

# ADVANCED RESEARCH METHODS

COM6315 Section 05CE  
Spring 2013

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## COURSE DESCRIPTION

This course is designed to provide graduate students with an advanced understanding of the principles, methods, and techniques of quantitative research. Specifically, this course aims to help students to understand methods and analyses frequently used in communication research and to gain fundamental knowledge and practical skills necessary to conduct statistical analyses and interpret the results.

The course consists of two main parts. The first part of the course covers key concepts related to quantitative research methods. The purpose is to help students to understand and critically analyze the method and design of quantitative research published in academic or trade journals. The second part of the course covers a range of statistical analyses commonly used in communication research. The emphasis is placed on obtaining practical skills in performing statistical analyses using SPSS, reading the output, and interpreting and writing up the results in a manuscript form (e.g., APA style).

## COURSE OBJECTIVES

At the conclusion of the course, students should be able to:

1. Critically appraise the method and design of quantitative research in a published article.
2. Identify an appropriate quantitative method and analysis for a given research question and/or hypothesis.
3. Understand types and nature of quantitative measurement as well as means to evaluate reliability and validity of the measurement
4. Understand characteristics, purposes, and indices of key statistical analyses
5. Perform the statistical analyses using SPSS and read the output.
6. Summarize and interpret the results of analysis in a manuscript form

## COURSE REQUIREMENT

Students must have access to SPSS.

## COURSE READINGS

### Required:

Patten, M. L. (2012). *Understanding research methods: An overview of the essentials* (8<sup>th</sup> ed.). Glendale, CA: Pyrczak Publishing.

Mertler, C. A., & Vannatta, R. A. (2010). *Advanced and multivariate statistical methods* (4<sup>th</sup> ed.). Glendale, CA: Pyrczak Publishing.

Blue Book series by Statistical Associates Publishing at <http://www.statisticalassociates.com/booklist.htm>

Reliability

Validity

GLM Univariate, ANOVA, & ANCOVA

GLM Multivariate, MANOVA, & MANCOVA

Multiple Regression

Factor Analysis

Logistic Regression

Additional readings will be posted on Sakai E-Learning.

## Highly Recommended:

Pallant, J. (2007). *SPSS survival manual: A step-by-step guide to data analysis using SPSS* (3<sup>rd</sup> ed.). Two penn plaza, NY: McGraw-Hill.

Frey, L. R., Botan, C. H., & Kreps, G. L. (2000). *Investigating communication: An introduction to research methods* (2<sup>nd</sup> ed.). Needham Heights, MA: Allyn & Bacon.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate data analysis* (7<sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall.

## Also Useful:

Davis, J. J. (2012). *Advertising research: Theory & practice* (2<sup>nd</sup> ed.). Upper Saddle River, NJ: Prentice Hall.

Babbie, E. (2010). *The practice of social research* (12<sup>th</sup> ed.). Belmont, CA: Wadsworth

## COURSE CONTENT

This course consists of eight modules.

### **Module 1: Types of Quantitative Research Methods**

This module introduces a few main types of quantitative research methods and their distinguishing characteristics. It starts with an explanation of empirical research, followed by comparisons of quantitative versus qualitative research. The module then covers specific types and characteristics of experimental research (true experiment and quasi-experiment) and non-experimental research (causal-comparative research, cross-sectional/correlational research, and longitudinal research). It also discusses different types of true and quasi-experimental designs and threats to validity.

### **Module 2: Conceptualization & Operationalization**

This module explains the relationships between theory and hypothesis, while introducing key concepts necessary to understand the process by which hypotheses are tested. The relationships between theory and hypothesis are explained in relation to conceptualization and operationalization of a construct and distinctions between constructs and variables. As a fundamental concept underlying measurement (to be discussed in Module 3), indicators are defined and different types of indicators are introduced.

### **Module 3: Measurement, Reliability, & Validity**

This module reviews characteristics and limitations of each of four levels of measurement, along with examples of scales and question types relevant for each measurement level. The module also covers various tests to evaluate reliability and validity of multi-item measurement scales.

