

Math 1113 Pre-Calculus (effective Fall 2009)

Text: Algebra and Trigonometry (4th edition) by Robert Blitzer

Content: Chapters 1 – 10 (with some omissions)

Course Description: Emphasizes trigonometric functions and concepts and will include a review of selected topics from algebra including systems of equations and matrix algebra. The graphing calculator will be incorporated throughout the course. Prerequisite: A minimum grade of “C” in MATH 1111 or equivalent.

Course Objectives:

The student will be able to

- Perform basic algebraic techniques needed in calculus
- Use circular (trigonometric) functions needed in calculus
- Use appropriate technology in problem solving and graphing

On the following pages is the list of sections to be covered in Pre-Calculus. Note some sections are optional; some sections are to be omitted. It is suggested to spend the majority of class time on the trigonometry sections and the more advanced algebra sections. The material in chapters 1, 2, 3, and 4 should be considered review and done as quickly as possible. The order in which the sections are covered may be varied slightly. Some instructors prefer to cover all the algebra topics first then cover the trigonometry. There are 43 required sections. It is up to the individual instructor to plan a daily calendar that fits his/her particular class and instructional needs. Students are required to purchase and become proficient at using the TI-83/84 graphing calculator. How to integrate the calculator into the course is to be done at the discretion of the instructor but use of the calculator is not optional. It is not the intent that students simply learn to push buttons for the sake of button pushing, but that the technology contribute to the teaching and learning and understanding of the mathematics. We want the students to learn the mathematics, some calculator fundamentals and appropriate use of the calculator. Students should not only know how to use the calculator but also when to use it. Many of the students will enroll in subsequent courses which presume both algebra and calculator background. There are also resources available for both instructors and students at the web site MyMathLab. Use of these this web site is optional but is encouraged.

Section		Required/Optional (or omit)
1.1	Graphs and Graphing Utilities	Optional
1.2	Linear Equations and Rational Equations	OMIT
1.3	Models and Applications	OMIT
1.4	Complex Numbers	Required
1.5	Quadratic Equations	Required
1.6	Other Types of Equations	Required
1.7	Linear Equations and Absolute Value Inequalities	OMIT
2.1	Basics of Functions and Their Graphs	Required
2.2	More on Functions and Their Graphs	Required
2.3	Linear Functions and Slope	Required
2.4	More on Slope	Cover Lightly
2.5	Transformations of Functions	Required
2.6	Combinations of Functions	Required
2.7	Inverse Functions	Required
2.8	Distance and Midpoint Formulas	Optional
3.1	Quadratic Functions	Required
3.2	Polynomial Functions and Their Graphs	Required
3.3	Dividing Polynomials: Remainder and Factor Theorem	Cover Lightly
3.4	Zeros of Polynomial Functions	Cover Lightly
3.5	Rational Functions and Their Graphs	Required
3.6	Polynomial and Rational Inequalities	Required
3.7	Modeling Using Variation	OMIT
4.1	Exponential Functions	Required
4.2	Logarithmic Functions	Required
4.3	Properties of Logarithms	Required
4.4	Exponential and Logarithmic Equations	Required
4.5	Exponential Growth and Decay: Modeling Data	Cover Lightly
5.1	Angles and Radian Measure	Required
5.2	Right Triangle Trigonometry	Required
5.3	Trigonometric Functions of Any Angle	Required
5.4	Trigonometric Functions of Real Numbers; Periodic Functions	Required
5.5	Graphs of the Sine and Cosine Functions	Required
5.6	Graphs of Other Trigonometric Functions	Required
5.7	Inverse Trigonometric Functions	Required
5.8	Applications of Trigonometric Functions	Cover Lightly

Section		Required/Optional (or omit)
6.1	Verifying Trigonometric Identities	Cover Lightly
6.2	Sum and Difference Formulas	Cover Lightly
6.3	Double Angle, Power-Reducing, and Half Angle Formulas	Cover Lightly
6.4	Product to Sum and Sum to Product Formulas	Optional
6.5	Trigonometric Equations	Required
7.1	The Law of Sines	Required
7.2	The Law of Cosines	Required
7.3-7.4	Polar Coordinates, Equations, and Graphs	OMIT
7.5	Complex Numbers in Polar Form: DeMoivre's Theorem	Required
7.6-7.7	Vectors	OMIT
8.1-8.2	Systems of Linear Equations	Required
8.3-8.6		OMIT
9.1	Matrix Solutions to Linear Systems	Cover
9.2	Inconsistent and Dependent Systems and Their Applications	OMIT
9.3	Matrix Operations and Their Applications (emphasize operations)	Cover
9.4	Multiplicative Inverses of Matrices and Matrix Equations	Cover
9.5	Determinants and Cramer's Rule	Cover
10.1-10.3	The Ellipse, Parabola, and Hyperbola	Optional
10.4	Rotation of Axes	OMIT
10.5	Parametric Equations	Required
10.6	Conic Sections in Polar Coordinates	OMIT

NOTE: Cover systems of linear equations showing graphical, algebraic, and Cramer's Rule solutions. Cover matrix methods as time permits.