

COURSE IMPLEMENTATION DATE:
 COURSE REVISED IMPLEMENTATION DATE: May 2009
 COURSE TO BE REVIEWED: March 2011
 (Four years after UPAC final approval date) (MONTH YEAR)

OFFICIAL COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
 Shaded headings are subject to change at the discretion of the department and the material will vary - see course syllabus available from instructor

FACULTY/DEPARTMENT:	Upgrading and University Preparation	
MATH 085		3
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS
	Intermediate Algebra and Trigonometry	
COURSE DESCRIPTIVE TITLE		

CALENDAR DESCRIPTION:

This course reviews basic algebraic concepts and skills, including linear functions. Absolute value, polynomial, rational, radical, and quadratic expressions, equations, and functions are studied in detail. Students will use function notation and graph relations and functions. The course reviews right-angle trigonometry and introduces the laws of sines and cosines to solve non-right triangles, with an emphasis on solving practical problems.

MATH 085 is intended to provide the background necessary for success at college level mathematics (MATH 094/095). As a prerequisite for entry into many college and university programs, Math 085 serves as an equivalent to Principles or Applications of Math 11.

PREREQUISITES: **MATH 084 or UUP department permission (assessment may be required).**
 COREQUISITES:

SYNONYMOUS COURSE(S)	SERVICE COURSE TO:
(a) Replaces: _____ (Course #)	_____
(b) Cannot take: _____ for further credit. (Course #)	_____
	(Department/Program)
	(Department/Program)

TOTAL HOURS PER TERM:	90	TRAINING DAY-BASED INSTRUCTION	
STRUCTURE OF HOURS:		LENGTH OF COURSE:	_____
Lectures: 60	Hrs	HOURS PER DAY:	_____
Seminar:	Hrs		
Laboratory:	Hrs		
Field Experience:	Hrs		
Student Directed Learning:	Hrs		
Other (Specify): Individual 30	Hrs		
	and small group work		

MAXIMUM ENROLLMENT:	24
EXPECTED FREQUENCY OF COURSE OFFERINGS:	2 sections per semester
WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	<input type="checkbox"/> Yes <input type="checkbox"/> No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	<input type="checkbox"/> Yes <input type="checkbox"/> No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

AUTHORIZATION SIGNATURES:

Course Designer(s): _____ CCP Math Curriculum Committee	Chairperson: _____ Greg St. Hilaire
Department Head: _____ Sue Brigden	Dean: _____ Karen Evans
UPAC Approval in Principle Date: _____	UPAC Final Approval Date: Mar. 2, 2007

