George Mason University
College of Education and Human Development
Research Methods

EDRS 220 Section DL1: Applied Quantitative Analysis in the Social Sciences
3 Credits Spring 2021
MW / 10:30-11:45 am / Online

Faculty
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Course Assistant
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COVID 19 Procedures: Spring 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

Prerequisite:
NONE

University Catalog Course Description: Develops fundamental concepts and methods of statistics in social science settings. Explores applications of descriptive and inferential statistics including hypothesis testing and basic correlational and comparative methods.

Mason Core
EDRS 220 fulfills the Mason Core Quantitative Reasoning requirement. For more information, please see the Mason Core website, https://catalog.gmu.edu/mason-core/.

Course Overview: EDRS 220 is an undergraduate quantitative analysis course that facilitates student understanding of the basic concepts and principles of descriptive and inferential statistics though the use of social science applications. It emphasizes comprehension, skill development and application of statistical knowledge to quantitative inquiry in education, exercise science, and other social sciences. Students learn through a combination of text reading assignments, data analysis and interpretation of SPSS printouts (Statistical Package for Social Sciences), with a *focus on application activities*.

Course Delivery Method

This course will be delivered online (76% or more) using an asynchronous format via 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 the first day of classes.

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

  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
- 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/

Expectations

- Course Week: Our course week will begin on the day that our synchronous meetings take place as indicated on the Schedule of Classes.
- 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 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 ensure accessibility must be registered with George Mason University Disability Services.

Learner Objectives: This course is a one-semester introduction to applications of statistical analysis. By the end of the semester, it is expected that you will be able to:

(1) Understand basic concepts and terminology pertinent to statistical analyses;
(2) Formulate a problem quantitatively [Mason Core Objective #2];
(3) Identify the type of statistic appropriate for a given research problem;
(4) Solve a problem with appropriate arithmetical , algebraic, and/or statistical method [Mason Core Objective #2];
(5) Interpret quantitative information (i.e., formulas, graphs, tables, figures) [Mason Core Objective #1];
(6) Draw inferences from quantitative information (i.e., formulas, graphs, statistical output) [Mason Core objective #1];
(7) Evaluate logical arguments using quantitative reasoning [Mason Core Objective #3];
(8) Communicate and present quantitative findings clearly and effectively [Mason Core Objective #4].

Course Delivery Method: The class sessions will include lecture, small group discussion, and analysis of statistical output. **Questions are encouraged**. The activity portion of the class will provide time for hands-on and computer work that is directly related to the homework and course goals.

Class Attendance & Participation: Students are expected to come to class on time, complete assignments, and participate in class discussions. Information on course assignments, weekly quizzes, and notes for class lectures are available on the course Blackboard site.
For assistance with Blackboard students may email courses@gmu.edu, call (803) 993-3141, or go to Johnson Center Rm 311 (office hours: 8:30 am-5 pm). For general technical assistance, students may call 9703) 993-8870 or go to the counter in Innovation Hall.

Required Materials:
Salkind N. J. & Shaw. L A. (2020). *Statistics for people who (think they) hate statistics using R* Sage.

Access to R software. R is free and open source. R can be installed on almost any computer with any operating system (e.g., Windows, Mac, Linus). There are also computer labs on campus that provide access to R. [You will get information about how to access and download R in class.]

A simple nonprogrammable calculator that has a square root function.

Course Performance Evaluation:

- **Online Quizzes (10%):** Each week there will be a short quiz posted on Blackboard. The quizzes are composed of short answer and multiple choice items which will cover the basic concepts presented in class and in the textbook. Quizzes are timed (usually 25 minutes) and must be completed during the specified time period. These quizzes are designed to provide you (and me) with feedback about your course progress. Your quiz score cannot lower your overall course grade (unless you have received 0's on quizzes due to failure to complete them). You must complete the online quiz by midnight the day before the first class meeting of the following week. *You are encouraged to take the quizzes soon after the class meeting; the purpose of the quiz is to help you to isolate key concepts from the class period and to focus your study time.*

- **Application Assignments (30%):** You will have 5 homework assignments. Assignments will be posted on Blackboard. Each assignment will include a scenario and accompanying data necessary to complete the problem set. These assignments are like mini projects. All assignments need to be completed by the due date. No late assignments will be accepted. Scenarios will require you to explain statistical concepts, work out problems, run analyses using SPSS and interpret results. You should show all of your work for problems that you complete and include appropriate computer printouts **(please copy and paste output from R to a Word document**). There is a targeted written or oral explanation of the results required in each of these assignments. At least 2 of the assignments will be written (i.e., typed)

documents and at least 2 will be oral video presentations with ppt slides. The 5th presentation may either written or oral.

