

**Course Outline for:** MATH 1055 Elements of Mathematics 1**A. Course Description:**

1. Number of credits: 4
2. Lecture hours per week: 4
3. Prerequisites: Math 0630 (C- or better); OR  
Math 0980 (C- or better); OR  
Math 0991 (C- or better); or  
Math 0601, 0602, or 0603 with mastery of sufficient topics; or  
High School GPA: 2.70+; or  
Accuplacer Quantitative Reason Score of 265+; or  
MCA Math score: 1150-1157
4. Corequisites: None
5. MnTC Goals: Goal 4 Mathematical/Logical Reasoning

As part of a two-course sequence primarily intended for students pursuing Elementary or Special Education degrees, this course focuses on counting and numbers, operations, fractions, decimals, percents, ratio and proportion, number theory and algebra. The course places an emphasis on mathematical reasoning, estimation, and problem solving.

**B. Date last reviewed/updated:** January 2024**C. Outline of Major Content Areas:**

1. Counting and numbers.
2. Operations.
3. Fractions, decimals, and percents.
4. Ratio and proportion.
5. Number theory.
6. Algebra.

**D. Course Learning Outcomes:**

Upon successful completion of the course, the student will be able to:

1. Apply and adapt a variety of appropriate strategies and technologies to solve problems that arise in mathematics and in other contexts. (2b, 4b, 4d)
2. Identify the features of number systems (e.g. positional, place value, zero as a placeholder, etc.). (4a)
3. Demonstrate fluent arithmetic computations and reasonable estimates with rational numbers expressed as decimals and fractions. (4b)
4. Perform the four arithmetic operations on whole numbers using a variety of algorithms and make sense of why the algorithms work and how these algorithms represent ways of thinking about numbers. (4b)

5. Use appropriate models to justify the way number operations have been defined. (2b, 4a, 4d)
6. Identify the use of the identity, commutative, associative, closure, and distributive properties. (2c, 4c)
7. Explain and apply concepts of number theory (e.g. divisibility, factors, multiples, and prime numbers). (2c)
8. Perform conversions among decimals, fractions, and percents. (4b)
9. Represent problems with a mathematical equation and solve problems involving rates, ratios, and proportions.
10. Identify natural numbers, whole numbers, integers, rational numbers, and real numbers. (4b)
11. Use algebraic expressions to describe and generalize patterns. (4b, 4c, 4d)
12. Distinguish among linear, quadratic and exponential functions using tables, graphs, equations and real-world situations. (4b, 4c, 4d)
13. Identify important mathematical education resources. (journals, websites). (2a, 4b)

**E. Methods for Assessing Student Learning:**

Methods for assessment may include, but are not limited to, the following:

1. In-class testing
2. Take-home testing
3. Assignments
4. Quizzes
5. Attendance
6. Group or individual projects
7. Research

**F. Special Information:**

Students are expected to have computer access. Instructors may require a scientific calculator.