

COMMON COURSE OUTLINE: Course discipline/number/title: MATH 1117: Pre calculus

A. CATALOG DESCRIPTION

1. Credits: 4

2. Hours/Week: 4

3. Prerequisites (Course discipline/number): Successful completion of MATH 1115 with grade of C or better or appropriate score on RCTC placement test.

4. Co-requisites (Course discipline/number): None

5. MnTC Goals (if any): CT, MA

For students requiring further experience with advanced algebra prior to Calculus. Topics include Trigonometric Functions and their inverses, Law of Sin's, Law of Cosines, Vectors, complex numbers, linear and non-linear inequalities and equations; graphing polar equations, mathematical induction, analytic trigonometry, sequences, series, and matrices, higher order rational, polynomial, exponential and logarithmic functions.

B. DATE LAST REVISED (Month, year): June, 2000

C. OUTLINE OF MAJOR CONTENT AREAS:

1. Linear and Quadratic Functions, Equalities and Inequalities
2. Graphing functions and relations
3. Complex numbers and graphical representation
4. Polynomial and Rational Functions and their graphs
5. Composition, Inverse, Exponential and Logarithmic Functions, Equations
6. Regression Models of Data
7. Trigonometric Functions, Graphs, Wrapping, Circular and Inverse Functions
8. Trigonometric Identities and Conditional Equations
9. Trigonometric Equations, Law of Sines, Law of Cosines
10. Geometric and algebraic vectors, Polar graphing and polar equations
11. Complex Numbers in Polar and Trigonometric form, De Moivre's Theorem
12. Systems of linear and nonlinear equations and inequalities, Matrices
13. Gauss-Jordan Elimination, Matrix operations, systems, equations, inverses,
14. Linear Programming, Sequences, Series
15. Math Induction, Permutations, Combinations, Probability, Binomial Theorem
16. Conic Sections, Circle, Parabola, Hyperbola, Ellipse
17. Translation of Axes, Parametric Equations

D. LEARNING OUTCOMES (GENERAL): The student will be able to:

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E. LEARNING OUTCOMES (MNTC): Competencies from the Minnesota Transfer Curriculum (MNTC):

Goal 2: Critical Thinking (CT): The student will be able to:

1. Gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected.
2. Imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives, which can give alternative meanings or solutions to given situations or problems.
3. Analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.
4. Recognize and articulate the value assumptions, which underlie and affect decisions, interpretations, analyses, and evaluations made by ourselves and others.

Goal 4: Mathematics/Symbolic Systems (MA): The student will be able to:

1. Illustrate historical and contemporary applications of mathematics/logical systems.
2. Clearly express mathematical/logical ideas in writing.
3. Explain what constitutes a valid mathematical/logical argument (proof).
4. Apply higher-order problem solving and/or modeling strategies.



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F. METHODS FOR EVALUATION OF STUDENT LEARNING:

1. Unit Exams
2. Quizzes
3. Homework
4. Group assignments
5. Comprehensive Final Exam

G. SPECIAL INFORMATION (if any): None