Quantitative Research in Higher Education

EDL 661 - Department of Educational Leadership
Fall 2013; Tuesdays, 6-8:40 pm; 316 Upham Hall

Instructor

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(703) 585-9582 (cell)

Office Hours: Contact me set up an appointment whenever you need to.

Course Objectives

Learning Objectives
By actively engaging in this course, you will gain:

• an introductory understanding of survey research process and design
• an understanding of the types of data that exist and how they relate to statistical analysis
• an overview of descriptive statistics and an introduction to inferential statistics
• the ability to use SPSS to run elementary statistical analyses
• the knowledge necessary to interpret the results of statistical analyses, with a focus on T-tests, ANOVA, and Multiple Regression.

About the Course

This is a course in applied statistics. As such, you will not be expected to hand calculate statistical analyses or understand the calculus and matrix algebra that underlie statistical analysis. Instead, you will learn about the relationship between data and statistical analyses. You will have hands-on opportunities to run statistical analyses using SPSS. Most importantly, you will learn to interpret the results of statistical analyses (T-tests, ANOVA, and Multiple Regression). We will use quantitative data from the Wabash National Study of Liberal Arts Education throughout the course.

The goal is for you to become a better consumer of quantitative research in higher education: you will gain skills and knowledge that help you read and evaluate quantitative research articles. You will also gain a solid foundation in introductory statistics and applying the appropriate statistical analysis to data.

If you feel you would like to learn more or go deeper on any of the topics covered in class, I will be happy to work with you to devise a plan for additional learning.

About the Instructor

I am an engaged educator committed to the learning process. I will be prepared for class, read and return your work in a timely manner, and be interested and engaged in your work. I will remember that each of you brings a different background, experience, and perspective to this course. I will learn from you. I will meet with you individually or in groups upon request and be available in person, by telephone, and by e-mail. I will work hard, have fun, and empower you to develop greater understandings of the topics covered in this course. I have high expectations of you and myself.
University Policies That Govern This Course

Respect for Diversity
Our SAHE core values emphasize the value of an inclusive community. Similarly, the Miami University Statement Asserting Respect for Human Diversity emphasizes inclusiveness. The following statement is reproduced directly from: http://miamioh.edu/about-miami/leadership/president/diversity-statement.html.

Miami University is a community dedicated to intellectual engagement. Our campuses consist of students, faculty, and staff from a variety of backgrounds and cultures. By living, working, studying, and teaching, we bring our unique viewpoints and life experiences together for the benefit of all. This inclusive learning environment, based upon an atmosphere of mutual respect and positive engagement, invites all campus citizens to explore how they think about knowledge, about themselves, and about how they see themselves in relation to others. Our intellectual and social development and daily educational interactions, whether co-curricular or classroom related, are greatly enriched by our acceptance of one another as members of the Miami University community. Through valuing our own diversity and the diversity of others, we seek to learn from one another, foster a sense of shared experience, and commit to making the University the intellectual home of us all.

We recognize that we must uphold and abide by University policies and procedures protecting individual rights and guiding democratic engagement. Any actions disregarding these policies and procedures, particularly those resulting in discrimination, harassment, or bigoted acts, will be challenged swiftly and collectively.

All who work, live, study, and teach in the Miami community must be committed to these principles of mutual respect and positive engagement, which are integral parts of Miami's focus, goals, and mission.

Disabilities and Accommodations
If you are a student with a disability, you are entitled to reasonable accommodations to fulfill the essential functions of the course that are listed in this syllabus. Students with physical, medical and/or psychiatric disabilities are encouraged to contact the Office of Disability Resources at 529-1541 (V/TTY), and students with AD(H)D and/or specific learning disabilities may contact the Office for Learning Disability Services located in the Rinella Learning Center at 529-8741. You can learn about campus policies, services, and resources for students with learning disabilities on this web page: http://www.units.muohio.edu/saf/lrn/RLC1LD.html

Academic Integrity
Academic integrity is central to any community of scholars. The rights and responsibilities that accompany academic freedom are at the heart of academic integrity here at Miami. To help all Miamians understand how our standards apply in various practical situations, this website describes our expectations, guidelines, and policies pertaining to graduate students: http://www.miami.muohio.edu/integrity/graduate-students/index.html
Course Expectations

Commitment to Learning
As graduate students I expect that you are committed to the learning process. As such, you will come to class prepared to actively participate. In order to do that, you must actively engage with the assigned readings. Active participation requires that you contribute your insights to the class discussions. It also means engaging with the thoughts of your colleagues – listening carefully, responding openly to, and making connections among others’ contributions.

