**SPECIAL TOPICS: DATA ANALYTICS AND VISUALIZATION**

**MASY1-GC 5000**| **100** | **Summer 2024 |** **7/3/24 – 8/12/24| 3 Credit**

**Modality: In-person**

**Course Site URL:** <https://brightspace.nyu.edu/>

**General Course Information**

**Name/Title:** Wajahat Gilani He/Him/His

**NYU Email:** wg2287@nyu.edu

**Class Meeting Schedule:** 7/3/24 – 8/12/24 | Mondays & Wednesdays (Thursdays) | 1:00pm – 4:00pm

**Class Location:** Midtown - Bldg: 20 W 43rd St Room 520

**Office Hours:** By appointment, please e-mail me to arrange

**Description**

This course will enhance curriculum by identification, analysis and application of special topics pertinent to the Management and Systems degree. The specific titles and content of each seminar will change to reflect emerging areas of interest, which can only be determined at the time of offering. The course may be used to satisfy the elective degree requirement. Applicability to specific concentrations will be noted in the course schedule and is at the department’s discretion.

**Prerequisites**

N/A

**Learning Outcomes**

At the conclusion of this course, students will be able to:

* Prepare data sets including data scraping, cleaning, and shaping
* Frame analytical business questions
* Convert data to information, including data exploration, summarization, and visualization
* Analyze data using contingency tables, predictive analytics, linear and logistical regression clustering, and decision trees
* Conduct hypothesis testing using inferential tests

**Communication Methods**

Be sure to turn on your [NYU Brightspace notifications](https://www.nyu.edu/servicelink/KB0018507) and frequently check the “Announcements” section of the course site. This will be the primary method I use to communicate information critical to your success in the course. To contact me, send me an email. I will respond within 24 hours.

**Structure | Method | Modality**

There are 12 session topics in this course. The session topics are organized into three (3) areas of study: 1) History, 2) Learning Principles, and 3) Instructional Design in Practice.

Active learning experiences and small group projects are key components of the course. Assignments, papers, and exams will be based on course materials (e.g., readings, videos), lectures, and class discussions. Course sessions will be conducted synchronously on NYU Zoom, which you can access from the course site in [NYU Brightspace](https://brightspace.nyu.edu/).

**Expectations**

Learning Environment

You play an important role in creating and sustaining an intellectually rigorous and inclusive classroom culture. Respectful engagement, diverse thinking, and our lived experiences are central to this course, and enrich our learning community.

Participation

You are integral to the learning experience in this class. Be prepared to actively contribute to class activities, group discussions, and work outside of class.

Assignments and Deadlines

Please submit all assignments to the appropriate section of the course site in [NYU Brightspace](https://brightspace.nyu.edu/). If you require assistance, please contact me BEFORE the due date.

Course Technology Use

We will utilize multiple technologies to achieve the course goals. I expect you to use technology in ways that enhance the learning environment for all students.

Feedback and Viewing Grades

I will provide timely meaningful feedback on all your work via our course site in NYU Brightspace. You can access your grades on the course site Gradebook.

Attendance

I expect you to attend all class sessions. Attendance will be taken into consideration when determining your final grade.

Refer to the [SPS Policies and Procedures page](https://www.sps.nyu.edu/homepage/student-experience/policies-and-procedures.html) for additional information about attendance.

**Textbooks and Course Materials**

**Required course texts:**

None.

**Recommended additional text:**

Online Statistics Education: An Interactive Multimedia Course of Study, <http://onlinestatbook.com/2/index.html>, 2017. Use this as an online reference for further explanations of concepts. (FREE) [OSE]

Various additional online texts and/or material available without cost from the NYU Library may be recommended by the instructor during the semester.

**Software:**

**REQUIRED –**

R https://www.r-project.org/

RStudio https://posit.co/

**Grading | Assessment**

Your grade in this course is based on your performance on multiple activities and assignments. Since all graded assignments are related directly to course objectives and learning outcomes, failure to complete any assignment will result in an unsatisfactory course grade. All written assignments are to be completed using APA format and must be typed and double-spaced. Grammar, punctuation, and spelling will be considered in grading. Please carefully proof-read your written assignments before submitting them for a grade. I will update the grades on the course site each time a grading session has been completed— typically three (3) days following the completion of an activity.

DESCRIPTION POINTS

In Class Group Projects 100

Midterm 1 110

Midterm 2 110

Final Exam 200

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TOTAL Points 520

A >=380

379 >= A- >= 350

349 >= B+ >= 320

319 >= B >= 290

289 >= B- >= 260

259 >= C+ >= 230

229 >= C >= 200

199 >= C- >= 170

F < 170

*See the* [“](https://www.sps.nyu.edu/homepage/student-experience/policies-and-procedures.html%23Graduate1)*[Grades](https://www.sps.nyu.edu/homepage/student-experience/policies-and-procedures.html%23Graduate1)*[” section of Academic Policies](https://www.sps.nyu.edu/homepage/student-experience/policies-and-procedures.html%23Graduate1) *for the complete grading policy, including the letter grade conversion, and the criteria for a grade of incomplete, taking a course on a pass/fail basis, and withdrawing from a course.*

**Course Outline:**

Start/End Dates: **7/3/24 – 8/7/24 Mondays & Wednesdays (1 Thursday Makeup Session)**

Summer Session One: **6W2**

Time: **01:00pm - 4:00pm**

No Class Dates: **N/A**

Special Notes: **N/A**

Number of Sessions: **12**

**Session 1, 07/3/24,**

Introduction

What is Data Analytics?

