MATHEMATICS (MATH)

MATH 0997 Support for Quantitative Reasoning 2 Credits

This Learning Support course provides corequisite support in mathematics for students enrolled in MATH 1001 – Quantitative Reasoning. Topics will parallel topics being studied in MATH 1001 and the course will provide support for the essential quantitative skills needed to be successful in MATH 1001. Taken with MATH 1001, topics to be covered will include logic, basic probability, data analysis and modeling from data.

Co-requisite(s): MATH 1001

MATH 0998 Support for Mathematical Modeling 2 Credits

This Learning Support course provides corequisite support in mathematics for students enrolled in MATH 1101 – Introduction to Mathematical Modeling. Topics will parallel topics being studied in MATH 1101 and the course will provide support for essential quantitative skills needed to be successful in MATH 1101. Taken with MATH 1101, this course is an introduction to mathematical modeling using graphical, numerical, symbolic, and verbal techniques to describe and explore real-world data and phenomena. Emphasis is on the use of elementary functions to investigate and analyze applied problems and questions, supported by the use of appropriate technology, and on effective communication of quantitative concepts and results. **Co-requisite(s)**: MATH 1101

MATH 0999 Support for College Algebra 2 Credits

This Learning Support course provides corequisite support in mathematics for students enrolled in MATH 1111 – College Algebra. Topics will parallel topics being studied in MATH 1111 and the course will provide support for the essential quantitative skills needed to be successful in MATH 1111. Taken with MATH 1111, this course provides an in-depth study of the properties of algebraic, exponential and logarithmic functions as needed for calculus. Emphasis is on using algebraic and graphical techniques for solving problems involving linear, quadratic, piece-wise, defined, rational, polynomial, exponential and logarithmic functions.

Co-requisite(s): MATH 1111

MATH 1001 Quantitative Reasoning 3 Credits

This course emphasizes quantitative reasoning skills needed for informed citizens to understand the world around them. Topics include logic, basic probability, data analysis, and modeling from data. Students receive credit toward graduation for only one of the following courses: MATH 1001, MATH 1111, or MATH 1101.

Notes: Registration for MATH 0997 is required each semester unless waived by satisfactory placement scores or successful completion of learning support mathematics requirements.

MATH 1101 Introduction to Mathematical Modeling 3 Credits

This course is an introduction to mathematical modeling using graphical, numerical, symbolic, and verbal techniques to describe and explore real-world data and phenomena. Emphasis is on the use of elementary functions to investigate and analyze applied problems and questions, supported by the use of appropriate technology, and on effective communication of quantitative concepts and results. Students receive credit toward graduation for only one of the following courses: MATH 1001, MATH 1101, MATH 1111.

Co-requisite(s): MATH 0998

Notes: Registration for MATH 0998 is required each semester unless waived by satisfactory placement scores or successful completion of learning support mathematics requirements.

MATH 1111 College Algebra 3 Credits

This course provides an in-depth study of the properties of algebraic, exponential, and logarithmic functions as needed for calculus. Emphasis is on using algebraic and graphical techniques for solving problems involving linear, quadratic, piece-wise defined, rational, polynomial, exponential, and logarithmic functions. Students receive credit toward graduation for only one of the following courses: MATH 1001, MATH 1101, MATH 1111.

Notes: Registration for MATH 0999 is required each semester unless waived by satisfactory placement scores or successful completion of learning support mathematics requirements.

MATH 1113 Precalculus 3 Credits

This course is an intensive study of the basic functions needed for the study of calculus. Topics include algebraic, functional, and graphical techniques for solving problems with algebraic, exponential, logarithmic, and trigonometric functions and their inverses.

Prerequisite(s): MATH 1111 with a C or better or satisfactory placement scores.

MATH 1401 Elementary Statistics - eCore 3 Credits

This is a non-calculus based introduction to statistics. Course content includes descriptive statistics, probability theory, confidence intervals, hypothesis testing, and other selected statistical topics. **Prerequisite(s):** Satisfactory placement scores equivalent to MATH 1001.

MATH 1501 Calculus 1 - eCore 4 Credits

Topics to include functions, limits, continuity, the derivative, antidifferentiation, the definite integral, and applications. **Prerequisite(s):** MATH 1113 with a grade of C or better.

MATH 2008 Foundations of Numbers and Operations 3 Credits

This course is an Area F introductory mathematics course for students in the early childhood education pathway. This course will emphasize the understanding and use of the major concepts of numbers and operations. As a general theme, strategies of problem solving will be used and discussed in the context of various topics.

Prerequisite(s): MATH 1001, MATH 1111, or MATH 1113.

MATH 2040 Applied Calculus 3 Credits

Differential and integral calculus of algebraic, logarithmic, and exponential functions; applications to social sciences, business and economics, such as maximum-minimum problems, marginal analysis, and exponential growth models. This course is designed for those students for whom the standard Calculus sequence is not required. **Prerequisite(s):** MATH 1111 with a grade of C or better.

MATH 2261 Calculus I 4 Credits

This course includes a study of functions, limits, derivatives, continuity, the chain rule, implicit differentiation, related rates, differentials, local extrema, graphing techniques, monotonicity, concavity, max-min applications, infinite limits, the mean value theorem, antiderivatives, differential equations, sigma notation, the definite integral and areas in the plane.

Prerequisite(s): MATH 1113 with a grade of C or better.

Notes: Students receive credit toward graduation for only one of the following courses: MATH 2261, MATH 1501.

MATH 2262 Calculus II 4 Credits

In this course volumes of solid s, arc lengths, surface area, work, fluid force, moments, exponential functions, logarithmic functions, inverse trigonometric functions, hyperbolic functions and their inverses, techniques for integration, indeterminate forms, L'Hopital's rule, improper integrals, Taylor's approximations, error estimates, numerical integration, fixed-point methods, infinite series and power series are studied. **Prerequisite(s):** MATH 2261 with a grade of C or better.

MATH 2263 Calculus III 4 Credits

Conic sections, translation and rotation of axes, polar coordinates, parametric equations, vectors in the plane and in three-space, the cross product, cylindrical and spherical coordinates, surfaces in three-space, vector fields, line and surface integrals, Stoke's theorem, Green's theorem and differential equations are studied in this course. **Prerequisite(s):** MATH 2262 with a grade of C or better.

MATH 2280 Discrete Mathematics 4 Credits

Includes mathematical elements of computer science such as propositional logic, predicate logic, sets, functions and relations, algorithms, combinatorics, probability, mathematical induction, recursion, elementary graph theory, trees, and Boolean logic.

Prerequisite(s): MATH 1113 with a grade of C or better or permission of the instructor.

MATH 2285 Linear Algebra 3 Credits

An introduction to linear algebra and its applications. Includes linear systems, matrices, determinants, vector spaces and their subspaces, linear independence, linear transformations, inner products, eigenvalues, and eigenvectors.

Prerequisite(s): MATH 2261 with grade of C or better. **Notes:** Intended primarily for students pursuing degrees in mathematics, computer science, physics, or engineering.

MATH 2310 Differential Equations 4 Credits

An introduction to numeric and analytic solutions of ordinary differential equations and mathematical modeling. Topics include first order differential equations, second order equations, higher order linear equations, systems of first order equations, simple non-linear equations and applications.

Prerequisite(s): MATH 2262 with a grade of C or better.