George Mason University
Graduate School of Education

COURSE SYLLABUS

EDRS 811 (001)
Quantitative Methods in Educational Research (3:3:0)
EDRS 811 001
Fall 2010

Instructor:	**Charles L. Thomas, PhD**
Class Day & Time:	**Monday, 4:30 – 7:10 pm**
Location:	**320 Innovation Hall**
Office:	**2006 West Bldg**
Phone:	**703-993-3137**
Email:	**cthomas@gmu.edu**
Office Hours:	**Mon. (2:30 PM- 3:30 PM) & Wed. (4:30 PM- 6:00 PM) , and by Appointment**

Catalog Course Description
The purpose of this course is to develop students' understanding of statistical ideas and procedures required for conducting statistical analyses and applications of quantitative methods in the practice of educational research. The course will reinforce and build upon concepts and skills acquired in EDRS 620. Students will learn through a combination of reading assignments, hands-on experience in using a computer program for data analysis, and application activities. Students will be expected to identify and report on quantitative methods used in published research (i.e., journal articles), to analyze data using the Statistical Package for Social Sciences (SPSS), and to provide written reports of methodology and results. *Prerequisites:* Successful completion of EDRS 620 (or its equivalent) or permission of instructor.

NATURE OF COURSE DELIVERY
Course delivery includes lectures, discussions, and group activities in a computer classroom. The course is technology-enhanced using Blackboard (http://courses.gmu.edu). Students are expected to have a MESA account (go to http://password.gmu.edu to set an account) and are responsible for any information posted on the Blackboard site.

For assistance with Blackboard students may email courses@gmu.edu, call (703) 993-3141, or go to Johnson Center Rm 311 (office hours: 8:30am-5pm). For general technical assistance, students may call (703) 993-8870 or go to the counter in Innovation Hall.

REQUIRED TEXT
Dimitrov, D. M. (2008). *Quantitative research in education*. New York: Whittier Publications.

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

OTHER RESOURCES
SPSS an IBM Company (2010). SPSS. Version 19. Retrieved August 19, 2010 at:
http://www.spss.com/software/statistics/

SPSS Tutorial (2010). Retrieved August 19, 2010 from Texas A&M University, Department of Statistics, College Station, TX Web site: http://www.stat.tamu.edu/spss.php

Students are *not* required to purchase statistical software for this course. However, assignments will require the use of SPSS. This program (version 19) is available in the computer labs on campus. If you have access to earlier versions, they can also be used for the course. You will find options for purchasing SPSS at: http://www.spss.com/vertical_markets/education/online.htm, including an option to lease the program from six months to one year (http://estore.e-academy.com/index.cfm?loc=spss/main).

COURSE REQUIREMENTS

Students will:

- Read all assigned materials before coming to class.
- Participate in classroom activities.
- Complete in- class and homework assignments and quizzes.
- Design and conduct a mini-research study.
- Complete an in-class midterm and final examination.
- Attend each class session.

COURSE EVALUATION

1. Quizzes (5%)

Students will take a brief quiz (i.e., 10 minutes) at the start of *every other* class session, *commencing September 20*, assessing *knowledge* and *comprehension* of statistical concepts discussed in class. Students who miss a quiz may not makeup the quiz without prior notification that they will not be in class and have received my approval. I will ignore a student's lowest quiz grade when determining final grades. Students may bring one 8.5 x 11 sheet of paper with notes on the front and back and should also have their own calculators for each quiz in the event that simple analyses are required.

2. In-Class/Homework Assignments (20%)

Students will complete homework assignments throughout the semester. These assignments give students hands-on experiences in the analysis and interpretation of statistical data using SPSS, and serve as the basis for class discussion. Students turn in the assignments at the *end of the next class period*.

For assigned problem sets, handwritten work is acceptable but should be neat and readable. When referring to computer printouts please cut and paste the appropriate output into your homework so that it is clear where you got the data cited in your response. Be sure to label and explain clearly. Students may work in groups but each student is responsible for turning in a completed individual homework assignment.

3. Midterm and Final Examination (25% each—50% total)

There are two scheduled performance-based exams: at midterm and the end of the course (see class schedule).

4. Mini-Research Study (25%)

The final requirement is a simulated study around an extant data set selected by the student (I will identify such during orientation). The purpose of the study should be selected by the student but be in the field of education, broadly conceived.

Moreover, the study questions should enable the student to conduct the following analyses: 1) Chi-square test for association, 2) Multiple Regression, and 3) ANCOVA or Two-Way ANOVA.

