

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

4. Text and References

- Dugopolski, Mark, Precalculus: Functions and Graphs, Custom Edition for Cal Poly, Pearson/Addison-Wesley.

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

<u>Topic</u>	<u>Lectures</u>
Chapter 5: Polynomial and Rational Functions	8
5.3 The Theory of Equations (<i>review</i>)	
5.4 Miscellaneous Equations	
5.5 Graphs of Polynomial Functions	
5.6 Rational Functions and Inequalities	
Chapter 7: Exponential and Logarithmic Functions	8
7.1 Exponential Functions and Their Applications	
7.2 Logarithmic Functions and Their Applications	
7.3 Rules of Logarithms	
7.4 More Equations and Applications	
Chapter 9: Systems of Equations and Inequalities	4
9.1 Systems of Linear Equations in Two Variables	
9.2 Systems of Linear Equations in Three Variables	
9.3 Nonlinear Systems of Equations (<i>optional</i>)	
9.4 Partial Fractions (<i>optional</i>)	
9.5 Inequalities and Systems of Inequalities in Two Variables	
Chapter 11: Matrices and Determinants	4
11.1 Solving Linear Systems Using Matrices	
11.2 Operations with Matrices	
11.3 Multiplication of Matrices	
11.4 Inverses of Matrices (<i>optional</i>)	
11.5 Solution of Linear Systems in Two Variables Using Determinants	
11.6 Solution of Linear Systems in Three Variables Using Determinants	
Total	24

8. Methods of Assessment

The primary methods of assessment are examinations, quizzes and homework. Typically, there will be two or three hour-long examinations during the quarter, and a comprehensive final examination. Students are required to show their work, and are graded not only on the correctness of their answers, but also on their understanding of the concepts and techniques. Homework is required daily.