Multivariate Analysis in Applied Psychological Research

Primera Casa (PC) 419

Wednesday 9am – 11:45am

Instructor Stefany Coxe, Ph.D.

Office:	DM 275
Office hours:	by appointment
Email:	stefany.coxe@fiu.edu
Website:	http://faculty.fiu.edu/~scoxe

Course Description

Basic techniques of multivariate analysis, emphasizing the rationale and applications to psychological research. Includes multiple regression, MANOVA, principal component analysis, and factor analysis.

Goals of the Course: (1) Familiarize you with classic multivariate statistics, (2) Make sure that you understand how to perform these analyses using statistical software, (3) Prepare you for further study in applied statistics, (4) Give you background to understand current applied statistics research

Statistical Background

Graduate coursework in analysis of variance and linear regression. We will cover a variety of topics in this course, but all of them build on a basic ANOVA and regression (general linear model) framework. I do not expect you to have taken SEM or other advanced courses.

Textbook

The Essence of Multivariate Thinking, 2nd edition (2014), by Lisa L. Harlow
ISBN: 978-0415873727
Other readings: I will post relevant articles to Blackboard on an as-needed basis.

Software

We will use both SPSS and SAS in this course. Each package has strengths and weaknesses, so you will want at least a basic understanding of both. I will provide you with information to get started in SPSS and SAS, as well as information about specific analyses we will cover in this class. You will need to access either SPSS or SAS outside of class to complete homework assignments.

Blackboard

Course materials (lecture notes, computer code, and assignments) will be posted on the Blackboard site for the course. You should bring lecture notes and other materials to class. Please note that the lecture notes are not complete – you will also need to take notes in class and consult the textbook.

Teaching Assistant

Our teaching assistant is April Schantz, a 4th year Industrial / Organizational (I/O) Psychology Ph.D. student. You can contact April at ascha028@fiu.edu

Assignments

Homework

- Homework assignments due in class

- Almost weekly (12 assignments)

- You may need to access SPSS and/or SAS to complete the homework assignments.

- You may also need to do some mathematical calculations by hand.

Quizzes

- In-class quizzes

- Approximately every three weeks (see Course Outline, 5 quizzes)

- I will give you output or other information and you will need to interpret or annotate the results or otherwise comment on the material.

- You may have to do some mathematical calculations, but they will be minimal.

- You will NOT need to run analyses in SPSS or SAS.

- You will have 1 hour to complete each quiz before lecture, so it is in your interest to be punctual!

Grading

Final Grade

Homework: 60% of total grade
Quizzes: 40% of total grade

Letter grade	Percentage
A	>= 93
A-	90 - 92.99
B+	87 - 89.99
B	83 - 86.99
B-	80 - 82.99
C+	77 - 79.99
C	73 - 76.99
C-	70 - 72.99

There are no plans for any make-up assignments or activities.

Course and University Policies

Attendance
I shouldn't have to tell you to attend every class. This is graduate school.
Legitimate, verifiable cases of illness and emergencies, religious holy days, and conference travel can be accommodated. You need to contact me as soon as possible to make arrangements.

Drop Dates
Monday, August 31: Last day to drop courses or withdraw from the University without incurring financial liability for tuition and fees
Monday, November 2: Deadline to drop a course with a DR grade

Special Needs
Any student with a disability or other special need that may require special accommodations for this course should make this known to the instructor during the first week of class.

Disability Resource Center
Graham Center (GC) 190
(305) 348-3532
drcupgl@fiu.edu
drc.fiu.edu

Academic Misconduct
Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and to honestly demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook.

Academic Dishonesty
Please refer to your student handbook for a description of what constitutes academic dishonesty.

NOTE: Anything on this syllabus is subject to change at the Instructors discretion.

Tentative Course Outline

Week	Topics	HW	Quiz	Readings
Aug 26	Introduction, Matrix algebra 1			1, 2, S1
Sep 02	Software, linear regression	1		3
Sep 09	Linear regression (matrix)	2	1	3
Sep 16	Linear regression (matrix)			3
Sep 23	Analysis of covariance (ANCOVA)	3		4*
Sep 30	Maximum likelihood	4	2	S2
Oct 07	Missing data			S3
Oct 14	Matrix algebra 2	5		S1
Oct 21	Principal components analyis (PCA)	6	3	9
Oct 28	Factor analysis (FA)	7		9
Nov 04	MANOVA	8	4	5
Nov 11	HOLIDAY			N/A
Nov 18	Repeated measures ANOVA	9		5
Nov 25	Mixed models	10		8
Dec 02	Outliers	11	5	N/A
Dec 09	FINALS WEEK	12		

Readings are chapters from the textbook, unless otherwise indicated
S1 = Supplement 1: Tabachnick & Fidell, Appendix 1
S2 = Supplement 2: Enders (2005)
S3 = Supplement 3: Baraldi & Ender (2010)