

**APPL-639 Sec 085: SPECIAL TOPICS: APPLIED STATISTICS (3) (Multivariate Statistics) summer 2019**

**First meeting Thursday, 5/30 (In Class 6:30pm-9:00pm) AC 403**

Course runs from 5/28/2019 to 7/22/2019 (First class is Thursday, May 30)

\*HYBRID class\* to meet in the classroom as scheduled with additional meetings scheduled as needed. We will thereafter meet every Thursday in person on the start date, time, and place with remote meetings to be scheduled on Tuesday evenings from 6:30 PM or with individual/groups of students at other times as is convenient for students and inductor (including weekends by appointment). Internet meetings will be held via GoToMeeting (<https://www.gotomeeting.com>).

**Catalog course description:** Study of one major statistical topic, such as multivariate statistics, structural equation modeling, meta-analysis, analysis of ordinal and categorical variables or nonparametric statistical techniques. Offered when student demand is sufficient and matches instructor interests. Topic may vary from semester to semester. May be repeated for credit as course topic changes. Prerequisites: APPL 631, APPL 632 and permission of instructor. Applied Psychology or Certificate in Professional Counseling Studies.

**Instructor**

J. Peter Leeds, Ph.D.  
Hours: Available by appointment via email  
[iamjleeds@gmail.com](mailto:iamjleeds@gmail.com)  
202-321-8938

I prefer to use gmail to communicate using the above e-mail address.

**Course Text**

Statistical Associates Multivariate Statistics Library by David Garson (2015), DVD with PDF sections on multivariate statistics, \$120.00 available through AMOZON and may be loaded on Kindle. **NOTE:** I have made a special arrangement with the author to our students who wish to obtain the free password for access to this set of texts.

1. Go to [www.statisticalassociates.com](http://www.statisticalassociates.com)
2. Click on the Books icon to go to the booklist E-Book Catalog page.
3. Get your password at the top of the page ([here](#))
4. Right-click where it says Free after a particular title, then save the pdf to your computer.
5. Only 2 titles per 48 hour period

6. Go to the Register page and register free for the password for that title. Fill out the form and send the e-mail. They will send you the password and ask for a donation – pay what you can.
7. There is also a FAQ page for further details.

The modules for this course include:

Curve Fitting & Nonlinear Regression (No ISBN)

WLS: Weighted Least Squares Regression ISBN: 978-1-62638-017-2

Factor Analysis ISBN: 978-1-62638-001-1

Logistic Regression, Binary & Multinomial, 2016 Edition ISBN: 978-1-62638-024-0

Multiple Regression ISBN-13: 978-1-62638-031-8

Structural Equation Modeling ISBN: 978-1-62638-032-5

Cluster Analysis ISBN: 978-1-62638-030-1

You can only download one or two at a time some you have collect them piecemeal. I have the PDFs of need to barrow any.

**Prerequisite:** APPL 631 (INTERMED STAT:BEHAV SCI), APPL 632 (RESEARCH METHODS) and permission of instructor

### Course Software

AMOS structural Equation Modeling Software is offered for a FREE 30-day trial (so they say) which is long enough for you to complete the class if you time the download right.

<https://www.ibm.com/us-en/marketplace/structural-equation-modeling-sem>

I recommend downloading and starting the clock on July 5 (for the first class on SEM). This should carry you till Aug 5<sup>th</sup> with the test due on August 6<sup>th</sup> (Be sure to do the SEM before the clock ticks out). For those of you who want to simply by the annual license foe AMOS here is the link.

AMOS and SPSS are available for sale through: [onthehub.com](http://onthehub.com)

1. SPSS Graduate Pack - Available to: Students \$39.25 + \$4.99 Download Fee
2. AMOS (Structural Equation Modeling) \$44.00 + \$4.99 Download Fee

Note: AMOS only runs on IBM PCs and not Mac. UBs' OTS cannot support PC laptops for students who use Mac for the purposes of loading AMOS. So, if you have a Mac, they'll need to run parallels or partition their hard drive to be able to install AMOS.

If you have access to this software then you need not purchase it.

### Important dates

Tuition due

May 27

University closed for Memorial Day	May 27
Last day to drop and receive 100% refund	May 27
First day of class	May 30
Last day to drop without a “W”	July 3
University closed for Independence Day	July 4 and 5
Last day to drop with a “W”	June 10
Last day of class (Exam)	July 22
Grad Roster Open	July 23
Grades due	July 27

## Summary

This graduate course introduces statistical methods for multivariate data that have application in psychology. Students should have a general understanding of basic statistical techniques and psychological measurement theory. This class also requires access to a statistical software packages (SPSS, and AMOS).

