

Pre-Calculus

Course Number: MA1104

Grade level: 12

Credits: 1.0

Prerequisite Courses: Algebra II

Course Description

Exploring the relationship between advanced algebra topics and trigonometry, MA1104 is an informative introduction to calculus that challenges students to discover and comprehend the nature of graphs, nonlinear systems, and polynomial and rational functions. Encouraging logarithmic knowledge and application, this two-semester course for high school students covers many interesting and advanced subject areas in a thoughtful and supportive format, providing students a deeper understanding of topics, including limits, continuity, derivatives, and the Fundamental Theorem of Calculus.

Course Objectives

Throughout the course, you will meet the following goals:

- Extend on previous coursework with functions with a more in-depth analysis of polynomial and transcendental functions
- Use matrices and vectors to solve mathematical and real-world problems
- Use parametric equations to describe functions and model real-world concepts
- Analyze conic sections and their rotations in Cartesian and polar coordinate systems
- Perform statistical analysis using normal distribution approximations
- Understand the concepts of a limit, a derivative, and an integral and how they are related via the Fundamental Theorem of Calculus

Student Expectations

This course requires the same level of commitment from you as a traditional classroom course would. Throughout the course, you are expected to spend approximately 5–7 hours per week online on the following activities:

- Interactive lessons that include a mixture of instructional videos and tasks
- Assignments in which you apply and extend learning in each lesson
- Assessments including quizzes, tests, and cumulative exams

Communication

Your teacher will communicate with you regularly through discussions, e-mail, chat, and system announcements. Through this communication with your teacher, you will monitor your progress through the course and improve your learning by reviewing material that was challenging for you.

You will also communicate with classmates, either via online tools or face-to-face, as you do the following:

- Collaborate on projects
- Ask and answer questions in your peer group
- Develop speaking and listening skills

Grading Policy

You will be graded on the work you do online and the work you submit electronically to your teacher. The weighting for each category of graded activity is listed below.

Assignments	10%
Labs	0%
Lesson Quizzes	20%
Unit Tests	50%
Cumulative Exams	20%
Additional	0%

Scope and Sequence

When you log into the Virtual Classroom, you can view the entire course map, which provides a scope and sequence of all topics you will study. Clicking a lesson's link in the course map leads to a page listing instructional activities, assignments, and learning objectives specific to that lesson. The units of study are summarized below:

- Unit 1:** Equations and Inequalities
- Unit 2:** Systems of Equations and Inequalities
- Unit 3:** Functions and Graphs
- Unit 4:** The Nature of Graphs
- Unit 5:** Polynomial and Rational Functions
- Unit 6:** Exponential and Logarithms Functions
- Unit 7:** Trigonometric Functions
- Unit 8:** Trigonometric Graphs
- Unit 9:** Trigonometric Identities
- Unit 10:** Vectors, Parametric Equations, and Polar Equations
- Unit 11:** Conics
- Unit 12:** Statistics and Probability
- Unit 13:** Sequences and Series
- Unit 14:** Introduction to Calculus