Advanced Research Methods

COM6315 Section 05CE
Spring 2015

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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 that are 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 and non-academic 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, interpreting and writing up the results in a manuscript form.

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 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:

Mertler, C. A., & Vannatta, R. A. (2010). Advanced and multivariate statistical methods (5th ed.). Glendale, CA: Pyrczak Publishing.

Frey, L. R., Botan, C. H., & Kreps, G. L. (2000). Investigating communication: An introduction to research methods (2nd ed.). Needham Heights, MA: Allyn & Bacon. [Reserved in Library West]

Pallant, J. (2011). *SPSS survival manual: A step-by-step guide to data analysis using SPSS* (4th ed.). Crows Nest, N.S.W., Australia: Allen & Unwin. [eBook available on Course Reserves on Sakai]

Additional readings will be posted on Sakai E-Learning.

Recommended Optional:
In addition to the above required books, I use the following references to prepare my lectures. A few chapters of Blue Book series are available on the E-Learning course site. Students are encouraged to download other chapters relevant to the course topics. Hair et al.'s book covers topics of multivariate analyses comprehensively and is a useful reference for your own research as well as for this course.

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

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate data analysis (7th ed.). Upper Saddle River, NJ: Prentice Hall. [Reserved in Library West]

COURSE CONTENT
This course consists of the following nine modules.

Module 1: Types of Quantitative Research Method
This module introduces a few main types of quantitative research method 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 key concepts involved in measurement including measurement levels, indicators, and dimensionality. It also discusses various tests to evaluate reliability and validity of multi-item 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 also demonstrated.

ASSIGNMENTS

The assignments of this course are designed for students to apply the knowledge gained from the lecture in hands-on exercises. Specifically, students review published empirical research critically on its method, analysis, and results. Students also conduct statistical analyses using SPSS and write up the results in a manuscript form.

All assignments must be word-processed and follow the assignment format rules and file naming convention (see below). Pay close attention to the page limit of each assignment. A penalty is applied for each line that exceeds the page limit. Assignments are due to Sakai E-Learning. Refer to the Course Schedule for deadlines.

Assignment 1: Types of Quantitative Research Method

Review the assigned articles and answer the questions for each article. Download the Word file from the Assignments tool, complete the assignment, and save the file according to the file naming convention (e.g., Module 1_Assignment 1_John Smith.docx). Submit the assignment to the Assignments tool. The assignment may be single-spaced, but must not exceed 7 pages. You may use a cover page for this assignment.

Assignment 2: Article Critique

For the assigned article, identify the following and provide necessary explanations as indicated below. Submit the assignment in Word. The assignment may be single-spaced, but 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, and 13: Analysis of Method & Statistical Technique

For these assignments, students analyze a specific statistical analysis (or analyses) in an assigned article(s) and provide the information requested (see below). The assignment may be single-spaced. Submit the Word file to the Assignments tool.

You have an option of choosing an article(s) in your field of study, which employed the statistical analysis (analyses) relevant to the assignment. The article must contain all of necessary information to complete the assignment. Submit the article (via email) **at least two weeks before the assignment deadline** for my review and approval. Articles submitted within two weeks of the assignment deadline will not be reviewed and cannot be used for the assignment.

Assignment 3: Chi-square Test and t-test

For the assigned articles, provide full bibliographic information of the article (the APA style is preferred) and identify (a) the test performed (Chi-square test or t-test), (b) variables analyzed, (c) measurement level of each

variable and a short description of variable measurement (e.g., how it was measured), and (d) relationships of variables examined with the test. The assignment must not exceed 3 pages.

Assignment 5: ANOVA & ANCOVA
Choose one of the assigned articles. Provide full bibliographic information of the article and identify (a) the test performed (two-way ANOVA, repeated measures ANOVA, or ANCOVA), (b) independent variable(s), dependent variable(s), and covariate(s), if ANCOVA was conducted (c) measurement level of each variable and a short description of variable measurement, and (d) relationships or effects of variables examined with the test. The assignment must not exceed 2 pages.