The report of the study should conform to the traditional format specified in the APA's *Publication Manual Guidelines* (2010) and contain the following (see Appendix for rubric):

(1) *Introduction:* Identify broad topic of interest; conduct a *brief* literature review; discuss significance of the proposed study; state purpose and hypotheses/research questions.
(2) *Methods:* Describe sampling method as well as the study groups, measures, procedures/data collection, and data analysis.
(3) *Results:* Describe the results of the analyses conducted in the significance tests and include appropriate tables and figures.
(4) Discussion and Conclusions: Discuss the meaning of the findings as if they had existed in a real study in terms of the broader literature, and identify limitations.
(5) *Reflection on the process:* Give your reflections of the simulated learning experience. What did you learn from it? What course experiences were supportive to the completion of the project? How did course material help you carry out the study? What learning experiences or materials do you wish were available or improved to make the experience more successful?

GRADING POLICY

Your final grade for this class will be based on the following letter grade/percent correct equivalents:

A+ = 98 – 100%	A = 93 – 97.99%	A- = 90 – 92.99%
B+ = 88 – 89.99%	B = 83 – 87.99%	B- = 80 – 82.99%
C = 70 – 79.99%	F < 70%	

CLASS POLICIES

Paper Format

Research papers should be submitted in APA format with 1 inch margins on all sides, double-spaced, 12-point Times New Roman font, include a separate title page, and proofread for spelling, grammar, and clarity. The evaluation of the research paper will factor into consideration how well students follow these guidelines.

Late Assignments

Assignments are due at the start of class on the assigned due date. If an assignment must be turned in late or outside of class, you may give the assignment to me in person, leave the assignment in my faculty mailbox (3rd Floor, West Bldg), or email the document. If you place the assignment in my mailbox, send an email to alert me that it is there. *DO NOT* slide assignments under my office door. Assignments submitted this way will not be accepted or graded and will be considered missing. A reduction of Late assignments are marked down by half a letter grade for each day the assignment is late.

Computer Use in Class

All course sessions are currently scheduled in 320 Innovation Hall where there are sufficient computers for the course. During class time, please refrain from checking email or conducting activities on the computer unrelated to the class session.

Class Environment
Help to foster a positive learning environment by respecting the opinions and contributions of others. In addition, please turn off cell phones or put them on silent (vibration) mode.

COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT STATEMENT OF EXPECTATIONS:

- Students are expected to exhibit professional behavior and dispositions. See gse.gmu.edu for a listing of these dispositions.
- Students must follow the guidelines of the University Honor Code (http://www.gmu.edu/catalog/apolicies/#TOC_H12) for all course assignments.
  - Students must not give or receive unauthorized assistance
  - Plagiarism is also a violation of the honor code. Please note that:
    - "Plagiarism encompasses the following:
      1. Presenting as one's own the words, the work, or the opinions of someone else without proper acknowledgment.
      2. Borrowing the sequence of ideas, the arrangement of material, or the pattern of thought of someone else without proper acknowledgment."
      (from Mason Honor Code online at http://mason.gmu.edu/~montecin/plagiarism.htm)
    - Paraphrasing involves taking someone else's ideas and putting them in your own words. When you paraphrase, you need to cite the source.
    - When material is copied word for word from a source, it is a direct quotation. You must use quotation marks (or block indent the text) and cite the source.
    - Electronic tools (e.g., SafeAssign) may be used to detect plagiarism if necessary.
    - Plagiarism and other forms of academic misconduct are treated seriously and may result in disciplinary actions.
- Students must agree to abide by the university policy for Responsible Use of Computing. See http://mail.gmu.edu and click on Responsible Use of Computing at the bottom of the screen.
- Students with disabilities who seek accommodations in a course must be registered with the GMU Disability Resource Center (DRC) and inform the instructor, in writing, at the beginning of the semester. See www.gmu.edu/student/drc or call 703-993-2474 to access the DRC.

NOTEWORTHY GMU POLICY STATEMENT & RESOURCES

Honor Code:

To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of George Mason University and with the desire for greater academic and personal achievement, we, the members of George Mason University, have set forth the following code of honor. Any individual caught in the act of cheating, attempting to cheat, plagiarizing, or stealing will be brought forth before a council of their peers. In the event that the individual is found guilty, he or she will be punished accordingly. For further information, please refer to the University Catalog or Website at www.gmu.edu.

