

THE DEPARTMENT OF MATHEMATICAL SCIENCES

MATH 107: University Mathematics BI

Fall 2023 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: Linear functions, equations, inequalities, systems of linear equations, quadratic equations, elementary functions, graphing functions.

Number of Credits: 3

Prerequisites: None.

Course-Section and Instructors:

Course-Section	Instructor
Math 107-001	Professor K. Horwitz
Math 107-003	Professor K. Horwitz
Math 107-005	Professor S. Carter
Math 107-007	Professor P. Rana Concepcion
Math 107-009	Professor S. Carter
Math 107-011	Professor J.H. Ro
Math 107-013	Professor J. Jean
Math 107-015	Professor C. Smailly
Math 107-101	Professor R. Estfanous

Office Hours for All Math Instructors: [Fall 2023 Office Hours and Emails](#)

Required Textbook:

Title	A) <i>Precalculus Version 3 Corrected</i> B) <i>Active Prelude to Calculus</i>
Author	A) Stitz and Zeager B) Boelkins
Edition	A) Version 3, 2013 B) 2018
Publisher	A & B) This textbook is available for free online.
Websites	A. https://stitz-zeager.com/szprecalculus07042013.pdf B. activecalculus.org/

University-wide Withdrawal Date: The last day to withdraw with a W is **Monday, November 13, 2023**. It will be strictly enforced.

COURSE GOALS

Course Objectives

Students should (a) improve their algebra skills engineering (b) learn about lines and slope, (c) understand many practical applications of systems of equations, (d) Students should gain an appreciation for the importance of trigonometry in scientific, engineering, and other applications., (e) learn about logarithmic and exponential functions and understand their real world applications.

Course Outcomes

Students have improved logical thinking and problem-solving skills.

Students have a greater understanding of the importance of algebra, trigonometry and logarithms and some real-world applications.

Students are prepared for their first course in Calculus.

Course Assessment: The assessment of objectives is achieved through homework, quizzes, and common examinations with common grading.

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:

Exam 1	15%
Exam 2	15%
Project	5%

Homework	15%
Quizzes	20%
Final Exam	30%

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

A	90 - 100	C	65 - 74
B+	85 - 89	D	55 - 64
B	80 - 84	F	0 - 54
C+	75 - 79		

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. Each class is a learning experience that cannot be replicated through simply "getting the notes."

Grades: You must receive a grade of C or better to progress to Math 138, Math 135 or Math 113.

Homework: Homework is an expectation of the course. All homework for the semester is on the syllabus, by section, below. It is essential to hand in homework on time. Late homework will be assessed at a 50% penalty.

Quizzes: As per each instructor, quizzes will be given throughout the semester. They will be based on the lecture, homework and the in-class discussions. Quizzes can be given on paper or computer format. There will be 6-10 assessments given throughout the semester.

Exams: There will be two exams and a final. Each exam will test the material taught since the beginning of the semester:

Midterm Exam I	October 4, 2023
Midterm Exam II	November 15, 2023
Final Exam Period	December 17 - December 23, 2023

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

Math Tutoring Center: Located in the Central King Building, Lower Level, Rm. G11 (See: **Fall 2023 Hours**)

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 need an accommodation due to a disability, please contact the Office of Accessibility Resources and Services at oars@njit.edu, or visit Kupfrian Hall 201 to discuss your specific needs. A Letter of Accommodation Eligibility from the office authorizing student accommodations is 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: **Fall 2023 Academic Calendar, Registrar**)

Date	Day	Event
September 4, 2023	Monday	Labor Day
September 5, 2023	Tuesday	First Day of Classes
September 11, 2023	Monday	Last Day to Add/Drop Classes
November 13, 2023	Monday	Last Day to Withdraw
November 21, 2023	Tuesday	Thursday Classes Meet
November 22, 2023	Wednesday	Friday Classes Meet
November 23 to November 26, 2023	Thursday and Saturday	Thanksgiving Recess - Closed
December 13, 2023	Wednesday	Last Day of Classes
December 14, 2023	Thursday	Reading Day 1
December 15, 2023	Friday	Reading Day 2
December 17 to December 23, 2023	Sunday to Saturday	Final Exam Period

Course Outline

Lecture	Sections	Topic	Assignment
1	1.1	Sets of Real Numbers and the Coordinate Plane	A. (11-19) *, 22-26 evens
2	1.2	Relations	A. 41*, 43, 45*, 47*, 49, 51 and 57

			B. Preview Activity Section 1.2
3	1.3	Introduction to Functions	A. 1-4, 7-10, 15-22
4	1.4	Function Notation	A. 11* 13-17 odd, 37, 39* 41, 43, 45, 47*, 49, 51 odd, 63, 64, 68*, 69* B. Preview Activity 1.9
5	1.5	Function Arithmetic	A. (1-9)* odd, 22*, 24*, 35* even,
6	1.6	Graphs of Functions	A. 1-6 evens 8*, 10, 12, 13, 16, 20*,
7	1.6	Graphs of Functions	A. 42-57 B. Preview Activity 1.8
8	1.7	Transformations	A. 1*, 5*, 8*, 9, 21, 24*, 29, 54-56, 57* 58-63 B. Preview Activity 1.4
9	2.1	Linear Functions	A. 11-15 odd 17*, 19, 21*, 23, 25, 30, 44, 46, 48*, 61* 63, 65*, 67, 69
10		Catch up/Review for Exam 1	
		Exam #1	
10	8.1	Systems of Linear Equations	A. 1-8, 28*, 30*, 31* B. Preview Activity Section 1.5
11	2.3	Quadratic Functions	A. 2-4*, 5*, 6-8, 31, 32*, 33-35
	2.3	Day 2	B. Preview Activity 5.2
12	3.1	Polynomial Functions	A. 1, 2*, 3, 4, 5*, 6-10, 21, 23, 25*, 33
13	3.2	Factor and Remainder Theorems	A. (1-6)*, 21-29 odd, 31-34 35*, 36, 40 B. Preview Activity 3.1
14		Introduction to Exponential Functions	B. Preview Activity 3.4
15	6.1	Introduction to Logarithmic Functions	A. 1-4, 9*, 11*, 14*, 15*, (20-26)*, 43-46, 58* B. Preview Activity 3.5
16	6.2	Properties of Logs	A. 10-14*, 15*, 16*, 17*, 18- 20, 35*, 38
17	6.3	Exponential Equations and inequalities	A. 1*, 3, 5*, 6-8*, 9-12
18	6.4	Logarithmic Equations and Inequalities	A. 1-4, 5*, 6, 7, 8*, 9*, 10, 11, 12-15, 22*
19		Catch up/Review for Exam 2	
		Exam #2	
20	10.1	Angles and their Measure	A. 9*, 11, 13*, 18*, 22*, 33, 34*, 35-40*, 52 B. Preview Activity 2.2
21	10.2	Unit Circle	A. 1, 2*, 3-5, 6*, 7-12*, 14*, (21-24)* 31-34 (just find solutions in $0 \leq \theta < 2\pi$), 40-48 Preview Activity 4.1
22	10.3	Six Circular Functions and Identities	A. (1-4)*, 5-8 odd, 21*, 22*, 23, 24, 43-46* (just find solutions in $0 \leq \theta < 2\pi$) B. Preview Activity 2.3
23	10.5	Graphs of Trigonometric Functions (Just Sin/Cos)	A. (1-4)*, 6, 8*, 12*
24	11.2	Law of Sines	A. 1-5*, 24*
25	11.3	Law of Cosines	A. 1-3, 11-15 odd, 19*
26		Catch up/Review for the Final	
		Final Exam	