Course: __MAT096-Foundations of Algebra II_____

Module: __Graphing Linear Equations_(10.1 – 10.5)_____

	Objectives	Questions	Materials	Content	Skills	Assessments
Graph Linear Equations; Find the equation of a line.	Plot ordered pairs on the Rectangular Coordinate System Create a Scattergram Graph a linear relationship: plot points for a given equation; plot x- & y- intercepts; given slope and a point. Find the Slope of a line given 2 points &given an equation; Plot and find the slope for horizontal and vertical lines Find the slope of parallel and perpendicular lines. Use Slope-Intercept Form & Point-Slope Form to graph and write the equation for a line. Recognize and Solve problems involving linear relationships.	How is the Rectangular Coordinate System organized? What is the solution of an equation in 2 variables? What are the characteristics of a linear equation? What methods can be used to graph a linear equation? How is the steepness of a line measured? What are the forms of a linear equation? How is the fact that two lines are parallel or perpendicular determined from the equation of a line?	Graph paper Straight Edge Coordinate Grids Discovery Problems - Banquet Tables & Slow Down and Save Money (4) Problems from mini-lectures 10.3intercepts 10.4slope 10.5equ of line 10.6intro to fnc (publisher Problems from Exeter Math Function Machine Box	Definition of: origin quadrants x-coordinate y-coordinate x-axis y-axis solution linear equation x-intercept y-intercept horizontal line vertical line slope standard form slope-intercept form point-slope form parallel line perpendicular line	The ability to place a linear pair (x,y) on a rectangular coordinate system. Graph a linear equation using several methods: given an equation, find (x,y) pairs; given a point and the slope; given x- and y-intercepts; Find slope in several ways: “walking” from point to point; calculating given 2 points; rearranging an equation into y=mx+b form and identifying m. Use information given to find the equation of a line.	Formative: Homework assignments & Classroom observation. Summative: Quiz on Skills Self Assessment: Weekly pulse (3 questions) in Blackboard Journal entry

Course: __MAT096-Foundations of Algebra II_____

Module: __Graphing Inequalities_(10.7)_____

	Objectives	Questions	Materials	Content	Skills	Assessments
Graph Linear Inequalities	**Determine whether an ordered pair is a solution of a linear inequality in two variables.** **Graph a linear inequality in two variables.**	**How is the solution of an inequality in 2 variables found?** **What methods can be used to graph an inequality?**	**Graph paper** **Ruler** **Coordinate Grids** **Discovery Problems - Graphing Equations and Inequalities (Activity 10-B publisher)** **Problems from Mini-Lecture: 10.7 Graphing Inequalities in 2 variables (publisher)**	**Definition of half-plane.** **Notation for defining the half-plane (dotted vs. solid line)**	**Solving an inequality.** **Determine the half-plane for the solution of a given inequality.**	**Formative: Homework assignments & Classroom observation.** **Summative: Chapter 10 exam (publisher)** **Self Assessment: Weekly pulse (3 questions) in Blackboard Journal**

Course: __MAT096-Foundations of Algebra II_____

Module: ___Rules of Exponents and Scientific Notation_(12.1 – 12.2)_____

	Objectives	Questions	Materials	Content	Skills	Assessments
Rules of Exponents & Scientific Notation	Use an understanding of exponential notation to simplify expressions containing exponents. Simplify an expression containing exponents using the "rules of exponents". Convert between a number and scientific notation (and vice versa).	What is exponential notation and how are exponential terms/ expressions simplified? What does scientific notation look like and why is it used	Ch 12 .ppt (exponent rules: slide 20&21 Scientific notation: slide 24, 26, 27) Envelope with x's and 3's.	Definition of a factor. Definition of parts of an exponential term (base, exponent). Meaning of a negative exponent. Rules of Exponents. Definition of Scientific Notation. Representation of a number between 1 and 10. Powers of 10.	The ability to use and interpret exponential notation effectively and accurately. Explain the difference between 2a^2+a +3a^2 and 2a^2 · a · 3a^2.	Formative: Homework assignments & Classroom observation. Summative: Quiz on Skills Self Assessment: Weekly pulse (3 questions in Blackboard Journal

