

Spring 2024

MATH 660-102: Intro to Stat Comp W/ SAS &R

C. Jin

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MATH 660: Introduction to Statistical Computing with SAS and R *Spring 2024 Course Syllabus*

NJIT Academic Integrity Code: All Students should be aware that the Department of Mathematical Sciences takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

COURSE INFORMATION

Course Description: This course will study SAS and R programming and emphasize the SAS and R data steps including getting data into the SAS and R environments, working and combining data using control flows, merge and subsets, etc. as well as learning to export data and to generate high resolution graphics. Several SAS and R statistical procedures or functions will also be discussed and illustrated. Finally, interactive statistical software JMP and Minitab are briefly introduced.

Number of Credits: 3

Prerequisites: A first course in statistics. Knowledge in probability and programming will be helpful. When in doubt, please seek instructor approval.

Course-Section and Instructors:

| Course-Section | Instructor |
|----------------|------------------|
| Math 660-102 | Professor C. Jin |

Office Hours for All Math Instructors: [Spring 2024 Office Hours and Emails](#)

Required Textbook:

| | Book |
|-----------|---|
| Title | <i>Introduction to Data Science: Data Analysis and Prediction Algorithms with R</i> |
| Author | Rafael A. Irizarry |
| Publisher | Chapman and Hall/CRC Press |
| ISBN # | 978-0367357986 |

University-wide Withdrawal Date: The last day to withdraw with a W is **Monday, April 1, 2024**. It will be

strictly enforced.

POLICIES

DMS Course Policies: All DMS students must familiarize themselves with, and adhere to, the **Department of Mathematical Sciences Course Policies**, in addition to official **university-wide policies**. DMS takes these policies very seriously and enforces them strictly.

Grading Policy: The final grade in this course will be determined as follows:

| | |
|--------------|-----|
| Quiz | 15% |
| Homework | 15% |
| Project | 20% |
| Midterm Exam | 20% |
| Final Exam | 30% |

Your final letter grade will be based on the following tentative curve.

| | | | |
|----|----------|----|---------|
| A | 90 - 100 | C+ | 70 - 79 |
| B+ | 85 - 89 | C | 60 - 70 |
| B | 80 - 84 | F | 0 - 59 |

Attendance Policy: Attendance at all classes will be recorded and is **mandatory**. Please make sure you read and fully understand the **Math Department's Attendance Policy**. This policy will be strictly enforced. Class attendance and participation can contribute up to 5% of the grade at the instructor's discretion.

Quiz: There will be quizzes in each lecture.

Exams: There will be one midterm exam during the semester and one comprehensive final exam. Exams are held on the following days:

| | |
|-------------------|---------------------|
| Midterm Exam | |
| Final Exam Period | May 3 - May 9, 2024 |

The final exam will test your knowledge of all the course material taught in the entire course. Make sure you read and fully understand the **Math Department's Examination Policy**. This policy will be strictly enforced.

Makeup Exam Policy: There will be **NO MAKE-UP QUIZZES OR EXAMS** during the semester. In the event an exam is not taken under rare circumstances where the student has a legitimate reason for missing the exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor's note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the Math Department Office/Instructor that the exam will be missed.

Cellular Phones: All cellular phones and other electronic devices must be switched off during all class times.

ADDITIONAL RESOURCES

Further Assistance: For further questions, students should contact their instructor. All instructors have regular office hours during the week. These office hours are listed on the Math Department's webpage for [Instructor Office Hours and Emails](#).

Accommodation of Disabilities: The Office of Accessibility Resources and Services (OARS) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please If you need an accommodation due to a disability please contact the Office of Accessibility Resources and Services at oars@njit.edu. The office is located in Kupfrian Hall, Room 201. A Letter of Accommodation Eligibility from the Office of Accessibility Resources and Services office authorizing your accommodations will be required.

For further information regarding self identification, the submission of medical documentation and additional support services provided please visit the Office of Accessibility Resources and Services (OARS) website at:

<https://www.njit.edu/accessibility/>

Important Dates (See: [Spring 2024 Academic Calendar, Registrar](#))

| Date | Day | Event |
|---------------------|--------------------|------------------------------|
| January 16, 2024 | Tuesday | First Day of Classes |
| January 22, 2024 | Monday | Last Day to Add/Drop Classes |
| March 10, 2024 | Sunday | Spring Recess Begins |
| March 16, 2024 | Saturday | Spring Recess Ends |
| March 29, 2024 | Friday | Good Friday - No Classes |
| April 1, 2024 | Monday | Last Day to Withdraw |
| April 30, 2024 | Tuesday | Friday Classes Meet |
| April 30, 2024 | Tuesday | Last Day of Classes |
| May 1, 2024 | Wednesday | Reading Day 1 |
| May 2, 2024 | Thursday | Reading Day 2 |
| May 3 - May 9, 2024 | Friday to Thursday | Final Exam Period |

Course Outline

Course Outline: The course outline may be modified at the discretion of the instructor. Students will be notified of any changes.

| <i>Lecture #</i> | <i>Date</i> | <i>Subject Topic</i> |
|------------------|-------------|---|
| 1 | 1/17/2024 | <i>Basic R Programming</i> |
| 2 | 1/24/2024 | <i>Data Structures in R</i> |
| 3 | 1/31/2024 | <i>Data Wrangling using tidyverse</i> |
| 4 | 2/7/2024 | <i>Finding Project Topics</i> |
| 5 | 2/14/2024 | <i>Visualization using ggplot2</i> |
| 6 | 2/21/2024 | <i>Statistical Inference</i> |
| 7 | 2/28/2024 | <i>Regression Strategies (I)</i> |
| | 3/6/2024 | Midterm |
| | 3/13/2024 | <i>Spring Break – No Class</i> |
| 8 | 3/20/2024 | <i>Regression Strategies (II)</i> |
| 9 | 3/27/2024 | <i>Examples of Statistical Learning</i> |
| | 4/1/2024 | <i>Last day to withdraw with a W</i> |
| 10 | 4/3/2024 | <i>Introduction to Python Programming</i> |
| 11 | 4/10/2024 | <i>Project Presentations</i> |
| 12 | 4/17/2024 | <i>Examples of Deep Learning</i> |

| | | |
|----|------------|--------------------------|
| 13 | 4/25/2024 | <i>Final Review</i> |
| | <i>TBD</i> | <i>Final Exam</i> |

Updated by Professor C. Jin - 1/8/2024
Department of Mathematical Sciences Course Syllabus, Spring 2024