### **Module 4: Basic Statistics**

This module introduces basic descriptive and inferential statistics. It first distinguishes between descriptive and inferential statistics and then explains a few measures of central tendency. Following an overview of univariate and multivariate analyses and test of significance, the module covers fundamental concepts involved in Chi-square test, Pearson product-moment correlation, and t-test. Finally, it describes a step-by-step procedure of conducting these statistical analyses using SPSS, reading the SPSS output, and summarizing the results.

### **Module 5: ANOVA & ANCOVA**

This module introduces essential concepts underlying ANOVA tests and then discusses variations of ANOVA. Specifically, it discusses different utilities of and variables used in one-way vs. two-way ANOVA, between-group vs. within-group ANOVA, and ANCOVA. It also introduces a few types of post-hoc tests. The module concludes with a step-by-step demonstration of conducting these statistical analyses using SPSS, reading the SPSS output, and summarizing the results.

## **Module 6: MANOVA & MANCOVA**

The module starts with an overview of relevant concepts related to multivariate analysis. After the overview, it discusses characteristics and advantages of MANOVA and MANCOVA, compared to univariate analysis. The module also explains the analytical procedure and main indices of these statistics. Finally, it covers steps necessary to conduct MANOVA and MANCOVA in SPSS, read the SPSS output, and summarize the results.

## **Module 7: Simple & Multiple Regression**

This module covers fundamental concepts underlying regression analysis, including regression equation, regression coefficients, and other indices. It also discusses the issue of multicollinearity and a means of testing interaction effects in regression analysis. Following an overview of multiple regression analysis, a few variable selection methods are introduced. The module concludes with a step-by-step demonstration of conducting a multiple regression analysis using SPSS, reading the SPSS output, and summarizing the results.

## **Module 8: Factor Analysis**

This module begins with an introduction of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). After the introduction, the module focuses on EFA and a particular extraction technique of EFA. It also covers indices of factor analysis and rotation methods. Finally, it describes a procedure of conducting an EFA in SPSS, reading the SPSS output, and summarizing the results.

## **Module 9: Logistic Regression**

This module discusses logistic regression analysis as a special type of multiple regression analysis. It focuses on characteristics and advantages of binary logistic analysis and main relevant indices. How to conduct a logistic regression analysis in SPSS, reading the SPSS outputs, and summarizing the results are demonstrated.

## **ASSIGNMENTS**

The assignments of this course are designed such that students apply the knowledge gained from the lecture for critically appraising the method and design of published research and gain hands-on practice of performing statistical analyses discussed in the class. All assignments must be typed or word-processed and submitted to the Assignments tool on Sakai E-Learning. Assignments are due by 5PM on Thu each week.

### **Assignment 1**

- 1) Find five articles in academic journals or trade publications, each using one of the following methods. The study reported in the article must be empirical research with a detailed description of method and design. Submit the articles in a pdf format (submit five pdfs).
  - True experiment
  - Quasi experiment
  - Causal comparative research
  - Cross-sectional/correlational research
  - Longitudinal research
- 2) For each article, write one paragraph (must not exceed 1 page) that explains why the method/design used in the article can be categorized as one of the above research designs. For example, for the article that reports the results of a true experiment, describe a particular true experimental design used in the study (e.g., pretest-posttest design) and explain why the study is qualified as a true experiment (e.g., What was the pretest and how was it done? What was the manipulation? Were there treatment and control groups? How were participants assigned to each group? What was the posttest and how was it done?)

In a Word document, provide full bibliographic information of the first article (use the APA style), followed by explanation about the method/design as described above. Do the same for the second to the fifth articles. In the end, the Word document will contain five paragraphs, each concerning an article describing one of the above methods. Submit the Word document to Sakai E-Learning.

## Assignment 2

For the assigned article, identify the following and provide necessary explanation as indicated below. Submit the assignment in Word (must not exceed 2 pages).

- 1) Theory: What theory or theories are used?
- 2) Hypothesis: What is (are) the hypothesis (hypotheses)? How is the theory translated to the hypothesis?
- 3) Conceptualization: What are the key constructs used in the study? How are they conceptualized (conceptual definition)? The key constructs are those explicated in the theory.
- 4) Operationalization: How are the key constructs operationalized (operational definition)? How are they manipulated or measured?
- 5) Reflective indicator(s): What variables, if any, are reflective indicators? Explain why they are reflective indicators.
- 6) Formative indicator: What variables, if any, are formative indicators? Explain why they are formative indicators.

