

THE DEPARTMENT OF MATHEMATICAL SCIENCES

MATH 108: University Mathematics I B

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: Intended for students whose major requires **MATH 111**. Linear functions, equations, inequalities, systems of linear equations, quadratic equations, polynomials, rational expressions, expressions involving radicals, partial fraction decomposition, conic sections, graphing functions.

Number of Credits: 4

Prerequisites: None.

Course-Section and Instructors:

Course-Section	Instructor
Math 108-001	Professor A. DeBarros
Math 108-003	Professor A. DeBarros
Math 108-005	Professor E. Ikheloa
Math 108-007	Professor S. Jackson
Math 108-009	Professor S. Jackson

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

Required Textbook:

Title	<i>Precalculus - A Right Triangle Approach</i>
Author	Ratti and McWaters
Edition	5th
Publisher	Pearson
ISBN #	Print:9780137519354

	MyLab Math with Pearson eText: 9780137519255
Notes	w/ MyMathLab

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) learn algebra and its applications to science and engineering (b) learn about slope and its relationship to average rates of change, (c) understand how to recognize functions, operations on functions and graph of functions, (d) understand many practical applications of systems of equations.

Course Outcomes

- Students have improved logical thinking and problem-solving skills.
- Students have a greater understanding of the importance of algebra in science and technology.
- Students are prepared for further study in mathematics as well as science, engineering, and other areas.

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:

Homework	10%
Quizzes	15%
Common Midterm Exam I	15%
Common Midterm Exam II	15%
Common Midterm Exam III	15%
Final Exam	30%

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

A	90 - 100	C	70 - 74
B+	85 - 89	D	55 - 69
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. Students are expected to attend class. Each class is a learning experience that cannot be replicated through simply "getting the notes."

Homework: Homework is an expectation of the course. Online homework is assigned through the portal, My Math Lab. All students are expected to obtain a subscription to My Math Lab for successful completion of the class.

Recitation Problems: Recitation problems for the session are listed, by section. These problems are to be done during weekly recitations. Recitation assignments will be graded for accuracy.

How to Get Started with MyMathLab

http://m.njit.edu/Undergraduate/UG-Files/MML_Getting_Started.pdf

http://m.njit.edu/Undergraduate/UG-Files/Technology_Tips.pdf

Quiz Policy: Quizzes will be given at the professor's discretion approximately once a week during class time or recitation throughout the semester. They will be based on the lecture, homework and the in-class discussions. There will be 8-12 assessments given throughout the semester.

Exams: There will be three common midterm exams held during the semester and one comprehensive common final exam. Each exam will test the material taught since the beginning of the semester. Exams are held on the following days:

Common Midterm Exam I	September 27, 2023
Common Midterm Exam II	October 25, 2023
Common Midterm Exam III	November 29, 2023
Final Exam	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 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

Lect.	Sect. #	Topic	Online Assignments (eoo = every other odd)	Recitation Problems
1	P1	Real Numbers and their Properties	<i>P1: ex. 81, 83, 89, 91, 101, 103, 105, 107, 129, 135, 141, 143, 151, 155</i>	<i>92, 102, 138, 146, 156</i>
2	P2	Integer Exponents, and Scientific Notation	<i>P2: ex. 29, 37, 45, 65, 69, 73, 81, 85, 89, 93, 105-111 odd</i>	<i>40, 46, 76, 92</i>