Attendance Is Necessary
Attendance is necessary for learning to occur. I understand that you may celebrate religious holidays that conflict with the class schedule; it is your responsibility to inform me as soon as possible of any intended absences for religious observances. If you need to miss a class for other personal or professional reasons, it is your responsibility to inform me in a timely manner. It is also your responsibility to find out from your colleagues what you missed. You may miss one class for legitimate reasons. Unexcused or excessive absences will result in a lower grade.

Deadlines Are Firm
I expect all assignments to be turned in on time, even if you are absent from class. No exceptions. I highly recommend using dropbox (http://db.tt/PKSFko6) in order to avoid losing your work due to a computer problem. Use this link or the one on Niihka to install it.

Respect Is Essential
I expect you to demonstrate respect to your classmates and me by being fully present. Therefore:

• Come to class on time.
• Turn off your cell phones – texting is not allowed.
• If you bring a laptop, turn off wireless access.
• Do not engage in side conversations, writing notes, facebooking, or any non-class activity.

Grading

Each assignment is worth 100 points. At the end of the semester, your grade will be calculated based on the percentages below. All assignments within a category will be averaged together and then multiplied by the percentage indicated.

<table>
<thead>
<tr>
<th>Assignment (details provided in next section)</th>
<th>Percent of Final Grade</th>
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<tbody>
<tr>
<td>Homework</td>
<td>20%</td>
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<tr>
<td>Homework 1, Descriptives and Graphs</td>
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<td>Homework 2, Factor Analysis</td>
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<td>Homework 3, T-tests and ANOVA</td>
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<td>Homework 4, Correlation and Regression</td>
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<tr>
<td>Take-home Quizzes</td>
<td>30%</td>
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<tr>
<td>Quiz 1</td>
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<td>Quiz 2</td>
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<td>Quiz 3</td>
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<tr>
<td>Guide to Statistics and SPSS</td>
<td>20%</td>
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<tr>
<td>Statistical Analysis Paper</td>
<td>30%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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Your final grade will be calculated using the following scale:

A  94-100 points  B+ 87-89 points  C+ 77-79 points  D+ 67-69 points  F 0-59 points
A- 90-93 points  B  84-86 points  C  74-76 points  D  64-66 points
B- 80-83 points  C- 70-73 points  D- 60-63 points
Course Assignments

General Overview of Assignments

- You are expected to turn in assignments through Niihka, unless otherwise noted. Assignments are due at 6:00 pm on designated dates. Anything turned in after that will be considered late and the grade will be reduced accordingly.
- The statistical analysis paper should adhere to APA style, version 6.
- Cover pages are not required for any assignment! You can include your name with the page numbers in the header of your paper.

Homework 20%

To understand statistics, you must do statistics. Therefore, you will have homework assignment to practice using SPSS and interpreting statistical results. Homework assignments will be posted on Niihka one week before they are due. I will not give you feedback on your homework, but we will review it in class one week after it is due and I will put an answer key on Niihka. After reviewing the answer key and our in-class review, if you do not understand the concepts or the difference between what you turned in, please make an appointment to talk to me.

Homework 1, Descriptives and Graphs
Homework 2, Factor Analysis
Homework 3, Correlation and Regression
Homework 4, T-tests and ANOVA

Take-home Quizzes 30%

Quiz 1
The first quiz will consist of short answers and multiple choice questions. It will cover the material discussed from Aug 27-Sept 17.

Exam 2
The second quiz will consist of short answers and multiple choice questions. It will cover the material discussed from Sept 24-Oct 1.

