# MATH 138: General Calculus I
## *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**: Intended for students who are not in Science or in Engineering. An introduction to differential and integral calculus of a single variable.

**Number of Credits**: 3

**Prerequisites**: MATH 107 with a grade of C or better, or MATH 110 with a grade of C or better or NJIT placement.

**Course-Section and Instructors:**

| Course-Section | Instructor |
|---|---|
| Math 138-002 | Professor S. Alptekin |

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

**Required Textbook:**

| | |
|---|---|
| **Title** | *Calculus: Concepts and Contexts bundled w/ WebAssign* |
| **Author** | Stewart |
| **Edition** | 5th |
| **Publisher** | Cengage |
| **ISBN #** | 9780357632499 (Book Only)<br>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.

## 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% |
| **Midterm Exam I** | 20% |
| **Midterm Exam II** | 20% |
| **Final Exam** | 30% |

Your final letter grade will be based on the following tentative curve. **NOTE:**This course needs to be passed with a grade of C or better in order to proceed to Math 238 or Math 246.

| | | | |
|---|---|---|---|
| **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 (both lecture and recitation) will be recorded and is **mandatory**. Please make sure you read and fully understand the Math Department's Attendance Policy. Students are expected to attend class. Each class is a learning experience that cannot be replicated through simply "getting the notes." This policy will be strictly enforced.

**Homework**: Homework is an expectation of the course. The problems listed in the syllabus are to be handed in. There will be additional homework on WebAssign that is expected to be completed by the deadlines set forth in the web portal. If you have any difficulties with registering and getting an account with WebAssign please see the professor immediately.

**Quizzes:** There will be 8-12 quizzes given throughout the semester. They will be based on the lecture, homework and the in-class discussions.

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

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|---|---|
| Midterm Exam I | Lecture 12 |
| Midterm Exam II | Lecture 20 |
| 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)

| | | |
|---|---|---|
| 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 |

| | | |
|---|---|---|
| January 16, 2024 | Tuesday | First Day of Classes |
| May 2, 2024 | Thursday | Reading Day 2 |
| May 3 - May 9, 2024 | Friday to Thursday | Final Exam Period |

# Course Outline

| Lecture | Sections | Topic | Assignment |
|---|---|---|---|
| 1 | 2.2 | The Limit of a Function | 2.2 ex: 4, 6, 14, 16 |
| 2 | 2.3 | Calculating Limits using Limit Laws | 2.3 ex: 12, 16, 18, 20 |
| 3 | 2.5 | Limits Involving Infinity | 2.5 ex: 4, 16, 20, 22, 24 |
| 4 | 2.6 | Derivatives and Rates of Change | 2.6 ex: 6, 8, 11, 13 |
| 5 | 2.7 | The Derivative as a Function | 2.7 ex: 4, 14, 19, 21, 26 |
| 6 | 3.1 | Derivatives of Polynomials and Exponential Functions | 3.1 ex: 4, 8, 12, 50 |
| 7 | Appendix C | Trigonometry | Appendix C: ex: 21, 23, 25 |
| 8 | 3.2 | Product and Quotient Rules | 3.2 ex: 3, 5, 15, 17 |
| 9 | 3.3 | Derivatives of Trigonometric Functions | 3.3 ex: 3, 5, 11, 15, 16 |
| 10 | 3.4 | Chain Rule | 3.4 ex: 3,4,12,16. |
| 11 | | **Review for Exam I** | |
| 12 | | Exam I | |
| 13 | 3.5 | Implicit Differentiation | 3.5 ex: 6, 8, 22, 24 |
| 14 | 3.7 | Derivatives of Log Functions | 3.7 ex: 4, 8, 10, 12 |
| 15 | 3.8 | Rates of Change in the Natural and Social Sciences | 3.8 ex: 8, 12a, 14 |
| 16 | 4.1 | Related Rates | 4.1 ex: 11, 12, 13, 14 |
| 17 | 4.2 | Max and Min Values | 4.2 ex: 4, 6, 24, 26 |
| 18 | 4.3 | Derivatives and Shapes of Curves | 4.3 ex: 8, 12, 22, 24 |
| 19 | | **Review for Exam II** | |
| 20 | | Exam II | |
| 21 | 4.5 | Indeterminate forms and L'Hopital's Rule | 4.5 ex: 5, 8, 31, 34 |
| 22 | 4.6 | Optimization Problems | 4.6 ex: 10, 14, 18, 40 |
| 23 | 4.8 | Antiderivatives | |
| 24 | 5.1 | Areas and Distances | 5.1 ex: 1-2 |
| 25 | 5.2 | The Definite Integral | 5.2 ex: 5 |
| 26 | 5.3 | Evaluating Definite Integrals | 5.3 ex: 4, 10, 14, 24 |
| 27 | 5.4 | The Fundamental Theorem of Calculus | 5.4 ex: 8, 24 |
| 28 | Catch up and | **Review for Final Exam** | |
| | | **Final Exam** | |