



COURSE OUTLINE OF RECORD

Number: MATH A115

TITLE: College Algebra

ORIGINATOR: Tab Livingston

EFF TERM: Fall 2016

FORMERLY KNOWN AS:

DATE OF

OUTLINE/REVIEW: 03-02-2016

CROSS LISTED COURSE:

TOP NO: 1701.00

CID: MATH 150

SEMESTER UNITS: 4.0

HRS LEC: 72.0

HRS LAB: 0.0

HRS OTHER: 0.0

CONTACT HRS TOTAL: 72.0

STUDY/NON-CONTACT HRS RECOMMENDED: 144.0

CATALOG DESCRIPTION:

Topics include linear, quadratic, rational, logarithmic, and exponential functions and their graphs, systems of equations, matrices, sequences, series, and basic combinations. This course prepares students to enter Math A140 but does not provide sufficient preparation to enter Math A180. This course may also be offered online. May be taken for grades or on a pass-no pass basis. PREREQUISITE: Math A030 or higher or appropriate placement score. Transfer Credit: CSU; UC.

JUSTIFICATION FOR COURSE:

Comparable to UC and CSU courses designed to meet mathematics requirement.

PREREQUISITES:

- MATH A030: Intermediate Algebra with a minimum grade of C or better
or
- Appropriate OCC Math Placement Score.

COREQUISITES:

ADVISORIES:

ASSIGNED DISCIPLINES:

MATERIAL FEE: Yes [] No [X] Amount: \$0.00

CREDIT STATUS: Noncredit [] Credit - Degree Applicable [X] Credit - Not Degree Applicable []

GRADING POLICY: Pass/No Pass [X] Standard Letter [X] Not Graded []

OPEN ENTRY/OPEN EXIT: Yes [] No [X]

TRANSFER STATUS: CSU Transferable[] UC/CSU Transferable[X] Not Transferable[]

BASIC SKILLS STATUS: Yes [] No [X] **LEVELS BELOW TRANSFER:** Not Applicable

CALIFORNIA CLASSIFICATION CODES: Y - Not Applicable

NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course

OCCUPATIONAL (SAM) CODE: E

REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [] **NUMBER REPEATS:**

REQUIRED FOR DEGREE OR CERTIFICATE: No [X] Yes []

GE AND TRANSFER REQUIREMENTS MET:

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

2A: Mathematic

CSU GE Area B: Scientific Inquiry and Quantitative Reasoning

B4 - Mathematics/Quantitative Thinking

OCC AA Gen Ed

AREA A2: LANGUAGE AND RATIONALITY - Communication and Analytical Thinking

OCC AS Gen Ed

AREA A2 – ENGLISH COMMUNICATION - Communication and Analytical Thinking

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:

1. Solve and apply equations and inequalities including linear, quadratic, absolute value, polynomial, rational, radical, exponential and logarithmic equations.
2. Graph linear, quadratic, absolute value, polynomial, rational, radical, exponential, logarithmic and parametric equations.
3. Perform function operations including composition, transposition, and finding inverse functions.
4. Apply techniques for finding zeros of polynomial functions.
5. Solve systems of equations by application of algebraic techniques and/or matrix techniques.
6. Define, recognize, and solve for terms of arithmetic and geometric series.

COURSE OBJECTIVES:

1. Solve linear and nonlinear equations and inequalities.
2. Graph linear, quadratic and cubic functions.
3. Add, subtract, multiply and divide functions as well as to determine the domain and range of functions.
4. Graph rational functions and find asymptotes as well as using the concepts of infinity to study their behavior.
5. Solve exponential and logarithmic equations.
6. Solve and apply systems of linear equations in three or more variables with and without matrices.
7. Find the n th term of a sequence.
8. Find the sum of a series.
9. Use sigma notation to evaluate sums.
10. Use the binomial theorem to expand binomials.
11. Evaluate probabilities in elementary situations.

COURSE CONTENT:

LECTURE CONTENT:

A. Functions, equations and inequalities

1. Solve linear and quadratic equations and inequalities
2. Interval notation
3. Solve higher degree polynomial, rational and absolute value equations and inequalities
4. Analyze linear equations: point-slope form, parallel and perpendicular lines
5. Graph linear, quadratic, cubic, radical and absolute value equations (with shifts and stretches)
6. Graph piecewise defined functions
7. Apply and analyze linear, quadratic and cubic models and applications

B. Polynomial and rational functions

1. Function notation, domain and range of functions
2. Apply functions to optimization problems in business and economics as a preparation for calculus
3. Analyze functions: increasing, decreasing and constant
4. Use functions to solve various applications
5. Find the inverse of a function graphically and algebraically
6. Apply the Intermediate Value Theorem
7. Graph polynomial and rational functions
8. Use informal limit concepts with polynomials and rational functions to find the limit as x

- approaches positive and negative infinity
- 9. Use informal limit concepts to find asymptotes for rational functions
- C. Logarithmic and exponential functions
 - 1. Define and graph exponential functions with base e and other bases
 - 2. Graph logarithmic and natural logarithmic functions
 - 3. Use the properties of logarithms to simplify or expand logarithmic expressions
 - 4. Solve exponential and logarithmic equations
 - 5. Apply and analyze exponential and logarithmic models and applications
- D. Systems of linear and quadratic equations
 - 1. Solve a system of three or more linear equations using addition and substitution
 - 2. Solve a system of three or more linear equations using augmented matrices or Cramer's Rule
 - 3. Use systems of linear equations in various applications
- E. Sequences and series
 - 1. Introduction to sequences
 - 2. Find the terms of a sequence given the n th term
 - 3. Introduce finite sums
- F. Combinatorics
 - 1. Calculate permutations and combinations
 - 2. Use the binomial theorem to expand binomials and to find a term in a binomial expansion
 - 3. Introduce probability theory and compute probabilities in elementary situations

LABORATORY CONTENT:

METHODS OF INSTRUCTION:

- A. Lecture:
- B. Online:
- C. Independent Study:

INSTRUCTIONAL TECHNIQUES:

The primary mode of instruction is the lecture/demonstration method as well as in-class exercises that allow students to analyze and solve problems. Some instructors may also utilize graphing calculators.

COURSE ASSIGNMENTS:

Out-of-class Assignments

Computational and applied problems (i.e., word problems) commonly appear on exams and/or quizzes. These require written responses. Critical thinking and problem solving skills are part of this course. 6 hours

Writing Assignments

Computational and applied problems (i.e., word problems) commonly appear on exams and/or quizzes. These require written responses. 1 hour

Reading Assignments

From assigned text 1 hour.

METHODS OF STUDENT EVALUATION:

- Midterm Exam
- Final Exam
- Short Quizzes

Demonstration of Critical Thinking:

Grades are determined by performance on exams and quizzes. Some instructors may also include grades on homework and collaborative projects. A comprehensive final exam is part of the course evaluation. Critical thinking will be evaluated through a problem-solving approach. Writing is encouraged throughout the course but is not necessarily a part of the grading on exams.

Required Writing, Problem Solving, Skills Demonstration:

Computational and applied problems (i.e., word problems) commonly appear on exams and/or quizzes. These require written responses.

TEXTS, READINGS, AND RESOURCES:

TextBooks:

1. Sullivan, M. *College Algebra*, 9th ed. Boston: Pearson Publishing, 2011

Other:

1. Other appropriate textbook as chosen by faculty.

LIBRARY:

Adequate library resources include: Print Materials

Non-Print Materials

Online Materials

Services

Comments:

Attachments:

[Attached Files](#)