

Pre-Calculus Syllabus 2002-2003

Text: Merrill, Advanced Mathematical Concepts: Precalculus with Applications

- Chapter 1 **Linear Relations and Functions**
- 1-1 Relations and Functions
 - 1-2 Composition and Inverses of Functions
 - 1-3A Graphing Calculators: Graphing Linear Equations and Inequalities
 - 1-3 Linear Functions and Inequalities
 - 1-4 Distance and Slope
 - 1-5 Forms of Linear Equations
 - 1-6 Parallel and Perpendicular Lines

**** Complete chapter 1 in about one week as review ****

- Chapter 2 **Systems of Equations and Inequalities**
- 2-1A Graphing Calculators: Graphing Systems of Linear Equations
 - 2-1 Solving Systems of Equations
 - 2-2A Graphing Calculators: Matrices
 - 2-2 Introduction to Matrices
 - 2-3 Determinants and Multiplicative Inverses of Matrices
 - 2-4 Solving Systems of Equations by Using Matrices
 - 2-5A Graphing Calculators: Graphing Systems of Linear Inequalities
 - 2-5 Solving Systems of Inequalities
 - 2-6 Linear Programming

- Chapter 3 **The Nature of Graphs**
- 3-1A Graphing Calculators: Graphing Polynomial Functions
 - 3-1 Symmetry
 - 3-2 Families of Graphs
 - 3-3A Graphing Calculators: Graphing Radical Functions
 - 3-3 Inverse Functions and Relations
 - 3-4A Graphing Calculators: Graphing Rational Functions
 - 3-4 Rational Functions and Asymptotes
 - 3-5 Graphs of Inequalities
 - 3-6 Tangent to a Curve
 - 3-7A Graphing Calculators: Locating Critical Points of Polynomial Functions
 - 3-7 Graphs and Critical Points of Polynomial Functions
 - 3-8 Continuity and End Behavior

- Chapter 4 **Polynomial and Rational Functions**
- 4-1 Polynomial Functions
 - 4-2A Graphing Calculators: Graphing Quadratic Functions
 - 4-2 Quadratic Equations and Inequalities
 - 4-3 The Remainder and Factor Theorems
 - 4-4 The Rational Root Theorem
 - 4-5A Graphing Calculators: Locating Zeros of Polynomial Functions
 - 4-5 Locating the Zeros of a Function
 - 4-6 Rational Equations and Partial Fractions
 - 4-7A Graphing Calculators: Solving Radical Equations and Inequalities
 - 4-7 Radical Equations and Inequalities

**** Complete chapter 4 in about one week ****

Chapter 5	The Trigonometric Functions
	5-1 Angles and Their Measures
	5-2 Central Angles and Arcs
	5-3 Circular Functions
	5-4 Trigonometric Functions of Special Angles
	5-5 Right Triangles
	5-6 The Law of Sines
	5-7 The Law of Cosines
	5-8 Area of Triangles
Chapter 6	Graphs and Inverses of the Trigonometric Functions
	6-1 Graphs of the Trigonometric Functions
	6-2 Amplitude, Period, and Phase Shift
	6-3A Graphing Calculators: Graphing Trigonometric Functions
	6-3 Graphing Trigonometric Functions
	6-4 Inverse Trigonometric Functions
	6-5 Principal Values of the Inverse
	6-6A Graphing Calculators: Graphing Inverses of Trigonometric Functions
	6-6 Graphing Inverses of Trigonometric Functions
	6-7 Simple Harmonic Motion
Chapter 7	Trigonometric Identities and Equations
	7-1 Basic Trigonometric Identities
	7-2 Verifying Trigonometric Identities
	7-2B Graphing Calculators: Verifying Trigonometric Identities
	7-3 Sum and Difference Identities
	7-4 Double-Angle and Half-Angle Identities
	7-5A Graphing Calculators: Solving Trigonometric Equations
	7-5 Solving Trigonometric Equations
	7-6 Normal Form of a Linear Equation
	7-7 Distance from a Point to a Line
	** Complete chapter 7 in about one week **
Chapter 8	Vectors and Parametric Equations
	8-1 Geometric Vectors
	8-2 Algebraic Vectors
	8-3 Vectors in Three-Dimensional Space
	8-4 Perpendicular Vectors
	8-5 Applications with Vectors
	8-6 Vectors and Parametric Equations
	8-7 Using Parametric Equations to Model Motion
Chapter 9	Polar Coordinates and Complex Numbers
	9-1 Polar Coordinates
	9-2A Graphing Calculators: Graphing Polar Equations
	9-2 Graphs of Polar Equations
	9-3 Polar and Rectangular Coordinates
	9-4 Polar Form of a Linear Function
	9-5 Simplifying Complex Numbers

- 9-6 Polar Form of Complex Numbers
- 9-7 Products and Quotients of Complex Numbers in Polar Form
- 9-8 Powers and Roots of Complex Numbers

Chapter 15

Statistics and Data Analysis

- 15-1 The Frequency Distribution
- 15-2 Measures of Central Tendency
- 15-3 Measures of Variability
- 15-4 The Normal Distribution
- 15-5 Sample Sets of Data
- 15-6A Graphing Calculators: Scatter Plots and Lines of Regression
- 15-6 Scatter Plots
- 15-6B Graphing Calculators: Curve Fitting

**** Optional Material if time permits in first three quarters ****

Chapter 11

Exponential and Logarithmic Functions

- 11-1 Rational Exponents
- 11-2A Graphing Calculators: Graphing Exponential Functions
- 11-2 Exponential Functions
- 11-3 The Number e
- 11-4A Graphing Calculators: Graphing Logarithmic Functions
- 11-4 Logarithmic Functions
- 11-5 Common Logarithms
- 11-6A Graphing Calculators: Exponential and Logarithmic Equations and Inequalities
- 11-6 Exponential and Logarithmic Equations
- 11-7 Natural Logarithms

**** Put at beginning of Fourth Quarter ****

Chapter 12

Sequences and Series

- 12-1 Arithmetic Sequences and Series
- 12-2 Geometric Sequences and Series
- 12-3 Infinite Sequences and Series
- 12-4 Convergent and Divergent Series
- 12-5 Sigma Notation and the n th Term
- 12-6 The Binomial Theorem
- 12-7 Special Sequences and Series
- 12-8 Mathematical Induction

Chapter 17

Limits, Derivatives, and Integrals

- 17-1 Limits
- 17-2 Derivatives and Differentiation Techniques
- 17-3 Area Under a Curve
- 17-4 Integration
- 17-5 The Fundamental Theorem of Calculus

**** Most of the Fourth Quarter will be spent on chapter 17 with supplementary materials ****