MATHEMATICS (MATH)

MATH 0459
Whole Number Arithmetic
1 Credit Hour
Content includes principles of arithmetic: fundamental operations with whole numbers, common fractions, decimals, exponents, roots, and order of operations. (2 lab hours)
Prerequisite: A qualifying score on the mathematics placement test.

MATH 0460
College Arithmetic
3 Credit Hours
Principles of arithmetic. Fundamental operations with whole numbers, common fractions and decimals. Percents and applications in the world of business. Rational numbers, exponents and powers. This course may be taken four times for credit. (3 lecture hours)

MATH 0461
Pre-Algebra
3 Credit Hours
Content includes principles of arithmetic: fundamental operations with whole numbers, common fractions, decimals, percents and applications in the world of business, rational numbers, exponents, and powers. (3 lecture hours)
Prerequisite: MATH 0459 with a C or better, or equivalent, or qualifying score on placement exam.

MATH 0465
Preparatory Mathematics for General Education
5 Credit Hours
Students develop the foundational mathematical skills necessary for general education mathematics courses (Math 1218 and Math 1220). Content features collaborative project-based and technology-enabled group work including modeling, problem solving, critical thinking, data analysis, algebra fundamentals, and both verbal and written communication of mathematical ideas. (5 lecture hours)
Prerequisite: MATH 0461 or MATH 0481 with a grade of C or better, or equivalent or a qualifying score on the math placement exam.

MATH 0470
Elementary Plane Geometry
3 Credit Hours
Points and lines in the plane, angles, triangles, quadrilaterals, polygonal regions, circles and their relationships. (3 lecture hours)
Prerequisite: MATH 0481 or college equivalent with a grade of C or better or a qualifying score on the mathematics placement test.

MATH 0481
Foundations for College Mathematics I
5 Credit Hours
Topics from elementary algebra: sets of numbers, operations with real numbers, variables, integral exponents, scientific notation, simplification of algebraic expressions, solving linear equations and inequalities in one variable, graphing linear equations, writing equations of lines, solving linear inequalities in two variables, solving systems of linear equations in two or more variables, applications, problem solving, operations with polynomials, factoring polynomials, and solving equations using factoring. (5 lecture hours)
Prerequisite: MATH 0460 or MATH 0461 with a grade of C or better, or equivalent or a qualifying score on the mathematics placement test.

MATH 0482
Foundations for College Mathematics II
5 Credit Hours
Students will survey topics from elementary algebra and intermediate algebra. Topics include: operations with algebraic fractions, solving equations with the algebraic fractions, radicals and rational exponents, complex numbers, solving quadratic equations, variation, solving equations and inequalities involving absolute value, function notation, graphing functions, inverse functions, exponential and logarithmic functions, applications, and problem solving. (5 lecture hours)
Prerequisite: Demonstrated geometry competency (level 2) and MATH 0481 (or college equivalent) with a grade of C or better or a qualifying score on the mathematics placement test.

MATH 0485
Algebra Refresher Workshop
0.5 Credit Hours
Designed as a focused review of the elementary and intermediate algebra techniques and associated problem solving skills required for a student to be successful in college level math. Students meeting mastery-level performance qualifications in the workshop can take a written departmental exit examination for potential placement. (0.5 lecture hour)
Prerequisite: Consent of instructor is required.

MATH 1100
Business Mathematics
3 Credit Hours
Students will be introduced to the application of mathematics to business transactions, analysis and solution of the business problems in profit and loss, interest, installment transactions, percent discounts, taxes, and payroll. (3 lecture hours)
Prerequisite: MATH 0460 or MATH 0461 with a grade of C or better, or equivalent or a qualifying score on the mathematics placement test.
Course types: Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.), General Education: Mathematics (A.A.S., A.G.S.)