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

1. Basic Algebraic Skills Review
 - a) perform operations with real numbers including absolute value and exponential notation
 - b) simplify expressions using rules for order of operations and properties of exponents
 - c) translate common language into algebraic expressions
 - d) evaluate algebraic expressions by substitution
2. Solving Linear Equations and Inequalities
 - a) solve first degree/linear equations in one variable and simple formulas for a given variable
 - b) solve and graph linear inequalities in one variable
 - c) write set-builder and/or interval notation for the solution set or graph of an inequality
 - d) find the union or intersection of two sets
 - e) solve and graph linear inequalities in one variable and compound inequalities (conjunctions and disjunctions)
 - f) solve absolute value equations
3. Graphing, Relations, and Functions
 - a) write linear equations in slope intercept form
 - b) graph linear equations using tables of values, slope intercept method, x- and y-intercepts
 - c) graph horizontal and vertical lines
 - d) find the slope of a line given two points on the line
 - e) find the equation of a line given graphic data: the slope and y-intercept, the slope and one point, or two points on the line
 - f) determine whether a pair of lines is parallel, perpendicular, or neither
 - g) find the equation of a line parallel or perpendicular to a given line and through a given point
 - h) use the definition of function and the vertical-line test to distinguish between functions and nonfunctions
 - i) use and interpret function notation to evaluate functions for given x-values and find x-values for given function values
 - j) determine the domain and range of a function
 - k) graph linear functions and non-linear functions such as quadratic, cubic, square root, reciprocal, and absolute value functions
 - l) graph linear inequalities in two variables
 - m) analyze functions to determine line of symmetry, vertices, asymptotes, and intercepts (optional)
 - n) use a graphing calculator or other appropriate technology to graph equations (optional)
 - o) identify an appropriate graph for a given relation (optional)
 - p) develop a model function from a given graph or set of data (optional)
4. Systems of Linear Equations and Inequalities
 - a) solve systems of linear equations in two variables by graphing, substitution, and elimination methods
 - b) determine if a system of equations will have no, one, or an infinite number of solutions
 - c) use systems of equations to solve applied problems
 - d) graph the solution for a system of linear inequalities in two variables (optional)
5. Polynomials and Polynomial Functions
 - a) determine the degree of a polynomial
 - b) distinguish between monomials, binomials, trinomials, and other polynomials
 - c) add, subtract, and multiply polynomials, and divide polynomials by monomials
 - d) factor polynomials using an appropriate strategy or a combination of techniques: common factors, difference of squares, difference and sum of cubes, perfect square trinomials, trial/error, or grouping
 - e) solve polynomial equations using the principle of zero products
 - f) solve applied problems using polynomial equations/ functions
 - g) divide polynomials and binomials using long division
6. Rational Expressions and Equations and Variation
 - a) identify situations and find values for which a rational expression will be undefined
 - b) simplify, add, subtract, multiply, and divide rational expressions
 - c) solve rational equations and check
 - d) solve formulas involving rational expressions for a given variable
 - e) solve applied problems that can be modeled with rational equations
 - f) simplify complex fractions
 - g) express variations in the form of equations (direct, inverse, joint, combined)
 - h) solve problems involving direct, inverse, joint, and combined variation
7. Radical Expressions and Equations
 - a) write radicals as powers with rational exponents and vice versa
 - b) use rational exponents to simplify radical expressions
 - c) simplify, add, subtract, multiply, and divide radical expressions (numeric or algebraic)
 - d) rationalize denominators in fractional expressions containing radicals (including the use of conjugates)
 - e) solve equations involving radical expressions or powers with rational exponents and check for extraneous roots
 - f) solve formulas involving powers and square roots for a given variable
 - g) solve applied problems which can be modeled by radical equations, and determine if solutions are reasonable given the context of the problem
8. Quadratic Equations and Quadratic Functions
 - a) solve quadratic equations by factoring, principle of square roots, completing the square, and the quadratic formula
 - b) use the discriminant to identify the number and type of solutions of a quadratic equation
 - c) write a quadratic equation given its solutions (optional)
 - d) solve rational and radical equations reducible to a quadratic pattern and check that answers are reasonable
 - e) solve selected polynomial equations that can be factored simplifying to linear and/or quadratic factors
 - f) graph quadratic functions of the form $f(x) = a(x-h)^2 + k$ and demonstrate translations, reflections, and stretching/shrinking resulting from changes in the function equation (optional)

- g) find the vertex, line of symmetry, minimum or maximum values, x- and y-intercepts, domain, and range, given the function $f(x) = a(x-h)^2 + k$ (optional)
 - h) rewrite $f(x) = ax^2 + bx + c$ as $f(x) = a(x-h)^2 + k$ by completing the square (optional)
 - i) solve problems that can be modeled using quadratic equations
9. Trigonometry
- a) label the sides of a right triangle with respect to a given angle
 - b) determine sine, cosine, and tangent ratios of an angle in a right triangle using the side lengths
 - c) use a scientific calculator to find the trigonometric value for a given angle and to find an angle given its trigonometric value
 - d) solve right triangles and applied problems using the basic trigonometric ratios, the Pythagorean theorem, and sum of the angles (180°)
 - e) use the Law of Sines and the Law of Cosines to solve non-right (oblique) triangles and applied problems

METHODS:

Lectures to demonstrate methods as well as problem sessions, guided individual and small group work

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

Credit can be awarded for this course through PLAR (Please check:) Yes No

METHODS OF OBTAINING PLAR:

Exam

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Recent text:

Bittinger, Intermediate Algebra, 10th Ed.

SUPPLIES / MATERIALS:

A scientific calculator is required.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments	15 – 20%
Quizzes/tests	25 – 35%
Midterm exam	10 – 15%
Final exam	35 – 40%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. Basic algebraic skills review
2. Solving linear equations and inequalities
3. Graphing, relations, and functions
4. Systems of linear equations and inequalities
5. Polynomials and polynomial functions
6. Rational expressions and equations and variation
7. Radical expressions and equations
8. Quadratic equations and quadratic functions
9. Trigonometry