

Mathematics

The study of mathematics provides foundational knowledge for understanding other disciplines, as well as logical reasoning and problem solving skills for work and life roles. The department offers a full curriculum to meet the educational needs of our students such as developmental offerings, mathematics courses specific to majors and a range of general education courses including Statistics, College Algebra, Calculus, and Ordinary Differential Equations. Courses fulfill Minnesota Transfer Curriculum requirements and graduation requirements.

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* Does not meet Minnesota Transfer Curriculum (MnTC) Distribution Requirements

MATH 0910 Introductory Algebra

This course is intended for students who need to master the fundamentals of algebra. The topics include a review of the real number system, solving equations and inequalities, and their applications, graphing linear equations, solving systems of linear equations, exponents, polynomials and quadratic equation solving and applications. (Prerequisite(s): Appropriate assessment score) 3C/3/0/0

MATH 0920 Intermediate Algebra

This course is intended for students who have had one year of high school algebra and need a refresher before taking courses such as College Algebra and/or Pre-Calculus. The topics include a review of solving equations and inequalities and their applications, exponents and polynomials, factoring polynomials, solving quadratic equations and their applications, rational expressions, rational exponents and radicals, and graphing functions (linear and quadratic). Students wanting to take Calculus will have the option of taking either Pre-Calculus or both College Algebra and Trigonometry as their prerequisites. (Prerequisite(s): Grade of "C" or better in MATH 0910, or appropriate assessment score) 3C/3/0/0

MATH 1411 Applied Mathematics

This course is required for students in certain trade programs. It is designed to help students develop the numerical skills needed to perform tasks in their trade. Topics include whole numbers, fractions, decimals, percents, ratios and proportions, powers, roots, integers, polynomials, equations, plane and solid geometry, trigonometric functions, and word problems relevant to the trades. (Placement into this course will be according to college assessment score.) 3C/2/1/0

MATH 1420 Trade Algebra and Trigonometry

This course is intended for the student who needs to master the fundamentals of algebra and right triangle trigonometry as they apply to the construction trades. The content of this course includes a review of basic math, simplifying expressions involving constants and variables, solving algebraic equations, solving literal problems using spreadsheets and graphing calculators and solving construction trade problems with algebra and right triangle trigonometry. (Placement into this course will be according to college assessment score.) 3C/3/0/0

MATH 1710 Liberal Arts Mathematics

This class includes selected topics from the mathematics of social choice, growth and symmetry, and probability and statistics. Real-life applications are used to illustrate mathematical concepts. Modern discoveries, as well as classic problems, are described using straightforward examples. A fundamental objective is to develop an appreciation for the aesthetic elements of mathematics. The development of critical thinking skills through the application of mathematics is also emphasized. This course is designed for students who are not planning to take any further mathematics courses. This course can be used to satisfy the general education requirement for math. (Prerequisite(s): MATH 0910 Introductory Algebra with a grade of "C" or better or appropriate assessment score) (MnTC: Goal 4) 3C/3/0/0

MATH 1730 College Algebra

This course covers algebraic functions and their applications. Topics include linear and quadratic functions, functions and graphs, polynomial and rational functions, exponential and logarithmic functions, systems of equations and inequalities, matrix algebra, discrete algebra, the binomial theorem and probability. Graphing calculators are used to further the student's understanding of essential mathematical concepts. Students wanting to take Calculus will have the option of taking either Pre-Calculus or both College Algebra and Trigonometry as their prerequisites. (Prerequisite(s): MATH 0920 with a grade of "C" or better, or appropriate assessment score) (MnTC: Goal 4) 3C/3/0/0

MATH 1740 Introduction to Statistics

This course covers concepts and applications of descriptive and inferential statistics. Measures of central tendency and variance, confidence intervals, normal distributions and central limit theorem are explored. The student learns about probability distributions and random variables. Techniques of estimation, hypothesis testing, z-scores, t-tests, F-tests, Chi-square tests, analysis of variance (ANOVA) and linear regression are covered in this course. This course can be used to fulfill the general education requirement for math, and transfer to 2 and 4 year institutions. (Prerequisite(s): MATH 0920 Intermediate Algebra with a grade of "C" or better or appropriate assessment score) (MnTC: Goal 4) 4C/4/0/0

Information is subject to change.
This course information is not a contract.

