

**BOROUGH OF MANHATTAN COMMUNITY COLLEGE**

City University of New York

**Department of Mathematics**

**Intermediate Algebra and Trigonometry**

**MAT 56**

**Semester:**

**Credits: 0**

**Class hours: 6**

**Instructor Information**

**Name:**

**Email:**

**Phone:**

**Office:**

**Course Description**

This course is an intermediate algebra and trigonometry course. It includes such topics as properties of real numbers, polynomials and factoring, equations in one and two variables, inequalities, systems of linear equations, rational expressions and functions, rational exponents and roots, quadratic functions, exponential and logarithmic functions, and an introduction to trigonometry.

**Pre-requisites**

MAT 12 or MAT 51 or the equivalent.

**Student Learning Outcomes and Assessment:**

<b>Course Student Learning Outcomes</b>	<b>Measurements</b>
<b>1.</b> Students should be able to solve applied word problems, including correctly setting up problems and translating between words and algebraic expressions and equations.	<b>1.</b> Homework, quizzes, online problem assignments, midterm, final exam.
<b>2.</b> Students should be able to perform operations and solve equations involving algebraic and transcendental expressions in the real numbers, including polynomial, rational, radical, exponential, logarithmic and trigonometric expressions and equations, linear inequalities, systems of equations.	<b>2.</b> Homework, quizzes, online problem assignments, midterm, final exam.
<b>3.</b> Students should be able to represent equations in the real numbers graphically, and translate between graphical and algebraic forms, and use both graphical and algebraic forms to solve problems.	<b>3.</b> Homework, quizzes, online problem assignments, midterm, final exam.

**General Education Outcomes and Assessment:**

<b>General Education Learning Outcomes</b>	<b>Measurements</b>
<b>Communication Skills-</b> Students will be able to write, read, listen and speak critically and effectively.	Homework, quizzes, online problem assignments, midterm, final exam.
<b>Quantitative Reasoning-</b> Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems.	Homework, quizzes, online problem assignments, midterm, final exam.
<b>Information &amp; Technology Literacy-</b> Students will be able to collect, evaluate and interpret information and effectively use information technologies.	Homework, quizzes, online problem assignments, midterm, final exam.

## Course Requirements

**1. Textbook:** Charles McKeague, *Algebra with Trigonometry for College Students*, 5<sup>th</sup> edition. Cengage, 2002\* or in e-book form\* (Note: For access to the e-book, you must obtain a **class key** from your instructor)

*\*For a reduced price, purchase the following through the online Cengage BMCC microsite.*

Copy the following URL exactly: <http://cengagebrain.com/micro/2010436MC>

- e-book (includes Enhanced WebAssign access code): **ISBN13: 978-1-337-775502**.....\$55
- Bundle: (includes textbook, e-book, and Enhanced WebAssign access code): **ISBN13: 978-1-337-894937**.....\$97

**Check with your instructor *before* purchasing to see which option is correct for your class.**

**2. Technology:** A scientific calculator is required. A TI-30X is recommended. Graphing calculators and cell phone calculators are not allowed.

## Math Lab

The Math Lab is located in S535. It is dedicated to helping students improve their understanding of mathematics at any level. You will need a valid BMCC student ID to visit the Math Lab. Tutors are available in the Math Lab for free to all BMCC students. The Math Lab has worksheets with practice problems in stock, as well as computer- and video-based tutoring. Your instructor can require you to attend to tutoring in the Math Lab and can also track how often you visit it and for how long. The Math Lab is typically open any day of the week when BMCC has classes in session; for current hours and more information about the Math Lab, see the webpage at <http://www.bmcc.cuny.edu/mathlab/>.

## Additional Resources

Practice departmental final exams can be found in the math lab(rm S535) and at

[http://www.bmcc.cuny.edu/math/instructional\\_materials.jsp](http://www.bmcc.cuny.edu/math/instructional_materials.jsp)

## Evaluation and Requirements of Students

- At the beginning of the semester, the instructor will advise the student of the determination of the final grade, which will include a mandatory final examination worth at least 30% of the final grade and any other criteria specified by the instructor. The other criteria can include, but is not limited to, class work, examinations, quizzes, and projects.
- A **70% or higher** overall course average is a passing course average.
- The final grade in this course will be R(repeat), S(satisfactory), W(official withdrawal), or WU(unofficial withdrawal).

## College Attendance Policy

### **1. Absences**

At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For this course, you are allowed seven hours of absence (not seven days). In the case of excessive absence, the instructor has the option of assigning an "R" grade. In the case where a student stops attending at any time, the instructor has the option of assigning a "WU" grade.

