EDRS 620 (001)
Quantitative Inquiry in Education

George Mason University, Graduate School of Education

Dr. Jill Lammert **Spring 2011**
Class Meeting: Innovation Hall, Room 328; Thursday 7:20-10:00pm
Office Hours: By appointment.
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Course Description
The main purpose of this course is to develop in students an understanding of statistical ideas and procedures required to accurately/correctly conduct statistical analyses and apply quantitative methods in the practice of educational research. Students will learn through a combination of reading assignments, data analyses, interpretation of SPSS (Statistical Package for Social Sciences) outputs, and application activities. Additionally, students will be expected to discuss and critique the quality/appropriateness of quantitative methods used in published research (e.g., professional journal articles).

Prerequisites: EDRS 590 or equivalent experience.

Course Methodology: This course consists of lectures, large group discussion, in-class activities, and individual/group assignments.

Required Text:
Dimitrov, D.M. (2008). *Quantitative research in education: Intermediate & advanced methods.* NY: Whittier Publications. ISBN: 978-1-7604-285-4

Recommended Text:
American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

Course Requirements
It is expected that each student will:
(1) Attend each class session.
(2) Read all assigned materials for the course.
(3) Participate in classroom activities that reflect critical reading of materials.
(4) Complete all in-class and homework assignments.
(5) Design, conduct, and prepare a report on a pilot research study.
(6) Present the pilot research study in class in a poster or PowerPoint format.

Student Outcomes

- Students will be able to deal appropriately with ethical issues in research.
- Students will be able to develop research hypotheses that relate to research questions.
- Students will be able to demonstrate an understanding of quantitative research design through completion of a pilot research project.
- Students will be able to design the basic components of a small-scale quantitative research study including the use of descriptive statistics and inferential statistics.
- Students will be able to write clearly and coherently about the conceptual framework, questions and methods used in a research study.
- Students will be able to identify threats to internal and external validity in simulated studies and their own research design.
- Students will be able to interpret SPSS outputs.
- Students will be able to demonstrate an understanding of power and effect size analysis.
- Students will be able to evaluate and critique data analysis in published quantitative research articles.
- Students will be able to develop and reinforce their critical thinking, problem solving, oral, and writing skills.

Performance Evaluation Components

1. **In class/Homework Assignments:** Students will be asked to work individually and/or in groups on in-class and homework assignments throughout the semester. As part of the homework assignments, students will need to complete two critiques of the data analysis section in two published quantitative research studies (max. 2 pages each).

2. **Midterm Examination (Closed books and notes)**

3. **Pilot Research Study:** This course requires students to develop a pilot research study in an educational setting and conduct basic quantitative data analysis. This work is intended to reflect what you learn during the course. Other course requirements are designed to build up to this final pilot research study. The pilot study must be turned in on-time and must adhere to the guidelines of the APA Publication Manual, 6th edition (2010).

4. **Final Examination: Semi-comprehensive examination (closed books and notes)**

5. **Class Participation and Attendance Policy:** Because of the importance of lecture and discussion to your total learning experience, regular attendance, punctuality, preparation, and active contribution to small- and large-group activities are required. These elements of your behavior will reflect the professional attitude implied in the course goals and will account for 10% of your course grade (equivalent to a full letter grade). Students who must miss a class must notify the instructor (preferably in advance) and are responsible for completing all assignments and readings for the next class.

Rubric for Participation and Attendance

	Level of Performance			
Element	**Distinguished (9-10 pts.)**	**Proficient (7-8 pts.)**	**Basic (4-6 pts.)**	**Unsatisfactory (0-3 pts.)**
Attendance & Participation	The student attends all classes, is on time and prepared. The student actively participates and supports the members of the learning group and the members of the class.	The student misses 1 class, is on time, prepared, and follows outlined procedures in case of absence. The student participates in group and class discussions.	The student misses 2 classes and follows outlined procedures in case of absence. The student is generally on time and prepared for class, and participates in group and class discussions.	The student misses more than 2 classes. The student is late for class and/or does not follow outlined procedures in case of absence. The student is not prepared for class and does not actively participate in discussions.

Grading Policy

Class Participation and Attendance	10 pts.
Individual Homework Assignments	10 pts.
Midterm Examination	20 pts.
Pilot Research Project	30 pts.
Final Examination	30 pts.
TOTAL	**100 pts.**

Grades

A+	98-100%	A	93-97.49%	A-	90-92.49%
B+	88-89.49%	B	83-87.49%	B-	80-82.49%
C	70-79.49%	F	below 70%		

COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT

Student Expectations

- Students must adhere to the guidelines of the George Mason University Honor Code [See http://academicintegrity.gmu.edu/honorcode/].
- Students with disabilities who seek accommodations in a course must be registered with the George Mason University Office of Disability Services (ODS) and inform their instructor, in writing, at the beginning of the semester [See http://ods.gmu.edu/].
- Students must follow the university policy for Responsible Use of Computing [See http://universitypolicy.gmu.edu/1301gen.html].
- Students are responsible for the content of university communications sent to their George Mason University email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.
- Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.
- Students are expected to exhibit professional behaviors and dispositions at all times.

