

# MATH 15900 PRECALCULUS

## List of Course Topics

**TEXTBOOK:** Swokowski & Cole, *Algebra & Trigonometry with Analytic Geometry*, Classic 12th Edition

### Chapter 1: Fundamental Concepts of Algebra

- 1.1 Real Numbers
- 1.2 Exponents and Radicals
- 1.3 Algebraic Expressions
- 1.4 Fractional Expressions

### Chapter 2: Equations and Inequalities

- 2.1 Equations
- 2.2 Applied Problems
- 2.3 Quadratic Equations
- 2.4 Complex Numbers
- 2.5 Other Types of Equations
- 2.6 Inequalities
- 2.7 More on Inequalities

### Chapter 3: Functions and Graphs

- 3.1 Rectangular Coordinate Systems
- 3.2 Graphs of Equations
- 3.3 Lines
- 3.4 Definition of Function
- 3.5 Graphs of Functions
- 3.6 Quadratic Functions
- 3.7 Operations on Functions

### Chapter 4: Polynomial and Rational Functions

- 4.1 Polynomial Functions of Degree Greater Than 2
- 4.2 Properties of Division

### Chapter 5: Exponential and Logarithmic Functions

- 5.1 Inverse Functions
- 5.2 Exponential Functions
- 5.3 The Natural Exponential Function
- 5.4 Logarithmic Functions
- 5.5 Properties of Logarithms
- 5.6 Exponential and Logarithmic Equations

### Chapter 11: Topics From Analytic Geometry

- 11.1 Parabolas
- 11.2 Ellipses (omit eccentricity)
- 11.3 Hyperbolas

### Chapter 9: Systems of Equations and Inequalities

- 9.1 Systems of Equations
- 9.2 Systems of Linear Equations in Two Variables

### Chapter 6: The Trigonometric Functions

- 6.1 Angles
- 6.2 Trigonometric Functions of Angles
- 6.3 Trigonometric Functions of Real Numbers
- 6.4 Values of the Trigonometric Functions
- 6.5 Trigonometric Graphs
- 6.7 Applied Problems (omit harmonic motion problems)

### Chapter 7: Analytic Trigonometry

- 7.1 Verifying Trigonometric Identities
- 7.2 Trigonometric Equations
- 7.3 The Addition and Subtraction Formulas
- 7.4 Multiple-Angle Formulas
- 7.6 The Inverse Trigonometric Functions (omit graphs of  $y = \cot^{-1} x$ ,  $y = \sec^{-1} x$ ,  $y = \csc^{-1} x$ )

### Chapter 8: Applications of Trigonometry

- 8.1 The Law of Sines
- 8.2 The Law of Cosines