

# MATHEMATICS (MATH)

## **MATH 003 Integrated Review for Contemporary Mathematics (2 credits)**

MATH 003: Integrated Review for Contemporary Mathematics (2 credits) will give students the mathematical foundation necessary for study of college level Contemporary Mathematics. Topics include the methods of quantitative reasoning - problem solving by Polya's method with analytic, numeric, and graphical methods, logic, algebraic and exponential models, probability and normal distribution, and selected topics from statistics. MATH 102 must be taken at the same time as MATH 003. This course may not be used to meet graduation requirements.

Prerequisite(s): (Next Gen QAS with a score of 252) or (MATH 024)

## **MATH 016 Topics in Introduction to Statistics (2 credits)**

MATH 016: Topics in Introduction to Statistics (2 credits) will give students the mathematical foundation necessary for study of college level Introduction to Statistics. Topics include linear equations and inequalities, polynomials, exponents, radicals, the Cartesian plane, data collection methods and descriptive statistics, and introductory probability concepts. Technology such as Excel and a graphing calculator will be utilized throughout the course. MATH 216 must be taken at the same time as MATH 016. May not be used for graduation credit.

Prerequisite(s): (Next Gen QAS with a score of 252 and MATH 024)

## **MATH 020 Pre-Algebra I (2 credits)**

This course provides students with a foundation necessary for study in MATH 021: Pre-Algebra II. It includes whole number concepts, fractions, decimals, percents, ratios and proportions. Basic algebraic skills are coupled with arithmetic skills throughout the course. May not be used for graduation credit. Course includes four lecture hours per week. This course requires outside class time for testing in the Test and Assessment Center.

Prerequisite(s): (Next Gen QAS with a score of 200)

## **MATH 021 Pre-Algebra II (2 credits)**

This course provides students with a foundation necessary for study in MATH 024: Stem Track I. It includes the study of signed numbers, sets and properties of numbers, algebraic expressions, linear equations, and inequalities in one variable, and linear equations in two variables. May not be used for graduation credit.

Prerequisite(s): (Accuplacer Arithmetic with a score of 065) or (Next Gen QAS with a score of 220) or (Next Gen Arithmetic with a score of 260) or (MATH 020)

## **MATH 024 STEM Track I (2 credits)**

This course will provide students with a foundation necessary for study of Math 025: Stem Track#II, Math 102: Contemporary Mathematics with Math 003 as a co-requisite, and Math 216: Introduction to Statistics with Math 016 as a co-requisite. It includes the study of rules of exponents, scientific notation, operations on polynomials, quadratic equations, and applications of quadratics. May not be used for graduation credit.

Prerequisite(s): (Next Gen QAS with a score of 236) or (MATH 021)

## **MATH 025 STEM Track II (2 credits)**

This course provides students with a foundation necessary for study in Math 101, Math 103, Math 111, Math 131, and Math 211. It includes the study of polynomial factoring, quadratic equations, rational expressions, rational exponents, radical expressions, radical equations, and functions. May not be used for graduation credit.

Prerequisite(s): (Next Gen QAS with a score of 252) or (MATH 024)

## **MATH 026 STEM Track III (2 credits)**

This course provides students with a foundation necessary for study in a college level math course. It includes the study of radical expressions, radical equations and applications of radical equations, complex numbers and complex solutions to quadratic equations, and the study of functions, their graphs, and properties of functions. An overview of inverse, exponential, and logarithmic functions is studied as well. May not be used for graduation credit. Course includes four lecture hours per week. This course requires outside class time for testing in the Test and Assessment Center.

Prerequisite(s): (Next Gen QAS with a score of 253) or (MATH 025)

## **MATH 027 STAT Track Mathematics (4 credits)**

This course will give students the mathematical foundation necessary for study of college level Introduction to Statistics. Topics include linear equations and inequalities, polynomials, exponents, radicals, the Cartesian plane, data collection methods and descriptive statistics, and introductory probability concepts. Technology such as Excel and a graphing calculator will be utilized throughout the course.

