# NJIT
New Jersey's Science & Technology University

## THE COLLEGE OF SCIENCE AND LIBERAL ARTS

## THE DEPARTMENT OF MATHEMATICAL SCIENCES

# MATH 238: General Calculus II
## *Summer 2021 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 placemen

**Course-Section and Instructors**

| Course-Section | Instructor |
|---|---|
| Math 238-140 | Professor E. Gulistan |

**Office Hours for All Math Instructors**: Summer 2021 Office Hours and Emails

**Required Textbook:**

| | |
|---|---|
| Title | *Calculus: Concepts & Contexts* |
| Author | Stewart |
| Edition | 4th |
| Publisher | Cengage Learning |
| ISBN # | 978-0495557425 |

**Withdrawal Date**: Please see the Summer 2021 Academic Calendar for the last day to withdraw based on the summer session you are registered for.

## 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.

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## 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.

| 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." Attendance at all classes (both lecture and recitation) will be recorded and is mandatory.

**Homework Policy**: Homework is an expectation of the course. All homework for the semester is listed above by section. In addition to the assigned homework, students will be required to complete foundation questions for each section PRIOR to beginning the section. These questions will allow students to review relevant material covered in the section. This will be graded as homework in addition to the assigned homework in the syllabus.

**Quiz Policy**: Quizzes will be given throughout the semester. They will be based on the lecture, homework, foundation questions and the in-class discussions. Quizzes will sometimes be assigned through WebAssign and will be completed outside class. There will be 6-10 assessments given throughout the semester.

**Exams**: There will be two midterm exams held in class during the semester and one comprehensive final exam. Exams are held on the following days:

| | |
|---|---|
| Midterm Exam I | June 9, 2021 |
| Midterm Exam II | June 30, 2021 |
| Final Exam | July 19, 2021 |

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.

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# ADDITIONAL RESOURCES

**Math Tutoring Center**: Located in the Central King Building, Room G11 (See: Summer 2021 Hours)

**Accommodation of Disabilities**: Disability Support Services (DSS) 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 contact Chantonette Lyles, Associate Director of Disability Support Services at 973-596-5417 or via email at lyles@njit.edu. The office is located in Fenster Hall Room 260.  For further information regarding self identification, the submission of medical documentation and additional support services provided please visit the Disability Support Services (DSS) website at:

- https://www.njit.edu/studentsuccess/accessibility/

**Important Dates** (See: Summer 2021 Academic Calendar, Registrar)

| Date | Event |
|---|---|
| May 24, 2021 | First Day of Classes for **FIRST, MIDDLE, AND FULL SUMMER SESSIONS** |
| May 26, 2021 | Last Day to Add/Drop Classes for **FIRST SUMMER SESSION** |
| May 28, 2021 | Last Day to Add/Drop Classes for **MIDDLE SUMMER SESSION** |
| May 31, 2021 | Last Day to Add/Drop Classes for **FULL SUMMER SESSION** |
| May 31, 2021 | University Closed for Memorial Day |
| June 28, 2021 | Last Day of **FIRST SUMMER SESSION** |
| July 4, 2021 | University Closed for Independence Day |
| July 5, 2021 | University Closed for Independence Day |
| July 7, 2021 | First Day of **FTF SUMMER SESSION** |
| July 19, 2021 | Last Day of **MIDDLE SUMMER SESSION** |
| August 2, 2021 | Last Day of **FULL SUMMER SESSION** |
| August 16, | Last Day of **FTF SUMMER SESSION** |

2021

# Course Outline

| Lecture | Sections | Homework |
|---------|----------|----------|
| 1 | 4.8 Definite Integral | 1-33 odd, 42 and 43 |
| | 5.3 Evaluating Definite Integrals | 1-29 odd 43, 47, and 59 |
| 2 | 5.4 The Fundamental Theorem of Calculus | 3, 7-17 odd |
| | 5.5 Substitution Rule | 3-33 odd, and 41-47 odd |
| 3 | 5.6 Integration by Parts | 1-29 odd |
| | 5.7 Additional Integration Methods | 1-9 odd and 19-27 odd |
| 4 | 5.10 Improper Integrals | 1, 5-33 odd, and 43-47 odd |
| 5 | Review for Midterm | |
| 6 | **MIDTERM EXAM I** | |
| 7 | 6.2 Volumes | 1-17 odd |
| | 6.3 Volumes by Cylindrical Shells | 3-19 odd, 23, and 25 |
| 8 | 6.4 Arc Length | 1-13 odd |
| | 6.5 Average Value of a Function | |
| 9 | 8.1 Sequence | 1,2, 5-27 odd |
| | 8.2 Series | 9-33 odd |
| 10 | 8.3 The Integral and Comparison Test | 7-29 odd |
| | 8.4 Other Convergence Tests | 3-9 and 19-33 |
| 11 | Review for Midterm | |
| 12 | **MIDTERM EXAM II** | |
| 13 | 8.5 Power Series | 3-23 odd |
| | 8.6 Representations of Functions as Power Series | 3-9 odd, 13-17 odd, 23 |
| 14 | 8.7 Taylor and Mclaurin Series | 11-18 all, 25-31 odd |
| | 8.8 Applications of Taylor Polynomials | 1-21 odd |
| 15 | *Review for Final* | |
| 16 | **FINAL EXAM** | |