Mathematics (MAT)

Courses

MAT-006. Elements of Algebra. 0 Credits.
RECI 1 hr, LECT 2 hrs
Elements of Algebra integrates the fundamental operations of arithmetic and introductory Algebra. It is intended for students whose placement examination indicates a need for a review of arithmetic and basic Algebra skills. Topics include operations on whole numbers, fractions, decimals, percent and signed numbers, linear equations and inequalities in one variable, operations on polynomials, factoring, integer exponents, and graphing. The course incorporates a Support Lab where students will receive personal assistance with problems or questions assigned as homework to supplement the lectures.
Prerequisites: Appropriate score on a placement test
Additional Fees: Course fee applies.

MAT-007. Foundations of Algebra. 0 Credits.
LECT 2 hrs
This course integrates selected topics of arithmetic and introductory algebra, including operations on whole numbers, fractions, decimals, percent and signed numbers, linear equations and inequalities in one variable, operations on polynomials, factoring, integer exponents, and graphing. Students are required to complete a series of laboratory assignments, which are designed to reinforce concepts based on the placement test results.
Prerequisites: Appropriate score on a placement test.

MAT-009. Basic Mathematics Ia. 0 Credits.
LECT 1 hr
Three (3) hours per day for one week. This is an intensive one-week review of topics typically found on the computation placement test. A passing grade satisfies the Basic Mathematics requirement.
Prerequisites: Appropriate score on a placement test.

MAT-00B. Prereq Algera 1A. 3 Credits.
LECT 3 hrs
Awarded by taking college placement test.

MAT-00R. Prereq Elem Alg. Recitation. 0 Credits.
LECT hrs
Awarded by taking the college placement test.

MAT-010. Basic Algebra Ia. 0 Credits.
LECT 1 hr
This is an intensive review of topics typically found on the basic algebra placement test. A passing grade satisfies the Basic Algebra requirement.
Prerequisites: Appropriate score on a placement test.

MAT-011. Basic Mathematics I. 0 Credits.
LECT 3 hrs
A preparatory course designed for students who need additional practice and review in arithmetic.

MAT-014. Basic Algebra I. 0 Credits.
LECT 3 hrs
A preparatory course in elementary algebra which includes rational numbers, polynomials, algebraic operations, first-degree equations, graphing, systems of linear equations, problem solving and an introduction to the quadratic equations.
Prerequisites: MAT-009 or MAT-011 and permission of department chair.

MAT-016. Intermediate Algebra. 0 Credits.
LECT 3 hrs
A second-level preparatory algebra course designed to prepare students for credit-level mathematics courses. Covered are selected topics, including systems of linear equations, polynomials, factoring, rational expressions, radicals and solving quadratic equations.
Prerequisites: MAT-007 or equivalent Minimum grade P.

MAT-050. Fundamentals of Mathematics. 0 Credits.
LECT 5 hrs
This course integrates selected topics of arithmetic and introductory algebra, including computation, topics in geometry, operations on signed numbers, solving linear equations in one variable, operations on polynomials, factoring, integer exponents and graphing.
Prerequisites: Appropriate score on a placement test.

MAT-110. College Algebra. 3 Credits.
LECT 3 hrs
An intensive course designed to prepare students for mathematics courses such as Calculus with Applications to Business and Economics and Precalculus. It covers selected algebra topics including exponents; rational expressions; polynomials, radicals, relations and functions; exponential and logarithmic functions, systems of equations.
Prerequisites: MAT-016 or MAT-060 (grade C or better) or equivalent.

MAT-113. Applied Calculus. 4 Credits.
LECT 4 hrs
A study of topics which provides a basis for continuing courses in mathematics and the physical sciences. This course includes trigonometric, exponential and logarithmic functions; analytic geometry; differentiation and integration.
Prerequisites: MAT-110 or MAT-123 or equivalent.

MAT-114. Introduction to Data Science. 4 Credits.
LECT 4 hrs
Introduction to Data Science will provide students with data literacy skills in order to understand techniques in data manipulation, visualization and interpretation. This project based course will allow students to utilize a toolkit of statistical software to perform data science methods. Ethical issues related to data privacy, authenticity and security will be addressed alongside an introduction to artificial intelligence.
Prerequisites: MAT-016 or MAT-120 or equivalent.

