

Common Course Outline for: MATH 1020 Mathematics for Liberal Arts

A. Course Description

1. Number of credits: 3
2. Lecture hours per week: 3
Lab hours per week: None
3. Prerequisites MATH 0630, or B or higher in high school Algebra II, or eligible for MATH 1020.
4. Co-requisites: None
5. MnTC Goals: 4

Topics selected from: mathematical reasoning, natural number patterns, geometry, combinatorics, elementary probability and statistics, financial mathematics, numeration systems, and selected current topics to give students practical applications of mathematics for their daily lives. This course is an alternative for students whose program does not require a college algebra course.

B. Date last reviewed: January 2018

C. Outline of Major Content Areas Topics will be selected from the following list:

1. Numeration Systems
2. Deductive and Inductive Reasoning
3. Counting Principles
4. Sequences
5. Topology
6. Graph Theory
7. Game Theory
8. Mathematical Modeling
9. Linear Programming
10. A Topic of Current Interest
11. Set Theory
12. Elementary Probability, Statistics
13. Financial Mathematics
14. Geometry and Art
15. Voting Systems

D. Course Learning Outcomes

Upon successful completion of MATH 1020, students will be able to do a reasonable selection of the following, depending on the topics chosen from part IV above: (Letters in parentheses refer to student competencies of the Minnesota Transfer Curriculum, Goal 2 – Critical Thinking, and Goal 4 – Mathematical/Logical Reasoning.)

1. Write numerals using the Roman, Babylonian, Mayan, and Egyptian numeration systems (Goal 4a,4b)
2. State the steps involved in deductive and inductive reasoning (Goal 2c,4c,4d)
3. Solve counting problems involving elementary counting principles (Goal 2b,4b,4d)
4. Calculate terms for various sequences (Goal 4a,4b,4d)
5. Determine whether two figures are topologically equivalent (Goal 2a,4a,4d)
6. Solve elementary graph theory problems. (Goal 4a,4b,4d)
7. Construct a mathematical model for an elementary real world problem. (Goal 2a,4a,4b,4d)
8. Solve an elementary linear programming problem (Goal 4a,4b,4d)
9. Know elementary set theory and use it to count elements in a finite set (Goal 2c,4b,4c,4d)
10. Solve elementary probability and statistics problems (Goal 2b,4b,4d)
11. Solve financial mathematics problems (Goal 2b,4b,4d)
12. Use one-to-one correspondences to compare cardinalities (Goal 2c,4a,4b)
13. Generate the Fibonacci sequence and describe some of its properties (Goal 4a)
14. Understand different voting systems and their limitations (Goal 4a)

DI. Methods for Assessing Student Learning

The instructor will choose from among various evaluation techniques including – but not limited to – in-class testing, take-home testing, assignments, quizzes, attendance, group or individual projects, and research. The instructor will also choose a method for end-of-the-semester evaluation.

DII. Special Information

Instructors may require a scientific calculator.