Fall 2024

MATH 110: University Mathematics B II

Mathematical Science Department

MATH 110: University Mathematics B II - Trigonometry
Fall 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: Intended for students whose major requires MATH 111. Trigonometric functions and identities, laws of sines and cosines, logarithmic equations, systems of nonlinear equations, polar coordinates.

Number of Credits: 4

Prerequisites: MATH 108 or placement by performance on standardized entrance examinations.

Course-Section and Instructors:

Course-Section	Instructor
Math 110-001	Professor M. Cadet
Math 110-003	Professor M. Cadet
Math 110-005	Professor A. DeBarros
Math 110-007	Professor A. DeBarros
Math 110-009	Professor P. Rodriguez
Math 110-011	Professor P. Rodriguez
Math 110-013	Professor J. Okoth
Math 110-015	Professor J. Okoth

Office Hours for All Math Instructors: Fall 2024 Office Hours and Emails

Required Textbook:

Title	*Precalculus*

Author	Ratti, McWaters, Skrzypek
Edition	5th
Publisher	Pearson
ISBN #	Print:9780137519354 MyLab Math with Pearson eText: 9780137519255
Notes	w/ MyMathLab

REQUIRED TEXTBOOK #2: *Precalculus*, by Abramson (free online):
https://openstax.org/details/books/precalculus

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, November 11, 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:

Homework and Quizzes	25%
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 scale.

A	90 - 100	**C**	70 - 74
B+	85 - 89	**D**	60 - 69
B	80 - 84	**F**	0 - 59
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 Policy: Homework is an expectation of the course. All homework for the spring session is listed, by section, below. Online homework will be in the My Math Lab section listed in conjunction with your text. All Hand in Homework is mandatory. Problems marked with an asterisk, *, will be graded for accuracy, while

the other assignments will be graded for completeness, unless otherwise noted by your instructor. The extra problems listed may be assigned by your instructor, but it is highly recommended that you complete extra problems regardless of whether they are assigned or not.

Quizzes Policy: Quizzes will be given approximately once a week 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 during the semester and one comprehensive final exam during the final exam week. Exams are held on the following days:

Common Midterm Exam I	September 25, 2024
Common Midterm Exam II	October 23, 2024
Common Midterm Exam III	November 20, 2024
Final Exam	December 15 - December 21, 2024

The time of the midterm exams is **4:15-5:40 PM** for daytime students and **6:00-7:25 PM** for evening students. 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 2024 Academic Calendar, Registrar)

Date	Day	Event
September 2, 2024	Monday	Labor Day
September 3, 2024	Tuesday	First Day of Classes
September 9, 2024	Monday	Last Day to Add/Drop Classes
November 11, 2024	Monday	Last Day to Withdraw
November 26, 2024	Tuesday	Thursday Classes Meet
November 27, 2024	Wednesday	Friday Classes Meet
November 28 to December 1, 2024	Thursday and Sunday	Thanksgiving Recess - Closed
December 11, 2024	Wednesday	Last Day of Classes
December 12, 2024	Thursday	Reading Day 1
December 13, 2024	Friday	Reading Day 2
December 15 to December 21, 2024	Sunday to Saturday	Final Exam Period

Course Outline

Lecture	Sections	Topics	Hand-In Homework Problems	Additional Practice Problems
1	4.1	Exponential Functions	24*, 26*, 37, 56*, 61*, 65, 69, 80, 85, 95, 96	4.1: 25,31,45- 49,51
2	4.2	Logarithmic Functions	40*, 50*, 52*, 58, 92*, 104, 96, 112, 119	4.2: 33,37,45,49,55,61,75,85,91
3	4.3	Rules of Logarithms	17*, 19, 38, 54, 82*, 84*, 97	4.3: 13,15,33,41,67,69,89
4	4.4	Exponential and Log Equations	24*, 26, 38*	4.4: 21,29,33,39
5	4.4	Exponential and Log Equations	47, 48*, 68*, 78*	53-63 odd
6	5.1	Angles and their Measures	32*, 65, 68, 72*, 90, 91, 96* Application Problem 5.1*	5.1: 9,13,35,39,55,57,61, 69,73,77

