

**ST. JOHN'S UNIVERSITY
SCHOOL OF EDUCATION
CENTER FOR EDUCATIONAL LEADERSHIP AND ACCOUNTABILITY**

EDU 7211 – Educational Research and Data Analysis II

Professor Francesco Ianni, Ed. D.

Email: francescoi@optimum.net

Other office hours may be arranged on a call-by-call basis.

Required for this course:

1. SPSS Version 10 or later, and Internet connectivity.
2. Salkind, N. (2008). *Statistics for People Who (Think They) Hate Statistics*. Thousand Oaks: Sage Publications.

Course Description

This course provides an introduction to the principles of statistical inquiry. Students will formulate research questions and hypotheses and use descriptive and inferential statistics to investigate the research reports summarizing and interpreting the results of the analysis. Students will have hands-on use of computer technology and SPSS to organize and analyze data. Students will learn to use measures of central tendency and variability, standard scores, the normal distribution, correlation and regression, t-tests, ANOVA, chi-square, and to compute and interpret statistical power.

A school district's effective use of data can enable the successful identification and implementation of appropriate strategies that ultimately lead to the attainment of standards and increase in student learning. By supporting the creation, access, and subsequent analysis of school district databases, efforts by school leaders to create and sustain professional learning communities that are focused on the success of all students can be realized.

Course Prerequisite

This course extends the study of statistical inquiry begun in EDU 5655. It will address more advanced univariate inferential statistical methods, principles of measurement, internal validity, power analysis and effect size. Students will have hands-on use of computer technology and SPSS to organize and analyze data. Students will learn to use techniques such as chi-square, bivariate and multiple correlation/regression, analysis of variance and covariance, and HLM to analyze and interpret the results of experimental and non-experimental studies.

Although not necessary, some knowledge of Microsoft's PowerPoint (or any other presentation graphics program) and Excel will be helpful.

Course Objectives

The purpose of this course is to help educators think through the issues surrounding the uses of school district databases established to achieve increased student learning. This course will help educators to formulate research questions and hypotheses and use descriptive and inferential statistics to investigate the research reports summarizing and interpreting the results of the analysis. The task of learning the structure, content, and data analysis options of a database is tolerable when students will have hands-on use of computer technology and SPSS to organize and analyze data.

Student Evaluation and Grades

1. Final Exam 40%
2. Assessments (Quiz/Papers) 30%
3. Final Project 30%

Description of Final Project

The purpose of this project is to help educators formulate research questions and hypotheses that will eventually lead to an increase in student learning.

Each student will present the final project. Please remember that your findings **MUST** be supported with the appropriate descriptive and inferential statistical methods. The students must **successfully demonstrate the ability to summarize data and effectively implement the appropriate statistical methodology. Excel output will not be allowed. Only SPSS tables and graphs will be graded.**

The project should be very similar to a mini dissertation. It will be graded on the followings:

1. Description of the problem
2. Research questions
3. Quick review of literature
4. Description of the methodology that will be used
5. Description of variables in the context of the research
6. Findings (tables, graphs, regressions...)
7. Description of the findings
8. Summary and conclusion

Course Outline

LECTURE POWERPOINT – FRIDAY

Data Analysis Introduction/Review and SPSS software

In this first lecture we will have an introduction to the course and a quick review of SPSS. We will make use of real data in order to pose relevant questions and learn the appropriate methods of analysis. The difference between descriptive and inferential statistics will be explained in addition to the different levels of measurement.

Distribution Analysis

Examining the distribution will be the main objective of this lecture. In order to understand the distribution, it is important to explore how the collection of data is distributed across the data set. The analysis of the measure of central tendencies will give the students a clear understanding of the delicate relationship between skewness, mean and median.

LECTURE POWERPOINT – SATURDAY

Central Tendency, Skewness and Spread

The initial examination of skewness and measure of central tendency will be expanded by the introduction of several other statistical measures that will describe the spread of the distribution. Basic calculation will be expected in this lecture in order to fully understand the nature of some of these statistical values.

