

Math 128 - Precalculus

Course Description: Math 128 is a 5-credit Precalculus course offered in the Fall, Spring, and Summer semesters. This course is designed to provide more fundamental review, such as algebra, than its 3-credit counterpart, Math 130. Content covered includes: basic algebra, theory of equations, inequalities, and functions; coordinate geometry; complex numbers; theory and applications of exponential, logarithmic, and trigonometric functions. This course is not to be taken if credit for Math 129 or Math 130 has already been received. Only earns 3 hours of credit toward graduation if credit for Math 120 or Math 122 has been received.

Prerequisites: Two years of high school algebra, one year of high school geometry AND a satisfactory placement exam score; OR completion of Math 120 or Math 122 with a grade of C or better.

Text: *Precalculus: Mathematics for Calculus*, Fifth Edition, by Stewart, Redlin, and Watson. Thomas Brooks/Cole Publishing, 2006.

Calculator: The TI-83(plus) or TI-84(plus) graphing calculator will be required for use in this class. Some work may be more difficult or not possible on other brands or models of calculators. In addition, some quizzes and test problems will be non-calculator oriented, requiring exact solutions to be shown.

Quizzes: Quizzes will be given frequently. Notes and calculators will be permitted on most quizzes, with the exception of non-calculator quizzes and those that require certain memorization.

Tests: Tests are common exams across course sections, written by the course coordinator in consultation with the instructors. All tests are on Wednesday evenings from 7:30 p.m. – 9:00 p.m. The tests are not given in students' regular classrooms. (Location to be determined closer to the test date.) Tests 2 and 3 may include review problems. Class is still held on the day of a test.

Course Coverage:

Chapter 1: Fundamentals (review of algebra and coordinate geometry)

- Section 1.1: Real Numbers
- 1.2: Exponents and Radicals
- 1.3: Algebraic Expressions
- 1.4: Rational Expressions
- 1.5: Equations
- 1.6: Modeling with Equations
- 1.7: Inequalities
- 1.8: Coordinate Geometry
- 1.9: Graphing Calculator Fundamentals
- 1.10: Lines

Chapter 2: Functions

- Section 2.1: What is a Function?
- 2.2: Graphs of Functions
- 2.3: Increasing/Decreasing Functions; Average Rate of Change
- 2.4: Transformations of Functions (even/odd functions emphasized in this course)

TEST #1: Chapters 1 and 2

Chapter 2: Functions (continued)

- Section 2.5: Quadratic Functions; Maxima and Minima
- 2.6: Modeling with Functions
- 2.7: Combining Functions
- 2.8: One-to-one Functions and their Inverses

Chapter 3: Polynomial and Rational Functions

- Section 3.1: Polynomial Functions and their Graphs
- 3.2: Dividing Polynomials
- 3.3: Real Zeros of Polynomials
- 3.4: Complex Numbers
- 3.6: Rational Functions

Brief Introduction to Trigonometry:

Chapter 5: Trigonometric Functions of Real Numbers

- Section 5.1: The Unit Circle

Chapter 6: Trigonometric Functions of Angles

- Section 6.1: Angle Measure

TEST #2: Chapters 2, 3, Sections 5.1, 6.1

Chapters 5 and 6: Trigonometric Functions of Real Numbers and Angles

- Section 6.2: Trigonometry of Right Triangles
- 6.3: Trigonometric Functions of Angles
- 5.2: Trigonometric Functions of Real Numbers
- 5.3: Trigonometric Graphs

Chapter 4: Exponential and Logarithmic Functions

- Section 4.1: Exponential Functions
- 4.2: Logarithmic Functions
- 4.3: Laws of Logarithms
- 4.4: Exponential and Logarithmic Equations
- 4.5: Modeling with Exponential and Logarithmic Functions

TEST #3: Chapter 4 and Sections 5.2, 5.3, 6.2, 6.3

Chapter 6: Trigonometric Functions of Angles

- Section 6.4 The Law of Sines
- 6.5 The Law of Cosines

Chapter 7: Analytic Trigonometry

- Section 7.1: Trigonometric Identities
- 7.2: Addition and Subtraction Formulas (sine and cosine only)
- 7.3: Double- and Half-Angle Formulas (sine and cosine only)
- 7.5: Trigonometric Equations

Comprehensive Final Exam