

DESCRIPTOR

Discipline: Mathematics – Basic Skills	Proposed Sub-discipline (if applicable):
General Course Title: Foundations of Algebra for Math-Intensive Fields	Min. Units 5
<p>General Course Description: This course consists of elements of beginning and intermediate algebra as appropriate for long-term engagement in math-intensive fields and may be accompanied by co-requisite or prerequisite support. Topics include polynomial, rational, radical, exponential, and logarithmic—expressions, equations, functions, and graphs; polynomial, rational, and radical inequalities; systems of equations; algebra of functions; complex numbers; and modeling.</p>	
Proposed Number: Math BS 80X	Proposed Suffix (if applicable):
<p>Any rationale or comment This course description includes baseline topics that are necessary and sufficient for an intermediate algebra course for students pursuing majors in STEM and some business fields. In addition, prerequisite and/or foundational skills are implicit in many topics, and may not be explicitly stated in the Course Content. For example, operations of real numbers is a prerequisite to topics in this course; domain and range are foundational to inverse functions. It is expected that colleges may include additional topics or elements as appropriate to local curricular programs. As additional topics are included, the number of units should increase appropriately. Some colleges may choose to offer a co-requisite course to support students requiring additional instruction and support. This course is not intended to be a required element of a college’s curricular offering, rather an option for colleges choosing to streamline curriculum efforts.</p>	
Required Prerequisites:	
Required Co- Requisites:	
<p>Advisories/Recommended Preparation¹: For students without a strong background in elementary mathematics, it is recommended that they take Math xxx: Elementary Mathematics. For students without a strong background in elementary algebra, but with strong elementary mathematics skills, it is recommended that they enroll in a co-requisite support course.</p>	
<p>Course Content: The following topics should be covered with a focus on skills development for trigonometry, college algebra, pre-calculus and calculus mathematics:</p> <ol style="list-style-type: none"> 1. Algebraic Expressions 2. Rational Exponents 3. Polynomials – Monomial, Binomial, Trinomial <ol style="list-style-type: none"> a. Factoring – Sum/Difference of Squares/Cubes, Substitution b. Solve Equations by factoring c. Quadratic Formula d. Graphing 4. Rational Expressions and Equations <ol style="list-style-type: none"> a. Solve Equations b. Graphing 5. Inequalities – Linear, Absolute Value, Quadratic, Rational <ol style="list-style-type: none"> a. Solve b. Graphing 6. Radical Expressions and Equations – Square Root, Cube Root <ol style="list-style-type: none"> a. Rational Exponents 	

¹ Advisories or recommended preparation will not require validation but are recommendations to be considered by the student prior to enrolling.

- b. Complex Numbers
- 7. Functions – Polynomial, Rational, Radical, Exponential, Logarithmic
 - a. Function Notation
 - b. Algebra of functions and composition of functions
 - c. Graphing
 - d. Inverse Functions
- 8. Conic Sections – Parabolas and Circles
- 9. Logarithms
 - a. Properties of logarithms
 - b. Solving exponential and logarithmic equations
- 10. Systems of Equations
- 11. Modeling and Applications

Optional Topics:

- 1. Sequences and Series—Summation Notation
- 2. Matrices
- 3. Cramer’s Rule
- 4. Conic Sections—ellipses, hyperbolas
- 5. Binomial Theorem

Laboratory Activities: (if applicable)

Course Objectives: At the conclusion of this course, the student should be able to (as appropriate to the level and content of this course):

- 1. Solve polynomial, rational, absolute value, radical, exponential, logarithmic equations;
- 2. Solve systems of equations with three or more variables;
- 3. Factor polynomials;
- 4. Solve linear and absolute value inequalities;
- 5. Graph linear and nonlinear functions, parabolas, and circles;
- 6. Apply basic operations on functions;
- 7. Find inverse functions; and
- 8. Use mathematical modeling to solve application problems.

Methods of Evaluation:

Sample Textbooks, Manuals, or Other Support Materials (do not include editions or publications dates)

FDRG Lead Signature:

Date:

[For Office Use Only]

Internal Tracking Number