- PRACTICE EXAM 1
- REVIEW PRACTICE EXAM 1

Transformations

In this lecture the students will explore the linear and non linear transformation. The main focus will be on the fact that most of the time variables need to be transformed in order to be used. Transformations are useful techniques that can truly tell the researcher a lot of information about the distribution.

- PRACTICE SPSS QUIZ 1
- REVIEW PRACTICE SPSS QUIZ 1

The Relationships between variables

Understanding the difference between one distribution and another was the focus of the first few lectures. In this part of the course we will explore the relationship between variables. Even though numerous graphical representations have been explored up to this point we will learn about scatterplots and ways to visually analyze a correlation from the graph.

Sunday

LECTURE POWERPOINT – SUNDAY

Regression Analysis

This lecture will expand on the correlation between variables and will emphasize how a change in one variable relates to the change in another variable. Students will be introduced to the necessary skills to find the regression equation in addition to the correct interpretation. In this part of the course, students will be able to focus on research methodologies and the initial structure of chapter three in the dissertation process.

- PROJECT DISCUSSION

Assignment

- SPSS QUIZ 1
- EXAM 1

Friday

- Quick review of SPSS
- Review and Practice of Regression Analysis
- SPSS QUIZ 2
- WORK ON PROJECT

Saturday

LECTURE POWERPOINT – SATURDAY

Probability Models and Inferential Statistics

In descriptive statistics students are exposed to a complete data set; in inferential statistics the researcher is expected to make prediction with a specific level of certainty that is based on probability models. In this lecture we will explore basic theoretical probability models in addition to the binomial and the normal distribution model.

Probability fundamentals

The Normal Distribution

Normal Curve

Analysis of variance

- REVIEW FINAL EXAM
- REVIEW
- WORK ON PROJECT
- EXAM 2

Sunday

- *FINAL EXAM*
 - *PROJECT IS DUE*
-

Website Links

Dr. Hughes gathered a set of websites that will complement the readings and the lectures throughout the course. Below are some of these sites.

<https://www.nystart.gov/publicweb/>
<http://www.schoolmatters.com/>
<http://www.schooldistrictalmanac.org/home.htm>
www.schooldistrictalmanac.org
www.schoolmatters.org
<http://www.just4kids.org/jftk/index.cfm?st=US&loc=home>
http://money.cnn.com/best/bplive/cities_table/
<http://www.usnews.com/usnews/edu/grad/grhome.htm>
www.schoolboarddata.org
www.mprinc.com/pubs/
www.wested.org/csrd/guidebook/toc.htm
<http://www.nber.org/sddb/>
www.naesp.org
www.ncrel.org/csri/tools/makegood.pdf
www.nwrel.org/csrdp/tool2.pdf
www.aasa.org/issues_and_insights/technology/
www.ecs.org/html/project.asp?projectID=26
www.cse.ucla.edu
www.nsse.org
www.publicagenda.org

Supplementary Texts

Bernhardt, V. (2000). *Designing and using databases for school improvement*. Larchmont, NY: Eye on Education. ISBN 1-883001-95-1

Holcomb, E. (2004). *Getting excited about data*. Thousand Oaks, CA: Corwin Press. ISBN 0-7619-3959-8

Hughes, J. (2005). *School District Almanac (Suffolk County Edition)*. SCOPE and Connolly – Cormack, Publishers. ISBN 1-884280-07-2 (Phone orders only: 631.360.0800: ATTN Dr. Joseph Verdone)

Reeves, D. (2004). *Accountability for learning: How teachers and school leaders can take charge*. Alexandria, VA: ASCD Publications. ISBN 0-87120-833-4

Bernhardt, V. (2004). *Data Analysis for continuous school improvement*. Larchmont, NY: Eye on Education. ISBN 1-930556-74-8

Preuss, P. (2003). *School leaders guide to root cause analysis: Using data to dissolve problems*. Larchmont, NY: Eye on Education. ISBN 1-930556-53-5