MATH 1102
Mathematics for Health Sciences
3 Credit Hours
Designed for health science majors. Topics include systems of measurements, use of formulas, dimensional analysis, percents, decimals, fractions, ratio and proportion, direct and inverse variation, solutions, and dosage calculations. (3 lecture hours)
Prerequisite: MATH 0465 or MATH 0481 or college equivalent with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1104
Mathematics for Horticulture
3 Credit Hours
Designed for horticulture majors only. Topics include fractions, decimals, percents, systems of measurement, dimensional analysis, use of formulas, ratio and proportion, linear equations, perimeter, area, volume, and surface area as related to landscape, mixtures as related to seed, fertilizer and chemicals, estimation, scale drawings, sales including discount and markup, construction as related to landscape, and estimates and bids on landscaping projects. (3 lecture hours)
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1108
Perspectives of Mathematics
3 Credit Hours
The course surveys some of the major ideas of mathematics and relationships to the arts, life sciences, physical sciences, social sciences, games, etc. Topics are selected from number systems, inductive and deductive reasoning, algebraic processes and methods, geometry, probability and statistics. (3 lecture hours)
Prerequisite: Demonstrated geometry competency (level 2), and MATH 0481 or college equivalent with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1115
Technical Mathematics I
3 Credit Hours
For technical/occupational programs. Emphasizes problem-solving skills using elementary algebra, right angle trigonometry, and ratio and proportion. (3 lecture hours)
Prerequisite: MATH 0481 or college equivalent with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1116
Technical Mathematics II
5 Credit Hours
A continuation of Technical Mathematics I emphasizing problem solving-skills using trigonometry, common logarithms and natural logarithms. (5 lecture hours)
Prerequisite: MATH 1115 with a grade of C or better.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1120
Mathematical Foundations for Diagnostic Medical Imaging Sonographers
3 Credit Hours
Students will be introduced to mathematical applications and problem solving in the field of sonography. Topics include systems of measurement, dimensional analysis, application of formulas, probability, and statistics. Curriculum is designed for ultrasound program applicants. (3 lecture hours)
Prerequisite: MATH 0482 (or college equivalent) with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1218 (M1 904)
General Education Mathematics
3 Credit Hours
Students will learn mathematical reasoning and the solving of real-life problems, rather than routine skills. Four topics will be studied: set theory, logic theory, counting techniques and probability, and mathematics of finance. The course is designed to fulfill general education requirements, and not designed as a prerequisite for any other college mathematics course. (3 lecture hours)
Prerequisite: MATH 0465 or MATH 0482 with a grade of C or better, or equivalent, or a qualifying score on the mathematics placement test, or a qualifying ACT math sub-score, or a qualifying SAT math sub-score, or a qualifying high school GPA with successful completion of a 4th year high school math class.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1220 (M1 901)
Quantitative Literacy
3 Credit Hours
Students will learn basic numeracy needed by a college graduate to reason about quantities, their magnitudes, and their relationships between and among other quantities. Topics include linear systems, linear programming, analysis and interpretation of graphs, logic and reasoning, descriptive statistics, the normal distribution, statistical inference, estimation, and approximation. This course is designed to fulfill general education requirements, and not designed as a prerequisite for any other college mathematics course. (3 lecture hours)
Prerequisite: MATH 0465 or MATH 0482 with a grade of C or better, or equivalent, or a qualifying score on the mathematics placement test, or a qualifying ACT math sub-score, or a qualifying SAT math sub-score, or a qualifying high school GPA with successful completion of a 4th year high school math class.
Course types: Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.), General Education: Mathematics (A.A.S., A.G.S.)

