

MIDDLESEX COUNTY COLLEGE  
EDISON, NJ  
MASTER SYLLABUS

**Course ID and Name:** MAT 129, Precalculus

**Department:** Mathematics

**Prerequisites:** Appropriate placement scores, a “C” or better in MAT-014, or departmental approval.

**Co-requisites:** None

**Course Description:** Emphasis on those topics from algebra and trigonometry that best prepare student for the first course in calculus. The areas of study are algebraic and transcendental functions and their graphs. Of special interest are polynomials, rational, exponential, logarithmic, and trigonometric functions. Additional topics include vectors, polar coordinate systems, matrices, and determinants.

**General Education Status:** GE MST

**Credits:** 4

**Lecture Hours:** 4

**Lab Hours:** 0

**Textbook(s) and Other Course Materials:**

E-book: Algebra and Trigonometry

OpenStax

<https://openstax.org/details/books/algebra-and-trigonometry>

Online Software: MyOpenMath

Supplies: TI 84, TI 83Plus, or TI Inspire Graphing 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 precalculus, as well as the formal mathematical definitions that accompany them.

Content Strand	Students will be able to...
Distance Formula and Circles (CLO 1, 2, 3, 4, 5)	<ul style="list-style-type: none"> <li>▪ Find the distance between two points.</li> <li>▪ Formulate the equation of a circle and identify its center and radius.</li> <li>▪ Solve quadratic equations analytically.</li> </ul>
Complete the Square, Quadratic-like Equations; Radical Equations; Equations Containing Rational Exponents (CLO 1, 2, 3, 4, 5)	<ul style="list-style-type: none"> <li>▪ Solve quadratic, radical, and absolute value equations analytically.</li> </ul>
Quadratic and rational inequalities (CLO 1, 2, 3, 4, 5)	<ul style="list-style-type: none"> <li>▪ Solve quadratic, radical, and absolute value inequalities analytically.</li> </ul>
Functions (Finding Real Zeros, Finding Asymptotes of Rationals, Transformations) (CLO 1, 2, 3, 4, 5)	<ul style="list-style-type: none"> <li>▪ Compute the arithmetic and composition of functions and determine their zeros.</li> <li>▪ Analyze polynomial and rational functions to determine their graphs.</li> </ul>
Exponentials and Logarithms (Properties, Graphs, Equations, Modeling) (CLO 1, 2, 3, 4, 5)	<ul style="list-style-type: none"> <li>▪ Apply the definition and properties of logarithms to solve logarithmic and exponential equations.</li> </ul>
Trigonometry (Angles, Graphs, Equations, Identities, Inverses) (CLO 1, 2, 3, 4, 5)	<ul style="list-style-type: none"> <li>▪ Use right triangle trigonometry and the Unit Circle to verify trigonometric identities and to solve trigonometric equations.</li> </ul>
Sum and Difference Formulas, Laws of Sines and Cosines (CLO 1, 2, 4, 5)	<ul style="list-style-type: none"> <li>▪ Use trigonometry to calculate missing side lengths and angle measures.</li> </ul>

**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.