HIBBING COMMUNITY COLLEGE
COURSE OUTLINE

COURSE NUMBER & TITLE:  MATH 1020 - Advanced Algebra
CREDITS:  3 (3 Lec / 0 Lab)
PREREQUISITES:  MATH 0971:  Beginning Algebra with a grade of “C” or better, or Placement Exam, or Equivalent

CATALOG DESCRIPTION:
Advanced Algebra is designed to study manipulation of rational expressions, solving rational equations, manipulation of radical expressions and rational exponents, solving radical equations, complex numbers, solving quadratic equations, parabolas, exponential and logarithmic functions, inverse and composite functions, and applications.

OUTLINE OF MAJOR CONTENT AREAS:
1.  Rational expressions and equations
   A.  Operations on rational expressions
      1.  Multiplying, dividing, and simplifying
      2.  LCMs, LCDs, addition, and subtraction
   B.  Division of polynomials
   C.  Complex rational expressions
   D.  Solving rational equations
   E.  Applications and proportions
   F.  Formulas and applications
   G.  Variation and applications

2.  Radical expressions and equations
   A.  Radical expressions and functions
   B.  Rational numbers as exponents
   C.  Simplifying radical expressions
   D.  Addition, subtraction, and multiplication
   E.  Division of radical expressions
   F.  Solving radical equations and problems
   G.  Complex numbers

3.  Quadratic equations
   A.  Solving quadratic equations using factoring, completing the square, and the quadratic formula
   B.  Graphing quadratic equations
   C.  Polynomial and rational inequalities

4.  Exponential and logarithmic functions
   A.  Exponential functions
   B.  Inverse and composite functions
   C.  Logarithmic functions
D. Properties of logarithmic functions
E. Natural logarithmic functions
F. Solving exponential and logarithmic equations
G. Modeling with exponential and logarithmic functions

COURSE GOALS/OBJECTIVES/OUTCOMES:
1. Students will simplify and perform operations on rational expressions.
2. Students will solve rational equations and formulas.
3. Students will solve applied problems involving rational equations and variation.
4. Students will simplify and perform operations on radical expressions.
5. Students will solve radical equations and applied problems involving radical equations.
6. Students will solve quadratic equations using factoring, the principle of square roots, completing the square, and the quadratic formula.
7. Students will graph quadratic functions and solve applied problems involving quadratic functions.
8. Students will solve polynomial and rational inequalities.
9. Students will compose functions and determine inverses of functions.
10. Students will simplify and perform operations on exponential and logarithmic expressions.
11. Students will solve exponential and logarithmic equations and solve applied problems involving exponential and logarithmic equations.

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: (SPECIAL FEES, DIRECTIVES ON HAZARDOUS MATERIALS, ETC.):
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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