

Course Outline

COURSE: MATH 430 **DIVISION:** 10 **ALSO LISTED AS:**

TERM EFFECTIVE: Fall 2017 **CURRICULUM APPROVAL DATE:** 03/27/2017

SHORT TITLE: ALGEBRA I

LONG TITLE: Algebra I

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
5	18	Lecture:	5	90
		Lab:	0	0
		Other:	0	0
		Total:	5	90

COURSE DESCRIPTION:

This is the first course of algebra. It will cover simplifying algebraic expressions, linear equations and inequalities, linear functions and their graphs, systems of equations, polynomials, factoring, rational expressions, and applications of all of the above. **PREREQUISITE:** Math 402 with a grade of "Pass", or Math 411 or Math 205A with a grade of C or better, or assessment test recommendation.

PREREQUISITES:

- Completion of MATH 402, as UG, with a grade of P or better.
- OR
- (Completion of MATH 404D, as UG, with a grade of C or better.
- AND Completion of MATH 404E, as UG, with a grade of C or better.
- AND Completion of MATH 404F, as UG, with a grade of C or better.)
- OR
- Completion of MATH 205A, as UG, with a grade of C or better.
- OR
- Completion of MATH 411, as UG, with a grade of C or better.
- OR
- Score of 18 on Algebra Readiness
- OR
- Score of 12 on Elementary Algebra
- OR
- Score of 15 on Intermediate Algebra
- OR
- Score of 30 on Algebra Readiness - Revised
- OR
- Score of 2400 on Accuplacer Math

COREQUISITES:

CREDIT STATUS: C - Credit - Degree Non Applicable

GRADING MODES

L - Standard Letter Grade

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

02 - Lecture and/or discussion

05 - Hybrid

72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:

1. Simplify and evaluate algebraic expressions. Solve linear equations and inequalities in one variable including compound inequalities. Evaluate and solve formulas. Analyze and solve problems involving applications of linear equations and inequalities in one variable.

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

2. Graph linear functions and inequalities in two variables. Determine slope, y-intercept, x-intercept and other information from either the graph, given the equation, or other information about the line. Utilize the graphs in problem solving. Solve systems of equations and inequalities in two and three variables algebraically, Solve systems of equations in two variables graphically. Analyze and solve problems involving applications of linear equations, linear inequalities, and systems of linear equations in two variables.

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

3. Add/subtract, multiply and divide polynomials and numbers in scientific notation. Simplify exponential expressions using properties of exponents. Solve application problems in all of the above.

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

4. Identify and implement the appropriate strategy for factoring polynomials. Solve polynomial equations by factoring, set up and solve application problems involving polynomials and quadratic equations.

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

5. Simplify, multiply, divide, add and subtract rational expressions and solve rational equations. Simplify complex fractions. Set up and solve rational equations for application problems.

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

6. Analyze and translate verbal Expressions into Algebraic. Use symbolic language to name algebraic structures.

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

7. Demonstrate proficiency with a scientific calculator

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

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

Curriculum Approval Date: 03/27/2017

8 Hours

Content: Fractions, Operations of real numbers, simplifying expressions.

Student Performance Objectives (SPO): Students will be able to perform mathematical operations with real numbers, evaluate numerical and algebraic expressions using the order of operations, simplify linear expressions.

Out-of-Class Assignments: Homework assignment

12 Hours

Content: Solving linear equations. Solving linear inequalities including compound inequalities in one variable and expressing the solution algebraically, graphically on the number

line, in interval notation and in set builder notation. Translating verbal expressions into algebraic expressions and equations. Evaluating and solving formulas; problem solving strategies involving linear equations and inequalities in one variable. Applications of linear equations/ inequalities.

Student Performance Objectives (SPO): Students will be able to solve linear equations and inequalities, and express the solution to linear inequalities graphically, algebraically, in set builder notation and in interval format. Students will be able to evaluate formulas, solve formulas for a specified variable and use formulas in problem solving. Student will be able to set up and solve linear equations and inequalities for application problems, including solution mixture, investment, and distance problems.

