



## MASTER COURSE OUTLINE

A. MATH 1115 Pre-Calculus

B. COURSE DESCRIPTION:

This course is for students requiring further experience with advanced algebra prior to calculus. Topics include trigonometric functions and their inverses, Law of Sines, Law of Cosines, complex numbers, linear and non-linear inequalities and equations; mathematical induction, analytic trigonometry, sequences, series, higher order rational, polynomial, exponential and logarithmic functions. Optional: matrices, vectors, graphing polar equations  
 Prerequisite: Math 1110 with grade of C or better or qualifying score on placement exam.  
**MnTC (Goals 4/MA and 2/CT); (5 Cr – 5 lect, 0 lab)**

C. \*MnTC Discipline: Mathematical/Logical Reasoning \*\*Core Theme: Critical Thinking

D. MAJOR CONTENT AREAS:

- Review of linear and quadratic functions, equations and inequalities
- Review of graphing functions and relations
- Complex numbers
- Polynomial and rational functions and their graphs including oblique asymptotes
- Composition, inverse, exponential and logarithmic functions
- Regression models of data
- Trigonometric functions, graphs, wrapping, circular and inverse functions
- Trigonometric identities
- Trigonometric equations
- Law of Sines, Law of Cosines
- Sequences, series
- Mathematical induction

E. GOAL TYPES, OBJECTIVES, AND OUTCOMES:

<u>GOAL</u>	<u>OBJECTIVES</u>	<u>OUTCOMES</u>
<u>MnTC Goal 2a</u>	<b>Students will be able to</b> 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.	<b>The student will successfully</b> 1. analyze models created and determine which would be the most applicable to the situation. 2. use graphs to make generalizations to assist in predicting the shape of other functions.
<u>MnTC Goal 2b</u>	imagine and seek out a variety of possible goals, assumptions, interpretations, of perspectives which can give alternative	1. use more than one method to solve similar problems.

	meanings or solutions to given situations or problems.	2. share methods used to interpret and solve application problems with other students.
<u>MnTC Goal 2c</u>	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.	1. list the assumptions and limitations needed to accept a mathematical model.
<u>MnTC Goal 4a</u>	illustrate historical and contemporary applications of mathematical/logical systems.	1. apply properties of real numbers along with the systematic properties of algebra in such fields as science, business, statistics, and personal decision making.
<u>MnTC Goal 4c</u>	explain what constitutes a valid mathematical/logical argument (proof).	1. use properties of trigonometric functions to prove trigonometric identities. 2. use properties such as definitions, axioms, postulates, and theorems to generate equivalent equations until either the resulting equation provides a solution or until a contradiction is established.
<u>MnTC Goal 4d</u>	apply higher-order problem-solving and/or modeling strategies.	1. use modeling strategies to solve applied problems.

#### F. SPECIAL INFORMATION:

This course may require use of the Internet, the submission of electronically prepared documents and the use of a course management software program. Students who have a disability and need accommodations should contact the instructor or the Student Success Center at the beginning of the semester. This information will be made available in alternative format, such as Braille, large print, or current media, upon request. A graphing calculator is required.

#### G. COURSE CODING INFORMATION:

Course Code A/ Class Maximum 48; Letter Grade.

Revision date: 9/1/16; 9/20/16

AASC Approval date: 2/19/19

<b>*Riverland Community College Disciplines</b>	<b>MnTC Goal Number</b>
Communication (CM)	<b>1</b>
Natural Sciences (NS)	<b>3</b>
Mathematics/Logical Reasoning (MA)	<b>4</b>
History and the Social & Behavioral Sciences (SS)	<b>5</b>
Humanities and Fine Arts (HU)	<b>6</b>

<b>**Riverland Community College Core Themes</b>	<b>MnTC Goal Number</b>
Critical Thinking (CT)	<b>2</b>
Human Diversity (HD)	<b>7</b>
Global Perspective (GP)	<b>8</b>
Ethical and Civic Responsibility (EC)	<b>9</b>
People and the Environment (PE)	<b>10</b>

\*These five MnTC Goals have been identified as Riverland Community College Disciplines.

\*\* These five MnTC Goals have been identified as Riverland Community College Core Themes.

NOTE: The Minnesota Transfer Curriculum “10 Goal Areas of Emphasis” are reflected in the five required discipline areas and five core themes noted in the Riverland Community College program of study guide and/or college catalog.

Riverland