MATH 1321
Mathematics for Elementary School Teachers I
4 Credit Hours
Students interested in a career working with children from birth to grade 8 would benefit from taking this course. It is the first course of a two-part sequence. Students will explore sets, logic and mathematical reasoning, problem solving, numeration systems, and elementary number theory. Other topics will include properties, algorithms, and computation with the sets of whole numbers, integers, rational numbers, and real numbers. Active participation in problem solving, conceptual understanding, and mathematical reasoning are integral foundations of this course. Students are expected to already have mastery level arithmetic skills and be proficient at arithmetic operations. This class is intended to teach pre-service teachers multiple strategies for presenting elementary mathematical content. An arithmetic skills assessment is a required mastery component and must be passed with a score of at least 80% for successful course completion. The arithmetic skills assessment is designed to measure a student's ability to perform arithmetic skills without the use of a calculation device or assistance. This course requires students to perform strategies, methods and/or skills where students perform calculations without the use of any assistance. Assistance includes but is not limited to charts, notes, formulas, and technology. (4 lecture hours)
Prerequisite: Demonstrated geometry competency (level 1), and MATH 0482 or college equivalent with a grade of C or better or a qualifying score on the mathematics placement test or a qualifying ACT or SAT math sub-score or a qualifying high school GPA with successful completion of a 4th year high school math class.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1322 (M1 903)
Mathematics for Elementary School Teachers II
3 Credit Hours
A continuation of MATH 1321. Designed for elementary education majors. Introduction to probability and statistics, measurement, geometric constructions, coordinate geometry and geometric transformations. This course requires students to perform strategies, methods, and/or skills where students perform calculations without the use of any assistance. Assistance includes but is not limited to charts, notes, formulas, and technology. (3 lecture hours)
Prerequisite: MATH 1321 or college equivalent with a grade of C or better and demonstrated geometry competency (level 1).
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1340
History of Mathematics
3 Credit Hours
The historical development of mathematics and certain mathematical concepts from ancient times to the present, with emphasis given to basic and intermediate mathematics concepts. The focus of this mathematics-driven course will be on the problems mathematicians have faced, and the theory and methodology that were developed to resolve these problems. (3 lecture hours)
Prerequisite: MATH 1218 or college equivalent with a grade of C or better.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1428
College Algebra With Applications
3 Credit Hours
Students will learn algebra with an emphasis on applications. This course should not be taken by students planning to enroll in calculus. Topics include, but are not limited to, matrices, functions, conic sections, polynomials, exponential and logarithmic functions, and sequences and series. (3 lecture hours)
Prerequisite: Demonstrated geometry competency (level 2), and MATH 0482 or college equivalent with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1431
Precalculus I
5 Credit Hours
Students will learn algebra with an emphasis on concepts needed for calculus. Topics include, but are not limited to, functions, conic sections, matrices and determinants, polynomial theory, rational functions, sequences and series, logarithmic and exponential functions, combinatorial mathematics, and mathematical induction. (5 lecture hours)
Prerequisite: Demonstrated geometry competency (level 2), and MATH 0482 or college equivalent with a grade or C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1432
Precalculus Ii: Trigonometry
3 Credit Hours
Students will learn trigonometry with an emphasis on concepts needed for calculus. Topics include, but are not limited to, formal definition of trigonometric functions and circular functions, radian measure, inverse trigonometric functions, graphs of trigonometric functions and inverse trigonometric functions, trigonometric identities, trigonometric equations, DeMoivre's theorem, solution of triangles, polar coordinates, and applications. (3 lecture hours)
Prerequisite: MATH 1431 or college equivalent with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1533 (M1 906)
Finite Mathematics
4 Credit Hours
Students will be introduced to sets, counting techniques, probability, modeling, systems of linear equations and inequalities, matrix algebra, linear programming, Markov chains, and game theory. This course is intended for students planning to major in business, or the behavioral, social, or biological sciences. (4 lecture hours)
Prerequisite: MATH 1428 or MATH 1431 or college equivalent with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1635 (M1 902/BUS 901)
Statistics
4 Credit Hours
Students will be introduced to elements of descriptive and inferential statistics. Business applications will be emphasized throughout the course. Topics include communication with data descriptions and graphs, probability principles and their use in developing probability distributions, binomial, normal, student-t, chi-square, and F distributions, hypothesis testing, estimation, contingency tables, linear regression and correlation, and one-way ANOVA. (4 lecture hours)
Prerequisite: MATH 1428, MATH 1431, or MATH 1533 or college equivalent with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 1820
Selected Topics I
1-3 Credit Hours
Introductory exploration and analysis of selected mathematics topics with a specific theme indicated by course title listed In college class schedule. May be taken three times for credit as long as different topics are selected. (1 to 3 lecture hours)
Prerequisite: Consent of instructor is required. The precise prerequisites will vary according to the specific mathematical selected topic.

