OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:
COURSE REVISED IMPLEMENTATION DATE: January 2012
COURSE TO BE REVIEWED: September 2017
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE 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 – see course syllabus available from instructor

MATH 085	Upgrading & University Preparation	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV 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 09* level mathematics courses. As a prerequisite for entry into many college and university programs, MATH 085 serves as an equivalent to Principles of Mathematics 11, Applications of Mathematics 11, or Pre-calculus 11.

PREREQUISITES: One of the following: MATH 084; Foundations of Mathematics and Pre-calculus 10 with at least a B; Principles of Mathematics 11, Applications of Mathematics 11, Foundations of Mathematics 11, or Pre-calculus 11 with at least a C; Foundations of Mathematics 12 or Pre-Calculus 12 with at least a C-; or UUP department permission (assessment may be required).

COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **90**

STRUCTURE OF HOURS:

Lectures:	**60**	Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify): Individual and s group work	**30**	Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **24**
Expected frequency of course offerings: **2 sections per semester**
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☒ Yes	☐ No

Course designer(s):	**Greg St. Hilaire, Anna Kuczynska, Judy Larsen**		
Department Head:	**Trudy Archie**	Date approved:	**March 2011**
Supporting area consultation (Pre-UEC)		Date of meeting:	**March 18, 2011**
Curriculum Committee chair:	**Greg St. Hilaire**	Date approved:	**April 2011**
Dean/Associate VP:	**Dr. Sue Brigden**	Date approved:	**August 30, 2011**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**September 30, 2011**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

1. Review properties of real numbers and order of operations including absolute value, root, and exponential notation.
2. Translate English phrases into algebraic expressions.
3. Evaluate algebraic expressions by substitution.
4. Solve formulas for a given variable.
5. Use set-builder and/or interval notation when describing a solution set, domain or range.
6. Find the union or intersection of two sets.
7. Solve and graph compound inequalities in one variable.
8. Solve absolute value equations and basic absolute value inequalities.
9. Review properties of a linear function.
10. Determine if a given relation is a function.
11. Use function notation to evaluate functions at given values or expressions, and find compositions of functions.
12. Determine the domain and range of a function.
13. Graph and analyze linear and non-linear functions such as quadratic, cubic, square root, reciprocal, and absolute value functions
14. Identify an appropriate graph for a given relation.
15. Review solving systems of two linear equations.
16. Use systems of equations to solve applied problems.
17. Solve problems that involve systems of linear-quadratic and quadratic- quadratic equations in two variables, algebraically and graphically.
18. Graph the solution for a system of linear and quadratic inequalities in two variables.
19. Review operations on polynomials.
20. Factor polynomials using an appropriate strategy or a combination of techniques: common factors, grouping, trial/error, difference of squares, difference and sum of cubes, or perfect square trinomials.
21. Solve polynomial equations using Zero Products.
22. Identify situations and find values for which a rational expression will be undefined.
23. Simplify, add, subtract, multiply, and divide rational expressions.
24. Solve rational equations and check solutions against the domain.
25. Solve applied problems that can be modeled with rational equations.
26. Simplify complex fractions. (optional)
27. Use rational exponents to write and simplify radicals.
28. Simplify, add, subtract, multiply, and divide numeric or algebraic radical expressions.
29. Rationalize denominators in fractional expressions containing radicals (including the use of conjugates).
30. Solve radical equations and check for extraneous roots.
31. Solve applied problems which can be modeled by radical equations, and determine if solutions are reasonable given the context of the problem.
32. Solve quadratic or reducible to quadratic equations by factoring, principle of square roots, completing the square, and the quadratic formula.
33. Use the discriminate to identify the number and type of solutions of a quadratic equation.
34. 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.
35. Find the vertex, line of symmetry, minimum or maximum values, x- and y-intercepts, domain, and range, given the function $f(x) = a(x-h)^2 + k$.
36. Rewrite $f(x) = ax^2 + bx + c$ as $f(x) = a(x-h)^2 + k$ by completing the square.
37. Solve problems that can be modeled by quadratic equations.
38. Solve problems that involve quadratic inequalities in one variable.
39. Solve problems, using the three primary trigonometric ratios for angles from the interval $[0°, 360°]$ in standard position.
40. Use the basic trigonometric ratios and the Pythagorean Theorem to solve right triangles and applied problems.
41. Use the Law of Sines and the Law of Cosines to solve oblique triangles and applied problems.
42. Analyze arithmetic sequences and series to solve problems.
43. Analyze geometric sequences and series to solve problems.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☐ Portfolio assessment ☐ Interview(s) ☐ Other (specify):

TEXTBOOKS, REFERENCES, MATERIALS: *[Textbook selection varies by instructor. Examples for this course might be:]*

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:	10%
Quizzes:	35%
Midterms:	30%
Final exam:	25%

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

1. Review of intermediate algebra skills
2. Graphs and properties of various functions
3. Systems of equations and inequalities including quadratic
4. Quadratic equations and functions
5. Polynomial equations and functions
6. Rational expressions and equations
7. Radical expressions and equations
8. Trigonometry
9. Sequences