Quinsigamond Community College School of Math and Science

Instructor's Information
Instructor: Professor XX (she/her/hers)
Office: 200A
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Course Information
Course: MAT 100 College Algebra – Section XX
Meets: Mondays and Wednesdays from 8:00am – 9:15am
Room: 179A
Credits: 3 credits
Semester: Fall 2024

Course Description
This course covers advanced algebra topics. 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.

MAT 100 Prerequisite or Corequisite
Prerequisite: QMAT placement score > 32 *or*
Corequisite: MAT 097 College Algebra Corequisite

Required Textbook/Materials/Website
Textbook: *Algebra for College Students*, by Blitzer, Pearson Pub., 8th edition, © 2017
Materials: Scientific calculator
Website: Access to www.mymathlab.com

Student Learning Outcomes
Students will be able to:
1. Solve systems of linear equations for two and three variables using addition, substitution, Cramer's Rule, and graphing.
2. Solve linear, compound, and absolute value equations and inequalities.
3. Factor polynomial expressions.
4. Perform and simplify the basic operations with rational expressions, radical expressions, and complex numbers.

5. Find the equation of the circle and identify the coordinates of the center and the radius of the circle.
6. Solve equations with rational expressions, radicals, and quadratic equations.

Course Topics & Required Section Readings/Assignments
This course covers the following instructional objectives and topics:
- 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
  - Factor by 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

MAT 100 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

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.

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. Occasionally, a quiz or exam will be given in class.

Diversity, Equity, and Inclusion Statement for the School of Math & Science

The School of Math and Science is motivated to teach and learn from the diverse community we have at QCC. In Science, Technology, Engineering, and Mathematics (STEM), it is advantageous to approach problems from multiple perspectives. The power of diversity, equity and inclusion allows us to persevere and overcome challenges.

The faculty of the School of Math and Science pledge to help students meet the demands of STEM regardless of race/ethnicity, gender identity and expression, sexual orientation, faith, abilities/disabilities, age, socioeconomic background, political leaning, ancestry, national origin, home language and all other identities. We are dedicated to nurturing a culture of collaboration, mutual respect and understanding; and to empowering members of our community to embrace their full potential.

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

Assignment and Test Schedule