

# MATHEMATICS (MTH)

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## **MTH 067 Foundations of Mathematics (4 Credits)**

60 lecture, 4 total contact hours

In this developmental math course, students learn problem-solving and basic algebra skills. Topics for this course include applications involving integers, decimals and fractions, as well as applications of percents, proportions and consumer credit, algebraic expressions, algebraic properties, algebraic operations and multi-step equation-solving. The Rectangular Coordinate system and applications of algebra are also introduced. Students who successfully complete this course with a minimum grade of "C" will raise their Academic Math level to 2. Level I Prerequisite: Academic Reading Level 5 or higher; no minimum writing level; Academic Math Level no higher than level 2

## **MTH 097 Foundations of Algebra (4 Credits)**

60 lecture, 4 total contact hours

In this developmental math course, students will focus on algebra. Topics include linear equations, linear functions, polynomials and systems of linear equations. Other functions such as constant, quadratic, cubic, and absolute value functions are also introduced. Students who successfully complete this course with a minimum grade of "C" will raise their Academic Math level to 3. Level I Prerequisite: Academic Reading Level 5; no minimum writing level; Academic Math Level 2

## **MTH 125 Everyday College Math (4 Credits)**

60 lecture, 4 total contact hours

In this course, students will further their knowledge of mathematical concepts and applications they might encounter in everyday adult life. Students will explore the following topics: investing and borrowing, home loans, student loans, sets, Venn diagrams, functions, probability and statistics. The following outcomes will be addressed: interpretation of mathematical information; representation of mathematical information; calculation and communication of results; application of information, which includes making judgments and conclusions based on quantitative analysis of data; and communication of information, which includes expressing quantitative evidence in support of an argument. Topics including rounding, percentages, decimals, place value, exponents and roots, order of operations, solving equations, evaluating simple formulas, basic inequalities, divisors and reducing fractions, and the coordinate plane will be added to the course. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 3

## **MTH 148 Functional Math for Elementary Teachers I (4 Credits)**

60 lecture, 4 total contact hours

In this course, students will learn the mathematical concepts and problem-solving techniques necessary for students pursuing a career in elementary education. It is not a course solely for math teachers; rather it provides a general mathematical background for teachers of all subjects. Topics include problem-solving, sets, numeration systems, number theory, number sense, computations in the real number system, and algebraic reasoning. This is the first course in a two-course sequence. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 2

## **MTH 149 Functional Math for Elementary Teachers II (4 Credits)**

60 lecture, 4 total contact hours

In this course, students will learn additional mathematical concepts and problem-solving techniques necessary for success in a teaching career at the elementary school level. It is not a course solely for math teachers; rather, it provides the general mathematical background for teachers of all subjects. Topics include probability, an introduction to statistics, introductory geometry, congruence, similarity and measurement concepts. This is the second course in a two-course sequence. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 2; MTH 148 minimum grade "C"

## **MTH 157 Technical Mathematics (3 Credits)**

45 lecture, 3 total contact hours

In this course, students will learn mathematical topics specific to career technical or occupational studies for students. Topics will include measurement, algebra, geometry, trigonometry, and graphs. These are presented on an introductory level and the emphasis is on applications. The title of this course was previously Geometry and Trigonometry. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 2

## **MTH 160 Basic Statistics (4 Credits)**

60 lecture, 4 total contact hours

In this course, students will use elementary statistics to achieve statistical literacy. Emphasis is on interpretation and evaluation of statistical results. Broad topics include descriptive statistics, linear regression, basic probability theory and inferential statistics. Specific topics include describing data sets graphically and numerically, measures of center and spread, bivariate data and least squares regression, correlation, random variables, basic probability distributions, confidence intervals and hypothesis tests. A graphing calculator is required for this course. See the time schedule for current brand and model. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 3

## **MTH 169 Intermediate Algebra (4 Credits)**

60 lecture, 4 total contact hours

Intermediate Algebra is the second course in the algebra sequence. In this course, students will study the following functions: quadratic, rational, radical, logarithmic and exponential. A graphing calculator is required for this course. See the time schedule for the current brand and model. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 4. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 3

