GEORGE MASON UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT
GRADUATE SCHOOL OF EDUCATION
EDUCATIONAL PSYCHOLOGY PROGRAM

EDRS 620 Section B03: Quantitative Methods in Educational Research
3 Credits, Summer 2015
June 1, 2015 to July 22, 2015
Monday and Wednesday, 7:20 PM to 10:00 PM Thompson Hall L003

PROFESSOR:
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COURSE DESCRIPTION

A. Prerequisites/Corequisites
EDRS 590 or equivalent experience.

B. University Catalog Course Description
Examines fundamental concepts and methods of statistics as applied to educational problems, including descriptive and inferential statistics.

C. Expanded Course Description
EDRS 620 is a graduate quantitative analysis course that facilitates student understanding of the basic concepts and principles of descriptive and inferential statistics. It emphasizes comprehension, skill development and application of statistical knowledge to quantitative inquiry in education. Students learn through a combination of text reading assignments, data analysis and interpretation of SPSS printouts (Statistical Package for Social Sciences), and application activities. Students identify and report on quantitative methods used in published research (e.g., professional journal articles). The course lays the foundation for advanced study of quantitative analysis for students desiring to continue their studies in the discipline.

LEARNER OUTCOMES or OBJECTIVES

This course is designed to enable students to:
- Understand and apply fundamental concepts, terminology and assumptions of statistical methods.
- Use appropriate statistical approach to answer questions, test hypotheses, and present data.
- Interpret reported statistical findings.
- Perform statistical analyses using computer software.
- Critique research that uses fundamental statistical analyses.
- Report statistical results in APA format.

PROFESSIONAL STANDARDS

In this course, the educational psychology standards will be addressed. Especially:

> *Standard 3*: Knowledge of Educational Research and Assessment. Candidates will demonstrate an understanding of the basic concepts, principles, techniques, approaches, and ethical issues involved in educational research.
> *Standard 4*: Analysis, Critique, and Evaluation of Educational Research. Candidates will use their knowledge of quantitative and qualitative research methodology to critically read and evaluate quantitative and qualitative research articles.
> *Standard 6*: Communication and Dissemination of Educational Research. Candidates will demonstrated critical thinking, oral presentation, technological, and writing skills as they are used in the profession. These include:
> > a. knowledge and use of APA style,
> > b. presentations,
> > c. article abstracts,
> > d. research proposals,
> > e. literature reviews, and
> > f. technological skills.

NATURE OF COURSE DELIVERY

This course will be taught face-to-face for most class sessions. Sessions will consist of some combination of whole- and small-group discussion and activities and instructor and student presentations. Students are expected to be prepared for class activities and discussions by reading assigned materials and completing assignments by their due dates.

REQUIRED TEXT

Privitera, G. (2016). *Essential statistics for the behavioral sciences*. Thousand Oaks, CA: SAGE Publications, Inc.

Additional short readings will be placed on Blackboard and distributed in class.

RECOMMENDED TEXT

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

COURSE ASSIGNMENTS AND EXAMINATIONS

1. **Homework**

   A short set of practice items will be assigned at each class meeting to be completed by the due dates on the syllabus below. The practice items will be self-graded by students using either the answers available in the text, its companion site or using solutions provided online on the Blackboard site. No practice items will be collected by the instructor, so it is imperative that students check their work prior to moving on to the next set of items. Time will be made available on the dates on which assignments are due for discussion in class – at any time, however, students are encouraged to use the Blackboard discussion board for questions and inquiries.

   Note that while the textbook illustrates the computational aspects of the statistical tests, we will primarily focus on the application and interpretation of results and output in this course. The necessary foundational understanding of the computations will be discussed.

2. **Exams**

   Two exams will be given in the course. The exams will emphasize the application and interpretation of statistical analyses over computational aspects of the material. Elements of assessment include terminology, selecting appropriate statistical analyses, using SPSS to conduct simple analyses, and interpreting output and APA reporting. Exams will not be cumulative.

3. **Article Reviews**

   Students will complete reviews of three journal articles that use at least three different methods of statistical analyses. The purpose of this assignment is to see the material we will discuss in context in education research. The selected articles should be forwarded in PDF format to me by July 8 so that I have time to read them before our classroom discussion on July 20. A detailed description of this assignment will be posted to Blackboard prior to the research week of July 6.

