

Course Syllabus: Psychology 5113
Psychological Statistics
PSYC 5113 Section 201
Spring, 2019

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REQUIRED TEXTS

Diekhoff, G. M. (1992 reprint). *Statistics for the Social and Behavioral Sciences: Univariate, Bivariate, and Multivariate*. New York: McGraw-Hill (formerly Wm. C. Brown Publishers). (purchase from Psychology Department office)

Diekhoff, G. M. (revised 2014). *Guide to SPSS for Windows*. (purchase from Psychology Department office)

Meyers, L. S., Gamst, G., and Guarino, A. J. (2017 or 2013). *Applied multivariate research: Design and interpretation*. Los Angeles: Sage.

RECOMMENDED FOR A MORE COMPLETE STATISTICS LIBRARY

Warner, R. (2008 or 2013). *Applied Statistics: From Bivariate Through Multivariate Techniques* (2nd ed.). Los Angeles: Sage.

Tabachnick, B. G. & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Upper Saddle River, NJ: Pearson...

PURPOSES AND GOALS OF THE COURSE

We will spend the first half of the semester reviewing the basic concepts of univariate and bivariate statistics, filling in some of the details that were probably missing from your undergraduate statistics class. During the second half of the semester we will cover topics in bivariate and multivariate statistics that were certainly not covered in your undergraduate course. In addition to acquiring a conceptual understanding of these statistical procedures, you will develop the ability to evaluate research scenarios in order to isolate the research questions being asked and determine which statistical techniques are most appropriate to answering those questions. You will become skilled in the use of statistics through regular homework and in-class assignments that require both manual calculation and computerized

data analysis. Your training will include a thorough introduction to the use of IBM SPSS 25.0 for Windows and most class sessions will include at least some time spent in the computer lab working with SPSS. The ultimate goal of this course is to train you to be intelligent and critical consumers of the technical and professional research literature in the social and behavioral sciences and to be capable users of applied statistics..

The course is fast-paced, and must be in order to cover the breadth of statistics. This will require concerted effort on your part. Although most reading assignments are relatively brief, chapters in your text are information-rich and extracting that information will require that you study it, work with it, and *experiment* with it. Don't be frustrated by the fact that you will be unable to grasp everything.

EXPECTATIONS

Please attend class regularly.

Please get to class early, not late.

Complete homework assignments in a timely manner

Be patient with those who learn more slowly than you do.

Be patient with those who learn more quickly than you.

Be courteous.

GRADING

Course grades will be largely determined by your average on the four exams. These exams will cover definitional and conceptual knowledge as well as your ability to analyze research problems, select appropriate statistical procedures, and use statistics effectively to answer research questions. Borderline grades will be affected by factors such as attendance, timely completion of homework assignments, and quality (not quantity) of participation.

DISABILITIES

Individuals requiring special accommodations according to the Americans with Disabilities Act should work with the MSU Disabilities Office and request that they notify me directly.

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TOPICS AND ASSIGNED READINGS

Introduction, Scales of measurement

Diekhoff Chapter 1

Meyers et al. Chapters 1, 2, 3

Descriptive Procedures

Data Distributions and Graphs

Diekhoff Chapter 2

Descriptive Statistics

Diekhoff Chapter 3

Standard Scores, Standard Normal Distribution

Diekhoff Chapter 4

Interval Estimation

Diekhoff Chapter 5

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EXAM 1

Univariate Significant Difference Tests

One-Sample Tests

Diekhoff Chapter 6

Two-Sample Tests

Diekhoff Chapter 7

One-Way ANOVA

Diekhoff Chapter 8

Meyers et al. Chapter 4

Factorial ANOVA

Diekhoff Chapter 9

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EXAM 2

Bivariate Correlation and Regression

Bivariate Correlation. Diekhoff Chapter 10

Meyers et al. Chapter 6

Bivariate Regression

Diekhoff Chapter 11

Multivariate Correlation and Regression

Partial and Semi-Partial Correlation

Diekhoff Chapter 12

Multiple Correlation and Regression

Diekhoff Chapter 13

Meyers et al. Chapters 7 and 8

Canonical Correlation

Meyers et al. Chapter 13

EXAM 3

Multivariate Significant Difference Tests

- Discriminant Analysis (One-Way MANOVA)

 - Diekhoff Chapter 14

 - Meyers et al. Chapter 11

- Factorial MANOVA

 - Diekhoff Chapter 15

 - Meyers et al.; Chapter 5

Examining Data Structures

- Factor Analysis

 - Diekhoff Chapter 16

 - Meyers et al. Chapter 12

- Cluster Analysis

 - Diekhoff Chapter 17

 - Meyers et al. Chapter 15

- Multidimensional Scaling

 - Diekhoff Chapter 18

 - Meyers et al. Chapter 14

EXAM 4