Prerequisite(s): (MATH 021) or (Next Gen QAS with a score of 232)

## **MATH 101 College Algebra (GM) (3 credits)**

This course presents linear, quadratic, logarithmic, polynomial and inverse functions. Additional topics include linear systems and inequalities, complex numbers, and piecewise-defined functions. Emphasis is placed on solving application problems related to business and social sciences.

Prerequisite(s): (Next Gen AAF with a score of 237) or (SAT Mathematics with a score of 530) or (ACT Mathematics with a score of 21) or (MATH 025) or (Next Gen QAS with a score of 263)

## **MATH 102 Contemporary Mathematics (GM) (3 credits)**

This survey course of contemporary mathematics and applications is intended for nonmath, non-science majors. Topics include logic, introductory probability and statistics, financial management, and mathematical modeling. Students must have a qualifying score on the math assessment or MATH 023 or MATH 025 or MATH 026.

Prerequisite(s): (MATH 025) or (MATH 023) or (MATH 026) or (Accuplacer College Math with a score of 001) or (SAT Mathematics with a score of 530) or (Next Gen QAS with a score of 263) or (ACT Craft and Structure with a score of 21) or (MATH 003 (may be taken concurrently))

## **MATH 103 Trigonometry (GM) (3 credits)**

This course provides a foundation for analytic geometry and calculus. Topics include functions, graphs, trigonometric functions of angles and real numbers, degree and radian measure, right triangle applications, identities, inverse functions, analytical trigonometry and trigonometric equations. Requires qualifying score on the math assessment or MATH 026.

Prerequisite(s): (MATH 026) or (Next Gen AAF with a score of 237) or (MATH 101) or (SAT Mathematics with a score of 530) or (ACT Mathematics with a score of 21)

**MATH 109 Precalculus Mathematics (GM) (4 credits)**

This course provides students with concepts and skills necessary for the study of calculus. It includes a study of algebraic and transcendental functions including their properties, inverses, graphs, equations, and applications. Additionally, the study of angles and triangles, trigonometric functions, and analytic trigonometry with applications is included. Requires a grade of C or better in MATH 103.

Prerequisite(s): (MATH 103) or or

**MATH 111 Introduction to Finite Mathematics (GM) (3 credits)**

This course is designed for students in Business Administration, Computer Information Systems and other appropriate transfer programs. Topics include graphing linear functions, systems of linear equations, linear programming, matrices and Markov chains, game theory, counting techniques, probability, logic and logic circuits.

Prerequisite(s): (MATH 026) or (Next Gen AAF with a score of 237) or (SAT Mathematics with a score of 530) or (ACT Mathematics with a score of 21)

**MATH 131 Concepts in Mathematics I (4 credits)**

This course is designed to meet the needs of prospective elementary school teachers. The domains and outcomes are those contained in the Council for the Accreditation of Educator Preparation (CAEP) 2018 K-6 Elementary Teacher Preparation Standards. Topics include fundamental operations with whole numbers, integers, fractions and decimals, estimations and mental computation, numeration systems, algebraic expressions and equations. Problem solving strategies are incorporated throughout the course.

Prerequisite(s): (MATH 026) or (Next Gen AAF with a score of 237) or (SAT Mathematics with a score of 530) or (ACT Mathematics with a score of 21)

**MATH 203 Calculus I (GM) (4 credits)**

This course is an introduction to calculus with analytic geometry. It includes a study of functions, limits, differentiation, integration, and applications of differentiation and integration. A computer algebra system will be used throughout the course. Four lecture hours per week. Requires MATH 109 with a grade of "C" or better. This course has a fee. Course fee.

Prerequisite(s): MATH 109

**MATH 204 Calculus II (GM) (4 credits)**

This course continues the study of calculus with analytic geometry. It includes techniques and applications of integration, improper integrals, infinite sequences and series, polar coordinates and parametric equations. Use of a computer algebra system such as MATLAB will be used throughout the course. Four lecture hours per week. Prerequisites MATH 203 with a grade of "C" or better. Course fee.