Out-of-Class Assignments: Homework assignment, project

12 Hours

Content: Cartesian coordinate system. Solving linear equations in two variables. Reading the graphs and graphing linear equations in two variables. Finding the slope and intercepts of the line. Slopes of vertical, horizontal, parallel and perpendicular lines. Solving application problems. Slope - intercept equation of a line, point - slope equation of a line, applications. Graphing linear inequalities in two variables, including compound inequalities.

Student Performance Objectives (SPO): Students will be able to solve and graph linear equations in two variables, identify the slope and intercepts of a line given the graph or equation, and identify lines that are parallel and perpendicular. 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. Graph solution set to linear inequalities and to compound linear inequalities in two variables.

Out-of-Class Assignments: Homework assignment, project

7 Hours

Content: Solving systems of linear equations in two variables by graphing, and systems of linear equations in both two and three variables using substitution and elimination. 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 2x2 systems graphically and identify consistent, inconsistent and dependent systems as well as systems with one solution, no solution and infinitely many solutions. Students will be able to solve 2x2 and 3x3 systems of equations using substitution and elimination, and solve application problems involving systems of equations,

Out-of-Class Assignments: Homework Assignment.

3 Hours

Content: Utilize the quotient, product, and power rules for exponents and evaluate numerical expressions with negative and zero exponents. Write numbers in scientific notation and perform operations using a scientific calculator.

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

and vice versa, use a scientific calculator to perform operations with numbers written in scientific notation, and solve application problems involving numbers in scientific notation.

Out-of-Class Assignments: Homework assignment, project

8 Hours

Content: Introduction to polynomials. Simplifying, adding and subtracting, multiplying, dividing polynomials.

Student Performance Objectives (SPO): Students will be able to identify the degree of a polynomial and put in standard form. Students will be able to simplify, add, subtract, multiply and divide polynomials. Students will be able to divide with long division and/or synthetic division.

Out-of-Class Assignments: Homework assignment, project

12 Hours

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

Student Performance Objectives (SPO): Students will be able to factor completely a polynomial expressions, including difference of squares and difference/sum of cubes. Students will be able to do factor by grouping

on a trinomial or polynomial. Students will be able to set up and solve polynomial equations for application problems.

Out-of-Class Assignments: Homework Assignment.

20 Hours

Content: Simplifying rational expressions, multiplying, dividing and adding/subtracting rational expressions, simplifying complex fractions and solving rational equations. Applications of rational equations.

Student Performance Objectives (SPO): Students will be able to simplify a rational expression and indicate where a rational expression is undefined. Students will be able to add, subtract, multiply and divide rational expressions, and simplify complex expressions including complex expressions with negative exponents. Student will be able to solve rational equations and set up a rational equation to solve a word problem.

Out-of-Class Assignments:

Homework assignment, project

5 Hours

Content: Review for the Final Exam.

Student Performance Objectives (SPO): Students will be able to review and re-learn the basic concepts.

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

METHODS OF INSTRUCTION:

Lecture, discussion, group work

METHODS OF EVALUATION:

Problem-solving assignments

Percent of total grade: 95.00 %

Percent range of total grade: 95 % to 100 % Homework Problems; Quizzes; Exams; Other: projects

Objective examinations

Percent of total grade: 0.00 %

Percent range of total grade: 0 % to 5 % Multiple Choice; True/False; Matching Items; Other: conceptual questions

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 10

Assignment Description: 1. Regularly assigned homework that requires students to analyze and study pertinent text material, solved examples and lecture notes.

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

REPRESENTATIVE TEXTBOOKS:

Required Representative Textbooks

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

ISBN: ISBN-10: 0321969332 ISBN-13: 978-0321969330

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

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Not Transferable

UC TRANSFER:

Not Transferable

SUPPLEMENTAL DATA:

Basic Skills: B

Classification: Y

Noncredit Category: Y

Cooperative Education:

Program Status: 2 Stand-alone

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department:

CSU Crosswalk Course Number:

Prior to College Level: B

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: N

Occupational Course: E

Maximum Hours: 5

Minimum Hours: 5

Course Control Number: CCC000536437

Sports/Physical Education Course: N

Taxonomy of Program: 170100