

Academy of Management Journal Author Resources
http://journals.aomonline.org/amj/author-resources

APA Format
http://owl.english.purdue.edu/owl/resource/560/01/

I will provide information and guidance on syntax using SPSS, HLM, or LISREL only. If you wish to do your work in other systems (e.g., STATA, SAS, S-PLUS, etc.) you may do so. However, I cannot provide guidance on all, or even most, software systems. You will have to figure it out for yourself. If you use a non-SPSS, HLM, or LISREL system, simply include your syntax and results from your analyses when providing results.

If you wish to work with others when completing projects, that is fine. However, please work together (not simply use their results) and please write up your OWN results (do NOT copy another person's write up).

You can find the Command Syntax Reference Guide for SPSS under Help when you have started SPSS.

Overview of Topics:
This course is a dynamic process, **subject to change**. You are responsible for maintaining awareness of changes in class scheduling if you have missed class.

Date	Topic
22-Jan	Introduction, review, multiple regression
29-Jan	Multiple regression - qualitative independent variables **Project 1 Assigned – Regression**
5-Feb	Multiple regression – mediation
12-Feb	Multiple regression – moderation **Project 1 Due** **Project 2 Assigned – Mediation, moderation, and diagnostics**
19-Feb	Multiple regression – conditional process modeling
26-Feb	Multiple regression - assumptions and diagnostics **Project 3 Assigned – Omitted variables, 2SLS, conditional process modeling**
5-Mar	Multiple regression - dichotomous dvs **Project 2 Due** **Project 4 Assigned – Logistic regression**
12-Mar	MANOVA / Discriminant analysis **Project 3 Due**
19-Mar	**Spring Recess**
26-Mar	**Mid-term Exam**
2-Apr	Repeated measures **Project 4 Due** **Project 5 Assigned – MANOVA/DA**
9-Apr	Factor analysis **Project 6 Assigned – EFA/MANOVA**
16-Apr	Path analysis / SEM **Project 5 Due** **Project 7 Assigned – Path analysis / SEM**
23-Apr	SEM **Project 6 Due**
30-Apr	Levels / HLM **Project 8 Assigned – HLM**
7-May	Network analysis **Project 7 Due**
14-May	Extra coverage of material if necessary **Project 8 Due** **Final exam online May 10th until May 14th** **Network Analysis Integrated with Final (final due by 5/14)**