MAT-117. Mathematical Analysis for Business and Economics. 3 Credits.
LECT 3 hrs
Mathematical topics used in business and economics with emphasis on applications. Covered are polynomials, linear and quadratic models, systems of equations, matrix algebra, and linear programming including the Simplex Method.
Prerequisites: MAT-016, MAT-060 (grade of C or better) or equivalent.
MAT-118. Calculus With Application to Business And Economics. 3 Credits.
LECT 3 hrs
A course covering functions, derivatives and integration, with special consideration of applications to the business and economics areas. Partial differentiation is introduced.
Prerequisites: MAT-110 (grade of C or better) or equivalent.

MAT-120. Mathematics for Liberal Arts. 4 Credits.
LECT 4 hrs
A course addressed to liberal arts students. Topics include the history of mathematics, probability, statistics, geometry, number theory, algebra, graphs and functions, and a choice of selected topics.
Prerequisites: MAT-006, MAT-007, MAT-014, MAT-050 or equivalent.

MAT-123. Precalculus. 4 Credits.
LECT 4 hrs
An intensive one-semester course to prepare students for Analytic Geometry and Calculus, including absolute values; relations; functions; equations; inequalities; polynomial, rational, trigonometric, inverse trigonometric, exponential and logarithmic functions; trigonometric equations and identities; and graphs.
Prerequisites: MAT-110 (grade of C or better) or equivalent.

MAT-124. Statistics. 3 Credits.
LECT 3 hrs
The fundamental principles of statistical methods. Descriptive statistics, correlation, regression, probability, binomial and normal distributions, sampling, elementary hypothesis testing, confidence intervals and ethical issues in statistics are included.
Prerequisites: MAT-016, MAT-060, MAT-120 or equivalent.

MAT-130. Probability and Statistics. 4 Credits.
LECT 4 hrs
The fundamental principles of statistical methods. Descriptive statistics, correlation, regression, probability, binomial and normal distributions, sampling, hypothesis testing, confidence intervals and ethical issues in statistics are included. An introduction to the use of statistical software to analyze data will be emphasized.
Prerequisites: MAT-016, MAT-060 or MAT-120 or equivalent.

MAT-131. Analytic Geometry and Calculus I. 4 Credits.
LECT 4 hrs
The first semester of a three-semester sequence. Analytic geometry in the plane, differentiation and applications, and integration are covered.
Prerequisites: MAT-123 (grade of C or better) or equivalent.

MAT-132. Analytic Geometry and Calculus II. 4 Credits.
LECT 4 hrs
A continuation of Analytic Geometry and Calculus I, which covers the calculus of inverse trigonometric functions, methods of integration, analytic geometry in the plane including polar coordinates and conic sections, hyperbolic functions, sequences and series, and parametric equations.
Prerequisites: MAT-131 (grade of C or better) or equivalent.

MAT-140. Math for Radiographers. 1 Credit.
LECT 1 hr
This course discusses the math skills that are crucial in the healthcare environment. It teaches the basis measurements, calculations, percents, ratios, and proportions, scientific notation, metric conversions, basis algebraic principles and basic geometric principles used in Radiology. It reviews whole numbers, fractions, decimals and exponents. Radiology units and numeric prefixes are also discussed.
Prerequisites: MAT-016 or MAT-060 and admission to the Radiography program
Corequisites: RAD-100, RAD-104 and RAD-107.

MAT-183. Honors Probability and Statistics. 4 Credits.
LECT 4 hrs
An introduction to the principles of statistical methods. The course will integrate spreadsheet software to cover such topics as descriptive statistics, correlation, regression, probability, binomial and normal distributions, sampling, elementary hypothesis testing and confidence intervals. This course will also cover ethical issues in statistics. Comprehensive case studies will be covered throughout the semester. An introduction to the use of statistical software to analyze large data sets will be emphasized.
Prerequisites: Permission of department chair or honors advisor.

