

Department of Educational and Counseling Psychology

EDRM 611

Applied Statistics for Education & Psychology I

July 9-20, 2012
Bell Hall 183
M-F 8:00am to 12:15pm

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Introduction

EDRM 611 is an introductory course in statistics for students in education and psychology. The course is designed for students with minimal background in mathematics who may or may not pursue further studies in statistics.

Course Description

Analysis of educational, counseling & psychological data using descriptive and basic inferential statistics; frequency distribution, measures of central tendency, dispersion, correlation, t-tests, one way Analysis of Variance, simple linear regression, introduction to multiple regression analysis, and Chi-Square. SPSS will be used for all data analysis. Students are expected to submit and present a research paper at the end of the course.

Knowledge Base

Statistical analysis is fundamental to the fields of social and behavioral sciences. One can scarcely open a book or journal in these disciplines without finding some aspects of statistics - correlations, statistical significance, t-tests, etc. Without statistics, we would quickly become lost in the sea of numbers, facts and figures. Statistics are a means of organizing, condensing, and analyzing numerical data in ways that find order in chaos.

Statistics as a general field consists of two subdivisions: descriptive and inferential statistics. Descriptive statistics involves techniques for presenting information in a succinct but clear manner. Inferential statistics involves procedures for making generalizations about a population by studying a representative subset of that population. Some aspects of both descriptive and inferential statistics will be presented in this class. In descriptive statistics, particular emphasis will be given to the following concepts: scales of measurement, frequency distribution, measures of central tendency, measures of dispersion, standard scores, correlations

and linear regression. For inferential statistics, hypothesis testing for one and two sample groups (means, proportion and correlation) will be presented. Beginning concepts in power analysis and nonparametric statistics will also be presented. Knowledge of elementary mathematics is assumed in this class.

Accommodation for Special Needs Students

Andrews University accepts and appreciates diversity in its students, including students with disabilities. Accordingly, qualified students with qualified disabilities are encouraged to inform the University of their disability and enter into a dialogue regarding ways in which the university might reasonably accommodate them. Students should note that an academic institution can respond only to what it knows. The office of Student Services and Student Success Center work together to provide reasonable adjustments and special help for students with qualified disabilities. Students are responsible to provide necessary documentation of disabilities from a qualified, licensed professional before accommodation can be considered. Support services for students with disabilities are available through Student Services. You may call the Student Success Center (471-6096) for assistance.

Course Text/Materials

Required:

Howell, David C. (2013). *Statistical Methods for Psychology*. Belmont, CA: Thomson Higher Education

SPSS for Windows, Ver 14, 15, 16, 17, 18, 19, or 20

An electronic calculator with simple statistical functions

Recommended:

Green, S. B. and Salkind, N. J. (2011). *Using SPSS for Windows and Macintosh: Analyzing and understanding data*. Upper Saddle River, NJ: Prentice Hall.

Objectives

The course has five major objectives. Upon completion of the course, the students should be able to :

1. demonstrate comprehension of basic statistical concepts and procedures.
2. demonstrate ability to apply basic statistical procedures and concepts to solve theoretical and practical problems.
3. identify appropriate statistical procedures for specific problems or hypotheses.
4. use SPSS (IBM SPSS) to analyze data.
5. adequately interpret and report statistical analysis.

Assessment of learning objectives

Student learning will be assessed and evaluated through the use of 5 quizzes, 7 assignments and one class project. The quizzes are designed to assess student understanding of basic statistical concepts (e.g. meaning of standard deviation, assumptions for one-way analysis of variance). The Assignments and class project are designed (a) to assess, through data analysis, students' ability to demonstrate and apply the statistical concepts covered in this class; (b) to demonstrate the use SPSS for data analysis; (c) to read and interpret data analysis output; and (d) to write research reports.

Quizzes, assignments, and the class project for the purpose of assessing mastery of statistical concepts covered in this class will be weighted as follows:

1.	Online quizzes	25% (5 quizzes).
2.	Assignments	45% (7 assignments)
3	Class Project	30%

Grades will be assigned according to the following scheme:

A	95%-100% (A); 90%-94% (A-)
B	85%-89% (B+); 80%-84% (B); 75%-79% (B-)
C	70%-74% (C+); 65%-69% (C); 60%-64% (C-)
D	55%-59% (D)
F	below 55% (F).

Class Schedule

Date	Topic	Chapter
July 9,10	Research Designs Levels of measurement/types of variables Frequency Distribution Central Tendency; Measures of Variations Standard Scores	1,2
11	Logic of significance Testing One sample case for the mean	4,7
12	Independent Samples t-test Dependent Sample t-test	7
13, 16	One-way Analysis of Variance Post-hoc multiple comparison procedure	11,12
17	Chi-Square Tests of Association Bivariate Correlation: Pearson r	6 9
18	Spearman rho & other correlation coefficients Significance tests for correlations	10

Additional References

- Agresti, A. and Finlay, B. (2009). *Statistical Methods for the social Sciences*. Upper Saddle River: NJ: Prentice Hall.
- Devore, J. and Peck, R. (2008). *Statistics: The Exploration and Analysis of Data*. Belmont, CA: Thomson Higher Education.
- Gravetter, F. J. and Wallnau, L. B. (2011). *Essentials of statistics for the behavioral sciences*. Belmont, CA: Thomson Higher Education.
- Heiman, G. W. (2011). *Basic statistics for the behavioral sciences*. Belmont, CA: Thomson Higher Education.
- Hinkle, D. E., Wiersma, W. and Jurs, S. G. (2003). *Applied statistics for the behavioral sciences. tatistical*. Boston, MA: Houghton Mifflin Company.
- Warner, R. M. (2013). *Applied statistics: From bivariate through multivariate techniques*. Thousand Oaks, CA: Sage Publications.