Course: __MAT096-Foundations of Algebra II_____

Module: ___Perform Operations on Polynomials_(12.3 – 12.7)__

	Objectives	Questions	Materials	Content	Skills	Assessments
Perform Operations on Polynomials	**Find and combine like terms.** **Perform addition and subtraction of polynomials.** **Multiply polynomials using the distributive property and special products where applicable.** **Divide polynomials**	**How are like terms combined to add and subtract polynomial expressions?** **How are polynomials multiplied?** **How are polynomials divided?**	**Monomial cards** **Vocabulary sheet for Chapter 12.** **Powerpoint: Slides 29, 31-47.** **Algebra tiles.** **0-9 tiles.** **Multiplying polynomials 0-9 sheet.**	**Definitions:** • **Terms** • **Like terms** • **Coefficient** • **Polynomial** • **Degree of a polynomial** **Distributive property.** **Vertical and Horizontal formats for multiplying binomials/ polynomials.** **Long division.**	**Find like terms** **Distribute -1:** **-(a + b + c) =** **-a -b -c**	**Formative: Homework assignments & Classroom observation** **Summative: Chapter 12 exam from book** **Self assessment: Exam Wrapper for Chapter 12 test & Weekly pulse (3 questions) in Blackboard Journal**

Course: __MAT096-Foundations of Algebra II_____

Module: ___Factor Polynomials (Ch 13.1 - 13.5)_____

	Objectives	Questions	Materials	Content	Skills	Assessments
Factor Polynomials	**Find the greatest common factor (gcf) of a list of numbers and a list of terms.** **Factor out the gcf from the terms of a polynomial.** **Factor trinomials of the form $ax^2 + bx + c$, including using grouping.** **Recognize and Factor trinomials that are perfect square trinomials or the difference of two squares.** **Analyze and apply the method of factoring to use in a given situation.**	**How is a polynomial factored?** **Where is factoring polynomials used?**	**Sum-product game (used as warmup at least 3 times prior to factoring).** **Powerpoint from Adam & Pia (student version).** **A-G algebra tile "packs".** **Graph paper.** **Word problems pack.**	**Definitions of:** **-prime factor** **-greatest common factor** **-prime polynomial**	**Recognize common factors in numbers.** **Recognize common factors in terms.** **Choose a factoring strategy (see pg. 1013) including the X method.**	**Formative:** **Algebra tile diagrams** **&** **Homework** **&** **Classroom observation** **Summative:** **Quiz on Skills** **Self Assessment:** **Weekly pulse (3 questions) in Blackboard Journal**

Course: __MAT096-Foundations of Algebra II_____

Module: ___Solving Quadratic Equations by Factoring, Quadratic Equations and Problem Solving (Ch 13.6-13.7)_____

	Objectives	Questions	Materials	Content	Skills	Assessments
Solving Quadratic Equations by Factoring; Quadratic Equations, and Problem Solving	Solve quadratic equations by factoring. Solve equations with degree greater than two by factoring. Solve problems that can be modeled by quadratic equations.	How do you know what the factors of a number(say, 12 or 0) are? In solving a quadratic equation, why is the equation re-written so that one side is equal to zero? How does the graph of a polynomial exhibit the "zeroes" or "solutions" of the polynomial? How can a polynomial application be modeled? And from the model, how do you know which solution(s) apply to the situation?	Discovery Activity: Keeping Bruin Out (11)	define the zero-factor property	factoring quadratic equations Solving linear equations	Formative: Homework & Classroom observation Summative: Chapter 13 Test (publisher) Self-Assessment: Weekly Pulse (3 questions) in Blackboard Journal

Course: __MAT096-Foundations of Algebra II_____

Module: ___Add, Subtract, Multiply, and Divide Rational Expressions (Ch 14.1-14.4)__

	Objectives	Questions	Materials	Content	Skills	Assessments
Add, Subtract, Multiply, and Divide Rational Expressions	Simplify or write rational expressions in lowest terms. Write equivalent forms of rational expressions.	When is a fraction equal to 1? How can "one-ness" be used in defining equivalent rational expressions? How can equivalent finding equivalent expressions help in adding and subtracting rational expressions? How is division by 0 noted? defined? If the denominator of a rational expression is x-2, what values of x would constitute division by 0?	Binomial "cards" (x, x-1, x+2, etc) Fraction bar "template" for forming and simplifying rational expressions	define: factors terms rational expression common denominator	Find the value of a rational expression given a replacement number. Identify when a rational expression is undefined. Find common denominators of rational expressions.	Formative: Homework & Classroom Observation Summative: Quiz on Skills Self-Assessment: Weekly Pulse (3 questions) in Blackboard Journal

