

**George Mason University  
College of Education and Human Development  
Educational Psychology**

**EDRS 620 (B01)/(B03)  
Quantitative Inquiry in Education (3 credits)  
Summer 2021, Session B  
Tuesday & Thursday 4:30pm-7:10pm  
Thompson L018 & via Zoom (see schedule)**

**Faculty**

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**Prerequisites/Corequisites**

Recommended: EDRS 590 or equivalent experience

**University Catalog Course Description**

This course examines fundamental concepts and methods of statistics as applied to educational problems, including descriptive and inferential statistics.

**Course Overview**

EDRS 620 is a graduate quantitative analysis course that facilitates student understanding of the basic concepts, and principles of descriptive and inferential statistics. The course explores hypothesis testing, correlational techniques, t-tests, analysis of variance, post-hoc comparison, factorial designs, regression, and non-parametric statistics. An emphasis is placed on 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. The course lays the foundation for advanced study of quantitative analysis for students desiring to continue their studies in this endeavor.

**Course Delivery Method**

This course will be delivered in as a hybrid course (50% or more using synchronous online format with some scheduled sessions in person). All students have the option to participate online for all sessions. We will meet mainly in Zoom and also use the Blackboard Learning Management system (LMS) housed in the MyMason portal. You will log in to the Blackboard (Bb) course site using your Mason email name (everything before @masonlive.gmu.edu) and email password. The course site will be available on Tuesday, June 1 at 4:30pm.

**Under no circumstances, may candidates/students participate in online class sessions (either by phone or Internet) while operating motor vehicles. Further, as expected in a face-to-face class meeting, such online participation requires undivided attention to course content and communication.**

### Technical Requirements

To participate in this course, students will need to satisfy the following technical requirements:

- High-speed Internet access with standard up-to-date browsers. To get a list of Blackboard's supported browsers see:

[https://help.blackboard.com/Learn/Student/Getting\\_Started/Browser\\_Support#supported-browsers](https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#supported-browsers)

To get a list of supported operation systems on different devices see:

[https://help.blackboard.com/Learn/Student/Getting\\_Started/Browser\\_Support#tested-devices-and-operating-systems](https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#tested-devices-and-operating-systems)

- Students must maintain consistent and reliable access to their GMU email and Blackboard, as these are the official methods of communication for this course.
- Students may be asked to create logins and passwords on supplemental websites and/or to download trial software to their computer or tablet as part of course requirements.
- The following software plug-ins for PCs and Macs, respectively, are available for free download: [Add or delete options, as desire.]
  - Adobe Acrobat Reader: <https://get.adobe.com/reader/>
  - Windows Media Player: <https://support.microsoft.com/en-us/help/14209/get-windows-media-player>
  - Apple Quick Time Player: [www.apple.com/quicktime/download/](http://www.apple.com/quicktime/download/)

### Expectations

- Course Week: Our course week will begin on the day that our first synchronous meeting takes place as indicated on the Schedule of Classes (i.e., Tuesday).
- Log-in Frequency: Students must actively check the course Blackboard site and their GMU email for communications from the instructor, class discussions, and/or access to course materials at least 2-3 times per week. In addition, students must log-in for all scheduled online synchronous meetings.
- Participation: Students are expected to actively engage in all course activities throughout the semester, which includes viewing all course materials, completing course activities and assignments, and participating in course discussions and group interactions.
- Technical Competence: Students are expected to demonstrate competence in the use of all course technology. Students who are struggling with technical components of the course are expected to seek assistance from the instructor and/or College or University technical services.
- Technical Issues: Students should anticipate some technical difficulties during the semester and should, therefore, budget their time accordingly. Late work will not be accepted based on individual technical issues.
- Workload: Please be aware that this course is **not** self-paced. Students are expected to meet *specific deadlines* and *due dates* listed in the **Class Schedule** section of this syllabus. It is the student's responsibility to keep track of the weekly course schedule of topics, readings, activities and assignments due.

- **Instructor Support:**  
Students may schedule a one-on-one meeting to discuss course requirements, content or other course-related issues. Those unable to come to a Mason campus can meet with the instructor via telephone or web conference. Students should email the instructor to schedule a one-on-one session, including their preferred meeting method and suggested dates/times.
- **Netiquette:**  
The course environment is a collaborative space. Experience shows that even an innocent remark typed in the online environment can be misconstrued. Students must always re-read their responses carefully before posting them, so as others do not consider them as personal offenses. *Be positive in your approach with others and diplomatic in selecting your words.* Remember that you are not competing with classmates, but sharing information and learning from others. All faculty are similarly expected to be respectful in all communications.
- **Accommodations:**  
Online learners who require effective accommodations to insure accessibility must be registered with George Mason University Disability Services.

