Course Description:

This course provides students with an introduction to quantitative research methods and data-analysis techniques commonly used in the social and behavioral sciences. Students will gain experience in graphical representations, descriptive and inferential statistics, hypothesis-testing methods, design of experiments, and modeling of behavioral data. The course provides hands-on experience with data collection and analysis using statistical software

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 these statistical analysis
- Make a decision based on the interpretation of these statistical analysis
- Read, understand and critically evaluate statistical methods used in social and behavioral research

Course Materials:

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

<u>Calculator:</u> 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 during class.

<u>Access to a PC</u>: You will need internet access to view course materials on the Canvas site.

Course Requirements:

<u>Exams</u>: There will be two exams. The first exam will be in two parts. 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. The second exam will be based on one (or more) text that was assigned and discussed during the semester. Exams will be proctored.

Note: Make-up exams are allowed only if provided with appropriate documentation (e.g., a doctor's note, a police report, etc.) <u>at least one-week prior</u> 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.

<u>Quizzes:</u> 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 18 quizzes in total and the lowest 3 scores will be dropped. Hence, there are no make-ups available for quizzes.

<u>Assignments:</u> There will be several homework assignments throughout the semester. The aim of these homework assignments is to practice your understanding of the class material. No late homework assignments will be accepted. <u>Presentation:</u> There will be group presentations for students to present and discuss the texts and articles starting in March.

<u>In-class Activities and Participation:</u> There will be several activities to be completed in class throughout the semester. These in-class activities will involve practice using statistical software as well as conceptual and computational exercises. The aim of these activities is to give you hands-on experience with the application of statistical concepts that we discuss in class. You are expected to actively participate in all classes. 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.

<u>Extra Credit</u>: The exams will include extra credit questions. There are no other extra credit options available.

Course Grading:

Course grades will be based on the following:

Assessment type	Percentage	
Exam I	30%	
Exam II	30%	
Quizzes	15%	
Assignments	10%	
In-class Activities & Participation	15%	
TOTAL	100%	

Letter grades will de determined using the following scale:

Percentage	Letter Grade
90% and above	A
85 – 89%	B+
80 – 84%	В
75 – 79%	C+

66 – 74%	С
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

Links to an external site.

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.

Al Usage:

This course expects students to work without artificial intelligence (AI) assistance to better develop their skills in this content area. As such, AI usage is not permitted throughout this course under any circumstance.

Academic Accommodations:

If you require academic accommodations, you must file a request with the Office of Disability Services for Students (<u>https://www.njit.edu/studentsuccess/accessibility</u>

Links to an external site.). 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
1/27	Course Orientation, Review of Syllabus and Available Resources	Appendix A Review and Self-Test		
1/29	Basic Statistical Concepts and Notation	Chapter 1		Q1
2/3	Frequency Distributions, Plotting Data & Reading Graphs	Chapter 2		Q2
2/5	Measures of Central Tendency	Chapter 3		Q3
2/10	Measures of Dispersion or Variability	Chapter 4		Q4

2/17	Basic Concepts of Probability	Chapter 5		Q5
2/19	Normal Distributions, & z-scores	Chapter 6		<mark>Q6</mark>
2/24	Research Design, questionnaire & other data collection methods			
2/26	Sample Distributions	Chapter 7		Q9
3/3	Hypothesis Testing	Chapters 8		
3/5	z-Tests	Chapters 8	HW2	Q10
3/10	t-Test	Chapter 9		<mark>Q11</mark>
3/12	Mid-term Exam			
3/14 - 3/16	Spring Break			
3/24	Estimation & Confidence Intervals	Chapter 11		Q12
3/26	Bivariate Tables & Analysis			Q13

3/31	Chi-test & Measure of Association			Q14
4/2	Analysis of Variance & Intro to ANOVA	Chapters 12	HW3	
4/7	ANOVA II (One-Way, Repeated Measures)	Chapter 13		
4/9	Graphical Representation of Numerical Data			<mark>Q15</mark>
4/14	ANOVA III (Factorial Designs)	Chapter 14		
4/16	Correlation	Chapter 15		<mark>Q16</mark>
4/21	Regression	Chapter 16		<mark>Q17</mark>
4/23	Correlation & Regression II	Chapter 15 & 16		
4/28	Quantitative Methods beyond Scientific Research		HW4	<mark>Q18</mark>
4/30	Catch up & Review			
5/5	Exam II			

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