## Assignments 3, 5, 7, 9, 11, 13, and 15

These assignments are similar to Assignment 1 in that students need to search for an article in academic journals or trade publications that used a particular statistical analysis (analyses) discussed in the week's lecture. For each of the following statistical analyses, 1) submit an article on an empirical study in a pdf format and 2) provide information about the analysis as specified below in Word (must not exceed 1 page).

### Assignment 3: Chi-square Test and t-test

Submit one article reporting a Chi-square test and another article reporting a t-test. For each article, identify (a) the test performed (Chi-square test or t-test), (b) variables analyzed, (c) measurement level of each variable, and (d) relationships of variables examined with the test.

### Assignment 5: ANOVA & ANCOVA

Submit one article reporting a two-way ANOVA, repeated measures ANOVA, or ANCOVA test. Identify (a) the test performed (two-way ANOVA, repeated measures ANOVA, or ANCOVA), (b) independent variable(s), dependent variable(s), and, for ANCOVA, covariate(s) (c) measurement level of each variable, and (d) relationships or effects of variables examined with the test.

### Assignment 7: MANOVA & MANCOVA

Submit one article reporting a MANOVA (one-way or two-way) or MANCOVA (one-way or two-way) test. Identify (a) the test performed (one-way or two-way MANOVA or MANCOVA), (b) independent variable(s), dependent variable(s), and, for MANCOVA, covariate(s) (c) measurement level of each variable, and (d) relationships or effects of variables examined with the test.

### Assignment 9: Multiple Regression

Submit one article reporting a multiple regression. Identify (a) independent variable(s) and dependent variable(s), (b) measurement level of each variable, and (c) relationships or effects of variables examined with the test.

### Assignment 11: Stepwise & Hierarchical Regression

Submit one article reporting a stepwise regression analysis and another article reporting a hierarchical regression analysis. Identify (a) the test performed (stepwise or hierarchical regression analysis), (b) independent variable(s), dependent variable(s), and, if any, covariate(s) (c) measurement level of each variable, and (d) relationships or effects of variables examined with the test.

### Assignment 13: Factor Analysis

Submit one article reporting a factor analysis. Identify (a) the purpose of the analysis (e.g., What factors or dimensions did the researcher try to uncover?), (b) variables analyzed, and (c) measurement level of each variable.

### **Assignment 15: Logistic Regression**

Submit one article reporting a logistic regression. Identify (a) independent variable(s) and dependent variable(s), (b) measurement level of each variable, and (c) relationships or effects of variables examined with the test.

### **Assignments 4, 6, 8, 10, 12, 14, and 16**

These assignments are designed to help students to gain hands-on experience on statistical analyses using SPSS. Students need to conduct a particular analysis (analyses) using SPSS, generate SPSS output, construct a results table(s) in Word, and summarize the results in a manuscript form. Submit a SPSS output and a Word document containing a results table(s) and write-up.

#### **Assignment 4: Chi-Square Test, Pearson Product-Moment Correlation, and t-test**

#### **Assignment 6: Two-Way ANOVA, One-Way Repeated Measures ANOVA, and One-Way or Two-Way ANCOVA**

#### **Assignment 8: One-Way or Two-Way MANOVA or MANCOVA**

#### **Assignment 10: Multiple Regression**

#### **Assignment 12: Stepwise and Hierarchical Regression**

#### **Assignment 14: Factor Analysis**

#### **Assignment 16: Logistic Regression**

### **Assignment Format**

Word documents (.doc or docx) must be double-spaced and formatted to have a 1” margin on all four sides. Use 12-point Times New Roman font (a larger font can be used for titles and headings) and insert page numbers at bottom center. Use one font style only including page numbers (i.e., Times New Roman). The document must be left justified and prepared according to the APA style.

On the top of the first page, indicate 1) module number and title (e.g., Module 1. Types of Quantitative Research Methods), 2) assignment title (e.g., Assignment 1: Quantitative Research Methods), 3) course title and semester (e.g., Advanced Research Methods, Spring 2013), 4) date of submission, and 5) student name. Do not use a cover page.