Assignment 7: MANOVA & MANCOVA
Choose one of the assigned articles. Provide full bibliographic information of the article and identify (a) the test performed (one-way or two-way MANOVA or MANCOVA), (b) independent variable(s), dependent variable(s), and covariate(s), if MANCOVA was conducted (c) measurement level of each variable and a short description of variable measurement, and (d) relationships or effects of variables examined with the test. The assignment must not exceed 2 pages.

Assignment 9: Multiple Regression
Choose one of the assigned articles. Provide full bibliographic information of the article and identify (a) the test performed (standard multiple regression, stepwise regression, or hierarchical regression), (b) independent variable(s), dependent variable(s), and any covariate(s) (b) measurement level of each variable and a short description of variable measurement, and (c) relationships or effects of variables examined with the test. The assignment must not exceed 2 pages.

Assignment 11: Factor Analysis
For the assigned article, provide full bibliographic information of the article and identify (a) the purpose of the analysis (e.g., What factors or dimensions did the researcher try to uncover?), (b) variables analyzed, (c) measurement level of each variable and a short description of variable measurement, and (4) factor structure that resulted from the analysis (e.g., What factors were revealed from the analysis? What variables belonged to each factor? How were the factors labeled? Eigenvalues and, if reported, the percent of the total variance explained by each factor). The assignment must not exceed 2 pages.

Assignment 13: Logistic Regression
For the assigned article, provide full bibliographic information of the article and identify (a) independent variable(s), dependent variable(s), and any covariate(s), (b) measurement level of each variable and a short description of variable measurement, and (c) relationships or effects of variables examined with the test. The assignment must not exceed 2 pages.

Assignments 4, 6, 8, 10, 12, and 14: Data Analysis & Interpretation
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. You should construct your own results tables (preferably following the APA style) and not copy-paste SPSS output. The data set is available on the module page of Sakai E-Learning. You may choose any variables in the data set and examine their relationships as long as you choose the correct type (i.e., measurement level) of variables for the given analysis. Based on SPSS output, (1) state a research question/hypothesis and/or a relationship of variables you examine for the given analysis, (2) construct a results table(s), and (3) summarize and interpret the results in a manuscript form in Word. Submit the SPSS output and Word file containing the above information to the Assignments tool. The Word document should be double-spaced. The page limit of each assignment is indicated below. You may use additional page(s) for results tables.

Assignment 4: Chi-Square Test, Pearson Product-Moment Correlation, and t-test
Conduct these three analyses and report the results as specified above (page limit: 3).

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

Conduct a two-way ANOVA, one-way repeated measures ANOVA, and one-way or two-way ANCOVA and report the results as specified above (page limit: 5)

Assignment 8: One-Way or Two-Way MANOVA or MANCOVA
Conduct a MANOVA (one-way or two-way) or a MANCOVA (one-way or two-way) and report the results as specified above (page limit: 2).

Assignment 10: Multiple Regression
Conduct a standard multiple regression, stepwise regression, or hierarchical regression and report the results as specified above. There should be a minimum of five independent variables (page limit: 2).

Assignment 12: Factor Analysis
Conduct an EFA and report the results as specified above. There should be a minimum of five variables and your final factor structure must contain two or more factors. Name the factors in the final factor structure appropriately (page limit: 2).

Assignment 14: Logistic Regression
Conduct a logistic regression and report the results as specified above. There should be a minimum of five independent variables and they need to be a mix of continuous variables and categorical variables (page limit: 2)

Assignment Format
Word documents (.doc or docx) must be 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.

At the top of the first page, indicate 1) module number and title (e.g., Module 1. Types of Quantitative Research Method), 2) assignment title (e.g., Assignment 1: Types of Quantitative Research Method), 3) course title and semester (e.g., Advanced Research Methods, Fall 2014), 4) date of submission, and 5) student name. Do not use a cover page unless otherwise instructed.

