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.: 0100

NUMBER OF CREDITS: 2

COURSE TITLE: Higher Algebra III

CATALOG DESCRIPTION: Teaches systems of equations in two and three variables, compound inequalities, absolute value equations and inequalities, radical expressions and equations, quadratic equations, exponential and logarithmic functions.

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 0099 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) Solving systems of equations in two and three variables
   2) Solving applied problems using systems of equations
   3) Sets, inequalities, interval notation, unions, intersections
   4) Solving compound inequalities, absolute value equations and inequalities
   5) Radical functions and representation as exponents
   6) Simplifying and performing operations with radicals
   7) Basics of quadratic equations
   8) Solving quadratic equations using the quadratic formula and graphically
   9) Exponential functions and their applications
  10) Logarithmic functions and properties of logarithms
  11) Solving exponential and logarithmic equations

LIST OF EXPECTED COURSE OUTCOMES:
  1) Develop and solve systems of equations in two and three variables
  2) Formulate solutions to compound inequalities, absolute value equations and absolute value
      inequalities and express solutions using interval and set notation
  3) Explore radical expressions and functions
  4) Investigate quadratic functions and equations by exploring the formulas, graphs and properties as
     they relate to solutions.
  5) Derive the solutions to exponential and logarithmic equations by applying properties of logarithms
     and inverse functions.

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

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:
• Graph and use the graph to solve systems of equation in two variables
• Solve systems of equations in two variables using elimination and substitution
• Solve system of equations in three variables
• Set-up and solve applied problems requiring systems of equations in two and three variables
• Articulate answers in interval notation and set notation using unions and intersections
• Solve compound inequalities
• Construct solutions to absolute value equations and inequalities
• Develop applications for absolute value equations and inequalities
• Represent radicals as exponents
• Simplify and express radicals in standard form
• Perform operations with radicals
• Manipulate the graphs of quadratics using computer software
• Solve quadratic equations using the quadratic formula and graphs
• Perform calculations for applied problems that use quadratic equations
• Evaluate formulas for the application of exponential functions
• Conduct computations with exponential and logarithmic functions
• Apply inverse properties and properties of logarithms to solve exponential and logarithmic equations

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.

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