### **File Naming Convention**

For articles in pdf: last name of the first author\_year of publication\_initials of the journal/publication\_key words of the article title (e.g., Kim\_2013\_JA\_Corporate Credibility and Spokesperson Credibility.pdf)

For Word documents and SPSS outputs: module number\_assignment number\_student name (e.g., Module 1\_Assignment 1\_Hyojin Kim.docx)

## **FINAL EXAM**

The final exam will be given on April 22<sup>nd</sup> and due by April 26<sup>th</sup> 5PM. Students will be asked to review and critically analyze the method, data analysis, and results of assigned journal articles, read SPSS outputs, and interpret and write up the results. Students must submit a Word file containing their answers. The Word document must conform to the above rules concerning Assignment Format and File Naming Convention (e.g., Final Exam\_Hyojin Kim.docx)

## **GRADING CRITERIA & SCALE**

### **Grading Criteria**

60%      Assignments  
10%      Quizzes  
30%      Final Exam

### **Grading Scale**

A = 90 or above	C = 70-75
B+ = 86-89	D+ = 66-69
B = 80-85	D = 60-65
C+ = 76-79	E = below 60

## **COURSE FORMAT & POLICY**

This is a Web-based course. All course materials are distributed via the UF E-Learning system. The course materials include lecture videos, quizzes, readings, and SPSS files.

No extra credit projects will be available. All assignments including quizzes and exam are due on the specified dates (refer to the Course Schedule). Twenty percent of the assignment's grade will be deducted each day the assignment is turned in late. All assignments must be prepared and presented professionally. Students must take special care to use proper words and spelling, grammatically correct sentences, and logically flowing content.

## **ACADEMIC DISHONESTY**

Academic honesty is expected on all assignments, quizzes, and exam. Cheating of any kind (including plagiarism) will not be tolerated.

The students of the University of Florida recognize that academic honesty and integrity are fundamental values of the University community. Students who enroll at the University commit to holding themselves and their peers to the high standard of honor required by the Honor Code. Any individual who becomes aware of a violation of the Honor Code is bound by honor to take corrective action. A student-run Honor Court and faculty support are crucial to the success of the Honor Code. The quality of a University of Florida education is dependent upon the community acceptance and enforcement of the Honor Code.

Students are strongly advised to view UF's academic honesty guidelines at:

<http://www.dso.ufl.edu/judicial/procedures/honestybrochure.php>

## COURSE SCHEDULE

The quizzes are accessible in the Assessments tool on the course site of Sakai E-Learning and must be taken by 3PM on Thu. Submit the assignments to the Assignments tool on Sakai course site. All Assignments are due by 5PM on Thu.

Week 1 & 2		Module 1: Types of Quantitative Research Methods
	<b>Required Reading</b>	Patten: Topic 1-4, 9-10, 37-39, 41-42
		Blue Book: Validity (pp. 16-19), GLM Univariate, ANOVA, & ANCOVA (pp. 36-37)
		Frey, Botan, & Kreps: Ch. 7 (Available on Sakai E-Learning)
	<b>Optional Reading</b>	Davis: Ch. 14 Research Methods Knowledge Base: <a href="http://www.socialresearchmethods.net/kb/design.php">http://www.socialresearchmethods.net/kb/design.php</a>
Week 1		Module 1A: Overview & True Experiment
<b>(Jan 7-Jan 11)</b>	<b>Lecture</b>	Watch the lecture video 1.1: Overview of Quantitative Research
		Watch the lecture video 1.2: True Experiment
Week 2		Module 1B: Quasi Experiment & Non-Experimental Research
<b>(Jan 14-Jan 18)</b>	<b>Lecture</b>	Watch the lecture video 1.3: Threats to Validity
		Watch the lecture video 1.4: Quasi Experiment
		Watch the lecture video 1.5: Non-Experimental Research
	<b>Quiz</b>	Take Quiz 2 in <b>Assessments</b> by <b>Jan 17<sup>th</sup> 3PM</b>
	<b>Assignment</b>	Submit Assignment 1 to <b>Assignments</b> by <b>Jan 17<sup>th</sup> 5PM</b>
Week 3		Module 2: Conceptualization & Operationalization
<b>(Jan 21-Jan 25)</b>	<b>Required Reading</b>	Patten: Topic 7, 8
		Kerlinger: Ch. 3 (Available on Sakai E-Learning)
		Pedhazur & Schmelkin: pp. 54-59 (Available on Sakai E-Learning)
	<b>Optional Reading</b>	Babbie: Ch. 5
	<b>Lecture</b>	Watch the lecture video 2.1: Theory, Hypothesis, & Research Questions
		Watch the lecture video 2.2: Constructs & Variables
		Watch the lecture video 2.3: Indicators
<b>Quiz</b>	Take Quiz 3 in <b>Assessments</b> by <b>Jan 24<sup>th</sup> 3PM</b>	
<b>Assignment</b>	Submit Assignment 2 to <b>Assignments</b> by <b>Jan 24<sup>th</sup> 5PM</b>	
Week 4-6		Module 3: Measurement, Reliability, & Validity
	<b>Required Reading</b>	Patten: Topic 45, 27-33
		Frey, Botan, & Kreps: Ch. 4 (pp. 81-95), 5 (pp. 109-119) (Available on Sakai E-Learning)
		Blue Book: Reliability (pp. 1-23), Validity (pp. 1-16)
	<b>Optional Reading</b>	Davis: Ch. 11
		Babbie: Ch. 5

