

Psychology 862
Multivariate Statistics
Course Syllabus

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Course Objectives

Welcome to Multivariate Statistics! The purpose of this course is to introduce you to this form of data analysis that is widely used across all fields of psychology. By the end of the course, my goal is that all students will be able to:

1. Identify variables in a data set as either categorical or continuous
 2. Recognize which analysis is appropriate given a specified hypothesis
 3. Conduct and interpret analyses involving multivariate data
 4. Write up the results of any given multivariate analysis
 5. Propose and complete a project using available survey data
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Readings

There is no textbook required for this course, but you should use the SPSS book as a reference for analyzing and writing up results. You will also be required to do some additional reading based on the topic you choose for your project. If you would like to have references that further explain these analyses, I would recommend the following books (both are about \$20 online):

- Grimm, L. G, & Yarnold, P. R. (1995). *Reading and Understanding Multivariate Statistics*. American Psychological Association.
 - Grimm, L. G, & Yarnold, P. R. (2000). *Reading and Understanding More Multivariate Statistics*. American Psychological Association.
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Grading

The total number of possible points in this course is 250. Your grades will be based on 10 in-class assignments working with SPSS (10 points each; 100 points total), 5 exams (20 points each; 100 total), and a final paper (50 points). Keep track of how much you earn as we progress through the course. Your grade will be based on the percentage scale below:

100-90 = A

89-80 = B

79-70 = C

69-60 = D

59-0 = F

In-Class Assignments

You will be asked to complete 10 in-class assignments (10 points each), which will involve working with an SPSS file containing data. Using these data, you will be asked to perform various statistical analyses, interpret the findings, and write up the results as if they were in the Method or Results section of an APA paper.

Paper

Throughout this course we will focus on writing a research paper involving the NELS data. Ideally, this will give you the opportunity to analyze variables that are interesting to you and could therefore use as pilot data for a thesis project (thus making the paper a rough draft of your thesis). The paper will follow APA guidelines, and will include all of the sections of an APA research paper. Please note that the first two sections require drafts to be turned in first. You will be asked to structure your paper according to the following outline:

- I. Introduction
 - a. Literature review
 - b. Hypotheses
- II. Method
 - a. Participants
 - b. Measures
 - c. Procedure
- III. Results
 - a. Preliminary results
 - b. Hypothesis Tests
- IV. Discussion
 - a. Implications
 - b. Limitations & Future Directions
 - c. Conclusions

Although there is no limit as to how long a research article can be, you should be prepared to write a 15-20 page paper (including references, title page, abstract, tables and figures). You should also be prepared to write drafts of each section of the paper and revise it several times (see Course Schedule for due dates on section drafts and the final paper; although the drafts will not be graded, including them with your final paper is worth 10 points total). If you turn in the original draft of your paper, you run the risk of getting a poor grade. *The final paper will be worth 50 points, and is due at 5 p.m. on May 5.*

Exams

You will be tested on each major section of this course through 5 exams (20 points each). The exams will consist of analyzing a data set, interpreting and writing the results, and answering questions about the statistics you obtain from the analyses.

Academic Accommodations

If you are registered with the Office of Services for Individuals with Disabilities, please obtain your accommodation letters from the OSID and present them to the course instructor to discuss any academic accommodations you need. If you believe you need accommodation and are not registered with the OSID, please contact the Office in Student Services Building Room 361 by e-mail at disserv@eku.edu or by telephone at (859) 622-2933 V/TDD. Upon individual request, this syllabus can be made available in an alternative format.

COURSE SCHEDULE

DATE	TOPIC
1/12	Introduction & Variance
1/14	Types of Variables & Comparisons
1/16	Correlational hypotheses & Designs
1/21	Survey items, Summary scores & Reliability
1/23	The Data File
1/26	Variable Selection & Downsize Data File
1/28	Writing Results Sections (Chosen variables due)
1/30	SPSS: Data entry, summary scores & descriptives
2/2	SPSS: Reliability analysis
2/4	EXAM 1
2/6	NO CLASS
2/9	Factor Analysis & Cluster Analysis
2/11	Assessing Validity of Measures
2/13	Discriminant Analysis & Logistic Regression
2/16	Writing Method Sections (Variable identification due)
2/18	SPSS: Factor & Cluster Analyses
2/20	SPSS: Discriminant Analyses & Logistic Regression
2/23	EXAM 2
2/25	Experimental Hypotheses & Designs
2/27	IV's vs. Subject Variables vs. Covariates
3/2	ANOVA, ANCOVA & Trend Analysis
3/4	Factorial and Multivariate ANOVAs
3/6	Hypotheses (Method Draft due)
3/16	SPSS: ANOVA, ANCOVA & Trend
3/18	SPSS: MANOVA, MANCOVA & Canonical Correlations
3/20	EXAM 3
3/23	Advanced Correlational Hypotheses & Designs
3/25	Bivariate, Partial & Semi-Partial Correlations
3/27	Simultaneous & Stepwise Regression
3/30	Writing Introduction Sections (Hypotheses due)
4/1	SPSS: Correlation Analyses
4/3	SPSS: Regression Analyses
4/6	EXAM 4
4/8	Hierarchical regression: Mediation effects
4/10	Hierarchical regression: Moderation effects
4/13	Structural equation model estimation
4/15	Longitudinal model estimation & Multilevel modeling
4/17	Final Paper: Sections, Tables, & Figures (Introduction Draft due)
4/20	SPSS: Mediation & Moderation effects
4/22	SPSS: Model estimation
4/24	EXAM 5
4/27	Data Analysis & Paper meetings (Analysis Plan due)
4/29	Data Analysis & Paper meetings
5/1	Data Analysis & Paper meetings

FINAL PAPER IS DUE ON MAY 4 AT 5 PM