

MATH 116 PreCalculus Algebra I

1. Catalog Description

MATH 116 Precalculus Algebra I 3 units

GE Area B1

Prerequisite: MATH 96 or appropriate Math Placement Level

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, MATH 141, MATH 161, or MATH 221. Credit will be granted in only one of the following courses: MATH 116, MATH 118. 3 lectures.

2. Required Background or Experience

The ability to perform all of the routine algebraic operations with accuracy and confidence.

3. Learning Objectives

The student should be able to:

- Use and understand the language and notation of the algebra of functions.
- Use and understand the basic properties of polynomial functions.
- Use and understand the basic algebraic principles of graphing.
- Solve linear and quadratic equations and inequalities.
- Perform arithmetic operations with complex numbers.

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 class use.

7. Content and Method

Topic Lectures

Chapter 1: Fundamentals 11

- 1.1: Real Numbers
- 1.2: Exponents and Radicals
- 1.3: Algebraic Expressions
- 1.4: Rational Expressions
- 1.5: Equations
- 1.6: Complex Numbers
- 1.7: Modeling with Equations
- 1.8: Inequalities
- 1.9: The Coordinate Plane; Graphs of Equations; Circles
- 1.10: Lines
- 1.11: Solving Equations and Inequalities Graphically
- 1: Focus on Modeling

Chapter 2: Functions 9

- 2.1: Functions
- 2.2: Graphs of Functions
- 2.3: Getting Information from the Graph of a Function
- 2.4: Average Rate of Change of a Function
- 2.5: Linear Functions and Models
- 2.6: Transformations of Functions
- 2.7: Combining Functions
- 2.8: One-to-One Functions and Their Inverses
- 2: Focus on Modeling

Chapter 3: Polynomial and Rational Functions 4

- 3.1: Quadratic Functions and Models
- 3.2: Polynomial Functions and Their Graphs

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.