

CATALOG INFORMATION

Dept and Nbr: MATH 154      Title: ELEM AND INT ALG  
Full Title: Elementary and Intermediate Algebra  
Last Reviewed: 10/22/2018

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	8.00	Lecture Scheduled	8.00	17.5	Lecture Scheduled	140.00
Minimum	8.00	Lab Scheduled	0	17.5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	8.00		Contact Total	140.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 280.00

Total Student Learning Hours: 420.00

Title 5 Category: AA Degree Applicable  
Grading: Grade or P/NP  
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP  
Also Listed As:  
Formerly:

**Catalog Description:**  
A combined elementary and intermediate algebra course that incorporates the use of technology. Topics include functions, equations and inequalities in one variable, systems of linear equations in two and three variables, exponential and logarithmic functions and equations, and discrete topics. Graphing calculators and/or computer algebra systems will be incorporated as appropriate.

**Prerequisites/Corequisites:**  
Completion of CSKLS 372 or higher (VE)

**Recommended Preparation:**

**Limits on Enrollment:**

**Schedule of Classes Information:**  
Description: A combined elementary and intermediate algebra course that incorporates the use of technology. Topics include functions, equations and inequalities in one variable, systems of linear equations in two and three variables, exponential and logarithmic functions and equations, and discrete topics. Graphing calculators and/or computer algebra systems will be incorporated

as appropriate. (Grade or P/NP)

Prerequisites/Corequisites: Completion of CSKLS 372 or higher (VE)

Recommended:

Limits on Enrollment:

Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
	B	Communication and Analytical Thinking	Fall 2016
	MC	Math Competency	
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>CSU Transfer:</b>		Effective:	Inactive:
<b>UC Transfer:</b>		Effective:	Inactive:

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

Upon completion of the course, students will be able to:

1. Perform arithmetic operations on real numbers and polynomial expressions.
2. Evaluate algebraic expressions.
3. Factor polynomials.
4. Solve linear, polynomial, rational, absolute value, radical, literal, exponential, logarithmic equations and systems of equations.
5. Solve linear and absolute value inequalities.
6. Graph linear equations and find the equation of a line.
7. Graph nonlinear relations and functions including parabolas.
8. Use the properties of radicals, exponents and logarithms.
9. State the distinctions between functions.
10. Apply basic operations on functions.
11. Solve mathematical models such as growth and decay, geometry, optimization, or uniform motion, and justify and interpret the solution in the context of the model.

### **Topics and Scope:**

I. Real number operations

II. Properties of exponents

III. Polynomials

A. Basic operations of polynomials

B. Factoring including greatest common factor, grouping, quadratic, sums and differences of cubes and using substitution

- C. Solve equations by factoring
- IV. Rational Expressions and Equations
- V. Linear equations and inequalities
  - A. Literal equations
  - B. Applications
  - C. Graphing
- VI. Absolute value equations and inequalities
- VII. Radical expressions and equations including square and cube roots, and rational exponents
- VIII. Relations and Functions
  - A. Domain and range
  - B. Linear and nonlinear
  - C. Function notation
  - D. Algebra of functions
- IX. Quadratic equations/Functions and Their Graphs
  - A. Completing the square
  - B. Quadratic formula
- X. Graphs of nonlinear relations including parabolas
- XI. Exponential and Logarithmic Functions
  - A. Properties of logarithms
  - B. Solving exponential and logarithmic equations
- XII. Systems of Equations in two and three variables
- XIII. Matrices and reduced row echelon form (RREF)
- XIV. Modeling with linear and nonlinear functions, such as growth and decay, geometry, optimization, or uniform motion
- XV. Discrete topics
  - A. Introduction to sequences and series
  - B. Summation notation
  - C. Factorial notation
  - D. Pascal's triangle
  - E. Binomial coefficients
  - F. Binomial expansion

### **Assignment:**

1. Daily reading outside of class (approximately 10-60 pages per week)
2. Problem set assignments (15-40)
3. Midterms (2-5) and a final exam; quizzes (0-15)
4. Projects (for example, calculator explorations and activities) (0-2)

### **Methods of Evaluation/Basis of Grade:**

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.

Writing  
0 - 0%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Problem Sets

Problem solving  
5 - 20%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations  
0 - 0%

**Exams:** All forms of formal testing, other than skill performance exams.

Quizzes, Midterms, Final Exam

Exams  
70 - 95%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Projects

Other Category  
0 - 10%

**Representative Textbooks and Materials:**

Beginning and Intermediate Algebra by Martin-Gay 5th, 2013, Pearson

Introductory and Intermediate Algebra by Bittinger 5th, 2013, Pearson

Beginning and Intermediate Algebra by Rockswold 3rd, 2012, Pearson

Beginning and Intermediate Algebra by Messersmith, 4th, 2016, McGraw-Hill