

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, 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:

Course Student Learning Outcomes	Measurements
1. Students should be able to solve applied word problems, including correctly setting up problems and translating between words and algebraic expressions and equations.	1. Homework, quizzes, online problem assignments, midterm, final exam.
2. 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.	2. Homework, quizzes, online problem assignments, midterm, final exam.
3. 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.	3. Homework, quizzes, online problem assignments, midterm, final exam.

General Education Outcomes and Assessment:

General Education Learning Outcomes	Measurements
Communication Skills- Students will be able to write, read, listen and speak critically and effectively.	Homework, quizzes, online problem assignments, midterm, final exam.
Quantitative Reasoning- 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.
Information & Technology Literacy- 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

Your instructor will select one of the two textbooks below.

ASK YOUR INSTRUCTOR BEFORE YOU PURCHASE A TEXTBOOK.

1a. Textbook: Charles McKeague, *Algebra with Trigonometry for College Students*, 5th 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.....\$53
- Bundle: (includes textbook, e-book, and Enhanced WebAssign access code): **ISBN13:** 978-1-337-894937.....\$97

OR

1b. Textbook: Hirsch, Milman & Offenholley, *Open Access College Algebra and Trigonometry*, 1st edition. ONLINE

- e-book (includes MyOpenMath access, and videos).....FREE
LINK: <https://math56oer.wordpress.com/>

2. Technology: A scientific calculator is required. 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

<https://www.bmcc.cuny.edu/academics/departments/math/mathematics-lab-tutoring/>.

Additional Resources

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

<https://www.bmcc.cuny.edu/academics/departments/math/instructional-materials/>

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).

BMCC is committed to the health and well-being of all students. It is common for everyone to seek assistance at some point in their life, and there are free and confidential services on campus that can help.

Single Stop www.bmcc.cuny.edu/singlestop, room S230, 212-220-8195. If you are having problems with food or housing insecurity, finances, health insurance or anything else that might get in the way of your studies at BMCC, come by the Single Stop Office for advice and assistance. Assistance is also available through the

Office of Student Affairs, S350, 212-220- 8130.

Counseling Center www.bmcc.cuny.edu/counseling, room S343, 212-220-8140. Counselors assist students in addressing psychological and adjustment issues (i.e., depression, anxiety, and relationships) and can help with stress, time management and more. Counselors are available for walk-in visits.

Office of Compliance and Diversity www.bmcc.cuny.edu/aac, room S701, 212-220-1236. BMCC is committed to promoting a diverse and inclusive learning environment free of unlawful discrimination/harassment, including sexual harassment, where all students are treated fairly. For information about BMCC's policies and resources, or to request additional assistance in this area, please visit or call the office, or email olevy@bmcc.cuny.edu, or twade@bmcc.cuny.edu. If you need immediate assistance, please contact BMCC Public safety at 212-220-8080.

Office of Accessibility www.bmcc.cuny.edu/accessibility, room N360 (accessible entrance: 77 Harrison Street), 212-220-8180. This office collaborates with students who have documented disabilities, to coordinate support services, reasonable accommodations, and programs that enable equal access to education and college life. To request an accommodation due to a documented disability, please visit or call the office.

College Attendance Policy

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 example, you may be enrolled in a three-hour class. In that class, you would be allowed 4 hours of absence (not 4 days). In the case of excessive absences, the instructor has the option to lower the grade or assign an F or WU grade.

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 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. For further information on integrity and behavior, please consult the college bulletin (also available online).