The purpose of results tables is to help the reader to understand the results of the analysis easily. Keep that in mind when constructing results tables. For instance, do not split a table over two pages. If a table is too large to place in the remainder of the page, use a page break and place it in the next page so that the entire table can fit in a 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, Module 3_Assignment 4_Hyojin Kim.spv)

QUIZZES
A total of five quizzes are given in the course and can be found in the Assessments tool on Sakai. Quizzes are based on lecture videos and required readings. Do not solely rely on lecture videos to study for a quiz, although lecture videos can be used as a guide to understand important topics to focus on. Quizzes are timed and graded immediately following completion.

FINAL EXAM
The final exam will be given in Week 15 and due by Apr 22nd noon. Students will be given one week to complete the exam. Questions ask students to review and critically analyze the method, data analysis, and results of assigned journal articles; and read SPSS outputs, interpret, and write up the results. Students must submit a Word file containing their answers. The Word document must conform to the assignment format rules 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 and thus gives you flexibility of when and where you "attend" the class. However, it is EXTREMELY IMPORTANT that you set aside a "class time" each week to study course materials and complete assignments. Students will not be excused for turning in the assignment late unless the reason is approved by the Dean of Graduate Studies & Research, your thesis/dissertation chair, or department chair/program director. Having an assignment deadline around the same time for another class is not an excusable reason for turning in an assignment late in this class, for example. Do not wait until the day before the assignment is due to contact me with questions. Keep up with readings and lecture videos and start assignments early.

No extra credit projects are available. All assignments and quizzes 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 and proof-read thoroughly. Students must take special care to use proper words and spelling, grammatically correct sentences, and logically flowing content. A penalty is applied for each misspelled word, grammatically incorrect sentences and other writing errors after three errors.

Plagiarism & Academic Dishonesty

Academic honesty is expected on all assignments and quizzes. Cheating of any kind (including plagiarism) will not be tolerated. Plagiarism is particularly a serious issue in graduate classes. It is YOUR responsibility to make certain you understand what constitutes plagiarism and to ensure that you give proper credit anytime you draw on someone else's writing. If you're not certain you understand what is acceptable and what is not, check out these Web sites or consult me. Your assignments will be checked for plagiarism with Turninit program:

http://www.indiana.edu/~wts/wts/plagiarism.html
http://www.sja.ucdavis.edu/sja/plagiarism.html

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 following is a tentative course schedule. Additional lecture videos and readings may be added. The quizzes are accessible in the Assessments tool on the course site of Sakai E-Learning. Assignments must be submitted to the Assignments tool on Sakai.

Week 1 & 2	Module 1: Types of Quantitative Research Method	
Jan 6 – Jan 16	Required Reading	Frey, Botan, & Kreps: Ch. 7
	Optional Reading	Research Methods Knowledge Base: http://www.socialresearchmethods.net/kb/design.php
	Lecture Video	Welcome (Course Materials homepage)
		1.1: Overview of Quantitative Research
		1.2: True Experiment
		1.3: Threats to Validity
		1.4: Quasi Experiment
		1.5: Non-Experimental Research
	Quiz	Take Quiz 1 (covers the syllabus and Welcome video) in **Assessments** by **Jan 9th noon**
		Take Quiz 2 (Module 1) in **Assessments** by **Jan 16th noon**
	Assignment	Answer the questions on Discussion board to introduce yourself to the class by **Jan 9th noon**
		Submit Assignment 1 to **Assignments** by **Jan 16th noon**
Week 3	Module 2: Conceptualization & Operationalization	
Jan 19 – Jan 23	Required Reading	Kerlinger: Ch. 3 (Available on Sakai E-Learning)
		Pedhazur & Schmelkin: pp. 54-59 (Available on Sakai E-Learning)
	Lecture Video	2.1: Theory, Hypothesis, & Research Questions
		2.2: Constructs & Variables
		2.3: Indicators
	Quiz	Take Quiz 3 (Module 2) in **Assessments** by **Jan 23rd noon**
	Assignment	Submit Assignment 2 to **Assignments** by **Jan 23rd noon**
Week 4	Module 3: Measurement, Reliability, & Validity	
Jan 26 – Jan 30	Required Reading	Frey, Botan, & Kreps: Ch. 4 (pp. 81-95), 5 (pp. 109-119)
	Optional Reading	Blue Book: Measurement Levels, Scales & Measures, Validity & Reliability
	Lecture Video	3.1: Overview of Measurement
		3.2: Levels of Measurement
		3.3: Other Important Topics of Measurement
		3.4: Reliability
		3.5 Validity
	Quiz	Take Quiz 4 (Module 3) in **Assessments** by **Jan 30th noon**

