# Quinsigamond Community College School of Math, Science, & Engineering

## Instructor's Information

Instructor: Professor XX (she/her/hers)
Office: 200A
Email: xxxxx@qcc.mass.edu
Telephone: 508-854-xxxx

## Course Information

Course: MAT 095 Beginning Algebra – Section XX
Meets: Mondays and Wednesdays from 8:00am – 9:15am
Room: 179A
Credits: 3 credits
Semester: Fall 20XX

## Course Description

This course covers all basic operations of real numbers, linear and literal equations, graphing lines (using tables, *x* and *y*-intercepts), the arithmetic of polynomial expressions including properties of exponents, solving and graphing linear inequalities, perimeters and areas of basic figures, scientific notation and intrasystem metric conversions. Technology tools are utilized in this course. Taking the departmental final examination is a requirement of the course. The minimum passing grade for developmental mathematics courses is a "C".

Please Note: This developmental course cannot be used to satisfy degree or certificate requirements.

## Required Textbook/Materials/Website

Textbook: *Introductory Algebra*, by Martin-Gay, 6th edition, Pearson © 2020
Materials: Scientific calculator
Website: Required access to www.mymathlab.com

## Student Learning Outcomes

Upon completion of this course, students will be able to:

1. Simplify expressions by performing mathematical operations on real numbers.
2. Solve linear equations, formulas, and inequalities.
3. Perform mathematical operations on polynomials.
4. Write numbers in scientific notation.
5. Graph linear equations and determine their slope.
6. Perform metric unit conversions.

## Course Topics & Required Section Readings/Assignments

Soft Skills for Success

- Growth Mindset
- Addressing math anxiety
- Note-taking skills (1.1 Objective B)
- Test-taking skills (1.1 Objective F)
- Time management (1.1 Objective G)

Prealgebra Review

- Factors and the Least Common Multiple
- Fractions

Real Numbers and Introduction to Algebra

- Symbols and Sets of Numbers
- Exponents, Order of Operations, and Variable Expressions
- Adding Real Numbers
- Subtracting Real Numbers
- Multiplying and Dividing Real Numbers
- Properties of Real Numbers
- Simplifying Expressions

Equations, Inequalities, and Problem Solving

- The Addition Property of Equality
- The Multiplication Property of Equality
- Further Solving Linear Equations
- Formulas and Problem Solving
- Linear Inequalities and Problem Solving

Exponents and Polynomials

- Exponents
- Negative Exponents and Scientific Notation
- Introduction to Polynomials
- Adding and Subtracting Polynomials
- Multiplying Polynomials
- Special Products
- Dividing Polynomials

Graphing Equations and Inequalities

- The Rectangular Coordinate System
- Graphing Linear Equations
- Intercepts
- Slope and Rate of Change
- Equations of Lines

Metric Conversions

## Instructional Objectives

- Write the factors and the prime factorization of a number.
- Find the LCM of a list of numbers.
- Discover fraction properties having to do with 0 and 1.

- Write equivalent fractions.
- Write fractions in simplest form.
- Add, subtract, multiply, and divide fractions.
- Define the meaning of the symbols $=, \neq, <, >, \leq, and \geq$.
- Translate sentences into mathematical statements.
- Identify integers, rational numbers, irrational numbers, and real numbers.
- Find the absolute value of a real number.
- Define and use exponents and the order of operations.
- Evaluate algebraic expressions, given replacement values for variables.
- Determine whether a number is a solution of a given equation.
- Translate phrases into expressions and sentences into equations.
- Add and subtract real numbers.
- Find the opposite of a number.
- Evaluate algebraic expressions using real numbers.
- Solve applications that involve addition and subtraction of real numbers.
- Evaluate algebraic expressions using real numbers.
- Determine whether a number is a solution of a given equation.
- Multiply and divide real numbers.
- Find the reciprocal of a real number.
- Evaluate expressions using real numbers.
- Solve applications that involve multiplication or division of real numbers.
- Learn to use the commutative, associative, identity, inverse, and distributive properties.
- Simplify expressions containing parentheses; identify terms, like and unlike terms; combine like terms.
- Use the addition property of equality to solve linear equations.
- Simplify an equation and then use the addition property of equality.
- Use both the addition and multiplication properties of equality to solve linear equations.
- Apply the general strategy for solving a linear equation.
- Solve equations containing fractions or decimals.
- Recognize identities and equations with no solution.
- Use formulas to solve problems.
- Solve a formula or equation for one of its variables.
- Graph inequalities on a number line.
- Use the addition and multiplication properties of inequalities to solve and graph inequalities.
- Evaluate exponential expressions.
- Use the product rule, quotient rule, and power rule for exponents.
- Define a number raised to the 0 power.
- Decide which rule(s) to use to simplify an expression.
- Simplify expressions containing negative exponents.
- Use the rules and definitions for exponents to simplify exponential expressions.
- Write numbers in scientific notation.
- Convert numbers in scientific notation to standard form.
- Define term and coefficient of a term.
- Define polynomial, monomial, binomial, trinomial, and degree.