Prerequisite(s): MATH 203

**MATH 206 Calculus III (4 credits)**

This course provides students with an introduction to multivariable calculus and vector functions. Topics include the three-dimensional coordinate system, vector-valued functions, partial derivatives, multiple integrals, and topics in vector calculus including line and surface integrals, Green's Theorem, Stokes's Theorem, and the Divergence Theorem. Use of a computer algebra system such as MATLAB will be used throughout the course. Requires MATH 204 with a grade of "C" or better. Course fee.

Prerequisite(s): MATH 204

**MATH 208 Elementary Differential Equations (3 credits)**

This course provides the student with the skills and techniques necessary to solve ordinary linear and nonlinear differential equations. Topics include first-order differential equations, higher-order differential equations, solving differential equations using power series, Laplace Transforms, systems of differential equations, and numerical methods. This course also investigates applications of differential equations and systems. Use of a computer algebra system such as MATLAB will be used throughout the course. Requires MATH 204 with a grade of "C" or better. Course fee.

Prerequisite(s): MATH 204

**MATH 210 Discrete Structures (3 credits)**

This course provides students with the mathematical background required for study of Computer Science. Topics include truth tables, symbolic logic, logic circuits, quantifiers, methods of direct, indirect, and inductive proof, set theory, counting principles, combinatorics, the binomial theorem, recursion, and graph theory. Requires MATH 203 with a grade of "C" or higher or permission of instructor.

Prerequisite(s): MATH 203

**MATH 211 Elements of Geometry (GM) (4 credits)**

This course explores geometric concepts inductively and deductively. Topics include two- and three-dimensional geometry using techniques of synthetic, coordinate and transformational geometries, measurement and the use of technology to explore geometric concepts. Requires a qualifying score on the math assessment placement test or MATH 026.

Prerequisite(s): (MATH 026) or (Next Gen AAF with a score of 237) or (SAT Mathematics with a score of 530) or (PARCC Algebra II with a score of 750)

**MATH 212 Calculus with Applications (GM) (3 credits)**

This course is designed for students in the social and management sciences. Differential and integral calculus with emphasis on differentiation techniques and the use of calculus in the above fields form an important part of the course. Exponential and logarithmic functions, partial derivatives are included. Technology will be utilized to enhance understanding of the concepts and their applications related to their future career. This course is not open to math, chemistry, engineering, or physics majors.

Prerequisite(s): (MATH 101) or (MATH 111) or (MATH 103) or (MATH 109)

**MATH 216 Introduction to Statistics (GM) (4 credits)**

This course provides the student with the fundamental concepts and methods of statistical analysis. Course topics: measures of central tendency and variation, graphical representation of data, least squares regression, correlation, probability distributions, sampling techniques, parameter estimation, and hypothesis testing. Technology and statistical literacy will be integrated throughout the course. Students may not earn credit for both MATH 216 and DSCI 102. This course requires a qualifying score on the math assessment or successful completion of MATH 023 or MATH 025 or MATH 027.

Prerequisite(s): (MATH 023) or (MATH 027) or (MATH 025) or (Next Gen QAS with a score of 263) or (SAT Mathematics with a score of 530) or (MATH 017) or (MATH 018) or (MATH 016 (may be taken concurrently))

**MATH 217 Linear Algebra (4 credits)**

This course presents basic concepts of linear algebra. Included are systems of linear equations, vector space, matrices, determinants, linear transformations, eigenvalues, and eigenvectors. Usually offered in spring semester.

Prerequisite(s): MATH 203

**MATH 225 Numerical Methods (3 credits)**

This course is an introduction to numerical methods and accompanying programming techniques. Topics include computer arithmetic, error analysis, iterative processes, numerical differentiation, numerical integration, Gaussian elimination, approximation of functions, interpolation, curve-fitting, and numerical solution of ordinary differential equations. The syntax and data structures of programming software such as MATLAB and Mathematica are also integrated throughout this course. Offered only in the spring semester. Course fee

Prerequisite(s): (MATH 203 and CSI 131) and (MATH 204 (may be taken concurrently))