<b>Week 4</b>	<b>Module 3A: Nominal &amp; Ordinal Levels of Measurement</b>	
<b>(Jan 28-Feb 1)</b>	<b>Lecture</b>	Watch the lecture video 3.1: Overview of Measurement
		Watch the lecture video 3.2: Nominal & Ordinal Levels of Measurement
<b>Week 5</b>	<b>Module 3B: Interval &amp; Ratio Levels of Measurement</b>	
<b>(Feb 4-Feb 8)</b>	<b>Lecture</b>	Watch the lecture video 3.3: Interval & Ratio Levels of Measurement
		Watch the lecture video 3.4: Other Important Topics of Measurement
<b>Week 6</b>	<b>Module 3C: Scale Reliability &amp; Validity</b>	
<b>(Feb 11-Feb 15)</b>	<b>Lecture</b>	Watch the lecture video 3.5: Test-Retest Reliability & Internal Consistency
		Watch the lecture video 3.6: Judgmental Validity, Empirical Validity, & Construct Validity
	<b>Quiz</b>	Take Quiz 4 in <a href="#">Assessments</a> by <b>Feb 14<sup>th</sup> 3PM</b>
<b>Week 7 &amp; 8</b>	<b>Module 4: Basic Statistics</b>	
	<b>Required Reading</b>	Patten: Topic 43-54, Appendix D
		Mertler & Vannatta: Ch. 1, 2
		Frey, Botan, & Kreps: Ch. 11 (pp. 289-301, 305-307), 12 (Available on Sakai E-Learning)
	<b>Optional Reading</b>	Davis: Ch. 15
		Pallant: Ch. 11-12, 16-17
<b>Week 7</b>	<b>Module 4A: Descriptive Statistics</b>	
<b>(Feb 18-Feb 22)</b>	<b>Lecture</b>	Watch the lecture video 4.1: Descriptive Statistics
		Watch the lecture video 4.2: Dispersion
		Watch the lecture video 4.3: Test of Significance
<b>Week 8</b>	<b>Module 4B: Basic Inferential Statistics</b>	
<b>(Feb 25-Mar 1)</b>	<b>Lecture</b>	Watch the lecture video 4.4: Basic Inferential Statistics
		Watch the lecture video 4.5: Data Analysis and Interpretation using SPSS
	<b>Quiz</b>	Take Quiz 5 in <a href="#">Assessments</a> by <b>Feb 28<sup>th</sup> 3PM</b>
	<b>Assignment</b>	Submit Assignments 3 and 4 to <a href="#">Assignments</a> by <b>Feb 28<sup>th</sup> 5PM</b>
<b>Week 9</b>	<b>Spring Break</b>	
<b>Week 10</b>	<b>Module 5: ANOVA &amp; ANCOVA</b>	
<b>(Mar 11-Mar 15)</b>	<b>Required Reading</b>	Patten: Topic 55, 56
		Mertler & Vannatta: Ch. 4-5
		Blue Book: GLM Univariate, ANOVA, & ANCOVA
	<b>Optional Reading</b>	Pallant: Ch. 18-20, 22
	<b>Lecture</b>	Watch the lecture video 5.1: Overview of ANOVA, One-Way ANOVA, & Post-Hoc Test
		Watch the lecture video 5.2: Two-Way ANOVA, Repeated Measures ANOVA, & ANCOVA
		Watch the lecture video 5.3: Data Analysis and Interpretation using SPSS
<b>Assignment</b>	Submit Assignments 5 and 6 to <a href="#">Assignments</a> by <b>Mar 14<sup>th</sup> 5PM</b>	
<b>Week 11</b>	<b>Module 6: MANOVA &amp; MANCOVA</b>	
<b>(Mar 18-Mar 22)</b>	<b>Required Reading</b>	Mertler & Vannatta: Ch. 6
		Blue Book: GLM Multivariate, MANOVA, & MANCOVA
	<b>Optional Reading</b>	Pallant: Ch. 21



