



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 a grade of C or better or appropriate placement in course based on Multiple Measures for Course Placement – Math Decision Band Chart.

MnTC (Goals 4/MA and 2/CT); (5 Cr – 5 lect, 0 lab)

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

D. RIVERLAND INSTITUTIONAL LEARNING OUTCOMES:

This course addresses the following Riverland Institutional Learning Outcome(s):

- ILO 1: critical thinking (*Core Theme Goal 2*)
- ILO 2: awareness of the larger global community (*Core Theme Goal 7 or 8*)
- ILO 3: ethical, engaged citizenship (*Core Theme Goal 9 or Goal 10*)
- ILO 4: communication and collaboration (*Discipline Goal 1 and by any learning outcome(s) involving communication or collaboration*)

E. 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

F. GOAL TYPES, OBJECTIVES, AND OUTCOMES:

GOAL	OBJECTIVES Students will be able to	OUTCOMES The student will successfully
<u>MnTC Goal 2a</u>	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.	<ol style="list-style-type: none"> analyze models created and determine which would be the most applicable to the situation. 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 meanings or solutions to given situations or problems.	<ol style="list-style-type: none"> use more than one method to solve similar problems. 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.	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 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).	<ol style="list-style-type: none"> use properties of trigonometric functions to prove trigonometric identities. 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.	<ol style="list-style-type: none"> use modeling strategies to solve applied problems.

G. 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 Accessibility Services 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.

H. COURSE CODING INFORMATION:

Course Code A/ Class Maximum 48; Letter Grade

Revision date: 09/01/16; 09/20/16; 09/29/22; 03/14/23

AASC Approval date: 02/19/19; 10/18/22; 03/28/23

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

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

*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.