

MATHEMATICS (MTH)

MTH 23 - Beginning Algebra

Credit Hours: 4, Contact Hours: 4

Division: Science Math

This is a basic course in algebra covering the following topics: operations on integers, rational numbers, numbers in scientific notation, and polynomials; exponent rules; dimensional analysis; solving linear equations; applications of linear equations in geometry, mixture, percents, and motion; graphing and analysis of graphs, particularly lines, in the coordinate plane; factoring; solving quadratic equations by factoring, applications of quadratic equations in geometry, mixture, percents and motion. The course concludes with an introduction to simplifying multiplying and dividing rational expressions and solving proportions. Good math writing form is stressed.

Required Prerequisite(s): A grade of 2.0 or better in MTH 08 or appropriate placement

MTH 111 - Intermediate Algebra

Credit Hours: 4, Contact Hours: 4

Division: Science Math

Intermediate Algebra covers elementary set notation, a description of the Real number system, its major subsets, and an introduction to the Complex number system. Simplifying exponents, and algebraic expressions. Solving linear, quadratic, rational, and radical equations. Linear inequalities and systems of equations are also solved. The function concept is referenced throughout including the graphical, symbolic and numerical representations. Group 2 course.

Required Prerequisite(s): A grade of 2.0 or better in MTH 23 or appropriate placement

Recommended Prerequisite(s): Placement into ENG 111

MTH 120 - Mathematical Explorations

Credit Hours: 3, Contact Hours: 3

Division: Science Math

This course is designed to meet the MTA graduation requirements in math for students whose programs of study have no further math requirements. This course is designed to develop quantitative reasoning skills as applied to personal and social issues. Topics will convey to the student the beauty and utility of mathematics, and its applications to modern society. Core topics include logic, models of growth (linear & exponential), personal finance, basic statistics and probability. Group 1 course. Quantitative Reasoning.

Required Prerequisite(s): A grade of 2.0 or better in MTH 23 or appropriate placement

Recommended Prerequisite(s): High school algebra and geometry; Placement into ENG 111

MTH 121 - College Algebra

Credit Hours: 4, Contact Hours: 4

Division: Science Math

This course covers algebra topics including functions, mathematical models, solving equations algebraically and graphically, polynomial functions, logarithmic functions, exponential functions, inverse functions, and linear and non-linear systems of equations. Applications are integrated throughout. Group 1 course. Quantitative Reasoning.

Required Prerequisite(s): A grade of 2.0 or better in MTH 111 or higher (excluding MTH 120 and MTH 131) or appropriate placement

Recommended Prerequisite(s): Placement into ENG 111

MTH 122 - Trigonometry

Credit Hours: 3, Contact Hours: 3

Division: Science Math

This course covers the definitions and graphic representations of the trigonometric functions. Triangles, angle measure, equations, identities, and inverse functions are discussed in detail. Law of Sines, Law of Cosines, and equations of the conic sections will also be covered. Group 1 course. Quantitative Reasoning.

Required Prerequisite(s): A grade of 2.0 or better in MTH 121 or higher (excluding MTH 131) or appropriate placement

Recommended Prerequisite(s): Placement into ENG 111

MTH 131 - Intro to Prob & Stats

Credit Hours: 3, Contact Hours: 3

Division: Science Math

Descriptive statistics, experimental design, an introduction to probability concepts and inferential statistics are included in the course. Descriptive statistics includes graphs of both numerical and categorical data, measures of central tendency, and measures of variation. The normal density function, linear regression, and the binomial model are included.

One and two sample problems involving confidence intervals and significance tests are studied for the sample mean and the sample proportion. Group 1 course. Quantitative Reasoning.

Required Prerequisite(s): A grade of 2.0 or better in MTH 111 or MTH 120 or higher or appropriate placement

Recommended Prerequisite(s): Placement into ENG 111

MTH 141 - Calculus I

Credit Hours: 5, Contact Hours: 5

Division: Science Math

This is the first course in a traditional calculus sequence, emphasizing the development of the mathematical thought process. The topics covered include limits (definitions and limit proofs), continuity, derivatives of algebraic and trigonometric functions, applications of the derivative, the indefinite and definite integral, the fundamental theorem of calculus, and applications of integration. Group 1 course. Quantitative Reasoning.

Required Prerequisite(s): A grade of 2.0 or better in MTH 122 or higher (excluding MTH 131) or appropriate placement

Recommended Prerequisite(s): Placement into ENG 111

MTH 142 - Calculus II

Credit Hours: 5, Contact Hours: 5

Division: Science Math

This course is a continuation of Calculus I. The topics include differentiation and integration involving exponential, logarithmic, and inverse trigonometric functions. There is an introduction of various integration methods. L'Hospital's Rule, improper integrals, parametric equations, polar coordinates, and infinite sequences and series are also investigated. Group 1 course. Quantitative Reasoning.

Required Prerequisite(s): A grade of 2.0 or better in MTH 141 or equivalent

Recommended Prerequisite(s): Placement into ENG 111

MTH 241 - Calculus III

Credit Hours: 5, Contact Hours: 5

Division: Science Math

The course covers multivariable calculus including three-dimensional analytical geometry, vector valued functions, partial differentiation, and multiple integration (with applications of each), and vector calculus.

Group 1 course. Quantitative Reasoning.

Required Prerequisite(s): A grade of 2.0 or better in MTH 142 or equivalent

Recommended Prerequisite(s): Placement into ENG 111

MTH 251 - Differential Equations

Credit Hours: 4, Contact Hours: 4

Division: Science Math

This course introduces the concepts of differential equations. Topics include: solving first and second order differential equations, and systems of linear differential equations. Solutions are found using analytical, numerical, or graphical techniques relating to quantitative modeling.

Laplace transforms and solving non-linear differential equations are introduced. Complex numbers and their usefulness in solving differential equations is identified. Linear algebra is introduced including the topics of; vector spaces, subspaces, spanning sets, linear dependence and independence, basis and dimensions, eigenvalues, eigenvectors, and linear transformations. Group 1 course. Quantitative Reasoning.

Required Prerequisite(s): A grade of 2.0 or better in MTH 142 or equivalent

Recommended Prerequisite(s): Placement into ENG 111