

# math105 syllabus

## Math 105: Applied College Algebra

**Text:** *Applied College Algebra University of Louisiana Lafayette with Materials from Algebra: Form and Function, 2nd Edition*, McCallum, Connally, and Hughes-Hallett, Wiley, 2015.

**Prerequisites:** Minimum ACT Math score of 19, departmental placement exam or Intermediate Algebra with a grade of C or better.

**Note:** Only one of MATH 102, MATH 103 and MATH 104, MATH 105, MATH 107, MATH 109, or MATH 143 may be used for degree credit.

**Knewton Alta is required. A scientific calculator is required. A TI-83, TI-83 Plus, TI-84, or TI-84 Plus Graphics Calculator is recommended.**

### Objectives, Outcomes, and Competencies

By the end of the course, students should be able to:

1. Use mathematical methods and models to solve quantitative problems and communicate solutions effectively.
2. Analyze and critically evaluate numerical and graphical data to draw reasonable and valid conclusions about real-world solutions.

### Sections and Topics

- Reordering and Regrouping
- The Distributive Law
- Use Operations to Solve Equations
- What is a Function
- Functions and Expressions
- Functions and Equations
- Functions and Change
- Functions and Change
- Functions, Modeling, and Proportionality
- Introduction to Linear Functions
- Linear Expressions
- Linear Equations
- Equations for Lines in the Plane
- Systems of Linear Equations: Graphing Systems
- Solving Quadratic Equations
- Quadratic Expressions
- Applications of Quadratic Functions
- Converting to Factored and Vertex Form
- Quadratic Equations: Square Root Property

- End Behavior of Polynomials – Handout, on Moodle
- Polynomial Functions, Working with Polynomials
- Solving Polynomial Equations
- Long-Run Behavior of Polynomials: End Behavior, Write and Graph Functions
- Power Functions: Positive Exponents
- Power Functions: Negative and Fractional Exponents
- Power Functions and Expressions
- Power Functions and Equations
- Domain and Range: Of Functions
- Composing and Decomposing Functions
- Shifting and Scaling
- Inverse Functions
- Exponents with Integer Powers and Fractional Powers
- Exponential Functions
- Domain and Range: Exponential Functions
- Modeling with Exponential Functions
- Exponential Functions and Base  $e$
- Introduction to Logarithms
- Natural Logarithms
- Solving Exponential Equations
- Applications of Logarithms to Modeling
- Exponential Expressions
- Exponential Functions and Base  $e$

Last updated 15 December 2022.