

I. EFFECTIVE DATE OF OUTLINE

Fall Semester 2012. To be reviewed by the department annually.

II. CATALOG DESCRIPTION

- A. MATH 1070
- B. Mathematical Foundations 3
- C. 3 credits
- D. Offered Spring, Fall, Summer
- E. Prerequisite: MATH 1060 or concurrent registration in MATH 1060.
- F. As part of a 3-course sequence, this course focuses on probability, data and statistics, and algebra. 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, performing 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. Ability to graph linear equations in the Cartesian plane

IV. OUTLINE OF MAJOR CONTENT AREAS

- A. Data and statistics
- B. Probability
- C. Algebra

V. LEARNING OUTCOMES

- A. Describe and compare data distributions graphically (2a, 2b, 4a, 4b, 4d)
- B. Describe and compare data distributions numerically using shape, outlier, center, cluster, and spread (SOCCS) (4a, 4b)
- C. Use computer software to graph and analyze data (4a, 4d)
- D. Solve problems using the Fundamental Counting Principle, permutations, and combinations (4a, 4b, 4c, 4d)
- E. Compute probabilities of simple and compound events using both experimental and theoretical methods (2b, 4a, 4b, 4c, 4d)
- F. Use an electronic spreadsheet to iterate functions and discover number patterns (4a, 4d)
- I. Distinguish among linear, quadratic, and exponential functions using tables, graphs, equations, and real world situations (4b, 4c, 4d)
- J. Use algebraic expressions to describe and generalize patterns (4b, 4c, 4d)
- K. Use expected value to interpret data and make decisions in a wide range of applied problem situations (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

Instructors may require a scientific calculator.