HIBBING COMMUNITY COLLEGE
COURSE OUTLINE

COURSE NUMBER & TITLE:  MATH 0971: Beginning Algebra
CREDITS:  4 (Lec 4 / Lab 0)
PREREQUISITES:  Placement Exam

CATALOG DESCRIPTION:
Beginning Algebra is designed to study operations on real numbers, manipulations of basic algebraic expressions, operations with linear and absolute value expressions, solving equations and inequalities, graphs, functions, solving systems of equations and inequalities, operations on polynomials and polynomial functions including factoring, and applications

OUTLINE OF MAJOR CONTENT AREAS:
1.  Review of basic algebra
   A.  Operations
       1.  The set of real numbers
       2.  Operations with real numbers
       3.  Exponential notation and order of operations
   B.  Manipulations
       1.  Introduction to algebraic expressions
       2.  Equivalent algebraic expressions
       3.  Simplifying algebraic expressions
       4.  Properties of exponents and scientific notation
2.  Solving linear equations and inequalities
   A.  Solving equations
   B.  Formulas and applications
   C.  Applications and problem solving
   D.  Sets, interval notation, and inequalities
   E.  Intersections, unions, and compound inequalities
   F.  Absolute-value equations and inequalities
3.  Graphs, functions, and applications
   A.  Graphs of equations
   B.  Functions and graphs
   C.  Finding domain and range
   D.  Linear functions: graphs and slope
   E.  Finding equations of lines
       1.  The slope-intercept equation
       2.  The point-slope equation
   F.  Mathematical modeling with linear functions
4.  Systems of equations
   A.  Graphing systems of equations in two variables
B. Solving by substitution or elimination
C. Solving applied problems: systems of two equations
D. Systems of linear inequalities in two variables

5. Polynomials and polynomial functions
   A. Introduction to polynomials and polynomial functions
   B. Multiplication of polynomials
   C. Factoring by removing a common factor
   D. Factoring by grouping
   E. Factoring trinomials
      1. \( x^2 + bx + c \)
      2. \( ax^2 + bx + c \) where \( a \) is not 1
   F. Special factoring
   G. Factoring differences of \( n^{th} \) powers
   H. Applications of polynomial equations and functions

COURSE GOALS/OBJECTIVES/OUTCOMES:
1. Students will manipulate and simplify algebraic expressions using order of operations and equivalent algebraic expressions.
2. Students will solve linear equations and applied problems involving linear equations.
3. Students will solve compound inequalities and equations involving intersections, unions, and absolute values and apply these solution techniques to applied problems.
4. Students will graph equations involving two variables.
5. Students will determine whether a correspondence is a function and determine the domain, range, intercepts, and equations of functions.
6. Students will graph linear functions and determine the equations and slopes for linear functions.
7. Students will solve systems of equations using graphing, substitution, and elimination.
8. Students will solve applied problems involving systems of equations.
9. Students will perform operations using polynomial functions.
10. Students will evaluate polynomials for specified inputs.
11. Students will factor polynomials including, but not limited to, trinomials of the form \( x^2+bx+c \) and \( ax^2+bx+c \), differences of squares, sums and differences of cubes, trinomial squares, and differences of \( n^{th} \) powers.
12. Students will solve applied problems involving polynomial functions.

MNTC GOALS AND COMPETENCIES MET:
N/A

HCC COMPETENCIES MET:
Communicating Clearly & Effectively
Thinking Creatively & Critically
STUDENT CONTRIBUTIONS:
The student will attend class regularly, participate in class discussion, complete daily assignments, in class exercises, exams, and a comprehensive final examination. The student will spend a minimum of two hours completing assignments for every hour in class. These must be accomplished in such a way that they meet minimum standards set by the instructor.

STUDENT ASSESSMENT SHALL TAKE PLACE USING INSTRUMENTS SELECTED/DEVELOPED BY THE COURSE INSTRUCTOR.

SPECIAL INFORMATION:
The student may be required to provide a calculator for this course. If a specific calculator model is required, this model will be specified by the instructor on the course syllabus.

Curriculum Approval Date: October 2, 2017

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<th>AASC APPROVAL DATE</th>
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