

MATHEMATICS (MAT)

MAT 070: Special Topics: Self-Paced Fundamentals of Mathematics (0 credits)

This course is designed for college students who need a review in preparation for further study of college-level mathematics, and it does not fulfill the B.A./B.S. core requirement in mathematics. This is a self-paced course in which students will work independently using adaptive learning technology to refresh their basic math skills.

Lab fee: \$40

MAT 104: Fundamentals of Mathematics (3 credits)

This course is designed for college students who need a review in preparation for further study of college-level mathematics, and it does not fulfill the B.A./B.S. core requirement in mathematics.

Prerequisite: Appropriate placement test score

MAT 112: Applied University Mathematics (3 credits)

This course is designed for diverse students to acquire a solid foundation in non-calculus mathematics. It uses practical mathematics to develop problem solving and analytical skills. Topics include linear equations, linear inequalities, matrix and its application, linear programming, and the simplex method.

Prerequisite: MAT 104 or appropriate placement test score

MAT 120: Statistics (3 credits)

This is an introduction to the basic descriptive and inferential statistics for students from all disciplines. It emphasizes the development of statistical literacy and the use of computer for analyzing data. Topics include principles of experimental design; graphical and numerical methods for summarizing, describing, exploring and analyzing data; binomial and normal probability distributions; point and interval estimates for means and proportions; hypothesis testing; and correlation and regression.

Prerequisite: MAT 104 or appropriate placement test score

MAT 130: Pre-Calculus (3 credits)

This course is an overview of algebra, trigonometry and analytic geometry. It is designed to provide students with a comprehensive and mathematically sound treatment of topics needed for calculus. The topics include, functions and graphs; polynomial, rational, exponential, logarithmic, and trigonometric functions; matrices; vectors; and three-dimensional coordinate geometry.

Prerequisite: MAT 112 or appropriate placement test score

MAT 134: Notable Women in STEM (3 credits)

This is women focused, empowering students to take ownership of their lives and learning by engaging them in transformative, purposeful leadership opportunities. Introducing women role models in Science, Technology, Engineering, and Mathematics (STEM). Providing women's role models in STEM, the challenges, struggles, and contributions.

MAT 161: Numbers and Operations (3 credits)

This course is designed for students who plan to teach. It involves a study of Number & Operations with the depth required for successful mathematics instruction. Topics include, but are not limited to, mathematical processes; operations and properties of integers, whole numbers and rational numbers; computation algorithms; and basic number theory.

Prerequisite: MAT 104 or appropriate placement test score

MAT 162: Functions and Algebra (3 credits)

This course is designed for students who plan to teach. It involves a study of Number & Operations and Functions & Algebra with the depth required for successful mathematics instruction. Topics include, but are not limited to, proportional reasoning; number systems, signed numbers, and the real number line; variables, algebraic expressions and functions; solving equations; exploring graphs of equations; and connecting algebra and geometry.

Prerequisite: MAT 161

MAT 163: Geometry and Statistics (3 credits)

This course is designed for students who plan to teach. It involves a study of Geometry & Measurement and Statistics & Probability with the depth required for successful mathematics instruction. Topics include, but are not limited to, basic geometry concepts; measurement and unit conversions; using descriptive statistics and graphs to summarize data; measures of central tendency (mean, median, and mode) and dispersion (range, standard deviation, etc.); permutations, combinations, and their applications in computing probability; sample space, simple /compound events, independent/dependent events, and conditional probability.

Prerequisite: MAT 104 or appropriate placement test score

MAT 221: Calculus I (3 credits)

This course is part of a two-semester sequence (221-222), covering materials on limits, continuity, derivative of a function, techniques of differentiation, and applications of derivatives. It prepares students for further study of MAT222, Calculus II. This is an applied calculus course with less emphasis on theoretical rigor. Instead, the emphasis is on basic concepts, methods, and applications.

Prerequisite: MAT 130 or appropriate test score.

MAT 222: Calculus II (3 credits)

This course is part of a two-semester sequence (221-222), covering materials on techniques of integration, differential equations, and their applications. This is an applied calculus course with less emphasis on theoretical rigor. Instead, the emphasis is on basic concepts, methods, and applications.

Prerequisite: MAT 221 or the equivalent

MAT 250: Calculus III (3 credits)

This course offers more techniques of calculus in two and three dimensions. Topics include partial differentiation, multiple integration, sequences and series, three-dimensional vector calculus, line and surface integrals, and their applications.

Prerequisite: MAT 221 and MAT 222 or equivalent

MAT 260: Discrete Math for Computer Science (3 credits)

This course introduces students to concepts and techniques from discrete mathematics that are extensively used in the field of computer science. Students will learn strategies in how to think logically and mathematically and apply their knowledge in solving problems. Topics include logic, proofs, set theory, relations, trees, counting, discrete probability theory, and graphing.

Prerequisite: MAT 130

MAT 350: Linear Algebra (3 credits)

This course offers basic concepts of linear algebra. Topics include matrices, determinants and eigenvalues, linear systems, vector spaces, linear transformations, and their applications.

Prerequisite: MAT 112 or appropriate placement test score

MAT 450: Methods of Applied Statistics (3 credits)

This is an applied statistics course for students to understand and use statistical methods in research and applications. Topics include estimation and hypothesis testing, analysis of variance, simple and multiple linear regression, correlation, model building, analysis of categorical data, and nonparametric statistics. The course has a large data-analytic component using a statistical computing software package.

Prerequisite: MAT 120 or equivalent