Course: __MAT096-Foundations of Algebra II_____

Module: ___Simplify Complex Fractions (Ch 14.7)_____

	Objectives	Questions	Materials	Content	Skills	Assessments
Simplify Complex Fractions	**Simplify complex fractions.**	**What operation is indicated by a fraction bar?** **With a complex fraction, how do you decide what operations to do in what order ?**	**3 x 5 cards containing operations with rational expressions (2 + 6/x; 1 - 9/x, etc)** **Fraction bar "template" for use with above 3 x 5 cards.** **Problems from mini-lecture 14.7 (publisher's instructor resources)**	**methods for simplifying complex fractions:** **Method 1: simplify numerator and denominator separately, then divide or simplify** **Method 2: Find the LCD of all fractions, then multiply the numerator and denominator by the LCD. Then, divide or simplify.**	**Finding the least common denominator of a complex fraction.** **Fraction division.**	**Formative: Homework & Classroom Observation** **Summative: Quiz on Skills** **Self-Assessment: Weekly Pulse (3 questions)**

Course: __MAT096-Foundations of Algebra II_____

Module: ___Solving Equations Containing Rational Expressions and Problem Solving _(Ch14.5-14.6)__

	Objectives	Questions	Materials	Content	Skills	Assessments
Solving Equations Containing Rational Expressions and Using them to Solve Problems	**Solve Equations containing rational expressions, including for a specified variable.** **Solve problems about numbers, work and distance.**	**What values result in the rational expression being undefined?** **What do the letters in a formula mean?** **Given an application problem, how do you determine the letter that is the variable in a formula that may be used to solve the problem?**	**Problems from mini-lecture 14.5 & 14.6 (publisher's instructor resources)**	**formulas:** **d=rt**	**Solving proportions.** **Solving an equation containing several variables for one variable in terms of the others, i.e. solve x + y = h for y in terms of x & h.** **Reading an application problem, identifying a formula that could be used to solve the problem, noting how the values given can be used in the formula, and identifying the actual variable to solve for.**	**Formative:** **Homework** **&** **Classroom Observation** **Summative:** **Chapter 14 Test (publisher)** **Self-Assessment:** **Weekly Pulse (3 questions in Blackboard Journal)**

Course: __MAT096-Foundations of Algebra II_____

Module: ___Simplify Roots and Radical Expressions (Ch 15.1 - 15.4)_____

	Objectives	Questions	Materials	Content	Skills	Assessments
Simplify Roots and Radical Expressions	Find nth roots Approximate sq roots Simplify radicals including radicals containing variables Add, Subtract, Multiply and Divide Radicals Rationalize Denominators including using conjugates	What are like terms? What are like radicals? When is a root exact? approximate? "perfect"? When is an nth root a real number? When is it not a real number? How can a denominator be re-written mathematically to eliminate a radical sign?	.ppt from the text Squares and square roots table (to be completed) 0-9 cards & find the missing squares puzzle.	define: real number rational number irrational number imaginary number index radical sign radicand positive/principal sq root negative sq root conjugate Prime factors "Perfect" square and cube roots like radicals Product Rule for Radicals Quotient Rule for Radicals	Finding exact roots using prime factors. Finding approximate roots with a calculator Finding the conjugate	Formative: Homework & Classroom Observation Summative: ?? Self-Assessment: Weekly Pulse (3 questions in Blackboard Journal

Course: __MAT096-Foundations of Algebra II_____

Module: ___Radical Equations and Problem Solving (Ch 15.5 - 15.6)_____

	Objectives	Questions	Materials	Content	Skills	Assessments
Radical Equations and Problem Solving	**Solve a Radical Equation containingSquare Roots.** **Use the Pythagorean Theorem to Solve Problems.** **Solve Problems using Formulas containing Radicals.**	**How can roots be used to solve a quadratic equation?**	**Discovery Activity: Draw the picture for a story. Identify the sides of the right triangle formed in the picture. Identify the diagonal.** **Discovery Activity: The Pythagorean Shortcut** **Handout: Solve a radical equation containing square roots.**	**Squaring Property of Equality** **The Pythagorean Theorem**	**Determining the method to use in solving an equation containing radicals.** **Identifying extraneous solutions.**	**Formative: Homework & Classroom Observation** **Summative: Chapter 15 test (publisher)** **Self-Assessment: Weekly Pulse (3 questions in Reflective Journal)**