# Quantitative Research Methods Lab

Spring 2024 – STS 307A W 9:15 AM – 11:10 AM in MALL PC39 Course delivery mode: Face-to-Face

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: Thursdays 1:00 AM - 2:00 PM in CULM 312

## **Course Prerequisites/Co-requisites**

Corequisite: STS 307. This course is the laboratory component of STS 307 and must be taken concurrently.

## **Course Description**

This course provides you with a hands-on experience in statistics for social and behavioral sciences. It involves working with a statistical software to analyze simple as well as more complex real data sets. 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
- Practice the most common methods used in social and behavioral sciences
- Explain how to interpret results of statistical analyses and how to report these results
- Provide hands-on experience with quantitative modeling using statistical software

## **Course Outcomes**

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

- Generate and interpret graphical representations
- Carry out descriptive and inferential statistical analysis and report the results
- Make decisions based on the interpretation of the statistical analysis
- Read, understand, and critically evaluate statistical methods used in social and behavioral research

#### **Course Materials**

<u>Textbook:</u> There is no textbook associated with the lab component. See the STS 307 syllabus for the assigned textbook for the main course.

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

#### **Course Requirements**

<u>Weekly Labs</u>: You will be given weekly lab assignments to complete. These will start as simple exercises (reading data into the software, naming variables, graphing data, etc) and move to more complex analyses (carrying out ANOVAs, Regression, effect size analysis). We will work on the labs together in class and you will submit your lab report along with your data output file by the end of the week.

<u>Project:</u> Although working with clean datasets are helpful in familiarizing oneself with advanced statistical methods, working with real (and probably messy) data sets are even more important as they will teach you how to carry out statistical analyses in the wild. As part of this course, you will be asked to work on a project focusing on analysis of a real data set. We will discuss the options and the details of the project in class but mainly you will be applying what you learned in class to analysis of real data set by carrying out explanatory analysis, graphing the data, computing descriptive statistics, developing testable hypotheses, testing your hypotheses with appropriate inferential statistics methods, and writing up your findings. You will submit several progress reports throughout the semester (see the course schedule for details). Besides the progress reports and the final write-up, you will present your project to class at the end of the semester.

<u>Class Participation</u>: We will complete weekly lab exercises during class meetings. 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.

## **Course Grading**

Course grades will be based on the following:

Assessment type	Percentage
Weekly Lab Reports	30%
Project Progress Reports	15%
Project Presentation	15%
Project Write-up	30%
Class Participation	10%
TOTAL:	100%

Letter grades will be determined using the following scale:

Percentage	Letter grade
90% and above	А
85 - 89%	B+
80 - 84%	В
75 - 79%	C+
66 - 74%	С
55 - 65%	D
below 55%	F

#### **Course Policies**

<u>Academic Integrity:</u> 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: <u>http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf</u>.

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 <u>dos@njit.edu</u>.

<u>Academic Accommodations:</u> 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>). 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 lab reports are due by the end of the assigned week.

Date	Торіс	Assignment
1/24	Lab 1: Basic Statistical Concepts and Notation; Frequency Distributions, Plotting Data & Reading Graphs	Lab 1 due 1/26
1/31	Lab 2: Measures of Central Tendency; Measures of Dispersion or Variability	Lab 2 due 2/2
2/7	Lab 3: Basic Concepts of Probability; Normal Distributions, & z-Scores	Lab 3 due 2/9
2/14	Work on Projects: Choose Data Set + Explanatory Data Analysis	Project Progress Report I due 2/16
2/21	Lab 4: t-Tests (for One Sample and Two Related Samples)	Lab 4 due 2/23
2/28	Lab 5: t-Tests (Two Independent Samples)	Lab 5 due 3/1
3/6	Work on Projects: Develop Hypotheses	Project Progress Report II due 3/8
3/13	No Class (Spring Break)	•
3/20	Lab 6: Estimation and Confidence Intervals	Lab 6 due 3/22
3/27	Lab 7: ANOVA: (One-Way, Independent-Samples & Post-hoc Tests)	Lab 7 due 3/29
4/3	Work on Projects: Start of Data Analysis	Project Progress Report III due 4/5
4/10	Lab 8: ANOVA (Factorial Designs)	Lab 8 due 4/12
4/17	Lab 9: Correlation and Regression	Lab 9 due 4/19
4/24	Project Presentations	Project Presentations due 4/26 (in class)
		Project Write-ups due 4/30

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