MATHEMATICS (MATH)

MATH 0111 NCBO for Algebraic Pathways 1 Credit   (1 Lec, 0 Lab)
This course is intended for students who nearly place into a transfer-level math course. The course includes the study of relations and functions, inequalities, algebraic expressions and equations (absolute value, polynomial, radical, rational), with a special emphasis on linear and quadratic expressions and equations. The use of an online software package is required.
Prerequisite(s): Math level 6

Course Type: College Prep

MATH 0132 NCBO Developmental Mathematics 1 Credit   (1 Lec, 0 Lab)
This 1 contact hour NCBO course is intended for students who nearly place into a transfer-level Math course and are on a non-algebraic Math pathway. This NCBO supports students in developing skills, strategies, and reasoning needed to succeed in mathematics, including communication and appropriate use of technology. Topics include the study of numeracy and the real number system; algebraic concepts, notation, and reasoning; quantitative relationships; mathematical models; and problem solving (the use of an online software package may be required).
Prerequisite(s): Reading level 4, Math level 4

Co-requisite(s): MATH 1332
Course Type: College Prep

MATH 0314 Algebraic Foundations 3 Credits   (3 Lec, 1 Lab)
This course is a study of the basic algebraic concepts necessary for success in MATH 1314 (College Algebra) to include exponent rules, radical and rational expressions, and the solution of equations and inequalities. This course is not applicable toward any degree.
Prerequisite(s): Reading level 4, Math level 6

Course Type: College Prep

MATH 0324 Foundations in Business and Social Sciences 3 Credits   (3 Lec, 1 Lab)
This course is the study of the basic algebraic concepts necessary for success in MATH 1324 (Math for Business and Social Sciences), to include exponent rules, radical and rational expressions, and the solution of equations and inequalities. This course is not applicable toward any degree.
Prerequisite(s): Reading level 6, Math level 6

Course Type: College Prep

MATH 0332 Foundations of Mathematical Reasoning 3 Credits   (3 Lec, 0 Lab)
This course is a study of the basic concepts necessary for success in MATH 1332 to include numeracy, proportional reasoning, probabilistic reasoning to assess risk, quantitative reasoning in personal finance and civic life, algebraic competence, reasoning, modeling, probability, collection and interpretation of data. This course is not applicable towards any degree.
Prerequisite(s): Reading level 4, Math level 4

Course Type: College Prep

MATH 0342 Foundations in Statistics 3 Credits   (3 Lec, 0 Lab)
This course is a study of the basic concepts necessary for success in MATH 1342 to include numeracy, proportional reasoning, probabilistic reasoning to assess risk, quantitative reasoning in personal finance and civic life, and algebraic competence, reasoning, modeling, probability, collection and interpretation of data. This course is not applicable towards any degree.
Prerequisite(s): Reading level 6, Math level 4

Course Type: College Prep

MATH 1314 College Algebra 3 Credits   (3 Lec, 1 Lab)
This course is an in-depth study and application of polynomial, rational, radical, exponential and logarithmic functions, and systems of equations using matrices. Additional topics such as sequences, series, probability, and conics may be included. A grade of C or better is required for MATH 0314 or MATH 0324.
Prerequisite(s): Math level 9

Course Type: Academic

MATH 1316 Plane Trigonometry 3 Credits   (3 Lec, 0 Lab)
This course consists of an in-depth study and applications of trigonometry including definitions, identities, inverse functions, solutions of equations, graphing, and solving triangles. Additional topics such as vectors, polar coordinates and parametric equations may be included.
Prerequisite(s): Math level 9

Course Type: Academic

MATH 1324 Mathematics for Business and Social Sciences 3 Credits   (3 Lec, 0 Lab)
The application of common algebraic functions, including polynomial, exponential, logarithmic, and rational, to problems in business, economics, and the social sciences are addressed. The applications include mathematics of finance, including simple and compound interest and annuities; systems of linear equations; matrices; linear programming; and probability, including expected value. A grade of C or better is required for MATH 0314 or MATH 0324.
Prerequisite(s): Math level 9

Course Type: Academic

MATH 1325 Calculus for Business and Social Sciences 3 Credits   (3 Lec, 0 Lab)
This course is the basic study of limits and continuity, differentiation, optimization and graphing, and integration of elementary functions, with emphasis on applications in business, economics, and social sciences. This course is not a substitute for MATH 2413, Calculus I.
Prerequisite(s): A grade of "C" or higher in MATH 1314 or MATH 1324 (The content of MATH 1325 is expected to be below the content level of MATH 2413)