Exam 3
The third quiz focuses on your ability to interpret statistical output from SPSS and integrate concepts from the entire course. I will provide a document that contains the framework of a quantitative research paper. Your task is to read and analyze the paper and then fill in sections where indicated. You will be asked to write short answers that range from one sentence to two paragraphs per section.

Guide to Statistics and SPSS 20%

Guide to Statistics and SPSS

You will create a Guide to Statistics and SPSS for your own use. Assume that you will need to use some of the information you have learned in this course in future jobs and/or courses. What is the most important information you will need to know? How can you organize that information cogently and concisely so it will be useful to you weeks or even months after the course is over? What information do you want to be able to recall?

You can use any material from class slides, handouts, exams, etc. but you should put the Guide in a format that is meaningful and useful to you. It does not have to be written in standard paragraphs – use bullets, diagrams, or any format that works for you.
Because the formatting will vary from individual to individual, there is no set page limit to this assignment. It must include enough information that I believe you have put considerable effort into making some meaning of the course content. Since it can be in any format, you can turn it in on Niihka or give me a hard copy.

**Statistical Analysis Paper 30%**

*Statistical Analysis Paper*

For this paper, you will run a descriptive and inferential analysis (multiple regression) to answer a research question of your choice. In the paper, you will describe the question, the statistical methods you chose and why, present the data in tables/charts/graphs, and describe the results in 5-7 pages.

While most papers begin with a literature review presenting an argument for your research question, we will skip that step for this assignment. I assume that, based on the reading you have done for your classes, and your practical work experience, you will be able to come up with a reasonable research question using the Wabash data.

Begin by picking an outcome variable that you are interested in. Then, based on your academic and work knowledge, choose an independent variable (or variables) you believe will predict the outcome (dependent variable). Next, choose a series of control variables – those variables that may be related to the dependent and independent variables and could provide alternative explanations for any change in the dependent variable.

Recode your data as needed to make it easier to understand and interpret. This may include using factor analysis to create new variables, but it is not necessary. Using SPSS, create a table of descriptives for your variables, run a multiple regression analysis, and create a table of results. Write a research report that includes your research question, methods, and results. Use the following outline to guide your writing.

**Research Report Outline**

1. An introductory paragraph that describes the relationship you are studying, including your research question.
2. A methods section that includes:
   a. One-three paragraphs describing the relevant parts of the Wabash study, the instruments that your variables come from, and the total number in your analytic sample.
   b. A description of the variables in your analysis, including their measurement scales, and a table showing the descriptive of the variables.
   c. A paragraph explaining why multiple regression is the appropriate method of analysis for your research study.
   d. A paragraph describing limitations of your study
3. A results section that includes:
   a. A summary of your relevant findings
   b. A table of your regression results
   c. A concluding paragraph that summarizes your results
Readings