	<b>Lecture</b>	Watch the lecture video 6.1: Multivariate Analysis
		Watch the lecture video 6.2: MANOVA & MANCOVA
		Watch the lecture video 6.3: Data Analysis and Interpretation using SPSS
	<b>Assignment</b>	Submit Assignments 7 and 8 to <a href="#">Assignments</a> by <b>Mar 21<sup>st</sup> 5PM</b>
<b>Week 12 &amp; 13</b>	<b>Module 7: Regression</b>	
	<b>Required Reading</b>	Mertler & Vannatta: Ch. 7
		Blue Book: Multiple Regression
	<b>Optional Reading</b>	Pallant: Ch. 13
<b>Week 12</b>	<b>Module 7A: Simple &amp; Multiple Regression</b>	
<b>(Mar 25-Mar 29)</b>	<b>Lecture</b>	Watch the lecture video 7.1: Overview of Regression Analysis
		Watch the lecture video 7.2: Multiple Regression
		Watch the lecture video 7.3: Data Analysis and Interpretation using SPSS
	<b>Assignment</b>	Submit Assignments 9 and 10 to <a href="#">Assignments</a> by <b>Mar 28<sup>th</sup> 5PM</b>
<b>Week 13</b>	<b>Module 7B: Stepwise &amp; Hierarchical Regression</b>	
<b>(Apr 1-Apr 5)</b>	<b>Lecture</b>	Watch the lecture video 7.4: Other Important Topics of Multiple Regression
		Watch the lecture video 7.5: Data Analysis and Interpretation using SPSS
	<b>Assignment</b>	Submit Assignments 11 and 12 to <a href="#">Assignments</a> by <b>Apr 4<sup>th</sup> 5PM</b>
<b>Week 14</b>	<b>Module 8: Factor Analysis</b>	
<b>(Apr 8-Apr 12)</b>	<b>Required Reading</b>	Mertler & Vannatta: Ch. 9
		Blue Book: Factor Analysis
	<b>Optional Reading</b>	Pallant: Ch. 15
	<b>Lecture</b>	Watch the lecture video 8.1: Factor Analysis
		Watch the lecture video 8.2: Data Analysis and Interpretation using SPSS
	<b>Assignment</b>	Submit Assignments 13 and 14 to <a href="#">Assignments</a> by <b>Apr 11<sup>th</sup> 5PM</b>
<b>Week 15</b>	<b>Module 9: Logistic Regression</b>	
<b>(Apr 15-Apr 19)</b>	<b>Required Reading</b>	Mertler & Vannatta: Ch. 11
		Blue Book: Logistic Regression
	<b>Optional Reading</b>	Pallant: Ch. 14
	<b>Lecture</b>	Watch the lecture video 9.1: Logistic Regression
		Watch the lecture video 9.2: Data Analysis and Interpretation using SPSS
	<b>Assignment</b>	Submit Assignments 15 and 16 to <a href="#">Assignments</a> by <b>Apr 18<sup>th</sup> 5PM</b>
<b>Week 16</b>	<b>Wrap-up &amp; Final Exam</b>	
<b>(Apr 22-Apr 24)</b>	<b>Assignment</b>	Submit the Final Exam to <a href="#">Assignments</a> by <b>Apr 26<sup>th</sup> 5PM</b>