### **Learner Outcomes or Objectives**

This course is designed to enable students to do the following:

1. Understand basic concepts, terminology, and assumptions pertinent to statistical analyses
2. Identify the type of statistic appropriate for a given research question
3. Use basic inferential statistics to test hypotheses
4. Interpret statistical findings
5. Compute, by hand and computer, basic statistical analyses
6. Write clearly and coherently about the conceptual framework, research questions and methods used in a study
7. Report statistical results in correct APA format

### **Professional Standards**

In this course, the following Educational Psychology program standards will be addressed:

***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. Oral presentations, c. Poster presentations, d. Article abstracts, e. Research proposals, f. Literature reviews, and g. Technological skills.

### **Required Texts**

Privitera, G. J. (2019). *Essential statistics for the behavioral sciences* (2nd ed.). Sage.

**Required Materials**

- (1) Access to SPSS software. There are computer labs on campus that provide access to SPSS. You can access SPSS software through GMU's virtual computer library at <https://its.gmu.edu/service/citrix-virtual-lab/> It is the student's responsibility to ensure access to SPSS for class time and outside of class time to complete required assignments.
- (2) A simple nonprogrammable calculator that has a square root function.

**Recommend Resource**

American Psychological Association. (2020). *Concise guide to APA style* (7th ed.). Washington, DC. \* The standard version of the publication manual is also acceptable.

**Statistics Study Tips**

1. Read widely; then read some more.
2. 'Google' difficult concepts. There is lots of helpful statistical information on the web.
3. Check for understanding frequently. This means that when a formula is presented, take time to see if you can explain how the formula works. If Greek letters are difficult for you, write out what each letter means.
4. Complete as many questions/problems as possible at the end of the chapters.
5. Develop examples of research questions and hypotheses that are appropriate for each statistical technique.
6. Form a study group.
7. Start the homework as soon as possible after class; waiting until the night before it is due does not help you process the material.

**Class Preparation**

Students are expected to come to class time having read the applicable textbook chapter and watched the asynchronous content found on the Blackboard site. Class time will be used to complete activities practicing the material. Information on course assignments, weekly quizzes, and class lectures are available on the course Blackboard site.

**Course Performance Evaluation**

Students are expected to submit all assignments on time in Blackboard.

- **Assignments and/or Examinations**

**1. Quizzes (10%)**

Timed online quizzes (usually 25 minutes) will be given once a week via Blackboard, assessing material discussed since the last quiz. The quizzes are composed of short answer and multiple-choice items which will cover the basic concepts presented in class and in the textbook. Students are expected to complete the quizzes independently by noon on the day indicated. Quizzes are designed to provide students (and instructor) feedback about students' course progress. Students who miss a quiz may not make up the quiz unless previous arrangements have been made. The lowest, non-missed quiz grade will be dropped. Quiz grades cannot lower students' overall course grade (unless they received 0's on quizzes due to failure to complete them). Students are encouraged to take the quizzes soon after the class meeting using only one 8.5 x 11 piece of paper with notes on the front and back. Remember the purpose of the quiz is to help isolate key concepts from the class period and to focus study time.

## 2. Homework Assignments (20%)

Students will complete homework assignments throughout the semester. All assignments will be posted on Blackboard and are due at the beginning of the class on the due date. These assignments are meant to apply and practice the course material.

For assigned problem sets, handwritten work is acceptable but should be neat, readable, and submitted as an electronic document. Questions will ask students to explain statistical concepts, work out problems, and or run analyses using SPSS and interpret results. Students should show all of the work for any problem completed. When referring to computer printouts cut and paste the appropriate output into the homework assignment. Be sure to label and explain clearly. Students may consult with each other for these assignments but each student is to turn in a complete homework assignment. Students should retain a copy of all submitted homework assignments.

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

The two exams, as indicated in the course schedule, will be given assessing material from the class and textbook (e.g., conceptual questions, application of skills, interpretation of SPSS output) using multiple choice, matching, and short answer questions.

## 4. Article Summaries (10% each—20% total)

Students will complete two article summaries with a particular emphasis on the research questions, methods, analysis, and results. For the first article summary, students will respond to a series of questions using an article that has been selected by the instructor. For the second article summary, each student may select from options provided by the instructor or identify an empirical journal in the student's area of interest that includes both ANOVA and correlation. Students will read the entire article, identify key components of the methods/analysis and write a short commentary/critique (3 pages maximum) of the Methods & Analysis section. Helpful hint: *Pay attention to the methods and analyses sections of articles from other courses or research projects. These are great candidates for this course requirement.*

- **Other Requirements**

### Course Expectations

It is expected that students will:

1. Read all assigned materials before coming to class
2. Participate in classroom activities that reflect critical reading of materials
3. Complete in-class assignments, homework assignments, and quizzes
4. Complete an in-class midterm and final examination
5. Attend each class session

### Class Attendance & Participation

It is expected that all students will read assigned materials before coming to class, view any asynchronous content including watching all video lectures, come to class on time, participate in class discussions/activities, and complete in-class assignments. Each class session will include: questions and answers on lecture content, going over key components of lecture material, and lab work to practice the material. The lab portion of the class will include time for hands-on computer work that is directly related to the homework and course goals. Questions are encouraged.

