

Syllabus
MATH1150
COLLEGE ALGEBRA
2017

Committee Members:

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Facilitator

The Institution agrees to the contents in this syllabus including course prefix, number, course description and other contents of this syllabus.

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I. CATALOG DESCRIPTION

MATH1150

College Algebra

Prerequisite: Appropriate placement score or Intermediate Algebra

Catalog Description: This course is the study of relations, functions, and their graphs, equations and inequalities, polynomial and rational functions, exponential and logarithmic functions, systems of equations and inequalities.

3.0 semester hours; 4.5 quarter hours

Contact hours per semester: 45

II. COURSE OBJECTIVES/COMPETENCIES

A. Course will:

1. Demonstrate various techniques to solve equations and inequalities, including numerical, analytical and graphical
2. Introduce how to analyze and manipulate functions and their graphs
3. Demonstrate how to analyze polynomial functions
4. Demonstrate how to analyze rational functions
5. Develop the concepts of exponential and logarithmic functions
6. Demonstrate various techniques to solve systems of equations and inequalities

III. STUDENT LEARNING OUTCOMES

A. Students will be able to:

1. Solve equations and inequalities analytically and graphically
2. Analyze and manipulate functions and their graphs
3. Analyze polynomial functions
4. Analyze rational functions
5. Develop the concepts of exponential and logarithmic functions
6. Solve systems of equations and inequalities

IV. COURSE CONTENT/TOPICAL OUTLINE

A. Functions and Graphs:

- ◆ Use numerical, algebraic and graphic models to solve problems and will be able to translate from one model to another
- ◆ Represent functions numerically, graphically, and algebraically
- ◆ Identify the domain and range of functions
- ◆ Recognize graphs of basic functions and determine their domains
- ◆ Build new functions from basic functions by adding, subtracting, multiplying, dividing, and composing functions.
- ◆ Find inverses of functions and relations
- ◆ Algebraically and graphically represent translations, reflections, stretches, and shrinks of functions

B. Identify appropriate basic functions with which to model real-world problems and be able to produce specific functions to model data, formulas, graphs, and verbal descriptions
Polynomial and Rational Functions

- ◆ Recognize, solve and graph linear functions and use them to model authentic situations
- ◆ Recognize, solve and graph quadratic functions and use them to model authentic situations
- ◆ Graph polynomial functions, predict their end behavior and find their real zeros
- ◆ Divide polynomials using long divisions and/or synthetic division
- ◆ Apply the remainder theorem, factor theorem and rational root theorem
- ◆ Factor polynomials with real coefficients containing complex roots
- ◆ Describe the graphs of rational functions, identify horizontal and vertical asymptotes, and predict the end behavior of rational functions
- ◆ Solve rational equations and identify extraneous solutions
- ◆ Solve inequalities involving polynomials and rational functions

C. Exponential and Logarithmic Functions:

- ◆ Evaluate exponential expressions
- ◆ Identify and graph exponential and logarithmic functions
- ◆ Use exponential growth and decay regression to model real-life problems
- ◆ Convert equations between logarithmic form and exponential form.
- ◆ Evaluate common and natural logarithms
- ◆ Graph common and natural logarithmic functions.
- ◆ Apply the properties of logarithms to evaluate expressions, and graph functions
- ◆ Apply the properties of logarithms to solve exponential and logarithmic equations algebraically and solve applications
- ◆ Use exponential and logarithmic functions to solve applications

D. Systems of Equations and Inequalities

- ◆ Solve systems of equations graphically and algebraically
- ◆ Solve applications involving systems of equations
- ◆ Solve systems of inequalities graphically

V. INSTRUCTIONAL MATERIALS

A. Approved Textbooks and/or Materials:

1. Precalculus with Limits; Hornsby
2. Algebra & Trigonometry-Sullivan
3. College Algebra – Graphs & Models; Bittinger
4. College Algebra; Aufmann, Barker, Nation
5. Precalculus; Briggs; Pearson
6. College Algebra; Larson
7. College Algebra; Beecher, Pearson
8. College Algebra; Lial, Hornsby, Schneider, Daniels; Pearson
9. College Algebra-Building Skills and Modeling Situations; McKeague, Yoshiwara, Burzynski
10. College Algebra; Blitzer

B. Materials: Scientific or Graphing calculator

VI. METHODS OF PRESENTATION

- A. Lecture
- B. Discussion
- C. Demonstration
- D. Application
- E. On-line
- F. Distant Education

VII. METHODS OF EVALUATION

Course grades at the determination of the instructor may include class and group participation, daily work, exams, projects, papers and/or a portfolio. Instructors will discuss evaluation and his/her grading policies with students at the beginning of each term.

VIII. SPECIFIC COURSE REQUIREMENTS

Course requirements are determined by the instructor.