University of Arkansas – Fort Smith
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General Syllabus

MATH 11004 College Algebra (Extended Format)

Credit Hours: 4   Lecture Hours: 3   Laboratory Hours: 2

Prerequisite: MATH 03174 Beginning and Intermediate Algebra (C or above), or MATH 11103 College Mathematics and Quantitative Literacy, or required placement score.

Effective Catalog: 2018~2019

I.   Course Information

A.   Catalog Description
Covers the same topics as the traditional College Algebra, but in an expanded time format. This allows for increased guided learning activities and learner/instructor interaction. Modeling and problem solving using linear, quadratic, polynomial, rational functions, exponential, and logarithmic functions, equations, and inequalities; graphing, systems of equations, and matrices. Course will meet mathematics requirement in all degree plans that specify MATH 11003. (ACTS: MATH 1103)

B.   Additional Information
This is the lowest level mathematics course acceptable for a bachelor's degree in Arkansas public colleges and universities. It is also the first college level course leading to higher mathematics courses required for majors in mathematics, engineering, business, and several pre-professional fields.
This expanded format version of College Algebra will be treated as equivalent to the traditional version of College Algebra for fulfilling graduation requirements at UA Fort Smith, and will be accepted for three hours of transfer credit equivalent to College Algebra at transfer institutions.

II.   Student Learning Outcomes

A. Subject Matter
Upon completion of this course, the student will be able to:

1. Identify different types of polynomial equations and inequalities and solve those equations and inequalities using appropriate methods.
2. Distinguish between functional and non-functional relations. Identify domains,

ranges and other characteristics, including zeros, extrema and intercepts, of functional and non-functional relations.
3. Graph polynomial, rational, exponential and logarithmic functions with and without graphing technology.
4. Model various applications using algebraic and transcendental functions to accurately reflect real world phenomenon. Students will then interpret and analyze the results of their models.
5. Determine and interpret asymptotic behavior in rational functions.
6. Solve systems of equations, including the use of matrix methods.

B. University Learning Outcomes
College Algebra enhances student abilities in the following areas:

Analytical Skills
Quantitative Reasoning: Students will assign and use numbers, read and analyze data, create models, draw inferences, and support conclusions based on sound mathematical reasoning. Students will apply appropriate mathematical skills to solve problems. Students will represent mathematical information symbolically, visually, numerically and verbally and will interpret models and data in order to draw inferences.

Communication Skills (written and oral)
Students will read and dissect real world applications. Students will demonstrate communication skills by reading and comprehending the written explanation. Students must be able to ask, explain, discuss, and sometimes write in an email any questions they have with the material.

III. Major Course Topics

A. Equations and inequalities
  1. Graphing Linear Equations
  2. Slope of a line
  3. Writing equation of lines
  4. Introduction to function
  5. Solving linear inequalities in one variable
  6. Solving absolute value equation and inequalities
  7. Solving system of linear and quadratic inequalities in two variables
B. Functions and their graphs
  1. Polynomial functions: zeroes and extrema
  2. Exponential and logarithmic functions
C. Mathematical Models
  1. Linear models
  2. Exponential models
  3. Logarithmic models
D. Systems of equations and inequalities
  1. Solving system of two linear equations