

EDRS 811 Quantitative Methods (001) in Educational Research

George Mason University, Graduate School of Education

Dr. Dimiter Dimitrov

SPRING 2011

Class Meeting: W [7:20-10:00 p.m.], INN, Room 319

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Office Hours: M (3:00– 4:00 p.m.) W (5:30-6:30pm)

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Other hours may be arranged by appointment.

Course Description

The main purpose of this course is to develop in the students an understanding of statistical ideas and procedures required for conducting correct statistical analysis 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 text 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 (articles), to collect and 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.

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

Required Texts:

Dimitrov, D.M. (2008). **Quantitative Research in Education: *Intermediate & Advanced Methods***. NY: Whittier Publications. ISBN: 978-1-57604-301-1

- (1) Read all assigned materials for the course.
- (2) Participate in classroom activities that reflect critical reading of materials.
- (3) Complete two in class assignments and HW assignments.
- (4) Design and conduct a pilot research study
- (5) Present the pilot research study in class in a poster format.
- (6) Attend each class session.

Course Evaluation

1. In class/Homework Assignments: Students will be asked to work individually on homework assignments throughout the semester.

2. Midterm Examination (Closed books and notes)

3. Pilot Research Study: This course requires students to develop and conduct a pilot-research study in an educational setting. This study is intended to reflect what you have learned from this course. It should be written in a way that one would submit for a national professional conference paper presentation. Other requirements for this course are designed to build up bases for the final pilot research proposal. Research papers must be handed in on time and must adhere to the APA Publication Manual Guidelines.

This pilot research study will be divided into 4 sequential parts.

1. Identify broad topic of interest; conduct a literature review; discuss significance of the proposed study; state purpose and hypotheses.
2. Methods - describe sample, measures to test hypotheses, procedures and data collection, design of the study, data analysis.
3. Write the results section.
4. Discussion and Conclusion.

The presentation of the final paper will take place the last day of class in a research paper format (APA style, see also guidelines posted on the AERA website, www.aera.net.org.) After completing the research study, reflect on that experience. What did you learn from it? How do you think course material helped you carry out the study? [**Scoring rubric** for the research paper on pp. 6-7].

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

5. Class Participation and Attendance Policy: Because of the importance of lecture and discussion to your total learning experience, I wish to encourage you to both attend and participate in class regularly. Attendance, punctuality, preparation, and active contribution to small and large group efforts are essential. These elements of your behavior will reflect the professional attitude implied in the course goals and will account for 5% of your course grade. With reference to the grading scale described later in this syllabus, you will note that this percentage is 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 (4-5 pts.)	Proficient (3 pts.)	Basic (2 pts.)	Unsatisfactory (1 or 0 pts.)
Attendance & Participation	The student attends all classes, is on time, is prepared and follows outlined procedures in case of absence, the student actively participates and supports the members of the learning group and the members of the class.	The student attends all classes, is on time, is prepared and follows outlined procedures in case of absence; the student makes active contributions to the learning group and class.	The student is on time, prepared for class, and participates in group and class discussions. The student attends all classes and if an absence occurs, the procedure outlined in this section of the syllabus is followed.	The student is late for class. Absences are not documented by following the procedures outlined in this section of the syllabus. The student is not prepared for class and does not actively participate in discussions.

Grading Policy

Class Participation and Attendance	5 pts.
Individual Homework Assignments	10 pts.
Pilot Research Study	30 pts
Midterm Examination	25 pts.
FINAL EXAMINATION	30 pts.
TOTAL	100 pts

Letter grades will be assigned as follows:

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%		

Honor Code

All evaluations and homework will be taken under 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 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. The University's Honor Code guidelines for academic honesty are at: <http://mason.gmu.edu/~montecin/plagiarism.htm>

Academic Integrity

GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

Office of Disability Services

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>.

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.

GMU E-mail Accounts

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

	Reading from text	Chapter^a
Jan. 26	Concepts of measurement in education	1, 2, 3
Feb. 2	Research Design	4, 5
Feb. 9	Review of introductory statistics – part 1	6, 7
Feb. 16	Review of introductory statistics – part 2	8, 9
Feb. 23	Correlation and Regression	10, 11
March 2	Nonparametric tests [chi-square tests]	12
March 9	Multiple regression	13
March 16	Spring Recess (no classes)	
March 23	Midterm Examination	
March 30	One-factor Analysis of Variance (ANOVA)	14
April 6	Two- and Three-factor ANOVA	15
April 13	Analysis of covariance (ANCOVA)	16
April 20	Multiple regression for ANOVA purposes	17
April 27	An overall review & Project discussion	
May 4	Project Presentations	
May 11	FINAL EXAMINATION	

Note: Project submission (via e-mail) due: **May 9**.

^a **Website for the book:** <http://cehd.gmu.edu/book/dimitov> [includes SPSS data files used in examples in the book and answers to study questions by chapters.]

Name: _____

Date: _____

Semester: _____

Grade: _____ pts.

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QUANTITATIVE METHODS IN EDUCATION RESEARCH

RUBRIC FOR RESEARCH PAPER

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, and boiler plate (partial fulfillment, Instructor's name, and school)					
Introduction Section					
a. Statement of the nature of the problem and its importance (include also a description of some recent studies related to the issues)					
b. Justification of the need for this study					
c. Statement of specific research questions.					
max = 6 pts.					
Methods Section					
a. Sample: description of the sample (size, subgroups, demographic characteristics)					
b. Data: description of the data (instruments, scales, reliability of scores)					
c. 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					
max = 8 pts.					

Results Section [Presentation of results obtained with the statistical data analysis for each research question]	QUALITY POINTS				
	1	2	3	4	5
<p>Relevance, accuracy, completeness, and APA style of the results provided</p> <p>a. within text of the results section,</p> <p>b. tables (each on a separate page) after references</p> <p>c. figures (each on a separate page) after tables</p>					
	max = 8 pts.				
<p>5. Discussion/Conclusions Section</p> <p>a. Conclusions drawn from the results [findings and implications for theory and/or practice]</p> <p>b. Statement of limitations</p> <p>c. Recommendations for future research</p>					
	max = 8 pts.				