

## **MATH 108: University Mathematics I B** *Fall 2019 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**. Linear functions, equations, inequalities, systems of linear equations, quadratic equations, polynomials, rational expressions, expressions involving radicals, partial fraction decomposition, conic sections, graphing functions.

Number of Credits: 4

Prerequisites: None.

Course-Section and Instructors

| Course-Section | Instructor          |
|----------------|---------------------|
| Math 108-001   | Professor A. Flax   |
| Math 108-003   | Professor A. Flax   |
| Math 108-009   | Professor I. Zarate |
| Math 108-013   | Professor I. Zarate |
| Math 108-017   | Professor S. Nair   |
| Math 108-019   | Professor S. Nair   |

Office Hours for All Math Instructors: [Fall 2019 Office Hours and Emails](#)

Required Textbook:

|           |  |
|-----------|--|
| Title     | <i>Precalculus - A Right Triangle Approach</i> |
| Author    | Ratti and McWaters                             |
| Edition   | 4th  |
| Publisher | Pearson  |
| ISBN #    | 9780134851013                                  |
| Notes     | w/ MyMathLab                                   |

**University-wide Withdrawal Date:** The last day to withdraw with a W is **Monday, November 11, 2019**. It will be strictly enforced.

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## COURSE GOALS

**Course Objectives:** Students should (a) learn algebra and its applications to science and engineering (b) learn about slope and its relationship to average rates of change, (c) understand how to recognize functions, operations on functions and graph of functions, (d) understand many practical applications of systems of equations.

### Course Outcomes

- Students have improved logical thinking and problem-solving skills.
- Students have a greater understanding of the importance of algebra in science and technology.
- Students are prepared for further study in mathematics as well as science, engineering, and other areas.

**Course Assessment:** The assessment of objectives is achieved through homework, quizzes, and common examinations with common grading.

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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                | 10% |
| Quizzes                 | 15% |
| 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 curve.

|    |          |   |         |
|----|----------|---|---------|
| A  | 90 - 100 | C | 70 - 74 |
| B+ | 85 - 89  | D | 55 - 69 |
| 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. 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 written homework for the session is listed, by section, above. On line, homework will also be assigned through the portal, My Math Lab. All students are expected to obtain a subscription to My Math Lab for successful completion of the class.

**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:** Quizzes will be given at the professor's discretion approximately once a week during recitation 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 held during the semester and one comprehensive common final exam. Each exam will test the material taught since the beginning of the semester.

Exams are held on the following days:

|                         |                        |
|-------------------------|------------------------|
| Common Midterm Exam I   | September 25, 2019     |
| Common Midterm Exam II  | October 23, 2019       |
| Common Midterm Exam III | November 20, 2019      |
| Final Exam Period       | December 14 - 20, 2019 |

The time of the midterm exams is 4:15-5:40 PM for daytime students and 5:45-7:10 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:** To properly report your absence from a midterm or final exam, please review and follow the required steps under the DMS Examination Policy found here:

- [http://math.njit.edu/students/policies\\_exam.php](http://math.njit.edu/students/policies_exam.php)

**Mandatory Tutoring Policy:** Based upon academic performance indicating a significant gap in understanding of the course material, students may receive a notice of being assigned to mandatory tutoring to assist in filling the gap. A student will have 2 points deducted from the course average for each instance in which the required tutoring is not completed by the stated deadline.

**Cellular Phones:** All cellular phones and other electronic devices must be switched off and put away during all class times.

## ADDITIONAL RESOURCES

**Math Tutoring Center:** Located in the Central King Building, Lower Level, Rm. G11 (See: [Fall 2019 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](tel:973-596-5417) or via email at [lyles@njit.edu](mailto:lyles@njit.edu). The office is located in Fenster Hall Room 260. A Letter of Accommodation Eligibility from the Disability Support 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 Disability Support Services (DSS) website at:

- <https://www.njit.edu/studentssuccess/accessibility/>

**Important Dates** (See: [Fall 2019 Academic Calendar](#), Registrar)

| Date              | Day | Event                |
|-------------------|-----|----------------------|
| September 3, 2019 | T   | First Day of Classes |

|                                |        |                              |
|--------------------------------|--------|------------------------------|
| September 13, 2019             | M      | Last Day to Add/Drop Classes |
| November 11, 2019              | M      | Last Day to Withdraw         |
| November 26, 2019              | T      | Thursday Classes Meet        |
| November 27, 2019              | W      | Friday Classes Meet          |
| November 28 - December 1, 2019 | R - Su | Thanksgiving Recess          |
| December 11, 2019              | W      | Last Day of Classes          |
| December 12 & 13, 2019         | R & F  | Reading Days                 |
| December 14 - 20, 2019         | Sa - F | Final Exam Period            |

