

Precalculus

Course Overview:

This course includes those mathematical topics necessary to prepare college bound students for a first course in calculus. Students will study in depth the concepts described in the Ohio Common Core FourthYear math course standards. Students considering college majors focusing in math or science (i.e. Medicine or Engineering) will find this course beneficial. Any students not considering science or math based careers (i.e. English, Business, Arts, or Communication) may choose College Prep over this course. If unsure about a college major, students should lean towards Pre-Calculus as their selection for a fourthyear math course, as it will provide students the solid mathematical foundations to succeed in an entrylevel college math course. A graphing utility is required for this course. This course meets NCAA eligibility requirements.

Text Books:

WebAssign

Math XL

Assessments:

Teacher Created Assessments

First Quarter:

Standards/Learning Goals:

Unit 1: Algebra Review

The algebra review covers areas including:

- Exponents and Radicals
- Algebraic Expressions
- Rational Expressions
- Solving Equations
- Circles
- Solving Inequalities
- Modeling
- Lines in the Coordinate Plane

Unit 2: Functions

Topics covered in this unit include:

- Graphs of Functions
- Interpreting Graphs of Functions
- Average Rate of Change
- Linear Functions
- Transformations of Functions
- Combining Functions
- One-to-One Functions and their Inverses
- Intro to Limits

F.IF 1-9

F.BF 1-4

Second Quarter:

Standards/Learning Goals:

Unit 3: Trigonometric Functions - Right Triangle Trig, Applications, Unit Circle, Trig Identities

Topics in this unit include:

- The Unit Circle
- Trigonometry of Right Triangles
- Trigonometric Functions of Angles
- Trigonometric Identities

F.IF 1-9

F.BF 1,3,4

F.TF 1-4, 8,9

Unit 4: Trigonometric Functions of Real Numbers

Topics in this unit include:

- Trigonometric Functions of Real Numbers
- Trigonometric Graphs

F.IF 1-9

F.TF 5-7

Third Quarter:

Standards/Learning Goals:

Unit 5: More Trig Identities and Solving Trigonometric Equations

Topics in this unit include:

- More Trigonometric Identities (Double-Angle Identities, Half-Angle Identities, etc.)
- Solving Basic Trigonometric Equations
- Using Trigonometric Identities to Solve Trigonometric Equations

F.IF 1-9

F.TF 1-9

Unit 6: Writing and Optimizing Functions, Polynomial Functions, Rational Functions

Topics in this unit include:

- Quadratic Functions
- Graphing Polynomial Functions
- Dividing Polynomials
- Real Zeros of Polynomials
- Rational Functions

F.IF 1,2,4,6,9

F.BF 1

Fourth Quarter:

Standards/Learning Goals:

Unit 7: Exponential and Logarithmic Functions

Topics in this unit include:

- Graphing Exponential and Logarithmic Functions
- The Natural Exponential Function
- Laws of Logarithms
- Solving Exponential and Logarithmic Equations
- Modeling with Exponential and Logarithmic Equations

F.IF 1-9

F.BF 1,2,4

F.EF 1-5

Unit 8: Additional Topics in Algebra - Financial Literacy, Conic Sections, Limits, Mathematical Induction, Sequences, and Series