- **"In Class" Activities (20%):** Students will complete in-class problem solving activities in small groups. Each activity will require data analyses and a lab write-up or questionnaire submitted at the completion of the tasks. Some activities will include explanation and presentation of findings to the class. *"In Class" in this online course means that one class meeting day a week is devoted to this activity.*

- **Exams (40%):** Three exams will cover the material from the class and textbook and include multiple choice and short answer application questions as well as interpretation of statistical output. The first two exams are worth 10% each and the final cumulative exam is worth 20%.

This course requires the use of LockDown Browser and a webcam for online exams. The webcam can be built into your computer (internal webcam) or can be the type of webcam that plugs in with a USB cable (external webcam). Watch this short video to get a basic understanding of LockDown Browser and the webcam feature. A Quick Start Guide for Students is also available.

- *You will need the following system requirements for online exams:*
  - *Windows: 10, 8, 7*
  - *Mac: OS X 10.10 or higher*
  - *iOS: 10.0+ (iPad only). Must have a compatible LMS integration [Details].*
  - *Web camera (internal or external) & microphone*
  - *A reliable internet connection*
  - *Prior to your first exam, you must install LockDown Browser following the step-by-step instructions.*
- *To ensure LockDown Browser and the webcam are set up properly, do the following:*
  - *Start LockDown Browser, log into Blackboard and select this course.*
  - *Locate and select the Help Center button on the LockDown Browser toolbar.*
  - *Run the Webcam Check and, if necessary, resolve any issues or permissions your computer prompts.*
  - *Run the System & Network Check. If a problem is indicated, see if a solution is provided in the Knowledge Base. Further troubleshooting is available through the ITS Support Center.*

Grading Scale: Grades will be assigned based on the following:

A+	98-100%	B+	88-89%	C+	78-79%	D	60-69%
A	93-100%	B	83-87%	C	73-77%	F	Below 60%
A-	90-92%	B-	80-82%	C-	70-72%		

Final grades are based in the assessments described above. "Extra credit" is not available.

Late Assignments: *As a general rule, late papers/homework will not be accepted*. If you believe you have EXCEPTIONAL circumstances and wish to negotiate to have extra time to complete

course work, you must discuss this with me before the day the assignment is due. (Negotiating means that you will be sacrificing a portion, perhaps substantial, of your grade for extra time).

Professional Dispositions

See https://cehd.gmu.edu/students/polices-procedures/

Tentative Course Schedule

Date	Week (2 class/week)	Topic	Reading/Due
1/25	1	*Course Info / Describing Data* Intro to Statistics & Frequency Distributions Learning about R	Ch. 1-3 Appendix A
2/1	2	*Explaining the Meaning of a Score* Central Tendency/ Variability	Ch. 4-5
2/8	3	Using Descriptives and graphs Correlation/Reliability/Validity	Ch. 6-8
2/15	4	*To infer…or not to infer?* Hypothesis Testing / Z-scores: location Feb. 16 Last Day to Drop (50% Refund)	**HW #1** Ch. 9-10
2/22	5	Review **Exam #1**	
3/1	6	*My sample….among many, many samples* Distributions of Sample Means / Z test	Ch. 11-12
3/8	7	*Relying only on my data.* The t distribution	**HW #2** Ch. 13
3/15	8	*Comparing means* T-tests -Independent	Ch. 13
3/22	9	*Comparing means* T-tests- Dependent	Ch. 14
3/29	10	Review **Exam #2**	**HW #3**
4/5	11	*Comparing more means* One-Way ANOVA	Ch. 15
4/12	12	*Patterns and relationships in data* Correlation & Simple Regression	**HW #4** Ch. 17-18
4/19	13	*Matching categorical patterns* Chi-Square	Ch. 19
4/26	14	*Variations: multiple time points & mixing it up* ANOVA variations	**HW #5** Ch. 16
5/5	15	**FINAL EXAM** **10:30-1:15**	

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

Policies

- Students must adhere to the guidelines of the Mason Honor Code (see https://catalog.gmu.edu/policies/honor-code-system/).
- Students must follow the university policy for Responsible Use of Computing (see http://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

- Support for submission of assignments to Tk20 should be directed to tk20help@gmu.edu or https://cehd.gmu.edu/aero/tk20. Questions or concerns regarding use of Blackboard should be directed to http://coursessupport.gmu.edu/.
- 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.

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