3	1.1	Linear equations in one variable	1.1: ex. 9, 15, 31, 35, 39, 43, 47, 63, 65, 67	38, 40, 54, 64
4	8.1	Systems of Equations	8.1: ex. 45, 47, 55, 57, 69, 79, 93, 101-109 odd	48, 58, 80, 98, 104, 106, 110
5	1.2	Applications of Linear Equations	1.2: ex. 23, 31, 37, 39, 41, 45, 49, 53, 57, 59, 63	24, 44, 60
6	P6	Rational Exponents and Radicals	P6: ex. 25, 33, 37, 41, 47, 51, 53, 59, 63, 69, 73, 89, 93, 95, 99, 103, 107, 111	32, 38, 46, 56
7	P6	Rational Exponents and Radicals	P6: ex. 25, 33, 37, 41, 47, 51, 53, 59, 63, 69, 73, 89, 93, 95, 99, 103, 107, 111	60, 70, 92, 104
8	P3	Polynomials	P3: ex. 17, 19, 21, 23, 31, 35, 39, 53, 71, 95	20, 28, 54
9	P4	Factoring Polynomials	P4: ex. 11, 19, 29, 33, 37-45 odd, 49, 51, 59, 67-81 odd, 95-111 eoo= every other odd	12, 34, 40, 50, 52
10		CATCH UP AND REVIEW		
		EXAM #1		
11	P4	Factoring Polynomials (continue)	P4: ex. 11, 19, 29, 33, 37-45 odd, 49, 51, 59, 67-81 odd, 95-111 eoo	60, 70, 82, 102, 112
12	1.3	Quadratic Equations (Factoring/Quadratic Formula)	1.3: ex. 19-33 odd, 45-55 odd, 61-85 eoo, 99, 101, 105	24, 34, 48, 56
13	1.3	Quadratic Equations (Completing the square)	1.3: ex. 19-33 odd, 45-55 odd, 61-85 eoo, 99, 101, 105	62, 64, 100, 102
14	1.4	Complex Numbers	1.4: ex 9, 11-23 eoo, 31, 35, 37, 39-51 eoo, 53, 55, 57	22, 32, 46, 56
15	P5	Rational Expressions	P5: ex. 21, 31, 33, 37, 39, 49, 55, 59, 71, 73, 79, 87, 89, 91	22, 32, 40, 48, 56
16	P5	Rational Expressions	P5: ex. 21, 31, 33, 37, 39, 49, 55, 59, 71, 73, 79, 87, 89, 91	60, 72, 80, 92
17	1.5	Solving other types of equations	1.5: ex. 19, 21, 25, 31-55 eoo, 63-79 eoo	20, 26, 30, 34
18	1.5	Solving other types of equations	1.5: ex. 19, 21, 25, 31-55 eoo, 63-79 eoo	50, 52, 72, 74
19	1.6	Inequalities	1.6: ex. 25, 33, 37, 51, 53, 57, 61, 63, 65, 69, 73, 77, 89, 93, 97, 101, 105, 109	34, 52, 60, 78
20	1.6	Inequalities	1.6: ex. 25, 33, 37, 51, 53, 57, 61, 63, 65, 69, 73, 77, 89, 93, 97, 101, 105, 109	90, 96, 106
21	1.7	Absolute Value Equations and Inequalities	1.7: ex: 19, 23, 27, 31, 37-61 eoo	16, 28, 38, 50, 56
22		CATCH UP AND REVIEW		
		EXAM #2		
23	2.1	The Coordinate Plane	2.1: ex. 15, 17, 19, 35, 37, 41-47 odd	16, 18, 44
24	2.2	Graphs	2.2: ex. 23, 27, 35, 41, 43, 45, 53, 57, 69, 71, 73, 75, 77, 81, 83, 89, 91	28, 58, 90
25	2.3	Lines	2.3: ex. 11-14, 29, 33, 35, 37, 41, 42, 51-54, 83, 85, 87, 101, 103	52, 86, 102, 103

26	2.4	Functions	2.4: ex. 9, 12-20, 31-32, 41-53 odd, 65, 69, 79-84	26, 42, 44
27	2.5	Properties of Functions	2.5: ex. 35, 37, 39, 49-51, 53, 57, 61, 67, 71, 77, 81, 109, 111	36, 62, 76
28	2.6	Library of Functions	2.6: ex. 11, 21, 23, 25, 31, 35, 43, 45 and A Library of Basic Functions p. 252	24, 28, 36
29	2.7	Transformations of Functions	2.7: ex. 11-17 odd, 18, 37-61 eoo, 65, 67, 71, 75, 79, 87, 89, 91 97, 98, 99, 103, 105	64, 70, 93
30	2.7	Transformations of Functions	2.7: ex. 11-17 odd, 18, 37-61 eoo, 65, 67, 71, 75, 79, 87, 89, 91 97, 98, 99, 103, 105	115
31	2.8	Combining Functions; Composite Functions	2.8: ex. 9-19 odd, 23, 25, 29, 39, 45, 49, 55, 59, 61, 67, 69, 73, 77	28, 50, 76
32	2.9	Inverse Functions	2.9: ex. 9, 11, 25, 27, 29, 33, 55, 57, 59 67, 69, 79	26, 34, 60
33	3.1	Quadratic Functions	3.1: ex. 11, 15, 27, 33, 39, 43, 45, 49, 61, 65, 67, 79, 81	42, 50, 70
34	3.2	Polynomial Functions	3.2: ex. 9, 29, 33, 35, 37, 39, 45, 47, 65, 67, 71, 87	48, 64, 70
35	3.3	Dividing Polynomials	3.3: ex. 9-15 odd, 19, 21, 29, 35, 39, 41, 49, 51	12, 32, 50
36		<i>CATCH UP AND REVIEW</i>		
		EXAM #3		
37	3.6	Rational Functions	3.6: ex. 9, 13, 17, 21, 25, 27, 39-67 odd	42, 48, 58
38	3.6	Rational Functions	3.6: ex. 9, 13, 17, 21, 25, 27, 39-67 odd	68, 70
39	3.7	Variation	3.7: ex. 15, 19, 21, 23, 29, 33, 35, 37	18, 24, 43
40	10.2	Parabolas	10.2: ex. 37-51 odd	50, 52
41	10.4	Hyperbolas	10.4: ex. 29, 33, 37, 41, 43-51 odd, 73, 75	44, 50
42		<i>REVIEW</i>		
		FINAL EXAM		

Updated by Professor Potocki-Dul - 8/28/2023
Department of Mathematical Sciences Course Syllabus, Fall 2023