

**Course Outline**

**COURSE:** MATH 235      **DIVISION:** 10      **ALSO LISTED AS:**

**TERM EFFECTIVE:** Spring 2021      **CURRICULUM APPROVAL DATE:** 10/13/2020

**SHORT TITLE:** INTEGRATED ALGEBRA

**LONG TITLE:** Integrated Algebra

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
7.5	18	Lecture:	7	126
		Lab:	1.5	27
		Other:	0	0
		Total:	8.5	153

**COURSE DESCRIPTION:**

This is an intermediate algebra course with an emphasis on word problems and real life applications. The focus will be on linear equations and inequalities, graphs and functions, systems of equations, polynomials and polynomial functions/equations, factoring, rational expressions and equations, roots, radicals, complex numbers, exponential and logarithmic functions, and problem solving strategies. Prerequisite: Appropriate Placement

**PREREQUISITES:**

- Score of 18 on Algebra Readiness
- OR
- Score of 12 on Elementary Algebra
- OR
- Score of 30 on Algebra Readiness - Revised
- OR
- Score of 2400 on Accuplacer Math
- OR
- Score of 2600 on MM Placement Tool Math

**COREQUISITES:**

**CREDIT STATUS:** D - Credit - Degree Applicable

**GRADING MODES**

- L - Standard Letter Grade

**REPEATABILITY:** N - Course may not be repeated

## SCHEDULE TYPES:

- 02 - Lecture and/or discussion
- 03 - Lecture/Laboratory
- 04 - Laboratory/Studio/Activity
- 04B - Laboratory - LEH 0.75
- 05 - Hybrid
- 71 - Dist. Ed Internet Simultaneous
- 72 - Dist. Ed Internet Delayed
- 73 - Dist. Ed Internet Delayed LAB
- 73B - Dist. Ed Internet LAB-LEH 0.75

## STUDENT LEARNING OUTCOMES:

1. Simplify and evaluate algebraic expressions. Solve linear equations and inequalities in one variable. Evaluate and solve formulas.

Measure of assessment: Homework, quizzes, exams.

Year assessed, or planned year of assessment: 2018

Semester: Spring

2. Analyze, set up and solve quadratic, exponential, logarithmic, and rational equations.

Measure of assessment: Quizzes, exams, projects and/or homework

Year assessed, or planned year of assessment: 2018

Semester: Spring

3. Analyze and solve problems involving applications of linear, quadratic, exponential, logarithmic, and rational functions.

Measure of assessment: Quizzes, exams, projects and/or homework

4. Graph linear, quadratic, logarithmic, and exponential functions and be able to utilize the graphs in problem solving.

Measure of assessment: Quizzes, exams, projects and/or homework

Year assessed, or planned year of assessment: 2018

Semester: Spring

5. Simplify radicals, perform operations with radicals. Analyze and solve radical equations.

Measure of assessment: Quizzes, exams, projects and/or homework

6. Demonstrate proficiency with a scientific calculator.

Measure of assessment: Quizzes, group work

7. Analyze and translate verbal expressions into algebraic expressions. Use symbolic language to name algebraic structures.

Measure of assessment: Quizzes, exams, projects and/or homework

## **CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS**

Curriculum Approval Date: 10/13/2020 **DE MODIFICATION ONLY**

10 Hours

Content: Operations with fractions, order of operations, properties and operations with real numbers, simplifying expressions, solving

linear equations. Sets and basic concepts of theory of sets.

Student Performance Objectives (SPO): Students will be able to evaluate numerical and algebraic expressions using the Order of operations,

solve linear equations, determine the intersections and unions of sets.

Out-of-Class Assignments: Homework assignment: operations with real numbers and fractions, evaluation of algebraic expressions,

solving linear equations, practice handouts on theory of sets.

15 Hours

Content: Translating verbal expressions into algebraic. Solving formulas, linear inequalities, absolute value equations and

inequalities, compound inequalities; problem solving strategies, involving linear equations and inequalities.

Applications of linear equations/ inequalities (word problems)

Student Performance

Objectives (SPO): Students will be able to solve linear inequalities,

graph the solution on the number line and express the solution in interval notation, solve absolute value equations and

inequalities and word problems involving linear and absolute value equations.

Out-of-Class Assignments: Homework assignment: interval notation practice handouts, solving and graphing linear

inequalities.

15 Hours

Content: Cartesian coordinate system, distance and midpoint formulas. Solving linear equations in two variables. Reading the graphs and graphing linear equations in two

variables. Finding the slope of the line. Slopes of vertical, horizontal, parallel and perpendicular lines.

Solving application problems.

Student Performance Objectives (SPO): Students will be able to solve and graph linear equations in two variables, find the distance between two points, identify the slope and intercepts, solve slope related application problems

Out-of-Class Assignments: Homework assignment: solving and graphing linear equations in two variables, determining the slopes of the lines.

Project: identifying and working with the linear models.

15 Hours

Content: Slope-intercept equation of a line, point - slope equation of a line, applications, relations and functions, compositions of functions, inverse functions.

Student Performance Objectives (SPO): Student will

be able to find the equation of a line given slope and y-intercept, point and slope, two points, graph of the line or any other information about the line. Solve application problems. Find the

domain and the range of the relation. Perform the operations with the functions. Find the composition of the functions. Identify and compare inverse functions.

Out-of-Class Assignments: Homework Assignment: determining the equation of the line, analyzing functions, finding the domains, ranges, and compositions of two functions.

5 hours

Content: Graphing linear inequalities, graphing non-linear relations.

Student Performance Objectives (SPO): Students will be able to graph linear inequalities in two variables and non linear relations

Out-of-Class Assignments: Homework Assignment: graphing linear inequalities.