Campus Resources

- The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See http://caps.gmu.edu/].
- The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing [See http://writingcenter.gmu.edu/].
- For additional information on the College of Education and Human Development, Graduate School of Education, please visit our website [See http://gse.gmu.edu/].

Honor Code

All required assignments will be completed in compliance with the GMU Honor Code. Students are expected to abide by the honor code set forth in the current edition of the Student Handbook. All exams, assignments, and papers are honor code work. That means that students must not give nor receive any unauthorized assistance. While members of a team may collaborate on written paper assignments, they may not give or receive assistance from other teams. Plagiarism is also a violation of the honor code. See http://academicintegrity.gmu.edu/honorcode/ for the full honor code.

Learning Disabilities

Students with any type of documented disability that may interfere with their learning in this class may negotiate a reasonable accommodation with the instructor. Students with disabilities who seek accommodations in a course must be registered with the Mason Office of Disability

Services (ODS) and inform the instructor, in writing, at the beginning of the semester. See http://ods.gmu.edu or call 703-993-2474 to access the DRC.

Technology Policy

This course is held in a computer lab to facilitate use of data analysis software. While class is in session the computers are not to be used for checking email, viewing non-class-related websites, or chatting with friends via instant messaging. Students using the computers in this manner may lose attendance credit for the day. Students may use the computers for these purposes before and after class or during class breaks. Students should keep their cell phones on silent or vibrate during class and should not use their cell phones except in case of emergency. If it is necessary to use the cell phone, please leave the classroom.

College of Education and Human Development Statement of Expectations:

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Course Schedule

Date	Topic	Chapter(s)
Jan. 27	Class canceled due to snow	
Feb. 3	Getting started; concepts of measurement in education	1, 2 until section 2.4, 3
Feb. 10	Research design	4-5
Feb. 17	Organizing and graphing data	6
Feb. 24	The normal distribution, measures of variability, z-score transformations. **DUE: Draft project Intro section**	7
March 3	More on normal distribution and other distributions (*t*-distribution)	7
March 10	Hypothesis testing: One-sample case for the Mean	8
March 17	*Spring Break*	
March 24	Hypothesis testing: Two-sample case for the Mean **DUE: Draft project Methods section: Sample, data, and data collection**	8
March 31	**Midterm Examination**	
April 7	Hypothesis testing: proportions	9
April 14	Correlation between two variables	10
April 21	Simple linear regression	10
April 28	*Chi-square* distribution, *Chi-square* tests for frequencies **DUE: Critique of data analysis in one published quantitative research studies (2-4 pages)** **OPTIONAL: Draft project Methods section: Data analysis procedures**	12
May 5	One-factor Analysis of Variance (ANOVA), *F* – distribution	14
May 10	Review and project discussion **(date negotiable)**	
May 12	**Final Examination** **Projects due via e-mail no later than 12:00PM**	

Notes:

1. Additional materials posted on the **Black Board 9.1 Learning System.** Enter through the "Courses" tab on https://mymasonportal.gmu.edu
2. Last day to add classes: February 8
3. Last day to drop with no tuition penalty: February 8
4. Last day to drop with 33% tuition penalty: February 15
5. Last day to drop with 67% tuition penalty: February 25
6. Last day to drop with no academic liability: February 25
7. Last day to drop: February 25

Rubric for Pilot Research Study

EDRS 620: Quantitative Methods in Education Research

Name: _____ Date: _____

Semester: _____ Grade: _____ pts.

GENERAL EVALUATION CRITERIA:

- *Clarity and organization*
- *Comprehensiveness of content*
- *APA style*

TOTAL SCORE: **MAX = 30 pts.**

Performance Elements	**Quality Points**				
	1	**2**	**3**	**4**	**5**
Cover page clearly organized with title, name, date, semester, Instructor's name, and school					
Introduction Section a. Statement of the problem, its importance, and some previous studies related to the problem (NOT AN EXTENSIVE LITERATURE REVIEW) b. Justification of the need for this study i. Statement of research questions.					
	max. = 6 pts.				
Methods Section a. **Sample:** description of the **sample** b. **Data:** description of the data c. **Data collection:** description of the data collection method d. **Statistical Data Analysis**: Description of the statistical methods used to address the research questions in the project					
	max = 8 pts.				

Performance Elements	Quality Points				
	1	2	3	4	5
Results Section [Presentation of results obtained from the statistical data analysis for each research question] a. Relevance, accuracy, completeness, and APA style of the results within text of the results section					
b. tables (each on a separate page) after references					
c. figures (each on a separate page) after tables					
	max = 8 pts.				
Discussion/Conclusions Section a. Conclusions drawn from the results					
b. Statement of limitations					
c. Recommendations for future research					
	max = 8 pts.				