4. **Attendance is expected at all class meetings.**

GRADING

Assignment	Points
Article reviews	10
Homework	10
Midterm Exam	40
Final Exam	40

A+ = 98 – 100	B+ = 87 – 89	C = 70 – 79	F = below 70
A = 93 – 97	B = 83 – 86		
A- = 90 – 92	B- = 80 – 82		

TASKSTREAM REQUIREMENTS

Every student registered for any Educational Psychology course with a required performance-based assessment is required to submit this assessment – **Final Exam** – to TaskStream (regardless of whether a course is an elective, a onetime course or part of an undergraduate minor.) Evaluation of your performance-based assessment will also be provided using TaskStream. Failure to submit the assessment to TaskStream will result in the course instructor reporting the course grade as Incomplete (IN). Unless this grade is changed upon completion of the required TaskStream submission, the IN will convert to an F nine weeks into the following semester

GMU POLICIES AND RESOURCES FOR STUDENTS

a. Students must adhere to the guidelines of the George Mason University Honor Code (see http://oai.gmu.edu/the-mason-honor-code/)

b. Students must follow the University policy for Responsible Use of Computing (see http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/)

c. Student 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 communications from the University, College, School and program will be sent to students solely through their Mason email account.

d. 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/).

e. 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).

f. Students must follow the University policy sating that all sound-emitting devices shall be turned off during class unless otherwise authorized by the instructor.

g. The George Mason University Writing Center staff provides a variety of resources and services (e.g, tutoring workshops, writing guides, and handbooks) intended to support students as they work to construct and share knowledge through writing (see http://writingcener.gmu.edu/).

PROFESSIONAL DISPOSITIONS

Students are expected to exhibit professional behaviors and dispositions at all times.

CORE VALUES COMMITMENT

The College of Education & Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles (*see* http://cehd.gmu.edu/values/).

For additional information on the College of Education & Human Development Graduate School of Education, please visit our website http://gse.gmu.edu/.

	Tentative Course Organization & Schedule		

Note about readings: The text discusses details of the computational steps involved in much of the statistics we will study. While this information is useful for gaining a better understanding of the material, we will use software to calculate test results. The essence of the course will be to apply and interpret – not perform computations.

Date	Topics	Assigned Reading	Homework Class Activities Due Dates
June 1	• Review syllabus • Fundamental concepts • Measurement scales	Chapter 1	
June 3	• Measures of central tendency and variability (summary statistics) • Presentation of data	Chapter 2 (2.8 to 2.9) Chapter 3 Chapter 4	
June 8	• Probability distributions • Sampling distributions	Chapter 5 Chapter 6	HW 1 DUE *(Chapters 1-4)*
June 10	• Hypothesis testing for single populations	Chapter 7 (7.1 to 7.6) Chapter 8	
June 15	• Hypothesis testing for two populations	Chapter 9 Chapter 10	HW 2 DUE *(Chapters 5-8)*
June 17	• Analysis of variance (ANOVA)	Chapter 11 (11.1 to 11.4)	
June 22	• ANOVA (continued)	Chapter 11 (11.5 to 11.9)	HW 3 DUE *(Chapters 9-10)*
June 24	• **EXAM 1**	*Covers through hypothesis testing for two populations*	

June 29	• ANOVA (continued)	Chapter 12 (12.1 to 12.5 only)	HW 4 DUE *(Chapter 11)*
July 1	• Simple linear regression	Chapter 13 (13.8 to 13.11)	
July 6 **July 8**	• *No class meetings*	Research articles	Time provided to read articles and prepare article reviews Articles for review should be emailed by July 8 (one email).
July 13	• Correlation	Chapter 13 (13.1 to 13.5)	HW 5 DUE *(Chapter 12; Chapter 13 Sections 8 to 11)*
July 15	• Chi-square tests	Chapter 14	
July 20	• Review, Discussion and Wrap-Up – Article reviews		HW 6 DUE *(Chapter 13 Sections 1 to 5; Chapter 14)* Article reviews DUE
July 22	• **EXAM 2**		

APPENDIX B

Instructions for Accessing SPSS from Off Campus

- Navigate to https://www.vcl.gmu.edu/index.php?mode=selectauth

- Click the "Proceed to login" button using your Mason credentials and login.

- Click "New Reservation" on the menu at the left.

- From the drop-down menu, select "SPSS 22," select "Now" as the reservation time, choose the duration of your reservation, and click "Create Reservation."

- Wait for the system to update; when the "Connect!" button appears, click it.

- Record the password that will be needed for your reservation, and then click "Get RDP File," which will download to your computer. Be sure to notice where it is saved.

- Click the downloaded RDP file, and allow the program to connect.

- Enter your username and password (the one recorded earlier, not your usual GMU password) and connect to the remote desktop.

- You will see a remote desktop appear (smaller than your computer's screen). The icon for SPSS 22 is on this desktop. Click to launch SPSS 22.

- When opening or saving files, you will generally have to be sure to go to your computer locations rather than those of the remote desktop. I have found it often easier to work off of a USB storage device while using the remote access apps.