

Fall 2024

## **MATH 135-001: Calculus For Business**

C. Kim

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## MATH 135: Calculus for Business

### *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 with majors offered by SOM. An introduction to mathematics of business, principles of differential and integral calculus, and optimization.

**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 135-001   | Professor C. Kim |

**Office Hours for All Math Instructors:** [Fall 2024 Office Hours and Emails](#)

**Required Textbook:**

|                  |                                                          |
|------------------|----------------------------------------------------------|
| <b>Title</b>     | <i>Finite Mathematics and Calculus with Applications</i> |
| <b>Author</b>    | M. Lial, R. Greenwell, N. Ritchey                        |
| <b>Edition</b>   | 11th                                                     |
| <b>Publisher</b> | Pearson                                                  |
| <b>ISBN #</b>    | 9780137419333                                            |
| <b>Notes</b>     | w/ MyMathLab                                             |

**University-wide Withdrawal Date:** The last day to withdraw with a W is **Monday, November 11, 2024**. It will be strictly enforced.

### COURSE GOALS

**Course Objectives:** An introduction to mathematics of business, principles of differential and integral calculus, and optimization.

**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        | 12% |
| Quizzes         | 18% |
| 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 | 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. Each class is a learning experience that cannot be replicated through simply "getting the notes."

**Homework:** Homework is an expectation of the course.

Calculus is learned by solving problems. Homework assignments are completed online. The online assignments can be completed at <https://mlm.pearson.com/northamerica/mymathlab/>. In order to access the online assignments you need to have a student access code. Access codes are included with a new book that is bundled with MyMathLab; codes can be purchased separately from the textbook at the campus bookstore or online at the course website. If you buy a new book from another source make sure it is bundled with MyMathLab.

**NOTE:** Homework Assignments are DUE frequently (at least weekly) at the dates and times specified online and by your instructor.

**How to get started with MyMathLab**

[http://m.njit.edu/Undergraduate/UG-Files/MML\\_Getting\\_Started.pdf](http://m.njit.edu/Undergraduate/UG-Files/MML_Getting_Started.pdf)

[http://m.njit.edu/Undergraduate/UG-Files/Technology\\_Tips.pdf](http://m.njit.edu/Undergraduate/UG-Files/Technology_Tips.pdf)

**Quiz Policy:** Every week there will be a short quiz on the topics presented the previous week. There are no make-up quizzes. In case of an excused absence, the quiz will not be included in the final grade.

**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    | Week 5-6                         |
| Midterm Exam II   | Week 10                          |
| Final Exam Period | December 15 to December 21, 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: **Fall 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 need an accommodation due to a disability, please contact the Office of Accessibility Resources and Services at [oars@njit.edu](mailto: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<br>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<br>December 21, 2024 | Sunday to Saturday  | Final Exam Period            |

## Course Outline

|   | Lect. | Sect | Topic                                                                       |
|---|-------|------|-----------------------------------------------------------------------------|
| 1 | 1     | R3   | Rational Expressions<br># 7, 9, 15, 19, 21, 23                              |
|   |       | R4   | Equations<br># 11, 13, 17, 19, 23, 29, 31                                   |
|   |       | R5   | Linear Inequalities<br># 7, 9, 11, 13, 17, 21, 23                           |
|   | 2     | 3.1  | Graphing Linear Inequalities<br># 5, 12, 15, 19, 25, 27, 29, 34, 35, 54, 57 |
|   |       | 3.2  | Solving Linear Programming Problems Graphically<br># 11, 13, 15             |
|   |       | 3.3  | Applications<br># 1, 5, 8, 9, 10                                            |
| 2 | 3     | 10.1 | Properties of Functions<br># 31, 33, 43, 45, 49, 51, 55, 57, 59, 61, 63, 81 |
|   | 4     | 10.3 | Polynomial and Rational Functions<br># 31, 35, 39, 41, 45, 47, 53, 57       |
| 3 | 5     | 10.4 | Exponential Functions<br># 17, 19, 21, 23, 25, 29, 31, 41, 44, 47           |
|   | 6     | 10.5 | Logarithmic Functions<br># 11, 17, 21, 25, 27, 31, 33, 37, 39, ...          |
| 4 | 7     | 10.6 | Growth and Decay<br># 15, 18, 19, 23                                        |
|   | 8     | 11.1 | Limits<br># 11, 13, 15, 17, 39-61 odd                                       |
| 5 | 9     | 11.1 | Limits (Continued)<br># 11, 13, 15, 17, 39-61 odd                           |
|   | 10    | 11.2 | Continuity<br># 15, 17, 19, 29, 33, 35, 51                                  |

