Course Syllabus
Psychology 5113-201
Psychological Statistics
Spring, 2024

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OFFICE HOURS

    MW 11-12
    TR 8-9:30

REQUIRED TEXTS

Warner, R. M. (2021). *Applied Statistics I: Basic Bivariate Techniques* (3rd ed.). Thousand Oaks, CA: Sage. ISBN: 978-1-5063-5280-0

Diekhoff, G. M. (1992). *Statistics for the Social and Behavioral Sciences: Univariate, Bivariate, and Multivariate.* New York: McGraw-Hill (formerly Wm. C. Brown Publishers). (You'll be provided with a free PDF copy.)

Diekhoff, G. M. (revised 2021). *Guide to SPSS for Graduate Statistics.* (You'll be provided with a free editable copy.)

ALSO RECOMMENDED FOR A MORE COMPLETE STATISTICS LIBRARY

Warner, R. M. (2021). *Applied Statistics II: Multivariable and Multivariate Techniques* (3rd ed.). Thousand Oaks, CA: Sage. ISBN: 978-1-5443-9872-3

Meyers, L. S., Gamst, G., & Guarino, A. J. (2013 or 2017). *Applied Multivariate Research: Design and Interpretation* (2nd or 3rd eds.). Thousand Oaks, CA: Sage.

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

ADDITIONAL TOOLS—RECOMMENDED, BUT NOT REQUIRED

I highly recommend that you have a desktop or laptop computer with an installed subscription to the IBM SPSS Statistics Standard Grad Pack (Version 29), the statistical software that you'll be using this semester. You can purchase this software subscription wherever you like, but here is one vendor that has proven to be reliable and who provided good customer service in the past: https://www.hearne.software/SPSS-Selection. Wherever you get it, the cost should be about $50 for a six-month subscription. Note that IBM SPSS software will not run on a tablet or smartphone. IBM SPSS is installed on the computers in the O'Donohoe 126 computer lab and those computers are available to you, so it is not mandatory that you have your own subscription. However, the lab is only open during business hours Monday-Friday, and classes are scheduled in the lab at various times during the week, so you won't always be able to access the lab when you want it.

Laerd Statistics at https://statistics.laerd.com provides an excellent guide to the use of SPSS at a very reasonable price—about $15 for six months). I recommend that you take their free tour and decide if their guide might be helpful to you as you learn to use SPSS

PURPOSES AND GOALS OF THE COURSE

We will spend the first part of the semester reviewing the basic concepts of univariate and bivariate statistics and fleshing out some of the details that were probably missing from your undergraduate statistics class. During the second part of the semester we will cover topics in bivariate and multivariate statistics that were almost 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. Your training will include a thorough introduction to the use of IBM SPSS 29.0 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 become capable users of applied statistics.

The course is fast-paced, and will require concerted effort on your part. Although most reading assignments are relatively brief, chapters in your textbooks, especially the Warner text and supplementary readings that I'll send you throughout the semester, 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. Get as much as you can in the time that you have.

EXPECTATIONS

Please attend class regularly.
Please get to class early, not late.
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 determined by your average on four exams:

85-100% A
70-84% B
50-69% C
30-50% D
Lower   F

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. You'll need to be able to complete a variety of statistical analyses, some of which can be accomplished using SPSS and some of which require manual calculations.

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.

TOPICS AND ASSIGNED READINGS

Introduction, Scales of measurement
        Diekhoff Chapter 1
        Warner I: Chapters 1, 2
Descriptive Procedures

        Data Distributions and Graphs
        Diekhoff Chapter 2
        Warner I: Chapter 3, 5

        Descriptive Statistics
        Diekhoff Chapter 3
        Warner I: Chapter 4

        Standard Scores, Standard Normal Distribution
        Diekhoff Chapter 4
        Warner I: Chapter 6
        Interval Estimation
        Diekhoff Chapter 5
        Warner I: Chapter 7

Univariate Significant Difference Tests
        One-Sample Tests
        Diekhoff Chapter 6
        Warner I: Chapters 8, 9

        Two-Sample Tests
        Diekhoff Chapter 7
        Warner I: Chapters 12, 14

        One-Way ANOVA
        Diekhoff Chapter 8
        Warner I: Chapter 13

        Factorial ANOVA
        Diekhoff Chapter 9
        Warner I: Chapter 16

Bivariate Correlation and Regression
        Bivariate Correlation

Diekhoff Chapter10
Warner I: Chapters 10, 17

Bivariate Regression
Diekhoff Chapter 11
Warner I: Chapter 11

Multivariate Correlation and Regression
Partial and Semi-Partial Correlation
Diekhoff Chapter 12

Multiple Correlation and Regression
Diekhoff Chapter 13

Multivariate Significant Difference Tests
Discriminant Analysis (aka One-Way MANOVA)
Diekhoff Chapter 14

Factorial MANOVA
Diekhoff Chapter 15
Warner I: Chapter 16

Examining Data Structures
Factor Analysis
Diekhoff Chapter 16

Cluster Analysis
Diekhoff Chapter 17

Multidimensional Scaling
Diekhoff Chapter 18

EXAMS

Four exams will be administered at approximately equal intervals throughout the semester. Each exam will cover whatever material we've covered in class since the preceding exam. Exams will not intentionally be designed to be cumulative, but statistical concepts are cumulative by their nature and that will be reflected in the exams.

Exam dates shown here are tentative and are subject to revision:

Exam 1, Feb. 7
Exam 2, Mar. 4
Exam 3, Apr. 8
Exam 4, May 1

All makeup exams will be administered on Monday, May 6, 8:00 am in OD-110.