COUNTY COLLEGE OF MORRIS
Course Information Outline

Course Title Algebra for Middle Grades **PREFIX&NUMBER** MAT 271

Lecture Hours 45 **Laboratory Hours** 0 **Credit Hours** 3 **Course Fee** None

Department Chairperson Approval Alexis Thurman A. Thurman **Date** 2/4/14

Division Dean Approval Patrick Enright **Date** 2/10/14

General Education Information:

Categories:

☐ Communications ☐ History ☐ Humanities ☐ Mathematics
☐ Science ☐ Social Science ☐ Technological Competency

☐ Diversity *(check if course also meets diversity category)*

Integrated Goals: *(check all that apply)*

☐ Ethical Reasoning and Action ☐ Information Literacy

1. **Catalog Course Description**

   This course will explore topics from pre-algebra and algebra. The course will prepare middle-grades mathematics teachers with a concrete understanding of patterns, relationships and functions, polynomials, algebraic operations, first degree equations, graphing and systems of linear equations and linear inequalities and including instructional techniques and calculator-structured lessons.

2. **Prerequisite(s)**
   Elementary School or N-12 subject matter endorsement

3. **Co-requisite(s)**
   None

4. **Textbooks**
   Van de Walle, John A. (2007). *Elementary and Middle School Mathematics: Teaching Developmentally* (6th edition). New York: Addison Wesley Longman, Inc.

   Chapin, S. H. and Johnson, A. (2006). *Math Matters: Understanding the Math You Teach,* 2nd edition, Sausalito, CA: Math Solutions.

   Bittinger, *Introductory Algebra,* 11th ed.,-County College of Morris Edition (Addison-Wesley)

5. **Supplementary Books and/or Materials**
   MyMathLab, Pearson

6. **Specialized equipment, supplies, facilities, for classes limited by enrollment or restricted by accreditation and/or equipment limitations.** (Information will be used to determine differential funding category.)
   None

Revised 12/7/2011

7. Course Content (List of Topics)

- Exponential notation, order of operations
- Algebraic expressions, operations on real numbers
- Properties of real numbers, simplifying algebraic expressions
- Solving linear equations
- Formulas, applications; solving linear inequalities
- Properties of exponents (concentration on positive exponents)
- Polynomials, addition and subtraction of polynomials
- Polynomials with several variables, division by a monomial
- Introduction to factoring, factoring trinomials
- Factoring binomials, general strategies
- Solving quadratic equations by factoring
- Graphing linear equations, slope
- Solving systems of linear equations, applications
- Instructional techniques for topics above

8. Statement of Course LEARNING OUTCOMES

- **Manipulate** mathematical operations, such as absolute value and exponentials, and **understand** and **utilize** the order of operations and rules of simplification
- **Solve** linear equations involving one variable and **apply** methodology to word problems
- **Solve** systems of linear equations involving two variables and **apply** methodology to word problems
- **Perform** proficiently addition, subtraction, and multiplication of polynomials, and division by a monomial
- **Factor** basic quadratic expressions and equations, and **apply** methodology to word problems
- Infusion of instructional techniques.

9. Statement of Relation to Curriculum(s)

This course is one course required to complete the Elementary with Subject Matter Specialization: Mathematics Grade 5-8 Certificate of Eligibility.

10. Format for offering the course (check all that apply)

☒ **Traditional** ☐ **On-Line** ☒ **Hybrid**