## Course Overview and Objectives

This course will be taught from the perspective of an applied psychologist. Thus, while this course should be considered a survey of multivariate methods, most time will be spent on those methods most useful to applied psychologists. A combination of teaching strategies will be used. First, you will experience plenty of PowerPoint lectures. It is assumed that at the time of the lecture you have familiarized yourself with the relevant texts from Garson (see above directions). Lastly, you will also get your hands dirty in actual data and analytic processes, and will on occasion have homework assignments related to data manipulation and analysis to complete outside of class. Major objectives are as follows:

1. Introduce you to traditional and cutting edge multivariate methods
2. Provide an understanding of multivariate methods such that you are able to interpret psychological literature of interest and become active critics of the methods used
3. Prepare you to run multivariate analyses for your own research
4. Integrate theory and methodology such that you can transfer course content into your research
5. Identify where multivariate methods fit in the grand scheme of the empirical research process

## Student Learning Outcomes:

1. Use the Statistical Package for the Social Sciences (SPSS) and AMOS (structural equation modeling software) to analysis a set of data in order to demonstrate proficiency with various statistical methodologies.

2. Discuss when to use common multivariate statistical methods, e.g., multiple regression, logistic regression, factor analysis, structural equation modeling, cluster analysis, and data mining.
3. Discuss the strength and weaknesses of the above mentioned methods.
4. Apply multivariate analysis to real world problems
5. Interpret results from analysis and results from articles that have applied these multivariate statistics.

**Tutoring Services:** This class was authorized a tutor through UB's Achievement and Learning Center. A student who earned a high "A" in last summer's class and who has experience with tutoring was selected to serve in this role. Tutoring is by appointment only. If you are interested go to the following UB website for more details.

<http://www.ubalt.edu/academics/academic-support/achievement-and-learning-center/our-services/tutoring.cfm>

**Student Success Addendum** – The following link provides important information to support your academic achievement including library, disability, community life, police, Sakai and other support services available to you. <http://www.ubalt.edu/policies/academic/Student-Success-Resources-Syllabus-Addendum.pdf>

## Course Requirements

Weekly Homework Assignments (50%). Homework assignments will be given on a weekly basis. Assignments must be submitted *prior* to the start of the following week's class lecture.

Final Exam (Take Home) (40%). One exam will be given at the end of the semester, covering roughly 80-90% of the material from the semester. The exam is designed to ensure that you stayed up-to-date on the assigned readings and that you have mastered the material. The test will contain material covered by the text in the assigned chapters, PowerPoint presentations, lectures, and discussion.

Attendance and participation (10%). Students are expected to attend class unless they talk to the instructors beforehand. Likewise, it is expected that students partake in class discussion. Discussion will be focused, in part, around assigned weekly readings.

## Grading Scale

A = 90-100	B+ = 85-89.99	B = 80-84.99	C+ = 75-79.99
C = 70-74.99	D+ = 65-69.99	D = 60-64.99	F = <60

## Miscellaneous

- The instructor reserves the right to change the syllabus as necessary. Students are responsible for changes announced in class.

- Academic honesty includes, at the very least, submitting work that is yours, giving appropriate credit whenever someone else's work is used, and taking tests and completing assignments strictly according to the conditions specified by the instructor. Please consult the University of Baltimore Student Handbook for a description of these issues.
- If you think there is any reason why you may require a reasonable accommodation to be able to meet the expectations of this course as indicated in this syllabus and as described by the instructor, please let the instructor know as soon as possible.

### Class Schedule

<b>Date</b>	<b>Topic</b>	<b>Assigned Readings</b>	<b>Assigned HomeWork (HW)</b>	<b>Homework Due</b>
Th, May 30	Ordinary Least Squares Regression (OLS) (Part 1) Hierarchical regression	Statistical Associates Multivariate Statistics Library - Multiple Regression		
Th, June 6	Regression Analysis (Part 2) Moderation and Mediation	Statistical Associates Multivariate Statistics Library - Multiple Regression	HW 2 (There is no HW 1)	Th, June 13
Th, June 13	Regression Analysis (Part 3) Curve Estimation  Weighted Least Squares Regression	Statistical Associates Multivariate Statistics Library – WLS: Weighted Least Squares Regression Curve Fitting & Nonlinear Regression	HW 3 Continued	Th, June 20
Th, June 20	Logistic Regression	Statistical Associates Multivariate Statistics Library - Logistic Regression, Binary & Multinomial, 2016 Edition	HW 5 (I omitted 4)	Th, July 4
Th, June 27	Exploratory Factor Analysis	Statistical Associates Multivariate Statistics Library - Logistic Regression, Binary & Multinomial, 2016 Edition Factor Analysis	HW 5 (continued)	Th, July 4
Tuesday, July 2	(Part 1) Structural Equation Modeling	Statistical Associates Multivariate Statistics Library - Structural Equation Modeling	HW 6	Tue, July 9
Th, July 4	-	-	-	-
Tu, July 9	(Part 2) Structural Equation Modeling	Statistical Associates Multivariate Statistics Library - Structural Equation Modeling	HW 7	Th, July 11
Th, July 11	(Part 3) Structural Equation Modeling	Statistical Associates Multivariate Statistics Library - Structural Equation Modeling	HW 8	Tue, July 16
Th, July 11	Handout take home exam	Final Exam (Take Home): Due by Monday, July 22 <sup>nd</sup> @ 11:59 PM EST		
July 14-17	IPAC Conference	Minneapolis, MN		