### **2. Lateness**

Classes begin promptly at the times indicated in the Schedule of Classes. Arrival in classes after the scheduled starting time constitutes a lateness. Latecomers may, at the discretion of the instructor, incur an official absence.

### **3. Withdrawal from a course**

Once classes begin, you must officially drop or withdraw from a course that you no longer want to attend before the deadlines (check the Academic Calendar for specific dates). *If you do not take action on the course, you will receive a grade of "WU or WN" (based on attendance), which counts as a failure in your GPA and may have financial repercussions. If you stop attending at any time during the term, then you should receive a grade of WU.*

**Academic Adjustments for Students with Disabilities**

Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Accessibility. BMCC is committed to providing equal access to all programs and curricula to all students.

**Single Stop**

The Single Stop Office provides services and resources to help students address barriers that prevent them from attending and completing school. They offer one-stop help with finances, housing, health insurance and more.

**BMCC Policy on Plagiarism and Academic Integrity Statement:**

Plagiarism is the presentation of someone else's ideas, words or artistic, scientific, or technical work as one's own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism. Students who are unsure of how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC's web site, [www.bmcc.cuny.edu](http://www.bmcc.cuny.edu). For further information on integrity and behavior, please consult the college bulletin (also available online).

<b><u>Suggested Schedule</u></b>	<b><u>Chapter (see topics covered below)</u></b>
Week 1	Basic Properties and Definitions
Week 2	Basic Properties and Definitions
Week 3	Equations and Inequalities in One Variable
Week 4	Equations and Inequalities in Two Variables
Week 5	Systems of Linear Equations, Rational Expressions and Rational Functions
Week 6	Rational Expressions and Rational Functions (cont.)
Week 7	Rational Expressions and Rational Functions (cont.), Rational Exponents and Roots
Week 8	Rational Exponents and Roots (cont.)
Week 9	Rational Exponents and Roots (cont.) Quadratic Functions
Week 10	Quadratic Functions (cont.) Exponential and Logarithmic Functions
Week 11	Exponential and Logarithmic Functions (cont.)
Week 12	Introduction to Trigonometry
Week 13	Introduction to Trigonometry (cont.), Trigonometric Identities
Week 14	Trigonometric Identities (cont.), Triangles
Week 15	Final Exam Review, <b>Final Exam</b>

**Outline of Topics****Pages in Text**

*(For specific problem types and difficulty level, instructors should refer to the instructor addendum.)*

Chapter R -Basic Properties and Definitions	
Exponents and Scientific Notation	38
Polynomials, Sums, Differences and Products	49
Factoring	61
Special Factoring	70
Chapter 1 -Equations and Inequalities in One Variable	
Linear and Quadratic Equations in One Variable	101

Formulas	112
Applications	126
Linear Inequalities is One Variable	143
Equations with Absolute Value	154
Inequalities Involving Absolute Value	
Chapter 2 -Equations and Inequalities in Two Variables	
Paired Data and the Rectangular Coordinate System	178
The Slope of a Line	192
The Equation of a Line	202
Chapter 3 -Systems of Linear Equations and Inequalities	
Systems of Linear Equations in Two Variables	276
Applications	312
Chapter 4 -Rational Expressions and Rational Functions	
Basic Properties and Reducing to lowest terms	347
Division of Polynomials	360
Multiplication and Division of Rational Expressions	371
Addition and Subtraction of Rational Expressions	380
Complex Fractions	389
Equations Involving Rational Expressions	394
Applications	405
Chapter 5 -Rational Exponents and Roots	
Rational Exponents	426
More Expressions Involving Rational Exponents	438
Simplified Form for Radicals	445
Addition and Subtraction of Radical Expressions	457
Multiplication and Division of Radical Expressions	461
Equations with Radicals	468
Complex Numbers	478
Chapter 6 – Quadratic Functions	
Completing the Square	493
The Quadratic Formula	505
Chapter 7 -Exponential and Logarithmic Functions	
Exponential Functions	567
The Inverse of a Function*	578
Logarithms Are Exponents	588
Properties of Logarithms	597
Chapter 10 -Introductions to Trigonometry	
Degrees, Radians, and Special Triangles	714
Trigonometric Functions	724
Trigonometric Functions and Calculators	731
Chapter 11 -Trigonometric Identities and Equations	
Introduction to Identities	796
Chapter 12 –Triangles	
Right Triangle Trigonometry	838
The Law of Sines	851
The Law of Cosines	862

\*Optional topic