

THE DEPARTMENT OF MATHEMATICAL SCIENCES

MATH 238: General Calculus II

Spring 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: A continuation of **MATH 138**. Topics include applications of integral calculus and an introduction to ordinary differential equations.

Number of Credits: 3

Prerequisites: **MATH 138** with a grade of C or better or **MATH 139** with a grade of C or better or **MATH 111** with a grade of C or better or placement.

Course-Section and Instructors:

Course-Section	Instructor
Math 238-102	Professor J.H. Ro

Office Hours for All Math Instructors: **Spring 2024 Office Hours and Emails**

Required Textbook:

Title	<i>Calculus: Concepts and Contexts bundled w/ WebAssign</i>
Author	Stewart
Edition	5th
Publisher	Cengage
ISBN #	9780357632499 (Book Only) 9780357756911 (Bundle with Webassign)

University-wide Withdrawal Date: The last day to withdraw with a W is **Monday, April 1, 2024**. It will be strictly enforced.

COURSE GOALS

Course Objectives: Students should -

- develop greater depth of understanding of integration and its importance in scientific and engineering applications,
- learn about series, including their convergence properties and their use in representing functions,
- gain experience in the use of approximation in studying mathematical and scientific problems and the importance of mathematically understanding and evaluating the accuracy of approximations,
- learn new ways of mathematically representing curves and how to use calculus in these settings, and
- learn alternative coordinate systems which are natural for many problems and learn how calculus can be applied in these systems.

Course Outcomes

- Students should gain an appreciation for the importance of calculus in scientific, engineering, computer, and other applications. Students should gain experience in the use of technology to facilitate visualization and problem solving. Course Outcomes Students have improved logical thinking and problem-solving skills.
- Students have a greater understanding of the importance of calculus in science and technology.
- Students are prepared for further study in mathematics as well as science, engineering, computing, and other areas.

Course Assessment: The assessment of objectives is achieved through homeworks, quizzes, and exams.

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	15%
Quizzes	15%
Exam I	20%
Exam II	20%
Final Cumulative 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.

Homework: Homework is a requirement for this class. All homework for the semester is listed above by section.

Quiz Policy: Quizzes will be given weekly throughout the semester. They will be based on the lecture, homework and the in-class discussions.

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

Midterm Exam I	Week 10
Midterm Exam II	Week 19
Final Exam Period	May 3 - May 9, 2024

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: **Spring 2024 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 are in need of accommodations due to a disability please If you need an accommodation due to a disability please contact the Office of Accessibility Resources and Services at oars@njit.edu. The office is located in Kupfrian Hall, Room 201. A Letter of Accommodation Eligibility from the Office of Accessibility Resources and Services office authorizing your accommodations will be 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: **Spring 2024 Academic Calendar, Registrar**)

Date	Day	Event
January 16, 2024	Tuesday	First Day of Classes
January 22, 2024	Monday	Last Day to Add/Drop Classes
March 10, 2024	Sunday	Spring Recess Begins
March 16, 2024	Saturday	Spring Recess Ends
March 29, 2024	Friday	Good Friday - No Classes
April 1, 2024	Monday	Last Day to Withdraw
April 30, 2024	Tuesday	Friday Classes Meet
April 30, 2024	Tuesday	Last Day of Classes
May 1, 2024	Wednesday	Reading Day 1
May 2, 2024	Thursday	Reading Day 2
May 3 - May 9, 2024	Friday to Thursday	Final Exam Period

Course Outline

(This outline is subject to change throughout the semester)

Lecture	Sections	Topic	Assignment
1		Introduction/ Precalculus/Calculus 1 Review	Finish what is not completed in class
2	5.3	Evaluating Definite Integrals	5.3 Ex.:1-30
3	5.4	The Fundamental Theorem of Calculus	5.4 Ex.: 1,2,8, 9, 13, 25
4	5.5	The Substitution Rule	5.5 Ex.: 3-33,40-47
5	5.6	Integration by Parts	5.6 Ex: 1-29
6	5.7	Additional Techniques of Integration	5.7 Ex.: 2, 6, 8, 19
7	5.7	Additional Techniques of Integration	5.7 Ex.: 20-27
8	5.10	Improper Integrals	5.10 Ex.: 5-25
9	Catch up and Review for Exam		Chapter 5 Review Ex.: 9-32
10	EXAM I		
11	6.2	Volumes	6.2 Ex.: 5, 7, 8, 14, 16
12	6.2	Volumes	6.2 Ex.: 2, 10, 13, 14
13	6.3	Volumes By Cylindrical Shells	6.3 Ex. 9,10, 11, 12
14	7.1	Modeling with Differential Equations	7.1 ex. 7, 9, 11, 13, 14

15	7.3	Separable Differential Equations	7.3 ex. 2-18 evens
16	8.1	Sequences	8.1 Ex.: 4, 6, 14, 16, 41
17	8.2	Series	8.2 Ex.: 4, 6, 22, 26
18	<i>Catch up and Review For Exam</i>		
19	EXAM II		
20	8.3	Integral and Comparison Tests	8.3 Ex.: 6, 10, 16, 18
21	8.4	Other Convergence Tests	8.4 Ex.: 21, 22, 26, 29
22	8.4	Other Convergence Tests	
23	8.5	Power Series	8.5 Ex.: 13, 14, 19, 20
24	8.6	Representations of Functions as Power Series	8.6 Ex.: 5, 6, 7, 8
25	8.7	Taylor and Maclaurin Series	8.7 Ex.: 5, 6, 13, 14
26	<i>Catch up and Review for Final Exam</i>		
27	FINAL EXAM		

Updated by Professor J.H. Ro - 12/7/2023
Department of Mathematical Sciences Course Syllabus, Spring 2024