

# SYLLABUS

## MATH 10005 – Introduction to College Mathematics

(3 Credit Hours)

### Catalog Information:

Includes number systems, exponents, polynomials, Cartesian coordinate system, linear and quadratic equations and inequalities.

Prerequisite: Appropriate placement test score or grade of C (2.0) or better in MATH 10004; no previous mathematics courses.

**Text:** *Beginning Algebra, 4<sup>th</sup> edition* by Martin-Gay.

### Review of Real Numbers (1 day)

- Operations with real numbers and properties of real numbers
- Introduction to variable expressions and equations

### Linear Equations, Inequalities, and Problem Solving (6 days)

- Simplifying algebraic expressions.
- Addition and multiplication properties of equality
- Solving linear equations
- Introduction to problem solving (linear equations)
  - Number value problems
  - Consecutive integer problems
  - Geometry type problems
- Formulas and problem solving
- Further problem solving including:
  - Area and perimeter problems
  - Motion problems
  - Chemistry problems (mixture)
  - Percent problems
- Solving linear inequalities

### Graphing Linear Equations (6 days)

- Introduction to the Rectangular Coordinate System
- Graphing linear equations, including  $x$ - and  $y$ -intercepts
- Slope and rate of change
- Slope-intercept form
- Point slope form

### Exam 1 (1 day)

## (MATH 10005 Syllabus, continued)

### **Solving Systems of Linear Equations** (2 days)

- Solving systems of linear equations
  - Graphing
  - Substitution
  - Addition (elimination)
- Problem solving with systems of linear equations

### **Integer Exponents and Polynomials** (5 days)

- Positive integer exponents
- Operations with polynomials (addition, subtraction, multiplication, long division)
- Special products
  - Multiplication of two binomials using the FOIL method
  - Squaring a binomial
  - Multiplying the sum and difference of two terms
- Negative integer exponents
- Scientific notation and operations with scientific notation

### **Exam 2** (1 day)

### **Factoring Polynomials** (5 days)

- The GCF and factoring by grouping.
- Factoring trinomials of the forms  $x^2 + bx + c$  and  $ax^2 + bx + c$
- Factoring binomials
- Solving quadratic equations by factoring
- Quadratic equations and problem solving

### **Rational Expressions** (6 days)

- Simplifying rational expressions
- Multiplying and dividing rational expressions
- Adding and subtracting rational expressions (both like and unlike denominators)
- Review LCD
- Solving equations containing rational expressions
- Proportion and problem solving with rational equations

### **Exam 3** (1 day)

**(MATH 10005 Syllabus, continued)**

**Roots and Radicals (5 days)**

- Introduction to radicals
- Simplifying radicals
- Operations with radicals (addition, subtraction, multiplication, and division)
- Rationalizing the denominator and rationalizing using conjugates
- Solving radical equations and problem solving
- Rational exponents

**Solving Quadratic Equations (5 days)**

- Solving quadratic equations by the square root method
- Completing the square and the quadratic formula
- Graphing quadratic equations

**Exam 4 (1 day)**

**Final Exam - Comprehensive Block Final**