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**PHD 704, SEC 01**  
**Quantitative Research Design and Analysis**  
**Alvernia University, Spring 2025, MOD 3**  
**Francis Hall 402**  
**M 5:30 - 8:30 PM**

- ⇒ **Professor:** Nicholas P. Nicoletti, Ph.D.
- ⇒ **Office:** Francis Hall, 227
- ⇒ **Phone:** (610) 796-8355<sup>1</sup>
- ⇒ **Email:** nicholas.nicoletti@alvernia.edu
- ⇒ **Class Time:** Monday Evenings, 5:30 - 8:30 PM
- ⇒ **Room:** Francis Hall, Floor 4, Room 402
- ⇒ **Office Hours:** Tuesday: 11:00 AM - 2:00 PM and Thursday: 11:00 AM - 2:00 PM  
(Office Door is Always Open, Please Stop By)

## 1 Course Description

**Graduate Credit Hours:** 3 CR

**Pre-requisites and Co-requisites:** None

**Course Format:** Traditional/Face-to-Face that is Web-enhanced

A companion to Qualitative Research Methodologies, this course is designed to help students develop proficiency in quantitative analysis for interpreting social and organizational data. Includes experimental, quasi-experimental, and several multivariate designs as well as critical analysis of quantitative studies and an examination of the ethics involved in research. Appropriate statistical techniques are discussed, critiqued, and applied. The course will enable students to develop the ability to recognize valid data and valid evidence within the context of decision making within organizations.

This course introduces students to statistical methods for social science and organizational research. The course prepares students to develop proficiency in analyzing and interpreting data within the context of several quantitative research designs, including

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<sup>1</sup>If you leave a voicemail, please leave your name, what class you are in, a description of the problem/question, and slowly leave a number where I may reach you. The best way to reach me is by email.

multivariate designs. Statistical topics and techniques covered include descriptive statistics, measures of central tendency and variability, probability, statistical inference and hypothesis testing, parametric and nonparametric testing, analysis of variance (ANOVA), and multivariate techniques (partial correlation and multiple regression). This course includes an applied component relying on Statistical Package for the Social Sciences (SPSS) software. Applied assignments will incrementally build a set of basic skills necessary to program and interpret statistical analyses.

## 2 Learning Objectives

1. Know the principles of quantitative research design;
2. Distinguish between types of quantitative research designs;
3. Know a range of statistical techniques and their appropriate application for data analysis;
4. Understand foundational statistical concepts including measures of central tendency and variability, the Central Limit Theorem, sampling and sampling distributions, estimation;
5. Know the difference between descriptive statistics and inferential statistics;
6. Know the principles of hypothesis testing and statistical significance;
7. Independently produce and interpret descriptive statistics to answer research questions;
8. Independently conduct and interpret the results of statistical tests, including t-tests, Chi-square tests, and ANOVA to answer research questions;
9. Independently conduct and interpret the results of multivariate regression analyses to answer research questions;
10. Import, define, and transform data in SPSS to prepare for statistical analysis;
11. Produce and interpret graphical presentation of data;
12. Critically review, interpret, and evaluate quantitative research results presented in academic and business publications.

## 3 Graduate Learning Objectives

1. **Interprofessional collaboration:** relationship management; decision making based upon theoretical concepts.
2. **Knowledge of the discipline:** evidence-based knowledge and practice; continuous quality improvement to achieve outcomes; professional behaviors.
3. **Effective communication:** advanced scholarly writing and oral communication; information management and technology skills.
4. **Ethical considerations and leadership:** advocacy (individual, organization, community, and global); ethical and moral leadership; social justice.
5. **Research skills:** quantitative and/or qualitative methods; information literacy.

## 4 Course Format

This is a **Blended-Plus course**: This is a course that delivers approximately 51% – 75% of its content electronically.

## 5 Instructional Time

All courses must meet the federal direct and supplemental instructional time requirements. The Direct Instructional Time required for all courses is 14 hours per credit hour. The Supplemental Instructional Time required for all courses is an additional 30 hours per credit hour.

This course is scheduled as a Blended-Plus (OR Directed Study or Independent Study) Course with Direct Instructional in-seat classroom time equal to 14 hours and Direct Instructional equivalents of 28 hours. The Supplemental Instructional time is met through outside assignments included in the Course Schedule as updated over the term.

