

MIDDLESEX COUNTY COLLEGE  
EDISON, NJ  
MASTER SYLLABUS

**Course ID and Name:** MAT 014, Algebra 2

**Department:** Mathematics

**Prerequisites:** A "C" or better in MAT 013 or appropriate placement score(s).

**Co-requisites:** None

**Course Description:** Topics include: A review of elementary algebra, the coordinate plane and functions, linear equations and inequalities, absolute value equations and inequalities, properties of lines, systems of linear equations, polynomials and factoring, operations with radical expressions, solve radical equations and applications, complex numbers, operations with rational expressions, solve rational equations, solve quadratic and higher degree polynomial equations and methods of solutions. The use of a graphing calculator is essential.

**General Education Status:** None

**Credits:** 4 credit equivalents   **Lecture Hours:** 4   **Lab Hours:** 0

**E-book and Other Course Materials:**

Book:

Author: Lynn Marecek

Title: Intermediate Algebra

Publisher: OpenStax

Link: <https://cnx.org/contents/02776133-d49d-49cb-bfaa-67c7f61b25a1>

Software: MyOpenMath

Supplies: TI-83/84 calculator required

**Core Learning Outcomes**

*Upon successful completion of the course, students will be able to:*

1. Use appropriate mathematical concepts and operations to interpret data and to solve problems.
  - a. Translate quantifiable problems into mathematical terms and solve these problems using mathematical or statistical operations.
  - b. Construct graphs and charts, interpret them, and draw appropriate conclusions.
2. Communicate accurate mathematical terminology and notation to explain strategies to solve problems and interpret solutions.
3. Use technology to correctly solve mathematical problems.
4. Utilize various reasoning, problem-solving, and critical thinking techniques to solve applications.
5. Understand the language and concepts of algebra, as well as the formal mathematical definitions that accompany them.

<b>Content Strand</b>	<b>Students will be able to...</b>
Problem Solving with Linear Equations (CLO 1, 2, 4, 5)	Use algebraic expressions and equations to analyze and solve application problems. Solve equations and inequalities containing absolute value expressions.
Linear Functions (CLO 1, 2, 3, 4, 5)	Graph linear functions by hand and with technology. Interpret the meaning of the slope and y-intercept in application problems. Write the equation of a linear function.
Relations and Functions, Graphs of Functions (CLO 1, 2, 3, 4, 5)	Analyze basic properties (intercepts, domain, and range) of graphs of functions. Perform arithmetic operations on functions.
Exponents (CLO 1, 2, 4, 5)	Perform operations on expressions that contain integer and rational exponents.
Operations with Polynomials, Factoring (CLO 2, 4, 5)	Perform arithmetic operations on polynomials. Factoring emphasizing Trinomials with Leading Coefficient Greater than 1, and the Sum & Difference of Two Cubes.
Radicals (CLO 1, 2, 4, 5)	Multiply and divide expressions containing radicals. Rationalize the denominator of expressions containing radicals. Perform arithmetic operations on complex numbers. Solve equations containing radicals.
Operations with Rational Expressions, Solving Rational Equations (CLO 2, 4, 5)	Perform arithmetic operations on rational expressions. Perform long and synthetic division. Solve rational equations and proportions. Simplify complex fractions.
Quadratic Equations and Their Applications (CLO 1, 2, 3, 4, 5)	Solve quadratic and higher-degree equations algebraically by factoring and using the quadratic formula. Graph quadratic functions in vertex form by hand and with technology.
Right Triangle Trigonometry (CLO 1, 2, 4)	Apply the Pythagorean Theorem to application problems. Solve basic right triangle problems using the three basic trigonometric ratios (sine, cosine, and tangent).

**Evaluation:**

Tests: 45% of grade

Classwork and Homework: 30% of grade

Cumulative Final Examination: 25% of grade

Note: A minimum grade of 60% is required on the departmental final exam in order to earn a grade of C or higher in the course.

**Policies:**

Disability Support

Students with disabilities, whether physical, learning or psychological, who believe that they may need accommodations in this class, are encouraged to contact Disability Services as soon as possible to ensure that the accommodations are implemented. Please meet with the Disability Services staff in Edison Hall, Room 100, (732) 906-2546.

Code of Student Conduct

To foster a productive learning environment, the College requires that all students adhere to the Code of Student Conduct which is published in the college catalog and website.

Effective Date: Fall 2019