Course Type: Academic

MATH 1332 Contemporary Mathematics (Quantitative Reasoning) 3 Credits   (3 Lec, 0 Lab)
This course contains topics that include introductory treatments of sets and logic, financial mathematics, probability, and statistics with appropriate applications. Number sense, proportional reasoning, estimation, technology, and communication should be embedded throughout the course. Additional topics may be covered. Math level 8 Prerequisite(s): A grade of C or better is required for MATH 0332 or MATH 0342

Course Type: Academic

MATH 1342 Elementary Statistical Methods (Statistics) 3 Credits   (3 Lec, 0 Lab)
This course covers collection, analysis, presentation and interpretation of data, and probability. Analysis includes descriptive statistics, correlation and regression, confidence intervals, and hypothesis testing. Use of appropriate technology is recommended.
Prerequisite(s): A grade of C or better in MATH 0342 or MATH 0332, Math level 8

Course Type: Academic

MATH 1350 Mathematics for Teachers I (Fundamentals of Mathematics I) 3 Credits   (3 Lec, 0 Lab)
This course is intended to build or reinforce a foundation in fundamental mathematics concepts and skills. It includes the conceptual development of the following: sets, functions, numeration systems, number theory, and properties of the various number systems with an emphasis on problem solving and critical thinking. This course is designed specifically for students who seek EC-8 teacher certification.
Prerequisite(s): A grade of 'C' or higher in MATH 1314

Course Type: Academic

MATH 1351 Mathematics for Teachers II (Fundamentals of Mathematics II) 3 Credits   (3 Lec, 0 Lab)
This course is intended to build or reinforce a foundation in fundamental mathematics concepts and skills. It includes the concepts of geometry, measurement, probability, and statistics with an emphasis on problem solving and critical thinking.
Prerequisite(s): A grade of C or higher in MATH 1314

Course Type: Academic

MATH 2305 Discrete Mathematics 3 Credits   (3 Lec, 0 Lab)
This course is a course designed to prepare math, computer science, and engineering majors for a background in abstraction, notation, and critical thinking for the mathematics most directly related to computer science. Topics include: logic, relations, functions, basic set theory, countability and counting arguments, proof techniques, mathematical induction, combinatorics, discrete probability, recursion, sequence and recurrence, elementary number theory, graph theory, and mathematical proof techniques.
Prerequisite(s): MATH 2413

Course Type: Academic

MATH 2318 Linear Algebra 3 Credits   (3 Lec, 0 Lab)
This course introduces and provides models for application of the concepts of vector algebra. Topics include finite dimensional vector spaces and their geometric significance; representing and solving systems of linear equations using multiple methods , including Gaussian elimination and matrix inversion; matrices; determinants; linear transformations; quadratic forms; eigenvalues and eigenvector; and applications in science and engineering.
Prerequisite(s): MATH 2414

Course Type: Academic

MATH 2320 Differential Equations 3 Credits   (3 Lec, 0 Lab)
This course focuses on ordinary differential equations, including linear equations, systems of equations, equations with variable coefficients, existence and uniqueness of solutions, series solutions, singular points, transform methods, and boundary value problems; application of differential equations to real-world problems.
Prerequisite(s): MATH 2414

Course Type: Academic

MATH 2412 Pre-Calculus Math 4 Credits   (4 Lec, 0 Lab)
This course is an in-depth combined study of algebra, trigonometry, and other topics for calculus readiness.
Prerequisite(s): A grade of C or higher in MATH 1314 or approval by Department Chair

Course Type: Academic

MATH 2413 Calculus I 4 Credits   (4 Lec, 0 Lab)
This course covers limits and continuity, the Fundamental Theorem of Calculus, the definition of the derivative of a function, techniques of differentiation, applications of the derivative to maximizing or minimizing a function, the chain rule, mean value theorem, and rate of change problems, curve sketching, definite and indefinite integration of elementary functions with an application to the calculation of areas.
Prerequisite(s): A grade of 'C' or higher in MATH 2412

Course Type: Academic

MATH 2414 Calculus II 4 Credits   (4 Lec, 0 Lab)
This course covers differentiation and integration of transcendental functions, parametric equations and polar coordinates, techniques of integration, sequences and series, improper integrals.
Prerequisite(s): A grade of 'C' or higher in MATH 2413

Course Type: Academic

MATH 2415 Calculus III 4 Credits   (4 Lec, 0 Lab)
This course focuses on advanced topics in calculus, including vectors and vector-valued functions, partial differentiation, Lagrange multipliers, multiple integrals, and Jacobians; application of the line integral, including Green's Theorem, the Divergence Theorem, and Stokes' Theorem.
Prerequisite(s): A grade of 'C' or higher in MATH 2414

Course Type: Academic