**University of Arkansas – Fort Smith**
**5210 Grand Avenue**
**P. O. Box 3649**
**Fort Smith, AR 72913–3649**
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**General Syllabus**

**MATH 0233 Beginning Algebra**

Credit Hours: 3 Lecture Hours: 3 Laboratory Hours: 0

Prerequisite: required placement score.

Effective Catalog: 2018~2019

## I. Course Information

### A. Catalog Description

Introduces students to the basic concepts of beginning algebra. Consists of three major sections, linear equations and inequalities, graphing and functions, and polynomials.

### B. Additional Information - None

## II. Student Learning Outcomes

### A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Solve linear equations
2. Use linear equations to solve application word problems
3. Apply linear formulas to word problems
4. Solve linear inequalities
5. Graph a linear equation by one of several methods
6. Find the equation of a line
7. Define a function
8. Find the domain and range of a function
9. Use the rules of integer exponents to simplify polynomials
10. Execute operations on polynomials
11. Factor polynomials of four terms or less by one of several methods
12. Solve quadratic equations by factoring
13. Solve word problems using quadratic equations
14. Apply good study habits and use the learning center resources available to the course to develop the skills necessary to succeed in mathematics classes

**B. University Learning Outcomes**

This course enhances student abilities in the following areas:

**Communication Skills (written and oral)**

Students will demonstrate communication skills by reading and comprehending the written explanation provided by the computer software. Students must be able to ask, explain, discuss, and sometimes write in an email any questions they have with the material.

**Analytical Skills**

**Quantitative Reasoning**: Students will assign and use numbers, read and analyze numerical data, create models, draw inferences and support conclusions based on sound mathematical reasoning. Students will read and analyze information pertaining to a given situation and write a mathematical equation to model the situation. This equation is then solved to answer questions about the situation.

## III. Major Course Topics

A. Solving simple linear equations
   1. Simplify an expression using the rules for order operations
   2. Solve a linear equation in one variable requiring simplifying one or both sides
   3. Solve a formula for an indicated variable

B. Linear problem solving
   1. Solve a business application
   2. Solve a geometry application
   3. Solve a lever application by setting up and solving a linear equation in one variable

C. Linear inequalities
   1. Solve a compound inequality in one variable involving “and”
   2. Solve a compound inequality in one variable involving “or”
   3. Solve an application by setting up and solving a linear inequality in on variable

D. Rectangular coordinate system
   1. Cartesian coordinate systems
   2. Distance and midpoint formula
   3. Equation of a circle

E. Graphing linear equations
   1. Plot an ordered pair on a coordinate plane
   2. Graph a liner equation in two variables by plotting points
   3. Graph a horizontal line and vertical line

F. Slope of a line
   1. Find the slope of a line given a graph
   2. Find the slope of a line passing through two given points
   3. Find the slope of a line given its equation

G. Equation of a line
   1. Find the point-slope equation of a line
   2. Write the equation in slope-intercept form of a line

3. Graph a linear equation using the slope and y-intercept

H. Function: domain and range
   1. Find the domain and range of a relation
   2. Find the domain and range from a graph

I. Exponents
   1. Identify the base and the exponent to simplify an exponential expression
   2. Simplify an express by applying properties of exponents
   3. Evaluate an expression using the rules the rules for the order of operation

J. Operations on polynomials
   1. Adding and subtracting polynomials
   2. Multiplying polynomials

K. Factoring polynomials by several methods
   1. Greatest common factor
   2. Factoring by grouping
   3. The sum and difference of two squares
   4. The sum and difference of two cubs

L. Solve quadratic equations by factoring
   1. Zero-factor property

M. Solve word problems involving quadratic equations
   1. Solve a business application
   2. Solve a geometry application