Psychology 7/8308

Applied Multivariate Statistics

Spring 2010

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Office Hours: W 10 - 11 or by appointment

Course Basics

Class Time and Room: 8:00 - 9:25am, TR
244 Psychology Building

Textbook:

Stevens, J.P. (2009). *Applied multivariate statistics for the social sciences* (5th ed.). New York: Routledge.

I will also provide articles, datasets, output, and other handouts throughout the semester.

COURSE OVERVIEW

Upon completion of this course, you should be familiar with the theoretical and applied issues with multivariate statistical techniques that are commonly used by psychologists. These methods will include (but are not limited to) multiple regression, logistic regression, discriminant functions, exploratory and confirmatory factor analysis, MANOVA, and structural equation modeling (SEM). We will also discuss issues related to multivariate analyses such as data collection, screening, and cleaning. I expect that you will be able to understand the research questions best addressed by different methods, run analyses, interpret output, and communicate your results to an audience.

COURSE FORMAT

I will structure the class sessions by first presenting the relevant background information and concepts related to a topic, next illustrating these concepts by running the analyses of interest, and finally allowing you the opportunity to try the methods. This is not a class in running a particular software package. There are several reasonable statistical packages capable of running these analyses including SAS, SPSS, and STATA. You should use the program most preferable to you.

COURSE EVALUATIONS

Your course grade will be based on your performance on several projects (80%) and an oral presentation of results associated with an analysis of your choice (20%). Projects will be assigned throughout the semester and each will be due 1 week from the date it is assigned (unless otherwise indicated). Projects will be subject to a 10% penalty for each day late. In addition to the written projects, you will be asked to present the results of an analysis of a data set of your choosing to the class during the last week of the semester. This presentation will be evaluated on appropriateness of the chosen technique, ability to clearly describe the results to the class, and general presentation. More information about the presentation will be provided throughout the semester.

GRADING SCALE

A	=	90 - 100%
B	=	80 - 89%
C	=	70 - 79%
D	=	60 - 69%
F	=	below 60%

ACADEMIC HONESTY

Plagiarism or cheating may result in your case being referred to the Academic Discipline Committee that addresses academic misconduct. This decision is up to the discretion of the instructor. Students are expected at all times to behave in accordance with the American Psychological Association Code of Ethics. Students should be familiar with the academic regulations outlined in the Graduate Issues of the Bulletin of the University of Memphis and to observe policies regarding student conduct published in the Student Handbook.

DIVERSITY STATEMENT

Diversity means the fair representation of all groups of individuals, the inclusion of minority perspectives and voices, and the appreciation of different cultural and socioeconomic group practices. We aspire to foster and maintain an atmosphere that is free from discrimination, harassment, exploitation, or intimidation. Academic courses will aim at providing opportunities for students to discuss issues of diversity including, but not limited to, ethnicity, gender, disability, and sexual orientation as they can be related to course content. The University of Memphis has adopted policies prohibiting discrimination based upon race, sex, disability, or sexual orientation. In addition, the American Psychological Association has explicit policies regarding the issues of and writing about race, gender, class, sexual orientation, disability, ethnicity, and religion. You may find information on these standards in the APA Publication Manual or on the APA webpage: http://apa.org/pi/oema/.

STUDENTS WITH SPECIAL NEEDS OR DISABILITIES

If you have a disability that interferes with completion of this course, please let the instructor know privately at the beginning of the course, and s/he will seek consultation on how best to adapt course materials or instruction. Students with disabilities are encouraged to contact Student Disability Services for the university at 678-2880.

ELECTRONIC COMMUNICATION

Course announcements as well as consultation with the instructor may occur via e-mail messages. Each student must maintain an e-mail account and is responsible for notifying the instructor if their e-mail address changes during the term. The University of Memphis offers free e-mail address changes during the term. Students without an e-mail account can bring their university ID cards, swipe them, and set up an account at the Smith or McWhirter computer labs or students can bring their cards to the information technology helpdesk, room 124 in the Administration Building for assistance.

COURSE TOPICS

Jan 14 – Course Introduction and Overview

Jan 19 – What is Multivariate Analysis?

Jan 21 – Matrix Algebra

Jan 26 – Multivariate Normality

Jan 28 & Feb 2 – Data Cleaning/Screening and Assumptions -- ***(Project 1)***

Feb 4, 9, & 11 – Multiple Regression ***(Project 2)***

Feb 16, 18, & 23 – Exploratory Factor Analysis ***(Project 3)***

Feb 25, Mar 2, & Mar 4 – Confirmatory Factor Analysis ***(Project 4)***

SPRING BREAK

Mar 16, 18, & 23 – Discriminant Analysis and Logistic Regression ***(Project 5)***

Mar 25, 30, & Apr 1 – MANOVA & MANCOVA ***(Project 6)***

Apr 6 & 8 – Cluster Analysis ***(Project 7)***

Apr 13 & 15 – Structural Equation Modeling ***(Project 8)***

Apr 20, 22, & 27 – Presentation Days

Please note that we may complete some topics more quickly (or more slowly) than expected. As a result, the above schedule may be revised as the semester unfolds.