EdPsych/Soc 584 & Psych 594
C.J. Anderson
Spring, 2017

Applied Multivariate Statistical Analysis
in Psychology and Education

COURSE INFORMATION

Instructor: Carolyn Anderson

Office:	rm 236C Education Bldg
Office hours:	Tuesday 1:15-3:15 pm
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Teaching Assistant: Wes Crues

Office:	rm 224B Colonel Wolfe School 401 East Healey Street
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Prerequiste Psych 407 or EdPsych 581 and EdPsych 582

Lecture 10:00-11:50am, Tue & Thur in room 22 Education Bldg.

Course website http://courses.education.illinois.edu/EdPsy584

Required text : Johnson, R.A. and Wichern, D.W. (2007). *Applied Multivariate Statistical Analysis*, Sixth Edition. Englewood Cliffs, NJ: Prentice-Hall.

Homework: There will be 9 – 10 assignments. You will have one week to complete each assignment. Most will require the use of computers. Note late homework will be accepted unless you receive prior approval by the instructor. Approval will require a very good reason.

Examinations: There will be a take home midterm either Mar 7th or 9th and a take home final (due Friday May 5th by 4:00pm). 5 points out of 100 will be lost for each day that a midterm or final is late.

Grades: Homework: 40%, Midterm: 30%, Final 30%.

Computers and Software: We will be using SAS version 9.4. If you are registered for the course, you will be authorized to connect to a campus server that has SAS. You

will need to use a remote desktop connection (RDC) program to connect to remote2.webstore.illinois.edu. The RDC is on computers running Windows, and can be downloaded (for free) for Apple computers. If you are logging in over the wireless, you will first need to get past the campus firewall using VPN. Detailed instructions for logging into the remote server can be found at https://wiki.illinois.edu/wiki/display/EDTS/Remote+Desktop+Connection+Instructions+for+Remote+Application+Server. There will be an introduction to SAS on TBA for those unfamiliar with SAS. If you prefer to have a copy of SAS on your own computer you may purchase a one year license from webstore.

An Introductory lab session will be held early in the semester that will cover SAS basics and a little IML (IML is SAS's interactive matrix language procedure). Documentation for SAS and IML is available online. Additional information and papers can be found at the SAS wite-site: www.sas.com.

For matrix computations, you may choose among SAS, R and/or MATLAB. If you choose to use R, Wes and I can give you some help with matrix computations. If you choose MATLAB, I can only give minimal help. I am assuming that you can create graphics using a program of your choice.

Illness: If you are sick, do NOT come to lecture, the instructor's office hours, or the TAs office hours. If you need to turn in homework, you can either give it to a fellow student (preferred) or it may be sent electronically (to both the TA and instructor).

Fair Use/Plagiarism Policy: Please see go to the following link for policy on academic integrity: http://education.illinois.edu/edpsy/about/academic-integrity The definition as spelled out in this document is

> The definition of plagiarism is straightforward: Presenting someone elses words, materials, manner of expression, or ideas as your own. This means that even if another person agrees to let you present his or her content as if it were yours, it is still plagiarism. Plagiarism does not require intent: it can be intentional or unintentional.

We take this very seriously.

Emergencies: Review http://police.illinois.edu/emergency-preparedness/ In an emergency in this building, well have three choices: RUN (get out), HIDE (find a safe place to stay inside), or FIGHT (with anything available to increase our odds for survival).

First, take a few minutes this week and learn the different ways to leave this building (exits are to the North, South and two to the West). If theres ever a fire alarm or

something like that, youll know how to get out, and youll be able to help others get out too.

Second, if theres severe weather and leaving isnt a good option, go to a low level, in the Education building the east side of the basement (away from windows).

If theres a security threat, such as an active shooter, RUN out of the building if we can do it safely or HIDE by finding a safe place where the threat cannot see us. We will lock or barricade the door and we will be as quiet as possible, which includes placing our cell phones on silent. We will not leave our area of safety until we receive an Illini-Alert that advises us it is safe to do so. If we cannot run out of the building safely or we cannot find a place to hide, we must be prepared to fight with anything we have available in order to survive.

Remember, RUN away or HIDE if you can, FIGHT if you have no other option.

Finally, if you sign up for emergency text messages at emergency.illinois.edu, youll receive information from the police and administration during these types of situations.

If you have any questions, go to police.illinois.edu, or call 217-333-1216

Class Schedule/Plan 2017

Week	Date	Lecture	Reading in J&W '07
1	Jan 17	Overview & Statistics review	Chapter 1
	Jan 19	Matrix algebra & random vectors	49-78, 82–101,137–140
2	Jan 24		
	Jan 26		
3	Jan 31	Sample geometry & random sampling	111–137
	Fewb 2		
4	Feb 7	Linear combinations	75–77, 149–192
	Feb 8	Multivariate normal distribution	157–214
5	Feb 14		
	16	Inferences about means	210–220
		Confidence regions & ellipsoids	221–234, 258–260
6	Feb 21		
	23	Large sample inference & missing data	234–238, 251–256
7	Feb 28	Paired comparisons (repeated measures)	273–283
	Mar 2	Comparing 2 independent populations	284–296

Week	Date	Lecture	Reading in J&W '07
8	Mar 7	Eigensystems (more matrix algebra) *** Midterm distributed ***	60–66,73–75,77-81
	9	Principal components	430–459
9	Mar 14	PCA continued	
2	16	Comparisons of means: 1–Way MANOVA *** Midterm due ***	296–312
—	—	March 19 – 25 : *** Spring Break ***	—
10	Mar 28	Profile analysis	323–328
	30	2–way MANOVA	312–323
11	Apr 4	2–way MANOVA (continued)	
	6	Discriminant analysis	575–578, 621–633
12	Apr 10	Discriminant analysis (continued)	
	12		
13	Apr 18	Canonical correlation	539–566
	20	Canonical correlation (continued)	
14	Apr 25	Factor analysis	481–530
	27	Factor analysis Final exam available	
15	May 2		
		***** Final exam due May 5 by 4:00 pm *****	