The Direct Instructional equivalencies are met through a combination of discussion boards and a cumulative final exam. The discussion boards will take 2 hours each, and there are 4 of them assigned. The final exam will take an additional 20 hours. This makes the Direct Instructional Equivalence equal to 42 hours.

In the syllabus **Direct Instructional Time (DI Seat Hours)** is denoted for every single class meeting. **Supplemental Instruction (SI) hours** are denoted for readings, homework, and research assignments.

## 6 Required Course Materials

- ◇ Privitera, Gregory, J. (2024). *Statistics for the Behavioral Sciences, 4<sup>th</sup> Edition*. Los Angeles: Sage. ISBN: 9781506386256.
- ◇ Pollock, Philip H., and Barry C. Edwards. (2020). *An IBM Companion to Political Analysis, 6<sup>th</sup> Edition*. Washington, D.C.: Sage/CQ Press. ISBN: 9781506379654.
- ◇ IBM SPSS Standard, version 28 or higher.<sup>2</sup>
- ◇ The remaining readings are a mixture of scholarly articles and book chapters which will be posted on Canvas. A “+” indicates that the reading is posted on Canvas. A “∇” indicates that the reading is in the physical Course Reserve in the libraries.

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<sup>2</sup>This class uses SPSS because Alvernia supports SPSS. However, my preferred software/language is R. I am also an advanced user of SPSS and Stata. SPSS is an easier to use GUI software, which is why many graduate programs use it. However, if you choose to use another program because of cost (e.g., R and R Studio are free), I am not opposed. Just know that lectures will be taught using SPSS and the learning curve for using another program cannot be used as a reason for not completing work on-time.

## 7 Course Expectations

### 7.1 What I Expect from You

- Come to class prepared with a laptop, having read all assigned reading, and having completed all necessary assignments.
- Come to class prepared to participate, discuss, and apply the course content.
- Be intellectually curious and ready to learn!
- Play with SPSS and become familiar with the program, the GUI, and various commands.
- Be ready to learn difficult concepts and receive feedback.

### 7.2 What You Can Expect from Me

- I will come to class prepared, enthusiastic, and open to your ideas, questions, confusion, frustration, etc.
- Prompt feedback through the return of all assignments, exams, etc.
- Answer email and discussion forum questions within a 24 hour window (outside of holidays and weekends).
- Practical advice in how to conduct quantitative research.
- If you are struggling with the material you are always welcome to come see me for help and support.

### 7.3 A Few Additional Notes

Multiple students often have the same question regarding course material or administrative issues. All relevant information about the course should be contained in this syllabus. Thus, students should always consult the syllabus first when they have a general / administrative question. In the event that the answer to your question is not in the syllabus, I have setup a Discussion Forum, under the "Discussion Board" tab in Canvas, where students can anonymously post a question about administrative issues or course material. Utilizing this mechanism allows all students to gain access to the answers to frequently asked questions. Hence, always check the discussion forum for the answer to your question (after you have consulted the syllabus). If the answer to your question is not in the discussion forum, create a new post and I will answer your question. Of course, students are free to email me or stop by my office hours with any questions; I understand that some questions / issues must be resolved outside of the discussion forum.

There will be no form of video/audio recording or photography will be permitted in my class without permission. I reserve the right to request copies of any recordings in any form taken in my class. See the section below on Alvernia's university-wide video and audio recording policies.

## 8 Grading Policy and Grading Rubric

Students can earn a total of 100 points per semester. Up to 45 points can be earned from successfully completing the six SPSS homework assignments, worth 15 points each. Up to 35 points can be earned from the cumulative Final Exam. And up to 20 points will be earned from the four discussion board assignments. This means that each point in the class is worth one percent of your final grade. In other words, the denominator for your grade will change throughout the semester as points are accumulated. For example, by mid-semester students will have the possibility to earn approximately 50 points in the class. Let's say that you earned 41 total points by mid-semester. To figure out your grade simply divide 41 by 50 and multiply by 100:  $(\frac{41}{50}) * 100 = 82$ . This would mean that you earned a B halfway through the semester. By the end of the semester - when all assignments are turned in - there will be 100 total points that could have possibly earned in the course. Thus, if you earned 90 points out 100 possible points, your grade would be a 90 which is an A-.

- \* SPSS Homework Assignment 1 — 15% (15 points).
- \* SPSS Homework Assignment 2 — 15% (15 points).
- \* SPSS Homework Assignment 3 — 15% (15 points).
- \* Cumulative Final Exam — 35% (35 points).
- \* Discussion Board Assignments — 20% (4 DBs, worth 5 points each, for 20 points).

