

EDRS 811 Quantitative Methods (001) in Education Research

George Mason University, College of Education and Human Development
FALL, 2004

Dr. Dimiter Dimitrov

Class Meeting: Tuesday, 4:30 – 7:10 p.m., Innovation Hall, Room 139

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Office Hours: T & TH 10:11:30 A.M.

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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

Hinkle, D., Wiersma, W., & Jurs, S. (2003). Applied Statistics for the Behavioral Sciences (5th. ed.), Houghton Mifflin Company, Boston: MA. ISBN: 0-618-12405-5.

Course Requirements: It is expected that each of you will:

- (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 6 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?

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 10% 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

ELEMENT	LEVEL OF PERFORMANCE			
	Distinguished (9-10 pts.)	Proficient (8 pts.)	Basic (7 pts.)	Unsatisfactory (6 or less 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	10 pts.
Individual Homework Assignments	10 pts.
Pilot Research Study	30 pts
Midterm Examination	20 pts.
FINAL EXAMINATION	30 pts.

TOTAL	100 pts
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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>

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. If you have not contacted the Office of Disability Services, and you have a disability please make sure to register for services.

GSE Statements of Expectations

The Graduate School of Education (GSE) expects that all students abide by the following:

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. See http://www.gmu.edu/catalog/apolicies/#TOC_H12 for the full honor code.

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.

	Reading from text	Chapter
Aug. 30	Introduction. Organizing and graphing data.	1, 2
Sept. 7	Measures of central tendency., Variation.	3
Sept. 14	The Normal Distribution.	4
Sept. 21	Corelation. Linear regression.	5, 6
Sept. 28	Sampling, Probability, and Sampling distributions	7
Oct. 5	Hypothesis testing: One-sample case for the mean	8, 9, 10
Oct. 12	<i>Columbus Day Recess (No Classes)</i>	
Oct. 19	MIDTERM EXAMINATION	
Oct. 26	Hypothesis testing: Two-sample case for the mean	11
Nov. 2	Hypothesis testing: Two-sample case for other statistics	12
Nov. 9	Determining power and sample size	13
Nov. 16	Chi-square tests for frequencies	20
Nov. 23	Basic designs for quantitative research in education. Issues of reliability and validity.	Handouts
Nov. 30	Summary and review for the final examination	
Dec. 7	Project presentations	
Dec. 14	FINAL EXAMINATION	