

MATH-040: Probability & Statistics

Summer 2023 – Course Syllabus

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Class schedule: May 22 - June 16, MTWRF 1:00 pm - 3:38 pm – White-Gravenor 213

Office hours: MTWRF 12:00 pm - 12:45 pm

Course Description

MATH-040 provides an introduction to basic concepts in statistics and probability. The emphasis is on understanding intuitions behind statistical principles and applications to data analysis. Topics to be covered include descriptive statistics, probability and sampling distributions, parameter estimation, hypothesis testing, and linear regression. Concepts learned in class will be reviewed and applied to data sets using the statistical software Minitab.

Course Objectives

The primary goals of this course are to:

- provide you with an understanding of the basic ideas behind statistical reasoning;
- enable you to perform basic data analysis and present your findings clearly and objectively;
- develop your critical thinking in evaluating statistical results you are presented with.

Textbook & MyLab Stat

De Veaux, Velleman and Bock (2020) *Stats: Data and Models*, 5th Ed. ISBN: 9780135163825.

You should purchase the e-textbook and the MyLab Stat bundle for **18-week access**. MyLab Stat will be used for homework assignments. You can either purchase the bundle from the GU bookstore or from Pearson. To register for MATH-040 and access MyLab Stat, follow these steps:

1. Sign into Canvas and select your Canvas course.
2. Select **MyLab and Mastering** from the left navigation.
3. Agree to Pearson privacy policies or authentication requests.
4. Enter your Pearson username and password. Otherwise, select Create an Account.
5. Select **Link Accounts**. If you see a confirmation page, select **Continue**.
6. Select one of the following access options, as it applies to you:
 - Enter a prepaid access code that came with your textbook or from the bookstore.
 - Buy instant access using a credit card or PayPal.
 - Select **Get temporary access without payment for 14 days**.

7. Your Pearson content appears.

Minitab Statistical Software

Statistical concepts will be applied to data sets using Minitab Statistical Software. Minitab 20 is available for free from the Georgetown University Information Systems (UIS - uis.georgetown.edu). The Minitab 20 Desktop App is for Windows operating systems only. Mac Users can launch the web app from app.minitab.com or use the Windows Version from the UIS Virtual Classroom at <https://console.nutanix.com/gu/uis/academic-apps/launchpad/apps>.

Course Website

Course information and material, including lecture notes, homework assignments, announcements, etc. will be posted on Canvas.

Course Outline

Part I. Exploring Data

- Displaying & describing categorical data
- Displaying & summarizing quantitative data
- Exploring relationships between variables

Part II. Probability

- Probability rules
- Random variables
- Probability models

Part III. Inference

- Inference for proportions
- Inference for means
- Inference for contingency tables
- Inference for regression

Part IV. Gathering Data

- Sample surveys
- Experiments & observational studies

Learning Assessment:

Assessment

Your final grade will be based on participation, homework assignments, tests and a final exam:

Lecture participation	10%
Homework assignments	25%
Tests	40%
Final exam	25%

Class participation: Attendance and participation are essential for success in the class.

Homework: Homework assignments are intended to get you to practice and apply the concepts covered in class. All homework will be completed via MyLab Stat online.

Tests: There will be two 60-minute tests on the following dates:

- Test 1 – Wednesday, May 31
- Test 2 – Thursday, June 8

Final Exam: The final exam will be administered during the last class on **Friday June 16, 2023**.

A student who misses a test or an exam without prior approval from the instructor or medical evidence justifying the absence will receive a grade of zero.

Grading scheme

A	≥ 94	B-	[80, 83)	D+	[65, 70)
A-	[90, 94)	C+	[77, 80)	D	[60, 66)
B+	[86, 90)	C	[74, 77)	F	< 60
B	[83, 86)	C-	[70, 74)		

Honor Code Pledge: As signatories to the Georgetown University Honor Pledge, and simply as good scholars and citizens, you are required to uphold academic honesty in all aspects of this course. You are expected to be familiar with the letter and spirit of the Standards of Conduct outlined in the Georgetown Honor System and on the Honor Council website (<http://gervaseprograms.georgetown.edu/honor/system/>). As a faculty member, I too am obligated to uphold the Honor System, and will report all suspected cases of academic dishonesty.

The Georgetown Student Pledge: *In pursuit of the high ideals and rigorous standards of academic life I commit myself to respect and to uphold the Georgetown University honor system: to be honest in every academic endeavor, and to conduct myself honorably, as a responsible member of the Georgetown community as we live and work together.*

Title IX Sexual Misconduct: Georgetown University and its faculty are committed to supporting survivors and those impacted by sexual misconduct, which includes sexual assault, sexual harassment, relationship violence, and stalking. Georgetown requires faculty members, unless otherwise designated as confidential, to report all disclosures of sexual misconduct to the University Title IX Coordinator or a Deputy Title IX Coordinator. If you disclose an incident of sexual misconduct to a professor in or outside of

the classroom (with the exception of disclosures in papers), that faculty member must report the incident to the Title IX Coordinator, or Deputy Title IX Coordinator. The coordinator will, in turn, reach out to the student to provide support, resources, and the option to meet. [Please note that the student is not required to meet with the Title IX coordinator.]. More information about reporting options and resources can be found on the Sexual Misconduct Website: <https://sexualassault.georgetown.edu/resourcecenter>.

If you would prefer to speak to someone confidentially, Georgetown has a number of fully confidential professional resources that can provide support and assistance. These resources include:

- Health Education Services for Sexual Assault Response and Prevention:
confidential email sarp@georgetown.edu;
- Counseling and Psychiatric Services (CAPS): 202.687.6985 or after hours, call (833) 960-3006 to reach Fonemed, a telehealth service; individuals may ask for the on-call CAPS clinician.

Title IX Pregnancy Modifications and Adjustments: Georgetown University is committed to creating an accessible and inclusive environment for pregnant students. At any point throughout their pregnancy students may request adjustments/modifications based on general pregnancy needs or accommodations based on a pregnancy-related complication or medical need. Students may also request accommodations following labor and delivery based on a complication or medical need.

SCS students must complete the Pregnancy Adjustment Request Form (<https://titleix.georgetown.edu/title-i>) and submit it to the SCS Deputy Title IX Coordinator at titleixscs@georgetown.edu. Upon receiving the completed form, the Deputy Title IX Coordinator will schedule a meeting with the student to discuss the requested adjustments and implementation process. More information about pregnancy modifications can be found on the Title IX at Georgetown University Website.