15 Hours

Content: Solving systems of linear equations in two and three variables. Problem solving strategies involving linear functions and systems of equations. Number,

Geometric, Uniform Motion, Investment and Mixture Applications.

Student Performance Objectives (SPO): Students will be able to solve  $2 \times 2$  and  $3 \times 3$  systems of equations using substitution and

elimination by addition; solve application problems involving systems of equations,

Out-of-Class Assignments: Homework Assignment: solving systems of equations.

10 Hours

Content: Utilize the quotient, product, and power rules for exponents. Negative and Zero exponents. Write numbers in scientific notation and perform operations using a scientific calculator. Introduction to polynomials. Degree of the term and polynomial, like terms.

Student Performance Objectives (SPO): Students will be able to apply the rules for exponents, convert from scientific notation to standard notation and

vice versa, use a scientific calculator to perform operations with numbers written in scientific notation, determine the degree of the algebraic term. identify like terms.

Out-of-Class Assignments: Homework Assignment: applying the rules of exponents towards simplifying exponential expressions.

10 Hours

Content: Addition, subtraction, multiplication and division of polynomials . Special Products.

Student Performance Objectives (SPO): Students will be able to perform operations with polynomials, determine the degree of the polynomial and apply special products towards multiplication of polynomials.

Out-of-Class Assignments: Homework Assignment: completing operations with polynomials, special products practice handout.

20 Hours

Content: Factoring polynomials. Factoring the Special Products, trinomials, and factoring by grouping. Solving polynomial equations by factoring; problem solving strategies involving polynomial functions and equations.

Student Performance Objectives (SPO): Students will be able to factor any polynomial, recognize and name the structure of the polynomial, identify prime polynomials, solve polynomial equations and application problems involving polynomials.

Out-of-Class Assignments: Homework Assignment: factoring polynomials, solving polynomial equations and applications.

18 Hours

Content: Rational Exponents. Evaluate roots and add, subtract, multiply, and simplify radicals. Dividing radicals and rationalizing the denominators with radicals. Introduction to complex numbers. Adding, subtracting, and dividing complex numbers. Solving radical and exponential equations.

Student Performance Objectives (SPO): Students will be able to apply exponential rules for simplifying expressions with rational exponents; add and

subtract radical expressions and solve radical equations. Students will be able to identify, analyze and complete all the operations with complex numbers.

Out-of-Class Assignments: Homework assignment: product, quotient, and power rules applied to rational exponents, simplifying radicals, completing operations with radicals and solving radical equations.

17 Hours

Content: Review of composite and inverse functions, graphing exponential and logarithmic functions. Properties of logs. Solving logarithmic and exponential equations and real-life problems involving logarithmic and exponential functions.

Student Performance Objectives (SPO): Students will be able to identify and analyze inverse functions, find the composition of two functions, graph inverse functions, including logarithmic and exponential functions, use properties of logs to simplify expressions with logarithms. Students will be able to solve logarithmic and exponential equations and solve relevant application problems including population growth, decay, and finance problems.

Out-of-Class Assignments: Homework Assignment: converting log expressions into exponential and vice-versa, solving log equations, log properties practice handouts.

15 Hours

Content: Solving quadratic equations by completing the square and by quadratic formula, applications, graphing quadratic

functions, standard form of the quadratic functions, applications involving polynomial functions, rational and quadratic inequalities.

Student Performance Objectives (SPO): Students will be able to solve a quadratic equations by completing the square and using the quadratic formula, solve application problems involving quadratic functions, rewrite quadratic function in the standard form and graph parabolas.

Out-of-Class Assignments: Homework assignment: practice in completing the square, solving quadratic equations by completing the square, quadratic formula, graphing parabolas.

13 Hours

Content: Review for the Final Exam.

Student Performance Objectives (SPO): Students will be able to review and re-learn the basic concepts covered during the semester including graphing and solving linear, quadratic, radical and rational equations, factoring polynomials, analyzing and completing operations with functions, and utilizing log properties to solve log equations.

Out-of-Class Assignments: Practice Final Exam handouts.

2 Hours

Final Exam

### **METHODS OF INSTRUCTION:**

Lecture, discussion, group work.

### **OUT OF CLASS ASSIGNMENTS:**

Required Outside Hours: 160

Assignment Description: Regularly assigned homework that requires students to analyze and study pertinent text material, solved examples and lecture notes.

Required Outside Hours: 160

Assignment Description: Regularly assigned homework that requires students to apply the principles and skills covered in class by solving related problems.

### **METHODS OF EVALUATION:**

Problem-solving assignments

Percent of total grade: 20.00 %

Homework, quizzes, projects.

Objective examinations

Percent of total grade: 80.00 %

In-class written exams.

**REPRESENTATIVE TEXTBOOKS:**

Required Representative Textbooks

Angel, Runde. Intermediate Algebra for College Students. Pearson,2014.

ISBN: ISBN-10: 0321927354

Reading Level of Text, Grade: 12 Verified by: Jennifer Nari

Lial, Hornsby, McGinnis. Beginning Algebra. Pearson,2015.

ISBN: ISBN-10: 0321969332

Reading Level of Text, Grade: 12 Verified by: Jennifer Nari

**ARTICULATION and CERTIFICATE INFORMATION**

Associate Degree:

GAV B4, effective 201470

CSU GE:

IGETC:

CSU TRANSFER:

Not Transferable

UC TRANSFER:

Not Transferable

**SUPPLEMENTAL DATA:**

Basic Skills: N

Classification: Y

Noncredit Category: Y

Cooperative Education:

Program Status: 1 Program Applicable

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department:

CSU Crosswalk Course Number:

Prior to College Level: A

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: N

Occupational Course: E

Maximum Hours:

Minimum Hours:

Course Control Number: CCC000603406

Sports/Physical Education Course: N

Taxonomy of Program: 170100