MATH 1840
Independent Study
1-4 Credit Hours
Exploration and analysis of topics within Mathematics to meet individual student-defined course description, goals, objectives, topical outline and methods of evaluation in coordination with and approved by the instructor. This course may be taken four times for credit as long as different topics are selected. (1 to 4 lecture hours)
Prerequisite: Consent of instructor is required.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 2000 (M1 900-O)
Survey of Calculus
3 Credit Hours
Students will study functions, limits, continuity, the derivative, rules for differentiation of algebraic, trigonometric, and the transcendental functions, anti-derivatives and integration, the fundamental theorem of calculus, and techniques of integration. Note: Students may not receive credit for Math 2000 and Math 2134 or Math 2231 or Math 2232. (3 lecture hours)
Prerequisite: MATH 1431 and MATH 1432 or college equivalents, both with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 2115 (M1 905/CS 915)
Discrete Mathematics
3 Credit Hours
Students will be introduced to the formal study of discrete structures in mathematics. Topics include set theory, combinatorial mathematics, logic, graph theory, Boolean algebra, and formal languages. (3 lecture hours)
Prerequisite: MATH 1428 or MATH 1431 or college equivalent with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 2134 (M1 900-B)
Calculus for Business and Social Science
4 Credit Hours
Students will be introduced to basic concepts of differential and integral calculus. This course is intended for students planning to major in business, or the behavioral, social, or biological sciences. (4 lecture hours)
Prerequisite: MATH 1431 or college equivalent with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 2231 (M1 900-1/MTH901)
Calculus and Analytic Geometry I
5 Credit Hours
This is the first calculus course for students majoring in science, technology, engineering, and mathematics. Topics include lines, circles, functions, limits, continuity, the derivative, rules for differentiation of algebraic, trigonometric, and the transcendental functions, related rates, mean value theorem, optimization and curve sketching, differentials, Newton's method, antiderivatives and integration, and the fundamental theorem of calculus. (5 lecture hours)
Prerequisite: MATH 1431 and MATH 1432 or college equivalents, both with a grade of C or better or a qualifying score on the mathematics placement test.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 2232 (M1 900-2/MTH902)
Calculus and Analytic Geometry II
5 Credit Hours
Applications of the definite integral, techniques of integration, numerical integration techniques, improper integrals, sequences and series, Taylor and Maclaurin expansions, power series, hyperbolic functions, conics, parametric equations, and polar coordinates. (5 lecture hours)
Prerequisite: MATH 2231 with a grade of C or better or equivalent
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 2233 (M1 900-3/MTH903)
Calculus and Analytic Geometry III
4 Credit Hours
Introduction to vectors and operations on vectors, geometry of space, cylindrical and spherical coordinate systems, vector functions with physics applications, arc length, curvature, multivariate functions, partial derivatives, multiple integrals and their applications, vector fields and their applications, line integrals and their applications, and Green's theorem in the plane. (4 lecture hours)
Prerequisite: MATH 2232 with a grade of C or better or equivalent
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 2235
Additional Topics in Vector Calculus
1 Credit Hour
An extension of Calculus III, covering the curl of a vector field, surface integrals, Stoke's theorem, and the divergence theorem. (1 lecture hour)
Prerequisite: MATH 2233 with a grade of C or better (or college equivalent).

MATH 2245 (MTH 911)
Linear Algebra
4 Credit Hours
Geometric vectors and vector spaces, matrices and linear transformations, inner product spaces, eigenvalues and eigenvectors, the determinant function, and formal methods of mathematical proof. (4 lecture hours)
Prerequisite: MATH 2232 or equivalent with a grade of C or better.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 2270 (MTH 912)
Differential Equations
4 Credit Hours
Equations of first order with applications, homogeneous linear equations of higher order with constant coefficients, non-homogeneous linear equations of higher order with constant coefficients, Laplace transform methods, applications of higher order differential equations, linear equations with variable coefficients, power series solutions, systems of linear equations, and numerical solutions of first order equations. (4 lecture hours)
Prerequisite: MATH 2233 with a grade of C or better.

MATH 2300
Mathematical Proof
3 Credit Hours
This course serves as a transition to upper level mathematics with a focus on writing proofs. Topics include: propositional logic, predicate logic, set theory, mathematical induction, number theory, relations and functions. (3 lecture hours)
Prerequisite: MATH 2232 with a grade of C or better.
Course types: General Education: Mathematics (A.A.S., A.G.S.)

MATH 2820
Advanced Selected Topics I
1-3 Credit Hours
Advanced exploration and analysis of selected mathematical topics with a specific theme indicated by course title listed in college class schedule. This course may be taken three times for credit as long as different topics are selected. (1 to 3 lecture hours)
Prerequisite: Consent of instructor is required. The precise prerequisites will vary according to the specific mathematical selected topic.

MATH 2860
Internship (Career & Technical Ed)
1-4 Credit Hours
Course requires participation in Career and Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits.
Prerequisite: Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.
Course types: Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.)

MATH 2865
Internship Advanced (Career & Tech Ed)
1-4 Credit Hours
Continuation of Internship (Career and Technical Education). Course requires participation in Career & Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits.
Prerequisite: Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.
Course types: Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.)

MATH 2870
Internship (Transfer)
1-4 Credit Hours
Course requires participation in work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits.
Prerequisite: Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.
Course types: Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.)

MATH 2871
Internship - Advanced (Transfer)
1-4 Credit Hours
Continuation of Internship (Transfer). Course requires participation in work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits.
Prerequisite: Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.
Course types: Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.)