- Evaluate polynomials for given replacement values.
- Simplify a polynomial by combining like terms.
- Simplify a polynomial in several variables.
- Write a polynomial in descending powers of the variable and with no missing powers of the variable.
- Add or subtract polynomials in one variable or several variables.
- Multiply monomials. Multiply a monomial by a polynomial. Multiply two polynomials. Multiply polynomials vertically.
- Multiply two polynomials using the FOIL method. Square a binomial. Multiply the sum and difference of two terms. Use special products to multiply binomials.
- Divide a polynomial by a monomial. Use long division to divide a polynomial by a polynomial other than a monomial.
- Plot ordered pairs of numbers on the rectangular coordinate system.
- Find the missing coordinate of an ordered pair solution, given one coordinate of the pair.
- Graph a linear equation by finding and plotting ordered pair solutions.
- Identify intercepts of a graph.
- Graph a linear equation by finding and plotting intercept points.
- Identify and graph vertical and horizontal lines.
- Find the slope of a line through two points of the line.
- Use the slope-intercept form to write an equation of a line.
- Be able to convert units within systems and across different systems.

## Grading Breakdown

20% Homework
10% Quizzes
10% <Attendance/Other>
35% Exams
25% Comprehensive Final Exam

| Grade | Range | Grade | Range | Grade | Range |
|---|---|---|---|---|---|
| A | 95 – 100 | B – | 80 – 82 | D + | 67 – 69 |
| A – | 90 – 94 | C + | 77 – 79 | D | 63 – 66 |
| B + | 87 – 89 | C | 73 – 76 | D – | 60 – 62 |
| B | 83 – 86 | C – | 70 – 72 | F | 0 – 59 |

## Teaching Procedures

Most classes will be a combination of lectures, group activities, and in-class assignments. You will be given homework assignments to be completed outside of class. Occasionally, a quiz or exam will be given in class.

## Attendance Policy

Students are expected to attend all classes for the entire period. Attendance will be taken in every class. If you are absent from class, proper documentation will excuse your absence.

## Accessibility Statement

Quinsigamond Community College is committed to providing access and inclusion for all persons with disabilities. Students who require an accommodation in this course should notify the professor as soon as possible. Students are responsible for forwarding the Accommodation Letter to the professor (via email or hard copy). Students may request accommodations at any time during the semester, which begin upon receipt (accommodations are not retroactive). Please discuss any barriers which may arise during the semester with your professor or coordinator in the Student Accessibility Services office.

**Contact Information for Student Accessibility Services (SAS):**
Call: 508-854-4471
Sorenson Video Phone: 508-502-7647
Email: disabilityservices@qcc.mass.edu

## Services for Veterans

If you are a veteran of the US Armed Forces, please visit the Veteran Affairs Office located in 258A (Administration Building) or contact them at veteranaffairs@qcc.mass.edu.

## Academic Honesty and Plagiarism

Our purpose of education is to seek the truth; this work requires trust and honesty between teacher and student. If we are not honest about what we know and don't know, our learning will always be impaired. Because our teaching and learning depends on this honest communication, we expect all students to understand what plagiarism is and why it is unacceptable.

Plagiarism means taking someone else's ideas or words and presenting them as one's own. The offense can take many forms including cheating on a test, passing in a paper taken from the Internet or from another student, or failing to properly use and credit sources in an essay. Sometimes the issue is subtle, involving getting too much help on an assignment from someone else. In every instance, plagiarism means cheating both oneself and the owner of the source. Since cheating sabotages a student's learning experience, consequences range from no credit for the assignment to failure for the course and possible expulsion from the college.

The penalty for getting caught cheating in this course is a failure of the quiz or test, or failure of the entire course. This is solely at the discretion of the instructor.

For further information concerning plagiarism, refer to the QCC Student Handbook.

## Math Center & QCC Math YouTube Channel

The Math Center provides free, drop-in tutoring assistance for students in any QCC mathematics course. Located on the second floor of the Harrington Learning Center (HLC), the Math Center is a welcoming place where students have the opportunity to work collaboratively with tutors and classmates. Students can work intensively to improve their mathematical skills or simply drop by to ask a few questions. In addition to tutoring, the Math Center houses various math-related resources, and

computers and software for math coursework. Visit their website for details and the semester schedule: https://www.qcc.edu/services/tutoring/math-center

For further help, visit the QCC Math YouTube channel. This channel has a playlist specifically for this course, with many short videos created with students like you in mind, covering many of the topics in this course: https://www.youtube.com/user/QCCmath