

Spring 2021

STS 307-HM2: Quantitative Research Methods

Yelda Semizer Kaplan

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Quantitative Research Methods
Spring 2021 – STS 307
T, Th 9:00 AM – 10:20 AM in KUPF 103
Course Delivery Mode: Converged learning

Instructor: Yelda Semizer

E-mail: yelda.semizer@njit.edu (Please contact me by email only from your NJIT email address and allow for least 24-48 hours for a response.)

Office Hours: Online, by appointment only.

Course Prerequisites/Co-requisites

Prerequisites: HUM 102 with a grade of C or higher, and one History and Humanities GER 200 level course with a grade of C or higher.

Course Description

This course provides you with an introduction to statistics in social and behavioral sciences. It involves some arithmetic and basic algebra. Topics covered in this course include graphical representations, basic probability, sampling distributions, confidence intervals, correlation, regression, and hypothesis testing methods.

Course Goals

The purpose of this course is to:

- Provide key concepts and tools in descriptive and inferential statistics
- Introduce the most common methods used in social and behavioral sciences
- Explain how to interpret results of statistical analyses
- Provide hands-on experience with quantitative modeling using statistical software

Course Outcomes

Upon successful completion of this course, you should be able to:

- Understand and interpret how to use graphical representations
- Understand and implement the most common methods used in social and behavioral sciences
- Interpret the results of the statistical analysis
- Make a decision based on the interpretation of the statistical analysis
- Read, understand, and critically evaluate statistical methods used in social and behavioral research

Course Materials

Textbook: Privitera, G. J. (2017). *Statistics for the Behavioral Sciences*. (3rd Ed.) Sage Publications. ISBN: 1506386253

Calculator: You will need a simple calculator capable (at a minimum) of computing square roots. An inexpensive solar-powered scientific calculator would be preferable, since these allow the use of parentheses, and have a dedicated squaring function. I recommend the Texas Instruments TI-30X IIS, which can be purchased online for under \$15. *Note:* If you have calculator functions on your smartphone or computer, you can also use that.

Access to a PC: You will need internet access to attend the online meetings and to view course materials on the Canvas site.

Course Requirements

Exams: There will be one midterm and one final exam. Each of these exams will consist of two parts. The first part will be conceptual (i.e., multiple choice and/or short answer questions) and the second part will be computational. Full credits will be given to computational questions only if all of the work is shown.

Note: Make-up exams are allowed only if provided with appropriate documentation (e.g., a doctor's note, a police report, etc.) at least one-week prior to the scheduled exam date, except in case of an unforeseeable emergency. Make-up exam will not be given if these criteria are not satisfied.

Quizzes: There will be a quiz associated with each lecture. The aim of these quizzes is to give you a chance to test your knowledge about the class material. All quizzes will be available on Canvas at the beginning of the semester. Each quiz will be due the next day after the related course has been taught. You will have three chances to take each quiz and only the highest score will count towards your course grade. There are no make-ups available for quizzes.

Assignments: There will be several homework assignments throughout the semester. The aim of these homework assignments is to practice your understanding of the class material. Each problem will be worth two points: one point for a good faith effort at completion, and one point for correctness of the answer. All homework assignments will be available on Canvas at the beginning of the semester. No late homework assignments will be accepted. As with the exams, to receive any credit on computational questions, you must show your work.

In-class Activities and Participation: There will be several activities to be completed in class throughout the semester. These in-class activities will involve practice using a statistical software as well as conceptual and computational exercises. The aim of these activities is to give you a hands-on experience with the application of statistical concepts that we discuss in class. You are expected to actively participate in all classes, either in-person or online. Active participation includes taking part in class discussion, asking questions, answering questions, etc. If you have concerns about your participation grade at any point of the semester, please feel free to reach out.

Extra Credit: The midterm and final exams will include extra credit questions. There are no other extra credit options available.

Course Grading

Course grades will be based on the following:

<u>Assessment type</u>	<u>Percentage</u>
Midterm Exam	30%
Final Exam	30%
Quizzes	15%
Assignments	10%
In-class Activities & Participation	15%
<u>TOTAL:</u>	<u>100%</u>

Letter grades will be determined using the following scale:

Percentage	Letter grade
90% and above	A
85 – 89%	B+
80 – 84%	B
75 – 79%	C+
66 – 74%	C
55 – 65%	D
below 55%	F

Course Policies

Academic Integrity: Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: <http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. **Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.** If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu.

Academic Accommodations: If you require academic accommodations, you must file a request with the Office of Disability Services for Students (<https://www.njit.edu/studentssuccess/accessibility>). You should file your request as soon as possible. Retroactive accommodations are not allowed.

Procedures and policies defined in this syllabus are subject to change upon mutual agreement. If you decide to stay enrolled in this course after receiving this syllabus, I will assume that you have read the entire syllabus and have agreed to all the policies outlined.

Course Schedule

Note: All assigned readings are due before the associated class meets.

Date	Topic	Assigned Reading	Homework	Quiz
1/19	Course Orientation, Review of Syllabus and Available Resources	Appendix A Review and Self-Test		
1/21	Basic Statistical Concepts and Notation	Chapter 1		Q1
1/26	Frequency Distributions, Plotting Data & Reading Graphs	Chapter 2		Q2
1/28	Measures of Central Tendency	Chapter 3		Q3
2/2	Measures of Dispersion or Variability	Chapter 4		Q4
2/4	Basic Concepts of Probability	Chapter 5	HW1 due	Q5
2/9	Normal Distributions, & z-Scores	Chapter 6		
2/11	Z-Scores (continues)	Chapter 6		Q6
2/16	Sampling Distributions	Chapter 7		Q7
2/18	Intro to Hypothesis Testing	Chapter 8		Q8
2/23	z-Tests (One Sample)	Chapter 8		Q9
2/25	t-Tests I (for One Sample and Two Related Samples)	Chapters 9 (9.1-9.6) & 10		
3/2	t-Tests I (continues)	Chapters 9 (9.1-9.6) & 10	HW2 due	Q10
3/4	Catch up & Review			
3/9	Midterm Exam			
3/11	TBD			
3/16 - 3/18	No Class (Spring Break)			
3/23	t-Tests II (Two Independent Samples)	Chapter 9 (9.7-9.10)		
3/25	t-Tests II (continues)	Chapter 9 (9.7-9.10)		Q11
3/30	Estimation & Confidence Intervals	Chapter 11		Q12
4/1	Introduction to ANOVA	Chapters 12&13 (12.1-12.7,13.5)		Q13
4/6	ANOVA I (One-Way, Independent-Samples) & Post-hoc Tests	Chapters 12&13 (12.1-12.7,13.5)	HW3 due	Q14
4/8	ANOVA II (One-Way, Repeated Measures)	Chapter 13		
4/13	ANOVA II (continues)	Chapter 13		Q15
4/15	ANOVA III (Factorial Designs)	Chapter 14		
4/20	ANOVA III (continues)	Chapter 14		Q16
4/22	Correlation	Chapter 15		Q17
4/27	Regression	Chapter 16	HW4 due	Q18
4/29	Catch up & Review			
5/4	No Class (Friday Classes Meet)			
TBD	Final Exam			

Note: The content of this schedule might be adjusted/changed by the instructor depending on students' needs.