Instructor's Information:
Instructor: <Professor John Smith>
Office: <200A>
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Telephone: 508-854-2400

Course Information:
Course: MAT 100 College Algebra – Section ##
Meets on: <Mondays, Wednesdays, Fridays from 8:00am – 8:50am>
Credits: 3 credit hours

Course Description:
This course continues the areas of study presented in Intermediate Algebra with more advanced treatment. Students perform arithmetic operations on rational expressions; solve equations with fractions; factor expressions; simplify complex fractions; simplify exponential expressions, roots, radicals, and rational exponents; solve linear systems using several techniques; use the midpoint and distance formulas; recognize and graph the equation of a circle; solve linear and absolute value inequalities; solve quadratic equations by completing the square and by using the quadratic formula; solve equations containing radicals or absolute values; and perform arithmetic operations on radical expressions and complex numbers.

Pre-requisite:
MAT 099 with a grade of "C" or higher; or appropriate placement score

Required Textbook/Materials/Website:
Materials: Scientific calculator
Website: Access to www.mymathlab.com

Student Learning Outcomes & Instructional Objectives:
This course is designed to achieve the following student outcomes and objectives:

- Solve systems of two linear equations in two unknowns and three linear equations in three unknowns
  - Checking solutions
  - Solve 2 by 2 linear systems by graphing (Review)
  - Solve by addition/elimination/substitution and/or mixed methods
  - Identify systems with infinite or no solutions
  - Cramer’s rule
- Solve linear inequalities
  - Closed and open interval notation and graphs
  - Simple linear inequalities
  - Compound inequalities (AND, OR)
- Identify inequalities with infinite or no solutions
  - Solve absolute value linear equations
    - Identify absolute value equations with infinite or no solutions
  - Solve absolute value linear inequalities
    - Union and intersection of sets. Empty set
    - Inequalities with Less than / Less than or equal to
    - Inequalities with Greater than / Greater than or equal to
    - Identify absolute value inequalities with infinite solutions or no solutions
  - Factor
    - Greatest common factor
    - Grouping
      - Trinomials: $x^2 + bx + c$
      - Trinomials: $ax^2 + bx + c$
    - Difference of two squares
    - Perfect square trinomials
    - Sum and difference of two cubes
  - Simplify rational expressions
    - Undefined rational expressions
    - Domain of a rational expressions
    - Simplifying rational expressions by factoring and cancelling
  - Multiply and divide rational expressions
  - Add and subtract rational expressions
    - Adding and subtracting rational expressions with the same denominators
    - Find the LCD of several rational expressions
    - Adding and subtracting rational expressions with different denominators using their LCD
    - Simplifying complex fractions using division or LCD
  - Radicals
    - Square roots
    - Cubic and higher order roots
    - Simplifying radicals
    - Roots of negative numbers
    - Radicals and fractional exponents
    - Multiplication and division rules for radicals
    - Addition/subtraction of radicals
    - Rationalizing radicals
  - Complex numbers
    - The definition of $i$
    - Powers of $i$
    - Complex numbers
      - Adding, subtracting and multiplying complex numbers
      - Dividing complex numbers: rationalizing
  - Solve equations with rational expressions
  - Solve equations with radicals
  - Solve quadratic equations
    - using the square root property
by completing the square
- using the quadratic formula
- Find the distance between two points and their midpoint
- Equation of the circle
  - identify the coordinates of the center and the radius of the circle
  - write the equation of a circle in standard form given its radius and center
  - convert the equation of a circle from general form to standard form

**Teaching Procedures:**
Most classes will be a combination of lecture, group activities, and in-class assignments. You will be given homework assignments to be completed outside of class, with due dates/times. There will occasionally be a quiz or exam given in class.

**Course Topics & Required Assignments/Readings:**

**Systems of Linear Equations**
- Systems of Linear Equations in Two Variables
- Systems of Linear Equations in Three Variables
- Matrix Solutions to Linear Systems (*optional*)
- Determinants and Cramer’s Rule (*optional*)

**Inequalities and Problem Solving**
- Solving Linear Inequalities
- Compound Inequalities
- Equations and Inequalities Involving Absolute Value

**Polynomials, Polynomial Functions, and Factoring**
- Greatest Common Factors and Factoring by Grouping
- Factoring Trinomials
- Factoring Special Forms
- A General Factoring Strategy
- Polynomial Equations and Their Applications (*optional*)

**Rational Expressions, Functions, and Equations**
- Rational Expressions and Functions: Multiplying and Dividing
- Adding and Subtracting Rational Expressions
- Complex Rational Expressions
- Rational Equations

**Radicals, Radical Functions, and Rational Exponents**
- Radical Expressions and Functions
- Rational Exponents
- Multiplying and Simplifying Radical Expressions
- Adding, Subtracting, and Dividing Radical Expressions
- Multiplying with More Than One Term and Rationalizing Denominators
- Radical Equations
- Complex Numbers

**Quadratic Equations and Functions**
- The Square Root Property and Completing the Square
• The Quadratic Formula
• Conic Sections and Systems of Nonlinear Equations
• Distance and Midpoint Formulas; Circles

Assignment & Test Schedule:
<list all assignments, quizzes, & exam dates>

Grading Breakdown:
25% Homework
15% Quizzes
10% Attendance
20% Exams
30% Final Exam

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

Attendance Policy:
Students are expected to attend all classes, for the entire period. Attendance will be taken during every class, and counts towards your final course grade. If you are absent from class, a doctor's note will excuse your absence.

Disability Statement:
If you have a disability which may require an accommodation, please notify me as soon as possible. You are responsible for forwarding your Accommodation Letter to me and discussing arrangements for this course. Your accommodations for this course begin upon my receipt of your Accommodation Letter; accommodations are not retroactive. You may request accommodations at any time during the semester, but instructors must be provided with reasonable notice prior to exams or deadlines. Disability Services works to promote access to ensure an accessible college experience for students. If you have further questions, contact Disability Services. All discussions are confidential.

Contact Information for Disability Services & Assistive Technology:
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 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 in the classroom 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 the 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.

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