



MASTER COURSE OUTLINE

A. MATH 1075 Quantitative Reasoning

B. COURSE DESCRIPTION:

This course integrates quantitative literacy with numeracy, probability, mathematical modeling, and statistical thinking. Topics covered include: creation and interpretation of graphs; descriptive statistics; inferential statistics; and mathematical modeling with linear, exponential, and other nonlinear functions. The essential skills of communicating mathematics effectively and using appropriate technologies will also be developed in this course. Prerequisites: Math 0660 or appropriate placement in course based on Multiple Measures for Course Placement – Math Decision Band Chart.

MnTC (Goals 4/MA and Goal 2/CT); (3 Cr – 3 lect, 0 lab)

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

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:

- Numeracy
 - Number sense and estimation
 - Ratios and proportions
 - Percentages
 - Voting and apportionment
- Mathematical modeling
 - Linear and other polynomial models
 - Correlation
 - Exponential and logistic models
 - Personal finance applications
- Statistical analysis
 - Charts and graphs
 - Distributions, including normal distribution
 - Sampling and error
 - Statistical process

F. GOAL TYPES, OBJECTIVES, AND OUTCOMES:

<u>GOAL</u>	<u>OBJECTIVES</u> Students will be able to	<u>OUTCOMES</u> The student will successfully
<u>MnTC Goal 4b</u>	clearly express mathematical/logical ideas in writing.	1. communicate mathematical understanding to others verbally and in written form.
<u>MnTC Goal 4c</u>	explain what constitutes a valid mathematical/logical argument (proof).	1. analyze solutions to check reasonableness and evaluate accuracy of data.
<u>MnTC Goal 4d</u>	apply higher-order problem solving and/or modeling strategies.	1. apply critical thinking skills and mathematical models to solve a variety of real-world application problems.
<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.	1. analyze and interpret information from a variety of graphs and charts. 2. create graphs and charts from provided data.
<u>MnTC Goal 2b</u>	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.	1. use more than one method to solve similar problems or 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. use various forms of mathematical models to explain observed data and use these models to predict possible future results.
<u>CS</u>	investigate various personal financial applications and develop a better understanding of how to manage finances.	1. use observed loan information and financial models to estimate various loan details. 2. analyze and interpret various aspects of credit card accounts. 3. analyze the effects of taxes, including income taxes, on personal finances.
<u>CS</u>	demonstrate an awareness of the application of mathematics to global and social issues.	1. analyze data from a variety of global and social issues. 2. collaborate with other students to increase mutual awareness and understanding of important issues.
<u>CS</u>	exhibit understanding of concepts related to the statistical analysis process.	1. analyze and interpret data from statistical studies, including sampling characteristics, error, and bias.
<u>CS</u>	demonstrate mastery of technology necessary to help solve application problems.	1. use appropriate technology and software to perform analysis and calculations.

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.

H. COURSE CODING INFORMATION:

Course Code D/Class Maximum 30; Letter Grade

Revision date:
 AASC Approval date: 02/20/24

*These five MnTC Goals have been identified as Riverland Community College Core Themes. Every course in the Riverland Community College curriculum shall meet outcomes from one of these themes.

**These five MnTC Goals have been identified as Riverland Community College Disciplines. Riverland’s MnTC courses also shall meet outcomes from a Discipline Area.

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 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

**Riverland Community College Discipline Areas	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