**MTH 176 College Algebra (4 Credits)**

60 or 75 lecture, 4 total contact hours

This course provides students with the necessary background for pre-calculus. Topics include graphs of functions including transformations, function composition, variation, polynomial functions of degree two and higher, polynomial and synthetic division, roots of polynomials, complex numbers, rational functions and equations, non-linear equations and inequalities, inverse functions, exponential functions equations and models, logarithmic functions equations and models and applications. A graphing calculator is required for this course. See the time schedule for the current brand and model. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 5. Since students with a math level of 3 are being allowed to enroll, it is assumed some background is missing, and will require additional support for topics including (but not limited to): Relations & Functions; Function notation; Review of linear functions; Properties of functions, including domain and range; Function composition; Inverses; Properties of radicals & radical equations; Inequalities, absolute value, and interval notation; Factoring techniques (including quadratic formula); Parent function graphs, and graphing techniques; Calculator mastery; Rules for exponents; Setting up and solving linear systems. Students with a math level of 3 must register for the sections with 75 lecture hours. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 4

**MTH 178 General Trigonometry (3 Credits)**

45 lecture, 3 total contact hours

In this course, students receive a rigorous background in trigonometry. Topics include trigonometric functions, inverse trigonometric functions, radian measure, trigonometric graph, identities, solutions of trigonometric equations, solution of triangles, rotation and vector triangles. A graphing calculator is required for this course. See the time schedule for the current brand and model. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 5 or MTH 176 minimum grade "C", may enroll concurrently

**MTH 180 Precalculus (5 Credits)**

75 lecture, 5 total contact hours

This course provides the necessary background in analytic geometry, trigonometry and advanced algebraic topics for calculus. Topics include trigonometric functions, identities and graphs, the conic sections, sequences and series and the binomial theorem. A graphing calculator is required for this course. See the time schedule for the current brand and model. Successful completion of this course with a minimum grade of "C" will raise your Academic Math level to 7. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 5 or MTH 176 minimum grade "C", may enroll concurrently

**MTH 191 Calculus I (5 Credits)**

75 lecture, 5 total contact hours

In this course, students will learn topics including limits, L'Hôpital's Rule, continuity, trigonometric functions, transcendental functions, derivatives, antiderivatives, applications of derivatives, including optimization, linearization, maximum and minimum applications, business, economics, sports, engineering, physics applications, Newton's method, and applications of integration. A graphing calculator is required for this course. See the time schedule for the current brand and model. This is a first-semester single variable college calculus course. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 7 or MTH 180 minimum grade "C"

**MTH 192 Calculus II (4 Credits)**

60 lecture, 4 total contact hours

In this course, students will explore the application of integration, integration techniques, L'Hôpital's Rule, numerical integration, improper integrals, infinite series, Taylor series, parametric equations and polar coordinates. A graphing calculator is required. See the time schedule for current brand and model. This is the second semester course in single variable calculus. Level I Prerequisite: Academic Reading and Writing Levels of 6; MTH 191 minimum grade "C"

**MTH 197 Linear Algebra (4 Credits)**

60 lecture, 4 total contact hours

In this course, students will be introduced to linear algebra. Topics include proof techniques, systems of linear equations, matrix algebra, vector spaces including abstract spaces like  $P_n$ , linear independence and span, bases and dimension, and linear transformations with their matrices. Additionally, students will explore rank theorems, isomorphism, eigenvalues and eigenspaces, diagonalization, inner product spaces, orthogonal matrices, Gram-Schmidt orthogonalization, along with various applications such as least squares approximation and QR factorization. Level I Prerequisite: Academic Reading and Writing Levels of 6; MTH 192 minimum grade "C"

**MTH 293 Calculus III (4 Credits)**

60 lecture, 4 total contact hours

In this course, students apply knowledge learned in the first two Calculus courses to functions of two or three variables, including parametric equations and polar coordinates vectors in the plane and space, partial differentiation, double and triple integrals, surface integrals, line integrals, Green's Theorem, Stokes' Theorem, Divergence, Curl and applications. This is the third course in the standard Calculus sequence. Level I Prerequisite: Academic Reading and Writing Levels of 6; MTH 192 minimum grade "C"

**MTH 295 Differential Equations (4 Credits)**

60 lecture, 4 total contact hours

In this course, students will learn to solve differential equations, including first and higher order linear and non-linear equations. Topics will include Cauchy-Euler types of equations, Bernoulli types of equations, homogeneous and non-homogeneous equations, and exact equations. The course also covers Laplace Transforms, solving systems of linear differential equations using the eigenvalue method. The course also covers linearization, numerical methods, and phase plane analysis. It is strongly recommended that students take MTH 197 and/or MTH 293 prior to or concurrently with MTH 295. A graphing calculator is required for this course. See the time schedule for current brand and model. Level I Prerequisite: Academic Reading and Writing Levels of 6; MTH 192 minimum grade "C"