**Late Assignments**

Unless otherwise indicated, assignments are in Blackboard at the start of class on the assigned due date. If an assignment must be turned in late, post the document to Blackboard. If an assignment must be turned in as a hard copy (e.g., due to technology problem), give the assignment to me in person or leave the assignment in my faculty mailbox (West Room 2108). If an assignment is left in my mailbox, send an email to indicate that it is there. **DO NOT** slide assignments under my office door. Late assignments will be marked down 5% for each day the assignment is late.

**Electronic Device Use in Class**

During class time, please refrain from checking email or conducting activities on the computer, cell phone or other electronic device that are not directly related to the class session.

**Class Environment**

Help to foster a positive learning environment by respecting the opinions and contributions of others. Also, cell phones should be turned off or put on silent mode so as to not affect the learning of those around you.

- **Grading**

Each student's final grade for the class will be based on the following:

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%	

**Professional Dispositions**

See <https://cehd.gmu.edu/students/policies-procedures/>

**Class Schedule**

Note: Faculty reserves the right to alter the schedule as necessary, with notification to students.

<b>Date</b>	<b>Class</b>	<b>Topic</b>	<b>Reading/Assignment Due</b>
6/1	1	Course Info Intro to Statistics Frequency Distributions Central Tendency	Ch. 1 -3  Appendix A: Basic Math Review
6/3	2	Intro to SPSS Variability Z-scores Standard Distributions <i>Online synchronous</i>	Ch. 4 & 5  <b>Student Information “Quiz”</b>
6/8	3	Distributions of Sample Means Standard Error	Ch. 6  <b>Quiz #1</b>  <b>HW #1: Distributions, Measures of Central Tendency and Variability</b>
6/10	4	Hypothesis Testing: Significance, Effect Size, & Power	Ch. 7
6/15	5	The t distribution <i>Online synchronous</i>	Ch. 8  <b>Quiz #2</b>  <b>HW #2: Z-Scores and the Normal Distribution</b>
6/17	6	Independent and Dependent t-Tests <i>Online synchronous</i>	Ch. 9 & 10
6/22	7	Catch up/Review	<b>HW #3: Hypothesis Tests of the Mean</b>  <b>Quiz #3</b>
6/24	8	<b>MIDTERM EXAM</b> <i>Online synchronous</i>	
6/29	9	ANOVA: One-way <i>Online synchronous</i>	Ch. 11  <b>Article Summary #1</b>

7/1	10	ANOVA: Post hocs and within subjects	Ch. 11 (continued)
7/6	11	Correlation & Simple Regression	Ch. 13 <b>Quiz #4</b> <b>HW #4: ANOVA</b>
7/8	12	Reading Multiple Regression  Chi-Square: Test for Goodness of Fit and Independence <i>Online synchronous</i>	Usher & Pajares (2006)  Ch. 14
7/13	13	ANOVA: Two-way <i>Online synchronous</i>	Ch. 12  <b>Quiz #5</b> <b>HW#5: Correlation and Simple Regression</b>
7/15	14	ANOVA: Two-way (cont.)	Ch. 12  <b>HW #6: Chi-Square</b>
7/20	15	Final Exam Review	<b>HW #7: ANOVA (cont.) and Synthesis of the Semester</b>  <b>Quiz #6</b>  <b>Article Summary #2</b>
7/22	Exam Period	<b>FINAL EXAM</b> <i>Online synchronous</i>	

Note:

- Unshaded classes will be taught in person with a synchronous fully online option via Zoom.
- Shaded classes will be taught in a fully online synchronous format. Please review any asynchronous material posted in advance.
- Quizzes and exams will be administered online.

## Core Values Commitment

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

## GMU Policies and Resources for Students

**For COVID 19 procedures in Summer 2021: Students, please be aware of and follow all policies and procedures for Mason's Safe Return to Campus: <https://www2.gmu.edu/Safe-Return-Campus>**

### *Policies*

- Students must adhere to the guidelines of the Mason Honor Code (see <https://catalog.gmu.edu/policies/honor-code-system/> ).
  - 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 follow the university policy for Responsible Use of Computing (see <https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>).
- Students are responsible for the content of university communications sent to their Mason 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 with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see <https://ds.gmu.edu/>).
- **Students must silence all sound emitting devices during class unless otherwise authorized by the instructor.**

### *Campus Resources*

- Questions or concerns regarding use of Blackboard should be directed to <https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/>.
- For information on student support resources on campus, see <https://ctfe.gmu.edu/teaching/student-support-resources-on-campus>

**Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking:**

As a faculty member, I am designated as a “Responsible Employee,” and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason’s Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason’s confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason’s Title IX Coordinator by calling 703-993-8730, or emailing [titleix@gmu.edu](mailto:titleix@gmu.edu).

**For additional information on the College of Education and Human Development, please visit our website <https://cehd.gmu.edu/students/> .**