MATH 1750 Trigonometry

This course introduces trigonometric functions and their applications. Topics in trigonometry include angles and the unit circle, graphs of functions, equations, identities, triangles, and the Laws of Sines and Cosines. Vectors, polar coordinates, and parametric equations will also be explored. A review of the fundamentals of functions will be included at the beginning of the course. Students wanting to take Calculus will have the option of taking either Pre-calculus or both College Algebra and Trigonometry as their prerequisites. (Prerequisite(s): MATH 1730 College Algebra with a grade of "C" or better, or appropriate assessment score) (MnTC: Goal 4) 3C/3/0/0

MATH 1762 Pre-Calculus

Pre-Calculus is often described as an accelerated version of College Algebra and Trigonometry. This course introduces algebraic and trigonometric functions and their applications. Topics include polynomial, rational, exponential, logarithmic functions, sequences, series, and limits. Vectors, parametric equations, and analytic geometry will also be explored. In addition, this course covers trigonometric functions, identities and equations and the laws of sines and cosines. (Prerequisite(s): MATH 0920 Intermediate Algebra with a grade of "C" or better, or MATH 1730 College Algebra with a grade of "C" or better, or appropriate assessment score) (MnTC: Goal 4) 5C/5/0/0

MATH 1790 Special Topics in Mathematics

This course is designed to present additional or unique material and learning experiences within a specified discipline. The course will be based on student need, flexibility, and may be designed to meet various transfer and pre-major course requirements. Please see a current Course Schedule for complete course details. (MnTC: Goal 4) Variable credits 1-6

MATH 2100 Intermediate Statistics

Second course in statistics provides an approach to statistical practices including nonparametric methods, simple regression, multiple regression, logistic regression, log-linear regression, ANOVA and survival, component and Bayesian data analysis. Application and interpretation of computer output will be highlighted. This course should be useful to students who are interested in learning natural sciences, economics, finance and data science. This course can be used to fulfill the general education requirement for math, and transfer to 2 and 4 year institutions. (Prerequisite(s): MATH 1740 Introduction to Statistics with a grade of "C" or better) (MnTC: Goal 4) 4C/4/0/0

MATH 2460 Discrete Structures of Computer Science

This is a course in discrete mathematical structures to prepare students for advanced courses. Topics include set theory, functions and relations, the big O notation, logic, truth tables and Boolean expressions, proof techniques including mathematical induction, and tree/graph fundamentals. Credit will not be awarded for both MATH 2460 and CSCI 2460. (Prerequisite(s): CSCI 1410 and MATH 1730 or higher) 4C/4/0/0

MATH 2749 Calculus 1

This course is a beginning calculus course, which introduces the concepts of limits, derivative, differentiation and integration of functions with emphasis on applications. Topics include introduction to the derivatives and limits, tangent to a curve, properties of limits, derivative of a real function, the power rule and the algebra of derivatives, the chain rules, the mean value theorem, applications of differentiation including max-min problems and related rate problems, anti-derivatives and the definite integral. Graphing calculators are used to further the student's understanding of essential concepts. (Prerequisite(s): MATH 1750 Trigonometry or MATH 1762 Pre-Calculus with a grade of "C" or better, or appropriate assessment score) (MnTC: Goal 4) 4C/4/0/0

MATH 2750 Calculus 2

This course is a continuation of MATH 2749 Calculus 1 and the continued development of the properties and applications of integration. Topics include applications of integral, transcendental functions, techniques of integration sequences and series and parametric equations and polar coordinates. A graphing calculator is required. Upon completion of Calculus 2, students can take either MATH 2753 or MATH 2760. (Prerequisite(s): A grade of "C" or better in MATH 2749) (MnTC: Goal 4) 4C/4/0/0

MATH 2753 Multivariable Calculus

This course is intended for students who have successfully completed MATH 2750 Calculus 2 and covers the calculus of several variables. Topics include functions of several variables, three-dimensional analytic geometry, vectors, partial derivatives, multiple integrals, vector fields, surface integrals, Green's Theorem, Stokes Theorem, and the Divergence Theorem. (Prerequisite(s): MATH 2750 Calculus 2 with a grade of "C" or better or appropriate assessment score) (MnTC: Goal 4) 4C/4/0/0

MATH 2760 Differential Equations and Linear Algebra

This course is an introduction to differential equations and linear algebra, which focuses on ordinary differential equations but students will be introduced to partial differential equations. Topics include the basic definition, terminology and ideas of ordinary differential equation, finding solutions of and working with applications of first and second order differential equations, existence and uniqueness of solutions, variation of parameters, undetermined coefficients, matrix formulation of linear systems, Laplace transforms, and an introduction to numerical and graphical methods of solutions. Additional topics include Gauss-Jordan reduction and system of Linear equations, matrices and coordinates relative to different bases, general linear spaces, orthogonality, determinants, eigenvalues, eigenvectors, and phase plane analysis of linear and nonlinear systems of ordinary differential equations. (Prerequisite(s): MATH 2750 Calculus 2 with a grade of "C" or better or appropriate assessment score) (MnTC: Goal 4) 4C/4/0/0