Week 5 & 6	Module 4: Basic Statistics	
Feb 2 – Feb 13	**Required Reading**	Frey, Botan, & Kreps: Ch. 11 (pp. 289-301, 305-307), 12
		Mertler & Vannatta: Ch. 1, 2
		Pallant: Ch. 6, 8-12
	Optional Reading	Blue Book: Correlation
	Lecture Video	4.1: Descriptive Statistics
		4.2: Dispersion
		4.3: Test of Significance
		4.4: Basic Inferential Statistics
		4.5a-c: Data Analysis and Interpretation using SPSS
	Quiz	Take Quiz 5 (Module 4) in **Assessments** by **Feb 6th noon**
	Assignment	Submit Assignments 3 and 4 to **Assignments** by **Feb 13th noon**
Week 7 & 8	Module 5: ANOVA & ANCOVA	
Feb 16 – Feb 27	**Required Reading**	Mertler & Vannatta: Ch. 4-5
		Pallant: Ch. 18-20, 22
	Optional Reading	Blue Book: GLM Univariate
	Lecture Video	5.1: F-test, One-Way ANOVA, & Post-Hoc Test
		5.2: Two-Way ANOVA & Repeated Measures ANOVA
		5.3: ANCOVA
		5.4a-c: Data Analysis and Interpretation using SPSS
	Assignment	Submit Assignments 5 and 6 to **Assignments** by **Feb 27th noon**
Week 9	Spring Break	
Week 10	Module 6: MANOVA & MANCOVA	
Mar 9 – Mar 13	**Required Reading**	Mertler & Vannatta: Ch. 6
		Pallant: Ch. 21
	Optional Reading	Blue Book: GLM Multivariate
	Lecture Video	6.1: Multivariate Analysis
		6.2: MANOVA & MANCOVA
		6.3a-b: Data Analysis and Interpretation using SPSS
	Assignment	Submit Assignments 7 and 8 to **Assignments** by **Mar 13th noon**
Week 11	Module 7: Regression	
Mar 16 – Mar 20	**Required Reading**	Mertler & Vannatta: Ch. 7
		Pallant: Ch. 13
	Optional Reading	Blue Book: Multiple Regression
	Lecture Video	7.1: Overview of Regression Analysis
		7.2: Multiple Regression
		7.3: Other Important Topics of Multiple Regression
		7.4a-b: Data Analysis and Interpretation using SPSS
	Assignment	Submit Assignments 9 and 10 to **Assignments** by **Mar 20th noon**

Week 12	Module 8: Factor Analysis	
Mar 23 – Mar 27	**Required Reading**	Mertler & Vannatta: Ch. 9
		Pallant: Ch. 15
	Optional Reading	Blue Book: Factor Analysis
	Lecture Video	8.1: Factor Analysis
		8.2: Data Analysis and Interpretation using SPSS
	Assignment	Submit Assignments 11 and 12 to **Assignments** by **Mar 27th noon**
Week 13	Module 9: Logistic Regression	
Mar 30 – Apr 3	**Required Reading**	Mertler & Vannatta: Ch. 11
		Pallant: Ch. 14
	Optional Reading	Blue Book: Logistic Regression
	Lecture Video	9.1: Logistic Regression
		9.2: Data Analysis and Interpretation using SPSS
	Assignment	Submit Assignments 13 and 14 to **Assignments** by **Apr 3rd noon**
Week 14	Module 10: TBA	
Apr 6 – Apr 10	The module topic, reading, and assignments will be announced later. Assignments given for this module will be due to **Assignments** by **Apr 10th noon**	
Week 15 & 16	Wrap-up & Final Exam	
Apr 13 – Apr 22	Submit the Final Exam to **Assignments** by **Apr 22nd noon**	