MAT-210. Probability and Statistics II. 4 Credits.
LECT 4 hrs
This course is a continuation of statistical analysis from Probability and Statistics. Techniques for collection and analysis of data emphasizing estimation and hypothesis testing, analysis of variance and regression analysis are included. Also included are nonparametric testing and an introduction to multiple regression. A focus on analyzing large data sets using statistical software.
Prerequisites: MAT-124 or MAT-130 or MAT-183 or equivalent (grade of C or better).

MAT-225. Discrete Mathematics. 4 Credits.
LECT 4 hrs
This is a 4-credit course in discrete mathematics. It is offered to math & computer science majors in their first two years of study. The course outline shows it is an exposition of real-world and modern mathematics. Discrete Mathematics covers a breadth of unique topics in number theory, graph theory, set theory, probability and statistics, and propositional logic.
Prerequisites: MAT-131.

MAT-228. Linear Algebra. 3 Credits.
LECT 3 hrs
Selected topics including matrices and determinants, vectors and vector spaces, linear transformations, eigenvalues and eigenvectors, with applications from a variety of disciplines.
Prerequisites: MAT-132 (grade of C or better) or equivalent.

MAT-230. Calculus III. 4 Credits.
LECT 4 hrs
A continuation of Analytic Geometry and Calculus II which includes analytic geometry in three dimensions, functions of several variables, partial derivatives, multiple integrals, vectors and an introduction to vector analysis.
Prerequisites: MAT-132 (grade of C or better) or equivalent.
MAT-232. Differential Equations. 3 Credits.
LECT 3 hrs
Ordinary differential equations and methods of solution. Introduction to classical equations and their solutions, with some applications to geometry, physics and engineering.
Prerequisites: MAT-132 (grade of C or better) or equivalent.

MAT-244. Ordinary Differential Equations. 4 Credits.
LECT 4 hrs
Prerequisites: MAT-132 (grade of C or better) or equivalent.

MAT-270. Numbers and Operations for Middle Grades. 3 Credits.
LECT 3 hrs
This course prepares middle-grades mathematics teachers with a concrete understanding of numbers, number systems, operations with fractions, decimals and percent; there is special consideration to ratios, proportions, factors and multiples and including instructional techniques and calculator-structured lessons.
Prerequisites: Permission of department chair. Elementary school or N-12 subject matter endorsement.

MAT-271. Algebra for Middle Grades. 3 Credits.
LECT 3 hrs
This course explores topics from pre-algebra and algebra. The course prepares middle-grades mathematics teachers with a concrete understanding of patterns, relationships and functions, polynomials, algebraic operations, first degree equations, graphing and systems of linear equations and linear inequalities and including instructional techniques and calculator-structured lessons.
Prerequisites: Permission of department chair. Elementary school or N-12 subject matter endorsement.

MAT-272. Mathematics for Middle Grades. 3 Credits.
LECT 3 hrs
This course explores topics including history of mathematics, algebra, probability and statistics while infusing instructional techniques and uses of technology.
Prerequisites: Permission of department chair. Elementary school or N-12 subject matter endorsement.

MAT-273. Statistics for Middle Grades. 3 Credits.
LECT 3 hrs
An introduction to statistical methods and reasoning as applied to practical problems. Topics include collecting and summarizing data, histograms and other types of graphs, descriptive statistics, normal distributions, sampling, surveys, use of computers in statistics and interpretation of data.
Prerequisites: Permission of department chair. Elementary school or N-12 subject matter endorsement.

MAT-274. Geometry for Middle Grades. 3 Credits.
LECT 3 hrs
This course includes topics in geometry and measurements with use of Geometer Sketchpad Software. Formulas for perimeter, area, and volume for polygons and polyhedrons, properties of parallel lines and perpendicular lines, fundamental topics of measurements, measurement instruments, measurement errors are covered while infusing instructional techniques.
Prerequisites: Permission of department chair. Elementary school or N-12 subject matter endorsement.

MAT-ELE. Mathematics Elective. 3-4 Credits.
LECT 3 hrs
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