

MATH 117 PreCalculus Algebra II

1. Catalog Description

MATH 117 Precalculus Algebra II 3 units

GE Area B1

Prerequisite: MATH 116 with a grade of C- or better or consent of instructor. Pre-calculus college algebra without trigonometry. Special products and factoring, exponents and radicals. Fractional and polynomial equations. Matrices, determinants, and systems of equations. Polynomial, rational, exponential, and logarithmic functions. Graphing, inequalities, absolute value, and complex numbers. MATH 116 and MATH 117 are equivalent to MATH 118, but are taught at a slower pace. Upon completion of MATH 116 and MATH 117, a student will receive 4 units of GE credit for Area B1. Students admitted Fall 2016 or later need a grade of C- or better in one of their GE B1 requirements in order to fulfill GE Area B. Not open to students with credit in MATH 118. 3 lectures.

2. Required Background or Experience

The ability to perform all of the routine algebraic operations with accuracy and confidence, and Math 116 with a grade of C- or better.

3. Learning Objectives

The student should be able to:

- a. Use and understand the basic properties of polynomial, rational, exponential, and logarithmic functions.
- b. Use and understand the basic algebraic principles of graphing.
- c. Perform the basic operations with matrices and determinants.
- d. Solve systems ($n < 4$) of linear equations using matrices and determinants.

4. Text and References

- Stewart, Precalculus 7th edition, 2016.

5. Minimum Student Materials

Paper, pencils and notebook.

6. Minimum University Facilities

Classroom with ample chalkboard space for demonstration and class use.

7. Content and Method

Topic Lectures

Chapter 3: Polynomial and Rational Functions 8

- 3.2: Polynomial Functions and Their Graphs (review)
- 3.3: Dividing Polynomials
- 3.4: Real Zeros of Polynomials
- 3.5: Complex Zeros and the Fundamental Theorem of Algebra
- 3.6: Rational Functions
- 3.7: Polynomial and Rational Inequalities
- 3: Focus on Modeling

Chapter 4: Exponential and Logarithmic Functions 8

- 4.1: Exponential Functions
- 4.2: The Natural Exponential Function
- 4.3: Logarithmic Functions
- 4.4: Laws of Logarithms
- 4.5: Exponential and Logarithmic Equations
- 4.6: Modeling with Exponential Functions
- 4: Focus on Modeling

Chapter 10: Systems of Equations and Inequalities 8

- 10.1: Systems of Linear Equations in Two Variables
- 10.2: Systems of Linear Equations in Several Variables (three variables)
- 10.3: Matrices and Systems of Linear Equations
- 10.4: The Algebra of Matrices
- 10.5: Inverses of Matrices and Matrix Equations (optional)
- 10.6: Determinants and Cramer's Rule (two variables)
- 10: Focus on Modeling

Total 24

8. Methods of Assessment

The primary methods of assessment are essay examinations, quizzes and homework. Typically, there will be one or more hour-long examinations during the quarter, and a required comprehensive final examination.