Required Book


www.muohio.edu/lynda

Required Articles and Chapters- Available on Niihka


<table>
<thead>
<tr>
<th>Dates</th>
<th>Topics to be discussed</th>
<th>Readings Due</th>
<th>Assignments Due</th>
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<tbody>
<tr>
<td>Aug 27</td>
<td>Introductions; syllabus; experimental research vs. survey research, getting started with SPSS Lynda Intro and Mod 1</td>
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<tr>
<td>Sept 3</td>
<td>Introduction to quantitative research, variable types, and statistical concepts Lesson 1a</td>
<td><strong>Pallant ch 1, 2</strong>&lt;br&gt;Levine &amp; Stephan, 2005 pp 1-14&lt;br&gt;Levine &amp; Stephan pp. 125-136&lt;br&gt;Lynda.com – Mod 1 &amp; 2&lt;br&gt;Review the web site: <a href="http://www.liberalarts.wabash.edu/study-overview/">www.liberalarts.wabash.edu/study-overview/</a>&lt;br&gt;<strong>Advanced:</strong> Meyers, Gamst, Guarino, 2005 ch 2</td>
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<td>Sept 10</td>
<td>Introduction to Wabash National Study of Liberal Arts Education and SPSS Lesson 1b</td>
<td><strong>Pallant ch 3, 4, 5</strong>&lt;br&gt;Lynda.com mod 4 &amp; 5&lt;br&gt;Pascarella, 2008&lt;br&gt;Review Wabash Codebook (there are multiple tabs – and it is not in print layout)</td>
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<td>Sept 17</td>
<td>Descriptive statistics, graphs, and manipulating data Lesson 2a</td>
<td><strong>Pallant ch 6, 7, 8</strong>&lt;br&gt;Lynda.com mod 3 &amp; 7</td>
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<td>Sept 24</td>
<td>Survey research process and design Lesson 2b</td>
<td>Umbach, 2005&lt;br&gt;Gonyea, 2005&lt;br&gt;Willis, 1999 (pp1-23 only, skip pp 24-37)&lt;br&gt;Porter, Whitcomb, &amp; Weitzer, 2004 (skim)&lt;br&gt;Tyree, 1998 (excerpt)&lt;br&gt;Campbell, Smith, Dugan, &amp; Komives, 2012&lt;br&gt;<strong>Advanced:</strong> Groves et al., 2004 pp. 39-63, 254-258&lt;br&gt;Bowman, 2010&lt;br&gt;Seifert, Pascarella, Erkel, &amp; Goodman, 2010 (read most of this article, but skim pp 8-12, labeled “Empirical Example”)</td>
<td>Homework 1</td>
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<td>Oct 1</td>
<td>Data reduction (principle components analysis) and reliability Lesson 3</td>
<td><strong>Pallant ch 9, 15</strong>&lt;br&gt;<strong>Advanced:</strong> Field, 2009 ch 17 –in-depth info about factor analysis</td>
<td>Quiz 1</td>
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<td>Date</td>
<td>Topic</td>
<td>Reading/Activities</td>
<td>Notes</td>
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<td>Oct 8</td>
<td>Correlation &amp; simple regression Lesson 4</td>
<td><strong>Pallant ch 11, 12</strong>&lt;br&gt;Lynda.com mod 8</td>
<td>Quiz 2</td>
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<td>Oct 15</td>
<td>Multiple regression Lesson 5a</td>
<td><strong>Pallant ch 13</strong>&lt;br&gt;Lynda.com mod 10, 11&lt;br&gt;Advanced:&lt;br&gt;Meyers, Gamst, Guarino, 2005 ch 5A</td>
<td>Homework 2</td>
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<td>Oct 22</td>
<td>More Multiple regression Lesson 5b Review and catch up</td>
<td>Bowman, 2009&lt;br&gt;Salisbury, Pascarella, Padgett, &amp; Blaich, 2012 – focus on Methods and Results and tables – pp 305-317&lt;br&gt;Advanced:&lt;br&gt;Allison, 1999 pp 1-96</td>
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<td>Oct 29</td>
<td>T-tests Lesson 6</td>
<td><strong>Pallant ch 10, 17 (skip sections on “calculating the effect size”</strong>&lt;br&gt;Lynda.com mod 8&lt;br&gt;Thompson, Oberle, &amp; Lilley, 2011</td>
<td>Homework 3</td>
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<td>Nov 5</td>
<td>ANOVA Lesson 7</td>
<td><strong>Pallant ch 18</strong>&lt;br&gt;Lynda.com mod 8</td>
<td>Statistical Analysis Paper</td>
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<td>Nov 12</td>
<td>More ANOVA Lesson 8</td>
<td><strong>Pallant ch 19</strong>&lt;br&gt;Article TBA</td>
<td>Homework 4</td>
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<td>Nov 26</td>
<td>No class – work on your Statistical Analysis Paper and Quiz 3</td>
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<td>Dec 3</td>
<td>The Role of Paradigms in Research; Quantitative Critical Methods</td>
<td>Teddle &amp; Tashakkori ch. 5&lt;br&gt;Baez, 2007&lt;br&gt;Stage, 2007&lt;br&gt;Perna, 2007</td>
<td>Quiz 3</td>
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<td>Dec 10</td>
<td>Finals Week – No Class</td>
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<td>Guide to Statistics and SPSS</td>
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