Fall, 2017

Multivariate Statistics

3 Hours of Academic Credit CRN 80902 CHSS 242A T/Th 3:30 – 5:00

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Office hours: Tues & Thurs, 11:00 – 12:00, 2:00 – 3:00 Other days and times by appointment

Text: Meyers, L. S., Gamst, G., & Guarino, A. J. (2017). *Applied multivariate research: Design and interpretation* (3rd ed.). Thousand Oaks, CA: Sage. ISBN: 978-1-5063-2976-5.

Additional assigned readings will be described on additional pages.

Objectives

The course will provide an introduction to common multivariate statistical analyses and the software used to conduct them. Five analyses will be covered in sufficient detail to prepare you to interpret your own data in the future: multiple regression, logistic regression, discriminant analysis, multivariate analysis of variance, and exploratory factor analysis. As time permits, other analyses will be covered in sufficient detail to facilitate your understanding of their use in published articles: these may include path analysis, confirmatory factor analysis, and meta-analysis.

<u>Topic</u>	Reading	Exam
A (brief) review of basic concepts	pp. 2-5; 16-17; 18-20; 23-24; 28-29	
Screening data	Chapters 3	
Correlation and simple regression	Chapters 4	
Multiple regression	Chapters 5	1
Dummies, moderation, and mediation	Chapters 6	
Logistic regression	pp. 346-366; 378-385	2
Discriminant analysis	Chapters 19	
MANOVA	Chapters 18	3
Exploratory factor analysis	Chapters 10	
Statistics as a principled argument		4

Notes and News

The four exams will each comprise one-fourth of your course grade. The exams will involve both conceptual inquiries and the interpretation of output from SPSS. A portion of each exam grade will also come from take-home computer assignments due on the exam day.

Please read your assignments in advance of each class. I will assume that you have, and that you already know what material is causing you grief. I'll seek to reinforce and amplify, not duplicate, our readings' coverage.

Class attendance is not required, but I hope you'll find it foolish to miss class, as interesting, testworthy things that are not in the book will routinely be discussed in class.

The Small Print:

SHSU proudly adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may adversely affect your work in this class, you should contact our Services for Students with Disabilities (SSD) Office located in the Lee Drain North Annex building (next to the Farrington building), 936-294-3512, or TDD 936-294-3786, to apply for accommodations. Your disclosure of any disability will be kept strictly confidential, of course; however, no accommodation can be made until you register with SSD. All the information you need is here: http://www.shsu.edu/dept/disability/

You'll probably not care, but the **Drop Date**, the last day to drop the course (and receive a mark of "Q" for the course), is Friday, November 10, just before our third exam.

The University Code of Student Conduct and Discipline, Section 5.3, states that you are expected "to engage in all academic pursuits in a manner that is above reproach and to maintain complete honesty and integrity both in and out" of the classroom. Any student found guilty of dishonesty in any type of academic work will be subject to disciplinary action that will involve failure of, and expulsion from, our course. So, what is "dishonesty?" Check out our policies here: http://www.shsu.edu/dotAsset/728eec25-f780-4dcf-932c-03d68cade002.pdf

If you miss an exam in order to observe a religious holy day, I will happily provide you the exam at another time during that week. However, University policy requires you to notify me in writing of your wish to be absent due to religious holy days. Please plan ahead, starting here: http://www.shsu.edu/dotAsset/0953c7d0-7c04-4b29-a3fc-3bf0738e87d8.pdf

Information about these policies and procedures is also available to you at <u>http://www.shsu.edu/syllabus/</u>, which offers one-stop shopping.

Decorum-wise: Please manage your electronic devices with grace and consideration for the rest of us.

You'll be asked to provide a formal evaluation of me and my course near the end of the semester.

Readings for our First Unit

Cumming, G. (2014). The new statistics: Why and how. Psychological Science, 25, 7-29.

Wampold, B. E., & Freund, R. D. (1987). Use of multiple regression in counseling psychology research: A flexible data-analytic strategy. *Journal of Counseling Psychology*, 34, 372-382.

COURSE OBJECTIVES:

- 1) You will understand the uses and applications of multiple regression, logistic regression, discriminant analysis, multivariate analysis of variance, and exploratory factor analysis.
- 2) You will knowledgeably conduct multiple regression, logistic regression, discriminant analysis, multivariate analysis of variance, and exploratory factor analysis.

CLASS MEETINGS:

During our semester together, you can expect to encounter the topics below. The list reflects our plans at the start of the course, but the specific schedule is tentative and may change as the course unfolds.

Date	The Day's Focus	Key Sources
August 24	Review of basic concepts	pp. 2-5; 16-17; 18-20; 23-24; 28-29
September 5	Review, continued	
September 7	The "new" statistics	Cumming (2014)
September 12	Screening data	Chapters 3
September 14	Screening and regression computer lab	
September 21	Correlation and simple regression	Chapters 4
September 26	Multiple regression	Chapters 5
September 28	Multiple regression, continued	
October 3	*** First Exam ***	
October 5	Exam feedback; Dummy variables	Chapters 6
October 10	Mediation	
October 12	Mediation, continued	
October 17	Moderation	
October 19	Logistic regression	pp. 346-366; 378-385
October 24	Logistic regression, continued	
October 26	*** Second Exam ***	
October 31	Exam feedback; Discriminant analysis	Chapters 19

November 2	Discriminant analysis, continued	
November 7	MANOVA	Chapters 18
November 9	MANOVA, continued	
November 14	*** Third Exam ***	
November 16	Exam Feedback; Exploratory factor analysis (EFA)	Chapters 10
November 28	EFA	
November 30	EFA; Statistics as principled argument	
December 7	*** Fourth Exam *** @ 5:00 pm	