Statement Regarding Disabilities:

If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. http://ods.gmu.edu

GMU Email Accounts

Students must activate their GMU email accounts to receive important University information, including messages related to this class.

OTHER USEFUL CAMPUS RESOURCES:

- *WRITING CENTER*: A114 Robinson Hall; (703) 993-1200; http://writingcenter.gmu.edu
- *UNIVERSITY LIBRARIES* "Ask a Librarian" http://library.gmu.edu/mudge/IM/IMRef.html
- *COUNSELING AND PSYCHOLOGICAL SERVICES* (CAPS): (703) 993-2380; http://caps.gmu.edu

UNIVERSITY POLICIES

The University Catalog, http://catalog.gmu.edu, is the central resource for university policies affecting student, faculty, and staff conduct in university affairs.

APPENDIX A
Schedule of Class Activities

Date	Study Topic/Class Activities	Assigned Readings	Assignment Due Dates
Aug 30	*Class Orientation Basic measurement and research concepts in education Introduction to the SPSS Environment	1, 4 Self-Review 2, 3	
Sept 6	**NO CLASS – LABOR DAY**		
Sept 13	Review of Research Design Review of Introductory Statistics	5,6, 7	
Sept 20	Hypothesis Testing for Differences in Means : One- and Two- Sample Cases	8	Quiz 1 HMWK 1: Constructing and ingterpreting graphic depictions of statistical data (Stat Lab #2)
Sept 27	Hypothesis Testing for Differences in Means: One- and Two- Sample Cases (cont') & Proportions	8, 9	
Oct 4	Chi-square tests for frequencies & association	12	Quiz 2 HMWK2: Significance tests of differences in sample means (Stat Lab #3)
Oct 12*	Correlation & Simple Regression Partial and Part Correlation	10,11	HMWK 3: Chi-Square
Oct 18	MIDTERM PERFORMANCE -BASED EXAMINATION		
Oct 25	Multiple Regression	13	
Nov. 1	Multiple Regression	13	Quiz 3
Nov. 8	One-factor Analysis of Variance (ANOVA)	14	HMWK 4: Multiple Regression
Nov. 15	Two-factor Analysis of Variance (ANOVA)	15	Quiz 4
Nov. 22	Analysis of Covariance (ANCOVA)	16	
Nov. 29	Multiple Regression & ANOVA (One-Factor Case)	17	Quiz 5 HMWK 5:ANOVA
Dec. 6	Presentation of Projects		
Dec 13	FINAL EXAMINATION		**Research Paper due Fri, 12/10/10**

**Notes*:
1. Class day moved to Tuesday due to Columbus Day break
2. Additional materials posted on the **Black Board Learning System**

Appendix B

EDRS 811 FALL 2010

Appendix
Quantitative Methods in Education Research (EDRS 811)
Research Paper Rubric

Name: _____ **Date:**_____

Semester: _____ **Grade:** _____

GENERAL EVALUATION CRITERIA:

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

MAXIMUM SCORE: 30 pts

PERFORMANCE ELEMENTS	POINTS 1	2	3	4
Cover page	**max = 1 pt**			
Clearly organized with title, name, date, and boiler plate (partial fulfillment, Instructor's name, and school) in APA style				
Introduction	**max = 5 pts**			
a. Statement of the nature of the problem and its importance (include a description of some recent studies related to the issues)				
b. Justification of the need for this study				
c. Statement of specific research questions.				
Methods Section	**max = 8 pts**			
a. Participants: description of the sample (size, subgroups, demographic characteristics)				
b. Measures: description of the data (instruments, scales, reliability of scores)				
c. Procedures and data collection: description of the data collection method (e.g., using existing records on student)				
d. Statistical Data Analysis: Description of the statistical methods and procedures used to address the research questions in the project				
Results Section Present the results obtained with the statistical data analysis for each research question	**max = 7 pts**			
a. within text of the results section,				
b. in APA formatted tables (each on a separate page after references, NOT SPSS tables), and in APA formatted figures (each on a separate page after tables).				
Discussion/Conclusions Section	**max = 7 pts**			
a. Conclusions drawn from the results [findings and implications for theory and/or practice]				
b. Statement of limitations				
c. Recommendations for future research				
References and Citations	**max = 1 pt**			
Inclusion of recent studies appropriately cited in text and in reference list in APA style				
Reflection	**max = 1 pt**			
Inclusion of a thoughtful reflection on the research study experience and how it contributed to your learning				