MATH 1111 - College Algebra (version 201312L)

Course Title	Course Development	Learning Support
College Algebra	Standard	No

Course Description

Emphasizes techniques of problem solving using algebraic concepts. Topics include fundamental concepts of algebra, equations and inequalities, functions and graphs, and systems of equations; optional topics include sequences, series, and probability or analytic geometry.

Pre-requisites

Appropriate placement test score or appropriate learning support exit point.

Regstr. Co-requisites

Regstr. Co-requisites: None

True Co-requisites

True Co-requisites: None

Course Length

	Lecture Contact Time	Regular Lab Type	Reg. Lab Contact Time	Other Lab Type	Oth. Lab Contact Time	Total Contact Hrs
Contact Hours Per Week	**3 hrs**	**N/A**	**0 hrs**	**N/A**	**0 hrs**	**3 hrs**
Contact Min/Hrs Per Semester	**2250 min**		**0 min**		**0 min**	**45 hrs**

	Lecture Credit Hours	Lab Credit Hours	Total Credit hours	WLU
Semester Credit Hours	**3**	**0**	**3**	**101.25**

Competencies & Outcomes

Order Description

1 **Fundamental Concepts of Algebra**

Order	Description	Learning Domain	Level of Learning
1	Demonstrate the concept of sets and set notation.	Cognitive	Application
2	Locate complements, unions, and intersections of sets.	Cognitive	Comprehension
3	Compute the value of expressions using the laws of exponents.	Cognitive	Application
4	Simplify radicals and use them in arithmetic operations.	Cognitive	Application
5	Perform arithmetic operations on polynomials.	Cognitive	Application
6	Identify all factors of algebraic expressions.	Cognitive	Knowledge
7	Perform arithmetic operations on rational expressions	Cognitive	Application
8	Define complex numbers	Cognitive	Knowledge
9	Perform arithmetic operations on complex numbers.	Cognitive	Application

2 **Equations and Inequalities**

Order	Description	Learning Domain	Level of Learning
1	Solve linear equations.	Cognitive	Application
2	Solve application problems involving linear equations	Cognitive	Application
3	Solve quadratic equations.	Cognitive	Application
4	Solve application problems involving quadratic equations.	Cognitive	Application
5	Solve linear inequalities.	Cognitive	Application
6	Solve quadratic inequalities.	Cognitive	Application
7	Solve rational inequalities.	Cognitive	Application
8	Solve exponential equations.	Cognitive	Application
9	Solve application problems involving exponential equations.	Cognitive	Application
10	Solve logarithmic equations.	Cognitive	Application
11	Solve application problems involving logarithmic equations.	Cognitive	Application

3 **Functions and Graphs**

Order	Description	Learning Domain	Level of Learning
1	Plot ordered pairs.	Cognitive	Application
2	Define relations and functions.	Cognitive	Knowledge
3	Construct a graph of linear functions.	Cognitive	Synthesis
4	Construct a graph of quadratic functions.	Cognitive	Synthesis
5	Construct a graph of exponential functions.	Cognitive	Synthesis
6	Construct a graph of logarithmic functions.	Cognitive	Synthesis

4 **Systems of Equations**

Order	Description	Learning Domain	Level of Learning
1	Solve systems of linear equations with two unknowns.	Cognitive	Application
2	Solve application problems involving linear systems.	Cognitive	Application

5 **Optional Topics**

Order	Description	Learning Domain	Level of Learning
1	Set-up and solve problems with direct, inverse, and joint variations.	Cognitive	Application
2	Solve absolute value equations and inequalities.	Cognitive	Application
3	Solve systems of linear equations with matrices.	Cognitive	Application

4	Solve simple linear programming problems.	Cognitive	Application
5	Construct conics which might include hyperbolas, parabolas, ellipses, and circles.	Cognitive	Synthesis
6	Identify a pattern in a sequence of numbers and use the pattern to extend an arithmetic sequence.	Cognitive	Knowledge
7	Identify a pattern in a sequence of numbers and use the pattern to extend a geometric sequence.	Cognitive	Knowledge
8	Use mathematical induction to prove statements.	Cognitive	Application
9	Use the Binomial Theorem to expand the binomial.	Cognitive	Application
10	Use the Binomial Theorem to find indicated terms without expanding.	Cognitive	Application
11	Define permutations and combinations.	Cognitive	Knowledge
12	Use permutations and combinations to solve application problems.	Cognitive	Application
13	Define probability.	Cognitive	Knowledge
14	Calculate probability of events in application problems.	Cognitive	Application
15	Solve rational equations.	Cognitive	Application
16	Solve radical equations.	Cognitive	Application