Suggested Schedule**Chapter (see topics covered below)**

	Sections in McKeague	Sections in Hirsch, Milman & Offenholley
Week 1	Basic Properties and Definitions	Linear Equations, Inequalities, Literal Equations
Week 2	Basic Properties and Definitions	Absolute Value Equations and Inequalities, Applications
Week 3	Equations and Inequalities in One Variable	Graphing Lines, Slope, Equations of Lines
Week 4	Equations and Inequalities in Two Variables	System of Linear Equations, Applications
Week 5	Systems of Linear Equations, Rational Expressions and Rational Functions	Properties of Exponents (integer and rational), Functions, Exponential Growth,
Week 6	Rational Expressions and Rational Functions (cont.)	Operating on Polynomials
Week 7	Rational Expressions and Rational Functions (cont.), Rational Exponents and Roots	Operating on Radicals and Complex Numbers
Week 8	Rational Exponents and Roots (cont.)	Inverse Functions and Logarithms, Properties of Logarithms
Week 9	Rational Exponents and Roots (cont.) Quadratic Functions	Quadratic Equations and Factoring
Week 10	Quadratic Functions (cont.) Exponential and Logarithmic Functions	Factoring and Rational Expressions
Week 11	Exponential and Logarithmic Functions (cont.)	Rational Expressions and Solving Radical Equations
Week 12	Introduction to Trigonometry	Introduction to Trigonometry
Week 13	Introduction to Trigonometry (cont.), Trigonometric Identities	Trigonometry
Week 14	Trigonometric Identities (cont.), Triangles	Trigonometry of Triangles
Week 15	Final Exam Review, Final Exam	Final Exam Review, Final Exam

Outline of Topics

<i>McKeague</i>	<i>Pages</i>	<i>Hirsch, Milman & Offenholley</i>	<i>Section</i>
Chapter R -Basic Properties and Definitions		Chapter 1 - Solving Equations	
Exponents and Scientific Notation	38	Linear and Literal	1.1
Polynomials, Sums, Differences and Products	49	Absolute Value	1.2
Factoring	61	Inequalities & Interval notation	1.3
Special Factoring	70	Absolute Value Inequalities	1.4
Chapter 1 -Equations and Inequalities in One Variable		Applications	1.5
Linear and Quadratic Equations in One Variable	101	Chapter 2 - Linear Equations in Two Variables	
Formulas	112	Graphing points and lines	2.1
Applications	126	Slope	2.2
Linear Inequalities in One Variable	143	Equation of a Line	2.3
Equations with Absolute Value	154	Applications of Linear Equations	2.4

Inequalities with Absolute Value		Systems of Linear Equations	2.5
Chapter 2 -Equations and Inequalities in Two Variables		Chapter 3- Exponents, Radicals, Functions	
Paired Data, the Rectangular Coordinate System	178	Properties of Exponents and Functions	3.1
The Slope of a Line	192	Rational Exponents	3.2
The Equation of a Line	202	Compound Interest, Exponential Growth*	3.3
Chapter 3 -Systems of Linear Equations and Inequalities		Chapter 4- Polynomials and Radicals	
Systems of Linear Equations in Two Variables	276	Operations on Polynomials	4.1
Applications	312	Operations on Radicals	4.2
Chapter 4 -Rational Expressions and Rational Functions		Complex Numbers and their Operations	4.3
Basic Properties and Reducing to lowest terms	347	Chapter 5- Inverse Functions and Logarithms	
Division of Polynomials	360	Inverse Functions*	5.1
Multiplication and Division of Rational Expressions	371	Logarithms	5.2
Addition and Subtraction of Rational Expressions	380	Properties of Logarithms	5.3
Complex Fractions	389	Solving Logarithmic Equations*	5.4
Equations Involving Rational Expressions	394	Chapter 6- Solving Equations	
Applications	405	Solving equations by Factoring	6.1
Chapter 5 -Rational Exponents and Roots		Quadratic Formula and Completing the square	6.2
Rational Exponents	426	More forms of Factoring	6.3
More Expressions Involving Rational Exponents	438	Chapter 7- Rational Expressions and Radicals	
Simplified Form for Radicals	445	Simplifying Rational Expressions	7.1
Addition and Subtraction of Radical Expressions	457	Adding and Subtracting Rational Expressions and Complex Rational Expressions	7.2
Multiplication and Division of Radical Expressions	461	Solving Rational Equations	7.3
Equations with Radicals	468	Solving Radical Equations	7.4
Complex Numbers	478	Chapter 8 - Trigonometry	
Chapter 6 -Quadratic Functions		Right Triangle Trigonometry	8.1
Completing the Square	493	Degrees, Radians and Reference Angles	8.2
The Quadratic Formula	505	Trigonometric Identities, Laws of sines and cosines	8.3
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

