MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE
COURSE OUTLINE

Faculty are required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Collegewide Curriculum Committee.

DEPT.: MATH                         COURSE NO.: 0099

NUMBER OF CREDITS: 2

COURSE TITLE: Higher Algebra II

CATALOG DESCRIPTION: Teaches polynomials, operations with polynomials, factoring polynomials, polynomials with several variables, rational expressions, graphs, functions and their applications. This course is not considered a transfer course.

AUDIENCE: Likely offered as instructor led, ITV or Internet

FULFILLS MN TRANSFER CURRICULUM AREA(S) (Leave blank if not applicable)
Area : by meeting the following competencies:
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PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE: Math 0098 or placement by Accuplacer.

LENGTH OF COURSE: One semester or alternative format of ½ semester.

THIS COURSE IS USUALLY OFFERED:
Every other year ☐ fall ☒ spring ☒ summer ☒ undetermined ☐

Four goals are emphasized in course at Minnesota West Community & Technical College:

1) ACADEMIC CONTENT:
   a) To solve problems using basic concepts of Algebra and Geometry.
   b) To provide a basic background in algebra to enable the student to progress to college course work at a higher level with confidence.
   c) To master a higher level of mathematical skill.
   d) To develop a higher level of mathematical thinking.
   e) To develop an appreciation of the language of the sciences.

2) THINKING SKILLS:
   a) Develop the ability of using algebraic expressions to analyze and solve “real-world” problems.
   b) Using and developing mathematical models to understand patterns.
   c) Developing and using problem solving strategies.
   d) Focusing on improving critical thinking skills (logical, observational, insightful, and
3) COMMUNICATIONS SKILLS:
   a) Writing concise solution papers to mathematical problems, mathematical ideas and definitions.
   b) Oral interpretation of problems.
   c) Solving problems in cooperative groups.
   d) Organize ideas and data using graphing techniques.
   e) Relating mathematical ideas to “real-world” applications.

4) HUMAN DIVERSITY:
   a) Working in small groups to experience different ways people solve problems and interpret and develop strategies in solving mathematical problems.
   b) Changing partners from time to time to enrich each person’s point of view.

TOPICS TO BE COVERED:
1) Polynomials
2) Operations with polynomials (addition, subtraction, multiplication, division)
3) Operations of polynomials in several variables
4) Factoring polynomials
5) Rational expressions; addition subtraction, division, multiplication and simplifying, utilizing properties of least common multiple (LCM) and greatest common factor (GCF)
6) Simplifying complex rational expressions and solving rational equations
7) Functions
8) Graphs of functions
9) Domain and range of functions
10) Linear Functions; graphs and slope
11) Finding equations of lines

LIST OF EXPECTED COURSE OUTCOMES:
1) Perform Calculations with polynomials
2) Investigate rational expressions and their applications
3) Explore functions utilizing function notation, the graphs of functions and the concepts of domain and range
4) Develop, interpret and graph equations of lines
5) Apply key concepts to application problems

LEARNING/TEACHING TECHNIQUES used in the course are:
☒ Collaborative Learning ☒ Problem Solving
☒ Student Presentations ☒ Interactive Lectures
☐ Creative Projects ☒ Individual Coaching
☒ Lecture ☚ Films/Videos/Slides
☒ Demonstrations ☚ Other (describe below)
☐ Lab

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:
☒ Reading ☒ Tests ☒ Individual Projects
EXPECTED STUDENT LEARNING OUTCOMES:

1. a) Evaluate and perform operations with polynomials (addition, subtraction, multiplication, division)
   b) Expand concepts of polynomials to polynomials with several variables
   c) Derive the factors of polynomials using factorization techniques
2. a) Perform operations with rational expressions (addition, subtraction, multiplication, division)
   b) Simplify complex rational expressions
   c) Solve applied rational equations
3. a) Develop function terminology and determine domain and range
   b) Evaluate functions symbolically and graphically
   c) Investigate the graphs of functions
4. a) Calculate and define the slope and intercepts of lines
   b) Develop equations for lines using graphs, slopes, and/or points on a line
   c) Interpret the equation of a line from a graph and the equation itself
5. a) Use factoring to solve applied quadratic equations
   b) Solve application problems using properties of rational equations
   c) Graph and interpret applied linear data utilizing computer software

The information in this course outline is subject to revision

To receive reasonable accommodations for a documented disability, please contact the campus Student Services Advisor or campus Disability Coordinator as arrangements must be made in advance. In addition, students are encouraged to notify their instructor.

Veteran Services: Minnesota West is dedicated to assisting veterans and eligible family members in achieving their educational goals efficiently. Active duty and reserve/guard military members should advise their instructor of all regularly scheduled military appointments and duties that conflict with scheduled course requirements. Instructors will make every effort to work with the student to identify adjusted timelines. If you are a veteran, please contact the Minnesota West Veterans Service Office.

This document is available in alternative formats to individuals with disabilities by contacting the Student Services Advisor or by calling 800-658-2330 or Minnesota Relay Service at 800-627-3529 or by using your preferred relay service.