## 9 Grading Distribution

The Alvernia grading distribution is below, with the graduate grading scale on the right side of the table. As this is a graduate course, grades will be appropriate for graduate students. Assignment grades are meant to show students the type of writing that is appropriate for a dissertation. Final course grades typically consist of most students earning an A or A-, with a few earning B's if they have struggled to complete work.

**Grading Scale**

Undergraduate Grading Scale					Graduate Grading Scale		
A	94-100	C-	70-72	P Passing Grade	A	4.0	94-100
A-	90-93	D+	67-69	I Incomplete	A-	3.7	90-93
B+	87-89	D	63-66	WP Withdrawal/Pass	B+	3.3	87-89
B	83-86	D-	60-62	WF Withdrawal/Fail	B	3.0	83-86
B-	80-82	F	Failure	AU Audit	B-	2.7*	80-82
C+	77-79				C	2.0	73-79
C	73-76				F		73 and below

## 10 Similarity Detection Software (Turnitin)

To prevent and detect plagiarism, I will require students to use similarity detection software (e.g. Turnitin) in this course. Textual similarity software compares submitted student text to a database of millions of previously published documents, including those on the public Internet, a proprietary collection of published articles, as well as every student paper previously submitted to the detection software (including my class assignments from previous semesters). This software also analyzes your paper for the use of generative Artificial Intelligence (AI), also known as large language models (LLMs). When similarities between student text and an existing document are found, the software identifies those similarities for the instructor and/or student to review. It does the same thing for generative AI. Similarity alone is not evidence of academic misconduct, as such material may be correctly cited. This software may be used as an educational tool to assist students in learning how to properly cite resources, to decrease instances of academic misconduct, and/or to assist in the identification of acts of academic misconduct.

## 11 Participation

Attendance is an important part of the college learning experience. I expect students to come to class prepared (having done the readings and assignments) and ready to participate in the form of answering and asking questions.

## 12 Course Schedule

### 12.1 Week 1: January 20 — 26, 2025

#### 12.1.1 ⇒ Monday, January 20 — No Class, MLK Day

- ★ No Class, MLK Day.
- △ Acquire Textbook.
- ★ Course Introduction and Administrative Review.
- ★ Pollock & Edwards, Getting Stated and Chapter 1: Introduction to SPSS, pp. 1 - 20 [SI Hours = 2].

### 12.2 Week 2: January 27 — February 2, 2025 (CLASS) [DI Seat Hours = 3.5]

#### 12.2.1 ⇒ Monday, January 27 — Descriptive Statistics, Frequency Distributions, and Variability

- ★ Privitera, To the Student - How to Use SPSS With this Book, pp. xxxiii - xliv [SI Hours = 3].
- ★ Privitera, Chapter 1: Introduction and Descriptive Statistics, pp. 1 - 32 [SI Hours = 2].

- ★ Privitera, Chapter 2, Frequency Distribution in Tables and Graphs: Summarizing Data, pp. 33 - 78 [SI Hours = 3].
- ★ Privitera, Chapter 3: Summarizing Data, Central Tendency, pp. 79 - 113 [SI Hours = 3].
- ★ Privitera, Chapter 4: Summarizing Data, Variability, pp. 114 - 149 [SI Hours = 3].
- △ Discussion Board 1 Due by Sunday, February 2, by 11:59 PM [DI Equivalency Hours = 2].

## **12.3 Week 3: February 3 — February 9, 2025**

### **12.3.1 ⇒ Monday, February 3 — Introduction to SPSS and the Workbook**

- ★ Pollock & Edwards, Chapter 2: Descriptive Statistics, pp. 21 - 44 [SI Hours = 3].
- ★ Pollock & Edwards, Chapter 3: Transforming Variables, pp. 45 - 69 [SI Hours = 3].
- △ **Homework 1:** Complete all exercises in Chapters 2 and 3 in Pollock & Edwards [SI Hours = 10].
- ★ Chapter Assignments are due by 11:59 PM. All homework assignment will be typed, consistent with graduate-level work, and uploaded to the paper to the Canvas Turnitin Dropbox. Please be sure that all of the above questions are answered within the same document with each section/question clearly labeled.