|    | Lect. | Sect | Topic                                           |                                                          |
|----|-------|------|-------------------------------------------------|----------------------------------------------------------|
| 1  | 1     | R3   | Rational Expressions                            | # 7, 9, 15, 19, 21, 23                                   |
|    |       | R4   | Equations                                       | # 11, 13, 17, 19, 23, 29, 31                             |
|    |       | R5   | Linear Inequalities                             | # 7, 9, 11, 13, 17, 21, 23                               |
|    | 2     | 3.1  | Graphing Linear Inequalities                    | # 5, 12, 15, 19, 25, 27, 29, 34, 35, 54, 57              |
|    |       | 3.2  | Solving Linear Programming Problems Graphically | # 11, 13, 15                                             |
|    |       | 3.3  | Applications                                    | # 1, 5, 8, 9, 10                                         |
| 6  | 11    |      | Exam Review                                     |                                                          |
|    | 12    |      | <b>MIDTERM EXAM 1</b>                           |                                                          |
| 7  | 13    | 11.4 | The Definition of the Derivative                | # 1, 13, 15, 17                                          |
|    | 14    | 11.5 | Graphical Differentiation                       | # 15, 17, 19                                             |
| 8  | 15    | 12.1 | Techniques for finding Derivatives              | # 7, 9, 11, 13, 15, 29, 43, 57*, 58*                     |
|    | 16    | 12.2 | The Product Rule and the Quotient Rule          | # 5-23 odd, 51, 53                                       |
| 9  | 17    | 12.3 | The Chain Rule                                  | # 27, 31, 34, 37, 39, 41, 59                             |
|    |       | 12.4 | Derivatives of Exponential Functions            | # 9, 13, 15, 21, 26, 52                                  |
|    | 18    | 12.5 | Derivatives of Logarithmic Functions            | # 5, 7, 11, 15, 23, 71, 72, 74                           |
| 10 | 19    |      | Exam Review                                     |                                                          |
|    | 20    |      | <b>MIDTERM EXAM 2</b>                           |                                                          |
| 11 | 21    | 13.1 | Increasing and Decreasing Functions             | 13.1 # 9, 19, 23, 27, 33, 53, 54, 55, 57                 |
|    |       | 13.2 | Relative Extrema                                | 13.2 # 13, 17, 25, 27, 35, 43, 51, 55, 56, 57, 59        |
|    |       | 13.3 | Concavity and Second Derivative Test            | 13.3 # 67, 69, 71, 86                                    |
| 12 | 23    | 14.2 | Applications of Extrema                         | 14,2 # 9, 11, 18, 19                                     |
|    | 24    | 15.1 | Antiderivatives                                 | # 11, 13, 19, 25, 37, 39, 41, 49, 51, 53, 55, 57, 59, 63 |
| 13 | 25    | 15.4 | The Fundamental Theorem of Integral Calculus    | # 7, 9, 15, 19, 21, 27                                   |
|    | 26    | 16.2 | Average Value of a Function                     | # 29, 33, 39, 41                                         |
| 14 | 27    |      | <b>Review for Final Exam</b>                    |                                                          |
|    | 28    |      | <b>Review for FINAL EXAM</b>                    |                                                          |