



## MASTER COURSE OUTLINE

A. MATH 2203 Numbers and Number Systems for Elementary Education Majors

B. COURSE DESCRIPTION:

*This course is for Elementary Education majors only. It is not a MnTC course but will satisfy General Education requirements.*

The major focus of this course is to provide students with foundational knowledge in developing, investigating, exploring, discussing, using, illustrating and explaining mathematics. Students will also have exposure to and modeling of the NCTM Principles and Standards for School Mathematics. Students will study the concepts and properties of operations essential to mathematics in the elementary and middle school grades. *This course is a math content course, not a methods course. It is designed to help students develop competencies outlined in the Minnesota Rule 8710.3200.* Prerequisite: MATH1110 College Algebra or MATH2021 Fundamentals of Statistics.

**(3 Cr – 3 lect, 0 lab)**

C. \*\*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:

- I. Numeration Systems and Sets
  - A. Numerations Systems
  - B. Describing Sets
  - C. Other Set Operations and their Properties
- II. Whole Numbers and their Operations
  - A. Addition and Subtraction of Whole Numbers
  - B. Algorithms for Whole Number Addition and Subtraction
  - C. Multiplication and Division of Whole Numbers
  - D. Algorithms for Whole Number Multiplication and Division
  - E. Mental Mathematics and Estimation for Whole Number Operations
- III. Number Theory
  - A. Divisibility
  - B. Prime and Composite Numbers

C. Greatest Common Divisor and Least Common Multiple

IV. Integers

- A. Integers and the Operations of Addition and Subtraction
- B. Multiplication and Division of Integers

V. Rational Numbers and Proportional Reasoning

- A. The Set of Rational Numbers
- B. Addition, Subtraction, and Estimation with Rational Numbers
- C. Multiplication and Division of Rational Numbers
- D. Ratios, Proportions, and Proportional Reasoning

VI. Decimals: Rational Numbers and Percent

- A. Introduction to Decimals
- B. Operations on Decimals
- C. Nonterminating Decimals
- D. Percents and Interest

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>**Critical Thinking</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. apply appropriate strategies in all areas of mathematical content covered.
<u>CS</u>	formulate and solve problems from both mathematical and everyday situations.	1. share methods of problem solving used in all mathematical situations.
<u>CS</u>	communicate mathematical ideas orally and in writing, using everyday language along with mathematical language and symbols.	1. present one computational algorithm.
<u>CS</u>	demonstrate use of different methods of mathematical reasoning.	1. use models, properties, relationships and patterns to explain their mathematical reasoning.
<u>CS</u>	show an understanding of the interrelationships within mathematics by connecting mathematics to other disciplines and real-world situations.	1. present a report showing one mathematical topic that is used in another discipline.
<u>CS</u>	model, explain, and develop computational algorithms.	1. successfully demonstrate computational algorithms.
<u>CS</u>	demonstrate mastery of the four basic operations and use them to solve problems.	1. solve problems using the four basic operations. 2. solve a set of problems using estimation and calculators.
<u>CS</u>	use a variety of manipulative and visual materials for exploration and development of numbers and their relationships, four basic operations with positive and negative rational numbers, and algebraic concepts.	1. present a lesson using manipulatives.
<u>CS</u>	demonstrate conceptual and procedural understanding of all basic mathematics.	1. explain how manipulatives model the computational algorithms.

## 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 cassette tape, upon request. A scientific 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

AASC Approval date: 02/19/19; 10/18/22

<b>*Riverland Community College Disciplines</b>	<b>MnTC Goal Number</b>
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

<b>**Riverland Community College Core Themes</b>	<b>MnTC Goal Number</b>
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.