## **12.4 Week 4: February 10 — February 16, 2025 (CLASS) [DI Seat Hours = 3.5]**

### **12.4.1 ⇒ Monday, February 10 — Probability, the Normal Distribution, Hypothesis Testing, the Chi-Square Test, and t-Test Variations**

- ★ Privitera, Chapter 6: Probability, Normal Distributions, and Z-Scores, pp. 191 - 225 [SI Hours = 3].
- ★ Privitera, Chapter 8: Hypothesis Testing, pp. 265 - 314 [SI Hours = 3].
- ★ Privitera, Chapter 9: One-Sample t-Tests with Confidence Intervals, pp. 316 - 350 [SI Hours = 3].
- ★ Privitera, Chapter 10: Two-Independent-Sample t-Tests with Confidence Intervals, pp. 351 - 387 [SI Hours = 3].
- △ Discussion Board 2 Due by Sunday, February 10, by 11:59 PM [DI Equivalency Hours = 2].

## **12.5 Week 5: February 17 — February 23, 2025**

### **12.5.1 ⇒ Monday, February 17 — SPSS Workbook Assignments**

- ★ Pollock & Edwards, Chapter 4: Making Comparisons, pp. 71 - 93 [SI Hours = 3].
- ★ Pollock & Edwards, Chapter 5: Making Controlled Comparisons, pp. 95 - 121 [SI Hours = 3].

- ★ Pollock & Edwards, Chapter 6: Making Inferences about Sample Means, pp. 123 - 143 [SI Hours = 3].
- △ **Homework 2:** Complete all exercises in Chapters 4, 5, and 6 in Pollock & Edwards [SI Hours = 10].
- ★ Chapter Assignments are due by 11:59 PM. All homework assignment will be typed, consistent with graduate-level work, and uploaded to the paper to the Canvas Turnitin Dropbox. Please be sure that all of the above questions are answered within the same document with each section/question clearly labeled.

## **12.6 Week 6: February 24 — March 2, 2025 (CLASS) [DI Seat Hours = 3.5]**

### **12.6.1 ⇒ Monday, February 24 — Analysis of Variance and Correlation**

- ★ Privitera, Chapter 12: Analysis of Variance, One-Way Between Subjects Design, pp. 426 - 476 [SI Hours = 3].
- ★ Privitera, Chapter 15: Correlation, pp. 598 - 657 [SI Hours = 3].
- △ Discussion Board 3 Due by Sunday, February 24, by 11:59 PM [DI Equivalency Hours = 2].

## **12.7 Week 7: March 3 — March 9, 2025**

### **12.7.1 ⇒ Monday, March 3 — SPSS Workbook Assignments**

- ★ Pollock & Edwards, Chapter 7: Chi-Square and Measures of Association, pp. 145 - 167 [SI Hours = 3].
- ★ Pollock & Edwards, Chapter 8: Correlation and Linear Regression, pp. 169 - 198 [SI Hours = 3].
- ★ Pollock & Edwards, Chapter 9: Dummy Variables and Interaction Effects, pp. 191 - 212 [SI Hours = 3].
- △ **Homework 3:** Complete all exercises in Chapters 7, 8, and 9 in Pollock & Edwards [SI Hours = 10].
- ★ Chapter Assignments are due by 11:59 PM. All homework assignment will be typed, consistent with graduate-level work, and uploaded to the paper to the Canvas Turnitin Dropbox. Please be sure that all of the above questions are answered within the same document with each section/question clearly labeled.

## **12.8 Week 8: March 10 — March 16, 2025 (CLASS) [DI Seat Hours = 3.5]**

### **12.8.1 ⇒ Monday, March 10 — Regression and Variants**

- ★ Privitera, Chapter 11: Linear Regression and Multiple Regression, pp. 659 - 719 [SI Hours = 3].
- △ Discussion Board 4 Due by Sunday, March 16, by 11:59 PM [DI Equivalency Hours = 2].



## **12.9 Week 9: March 17 — March 23, 2025**

### **12.9.1 ⇒ Monday, March 17 — Final Exam**

△ The Final Exam is due on March 17, by 11:59 p.m. [DI Equivalency Hours = 20].

## References

Pollock, P. H., & Edwards, B. C. (2020). *An ibm companion to political analysis, 6<sup>th</sup> edition*. Washington, D.C.: Sage/CQ Press.

Privitera, J., Gregory. (2014). *Statistics for the behavioral sciences, 4<sup>th</sup> edition*. Los Angeles: Sage.