Introduction to R/RStudio (vectors, for-loops, data.tables)

**Session 2, 07/8/24,**

R data.tables/ggplot2

Project 1

**Session 3, 07/10/24,**

Data Preparation

Project 2

**Session 4, 07/11/24 Makeup Session,**

Descriptive Analytics

Linear Regression

Project 3

**Session 5, 07/15/24,**

Midterm # 1

**Session 6, 07/17/24,**

Predictive Analytics A

Decision Trees

Project 4

**Session 7, 07/22/24,**

Predictive Analytics B

Clusters

Project 5

**Session 8, 07/24/24,**

Evaluating Models

Project 6

**Session 9, 07/29/24,**

Midterm # 2

**Session 10, 07/31/24,**

Prescriptive Analysis

Project 7

**Session 11, 08/05/24,**

Text Analytics

Project 8

**Session 12: 08/07/24,**

Final Exam

**NOTES:**

The syllabus may be modified to better meet the needs of students and to achieve the learning outcomes.

The School of Professional Studies (SPS) and its faculty celebrate and are committed to inclusion, diversity, belonging, equity, and accessibility (IDBEA), and seek to embody the IDBEA values. The School of Professional Studies (SPS), its faculty, staff, and students are committed to creating a mutually respectful and safe environment (*from the* [SPS IDBEA Committee](https://www.sps.nyu.edu/homepage/about-us/idbea/about-idbea.html)).

**New York University School of Professional Studies Policies**

1. Policies - You are responsible for reading, understanding, and complying with [University Policies and Guidelines](http://www.nyu.edu/about/policies-guidelines-compliance.html), [NYU SPS Policies and Procedures](http://sps.nyu.edu/academics/academic-policies-and-procedures.html), and [Student Affairs and Reporting](https://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/student-services.html).

2. Learning/Academic Accommodations - New York University is committed to providing equal educational opportunity and participation for students who disclose their dis/ability to the [Moses Center for Student Accessibility](https://www.nyu.edu/students/communities-and-groups/student-accessibility.html). If you are interested in applying for academic accommodations, contact the [Moses Center](https://www.nyu.edu/students/communities-and-groups/student-accessibility/academic.html) as early as possible in the semester. If you already receive accommodations through the Moses Center, request your accommodation letters through the [Moses Center Portal](https://www.nyu.edu/students/communities-and-groups/student-accessibility.html) as soon as possible ([mosescsa@nyu.edu](mailto:mosescsa@nyu.edu) | 212-998-4980).

3. Health and Wellness - To access the University's extensive health and mental health resources, contact the [NYU Wellness Exchange](https://www.nyu.edu/students/health-and-wellness/wellness-exchange.html). You can call its private hotline (212-443-9999), available 24 hours a day, seven days a week, to reach out to a professional who can help to address day-to-day challenges as well as other health-related concerns.

4. Student Support Resources - There are a range of resources at SPS and NYU to support your learning and professional growth. For a complete list of resources and services available to SPS students, visit the [NYU SPS Office of Student Affairs site](https://www.sps.nyu.edu/homepage/student-experience/resources-and-services.html).

5. Religious Observance - As a nonsectarian, inclusive institution, NYU policy permits members of any religious group to absent themselves from classes without penalty when required for compliance with their religious obligations. Refer to the [University Calendar Policy on Religious Holidays](https://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/university-calendar-policy-on-religious-holidays.html) for the complete policy.

6. Academic Integrity and Plagiarism - You are expected to be honest and ethical in all academic work. Moreover, you are expected to demonstrate how what you have learned incorporates an understanding of the research and expertise of scholars and other appropriate experts; and thus recognizing others' published work or teachings—whether that of authors, lecturers, or one's peers—is a required practice in all academic projects.

Plagiarism involves borrowing or using information from other sources without proper and full credit. You are subject to disciplinary actions for the following offenses which include but are not limited to cheating, plagiarism, forgery or unauthorized use of documents, and false form of identification

[Turnitin](https://www.nyu.edu/servicelink/KB0018471), an originality detection service in NYU Brightspace, may be used in this course to check your work for plagiarism.

Read more about academic integrity policies at the NYU School of Professional Studies on the [Academic Policies for NYU SPS Students](https://www.sps.nyu.edu/homepage/student-experience/policies-and-procedures.html) page.

7. Use of Third-Party Tools - During this class, you may be required to use non-NYU apps/platforms/software as a part of course studies, and thus, will be required to agree to the “Terms of Use” (TOU) associated with such apps/platforms/software.

These services may require you to create an account but you can use a pseudonym (which may not identify you to the public community, but which may still identify you by IP address to the company and companies with whom it shares data).

You should carefully read those terms of use regarding the impact on your privacy rights and intellectual property rights. If you have any questions regarding those terms of use or the impact on the class, you are encouraged to ask the instructor prior to the add/drop deadline.