## Course Outline

| Lecture | Section # | Topic   | Assignment   |
|---------|-----------|---|--|
| 1       | P1        | Real Numbers and their Properties                 | P1: ex. 82, 84, 86, 102, 104, 106, 108, 130-160 even               |
| 2       | P2        | Integer Exponents, and Scientific Notation        | P2: ex. 10-94 even, 101-110  |
| 3       | 1.1       | Linear equations in one variable                  | 1.1: ex. 9-13, 15, 17, 23-35 odd, 49-55 odd, 61, 63                |
| 4       | 1.1       | Linear equations in one variable                  | 1.1 ex. 37-47, 65, 68  |
| 5       | 8.1       | Systems of Equations                              | 8.1: ex. 59-75 odd 97, 99, 101                                     |
| 6       | 1.2       | Applications of Linear Equations                  | 1.2: ex. 9-12, 20-34 evens, 37-46, 47-59 odd                       |
| 6       | P6        | Rational Exponents and Radicals                   | P6: ex. 26-62 even, 86-94 even                                     |
| 7       | P6        | Rational Exponents and Radicals                   | P6: ex. 64-74 even, 78, 80, 82, 96-112 even                        |
| 8       | P3        | Polynomials                                       | P3: ex. 18-28 even, 32-42 even, 54, 72, 95                         |
| 9       | P4        | Factoring Polynomials                             | P4: ex. 28-34 even, 38-48 even, 66-84 even, 94-106 evens           |
| 10      |           | <b>CATCH UP AND REVIEW</b>                        |  |
|         |           | <b>EXAM #1</b>                                    |  |
| 11      | 1.3       | Quadratic Equations (Factoring/Quadratic Formula) | 1.3: ex. 20-30 even, 48-52 even, 91, 93                            |
| 12      | 1.3       | Quadratic Equations (Completing the square)       | 1.3: ex. 32-38 even, 42-46 even, 54-64 even, 68-78 even, 97, 104   |
| 13      | 1.4       | Complex Numbers                                   | 1.4: ex 10-36 even, 40-50 even                                     |
| 14      | P5        | Rational Expressions                              | P5: ex. 26, 30, 34, 36, 38, 48, 50, 56, 60, 70-76 even, 86, 90, 92 |
| 15      | 1.5       | Solving other types of equations                  | 1.5: ex. 20-24 even, 30-36 even,                                   |
| 16      | 1.5       | Solving other types of equations                  | 1.5: ex. 40-58 even, 64, 66, 70-80 even                            |
| 17      | 1.6       | Inequalities                                      | 1.6: ex. 12, 20, 24, 32, 51, 57, 59, 65, 67-77 odd, 95-105 odd     |
| 18      | 1.7       | Absolute Value Equations and Inequalities         | 1.7: ex: 14, 16, 26, 28, 34, 36                                    |

|    |      |   |  |
|----|------|---|--|
| 19 | 1.7  | Absolute Value Equations and Inequalities | 1.7: ex. 54-72 even, 79  |
| 20 | 2.1  | The Coordinate Plane                      | 2.1: ex. 15-21 odd, 35, 37, 41                                     |
| 21 | 2.2  | Graphs                                    | 2.2: ex. 22-28 even, 35, 37-46, 53, 57, 67, 70, 76, 81, 83, 89, 91 |
| 22 |      | <b>CATCH UP AND REVIEW</b>                |  |
|    |      | <b>EXAM #2</b>                            |  |
| 23 | 2.3  | Lines                                     | 2.3: ex. 9, 13, 27, 34-46 evens, 51-54, 79-87 odd, 93, 96-104 even |
| 24 | 2.4  | Functions                                 | 2.4: ex. 9, 12, 14, 15, 20, 32, 43, 44, 51-54, 70, 79-84           |
| 25 | 2.5  | Properties of Functions                   | 2.5: ex. 9-16, 35-39 odd, 57-67 odd, 107-110                       |
| 26 | 2.6  | Library of Functions                      | 2.6: ex. 9, 11, 17, 25, 31, 35, 41                                 |
| 27 | 2.7  | Transformations of Functions              | 2.7: ex. 9-19 odd, 23-34, 36-58 even, 63, 69                       |
| 28 | 2.7  | Transformations of Functions              | 2.7: ex. 75-82, 83-94, 95-105                                      |
| 29 | 2.8  | Combining Functions; Composite Functions  | 2.8: ex. 9-20, 23, 32, 39, 47, 49, 62                              |
| 30 | 2.8  | Combining Functions; Composite Functions  | 2.8: ex. 67, 69, 73, 76, 77  |
| 31 | 2.9  | Inverse Functions                         | 2.9: ex. 9-16, 17, 25, 26, 29, 33, 55, 57, 67-77 odd               |
| 32 | 3.1  | Quadratic Functions                       | 3.1: ex. 9-16, 21, 27, 29, 31, 51, 55, 65, 67, 79, 81              |
| 33 | 3.2  | Polynomial Functions                      | 3.2: ex. 9-14, 29-34, 37, 48, 64, 65, 87                           |
| 34 |      | <b>CATCH UP AND REVIEW</b>                |  |
|    |      | <b>EXAM #3</b>                            |  |
| 35 | 3.3  | Dividing Polynomials (Long Division)      | 3.3: ex. 9-16  |
| 36 | 3.3  | Dividing Polynomial (synthetic division)  | 3.3: ex. 17-29 odd, 35-41 odd, 49, 51                              |
| 37 | 3.6  | Rational Functions                        | 3.6: ex. 9-26, 28, 32, 35-51 odd, 53-58                            |
| 38 | 3.6  | Rational Functions                        | 3.6: ex. 59-73 odd   |
| 39 | 3.7  | Variation                                 | 3.7: ex. 9-13, 29-41 odd   |
| 40 | 10.2 | Parabolas                                 | 10.2: ex. 17-31 odd, 37-47 odd                                     |
| 41 | 10.4 | Hyperbolas                                | 10.4: ex. 17-27 odd, 29-53 odd, 69, 71-75 odd                      |
| 42 |      | <b>CATCH UP AND REVIEW</b>                |  |
|    |      | <b>EXAM</b>                               |  |

*Updated by Professor M. Potocki-Dul - 10/14/2019  
Department of Mathematical Sciences Course Syllabus, Fall 2019*

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