7		Project 1: PULLEY SYSTEM PROJECT	Problems in Packet*	
8	5.2	Right Triangle Trigonometry	12*, 16, 34*, 42*, 46, 52, 89*, 92	5.2: 7,9,17,27,33,39,43,49, 55,59,89
9	CATCH UP AND REVIEW		Application Problem 5.2*	
10	5.3	Trigonometric Functions of any Angle	16*, 24*, 36, 41, 45, 47*, 59*	5.3: 19,23,65,75
	COMMON EXAM 1 - September 25, 2024			
11	5.3	Trigonometric Functions of any Angle	79*, 91*, 102	5.3: 44,47,57,88,89
12	5.4	Graphs of Sine and Cosine	20*, 21, 38*, 45, 49*, 60	5.4:24,52,56,59
13	5.4	Graphs of Sine and Cosine	64, 83, 84 Application Problem 5.4*	70,79,87,91
14	5.5	Graphs of Other Trig. Functions	26, 46*, 51*, 53	5.5: 29,37, 54, 58
15	5.6	Inverse Trigonometric Functions	12, 20*, 22*, 40, 44*, 46, 64* Application Problems 5.6*	5.6: 9,11,17,21,27,33,35,37,47,51, 65,69,81,85
16	6.1	Verifying Identities	12*, 16*, 22, 24, 32, 38*, 48	6.1:13,23,25-35 odd
17	6.1	Verifying Identities	61, 83 Application Problems 6.1*	59,63,71,81,95,96, 97
18	6.2	Sum and Difference Formulas	24*, 30, 44*, 70 Application Problems 6.2*	6.2: 9,11,15,22,25,29 ,41,51, 63,113
19		APPLICATION 2: ROLLING WHEEL PROBLEM	Problems in Packet*	
20	6.3	Double Angle/Half Angle Formulas	18*, 27, 28, 41, 43, 49, 52*, 56* Application Problem 6.3*	6.3: 7,13,23,33,35,37,45,47,55,57, 59,91
21	CATCH UP AND REVIEW			
22	6.4	Product to Sum and Sum to Product Formulas	18*, 20, 22, 30*, 36, 42*	6.4: 10, 12, 14, 16, 26, 28, 32, 34, 38, 40, 44, 46, 48, 50, 52

	COMMON EXAM 2 - October 23, 2024			
23	6.5	Trig Equations I	16*, 42*, 50	6.5: 7-15 odd,17,23,46,47
24	6.5, 6.6	Trig Equations I, II	6.5: 64*, 76*	6.5: 52,55,61,67,77,81
25	6.6	Trig Equations II	14, 20*, 46*, 78*, 84	6.6: 7-25 odd,85
26	7.1	Law of Sines	44, 73*, 89 Application Problems 7.1*	7.1: 17, 21-29 odd,61
27	7.2	Law of Cosines	10, 16*, 22*, 63, 66* Application Problems 7.2*	7.2: 9,11,18,19,35 (HW may require calculator)
28	7.3	Areas of Polygons Using Trigonometry	10, 12*, 40, 54* Application Problems 7.3*	7.3:27,35,56 (HW may require calculator)
29	2.2	Circles	80, 84*, 86, 88*, 90*	2.2: 75,77,79,81,85,92
30	10.3	The Ellipse	10*, 18*, 30*, 36, 58*	10.3: 13,19,27,31,41,45,49
31	7.6	Polar Coordinates	12, 32*, 40*, 41, 49, 51, 53*, 60	7.6: 13,19,25,29,31,37,43,46
32	7.6	Polar Coordinates	72*, 74, 76, 78	7.6: 57,61,63,65,67,71,73
33	CATCH UP AND REVIEW			
34	8.1	Systems of Linear Equations in Two Variables	45*, 62, 66*, 76, 78 Application Problem 8.1*	8.1:39,51,55,57,69,71, 95, 99
	COMMON EXAM 3 - November 20, 2024			
35	8.2	Systems of Linear Equations in Three Variables	22, 26* Application Problem 8.2*	8.2: 9,11, 23, 29
36	8.3	Partial Fraction Decomposition	20, 22*, 32, 56*	8.3: 17,19,21,25,39
37	8.3	Partial Fraction Decomposition	78, 84*	8.3: 59,61,69
38	CATCH UP AND REVIEW			
39	8.4	Systems of Non-Linear Equations	20*, 34, 46, 50*, 62, 68*, 72 Application Problems 8.4*	8.4:15,21,31,41,45,65,69
40	Open Stax Section 12.1	Finding Limits – Numerical and	Assignment 12.1*	

		Graphical Approaches		
41	Open Stax Section 12.2	Finding Limits: Properties of Limits	Assignment 12.2*	
42	CATCH UP AND REVIEW			
	FINAL EXAM WEEK - December 15 - December 21, 2024			

Updated by Professor D. Schmidt - August 2024
Department of Mathematical Sciences Course Syllabus, Fall 2024