

I. EFFECTIVE DATE OF OUTLINE

Fall Semester, 2009. To be reviewed by the department annually.

II. CATALOG DESCRIPTION

- A. MATH 1060
- B. Mathematical Foundations 2
- C. 3 credits
- D. Offered Spring Semester
- E. Prerequisite: MATH 0630 or MATH 0670 or MATH 0700 with a grade of C or higher, or placement in MATH 1100. MATH 0650 or high school geometry is recommended.
- F. Part of a two-course sequence focusing on concepts and models involved in working with geometry, measurement, probability, and statistics. Emphasis on mathematical reasoning, estimation, and problem solving. Satisfies MnTC Goal 4.

III. RECOMMENDED ENTRY SKILLS/KNOWLEDGE

- A. Arithmetic skills with whole numbers, integers, fractions, decimals, and percentages
- B. Familiarity with algebraic skills, including order of operations, rules of exponents, solving linear and quadratic functions, solving algebraic proportions, rearranging formulas, ability to perform arithmetic operations with elementary algebraic expressions, and working with function notation
- C. Ability to use a scientific calculator to carry out computations involving basic arithmetic, exponents, square roots, and scientific notation
- D. Familiarity with Plane Geometry figures and terminology
- E. Graph linear equations in the Cartesian plane

IV. OUTLINE OF MAJOR CONTENT AREAS

- A. Statistics
- B. Probability
- C. Geometry and Measurement

V. LEARNING OUTCOMES

Upon successful completion of MATH 1060, students will be able to:

(Letters in parentheses refer to student competencies of the Minnesota Transfer Curriculum, Goal 2: Critical Thinking, and Goal 4: Mathematical/Logical Reasoning.)

- A. Describe data using charts such as bar graphs or box-plots. (2a,2b,4a,4b,4d)
- B. Determine the mean, median, mode, range, standard deviation, and z-scores of numerical data. (4a, 4b)
- C. Compute probabilities of simple and compound experiments. (2b,4a,4b,4c,4d)
- D. Use the Fundamental Counting Principle. (4a,4b,4c,4d)
- E. Use fundamental techniques of graph theory. (2a,2b,4a,4d)
- F. Recognize and verbally distinguish among geometric shapes in 2 or 3 dimensions. (4a,4b)
- G. Recognize reflection and rotational symmetry in two-dimensional shapes. (4a,4d)
- H. Know and apply angle properties of transversals, triangles, and polygons. (4a,4b,4c,4d)
- I. Define a tessellation and identify polygons that tessellate the plane. (4a,4b)
- J. Describe the properties of regular polygons and polyhedra. (2c,4a,4b)
- K. Use the metric and English systems to measure length, mass, area, and volume. (4a,4b)
- L. Compute areas of plane figures. (4a,4b,4d)
- M. Compute volumes and surface areas of basic 3-dimensional figures. (4a,4b,4d)
- N. Define and apply the concepts of congruence and similarity of triangles. (2c,4a,4b,4c,4d)
- O. Define and apply concepts of transformational geometry: translations, rotations, reflections, and glide reflections. (4a,4b,4c,4d)

VI. METHODS USED FOR EVALUATION OF 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.

VII. SPECIAL INFORMATION

- A. A scientific calculator is required.