MATHEMATICS (MA)

MA 044 Pre-College Math
4 Class Hours, 4 Quarter Credit Hours
This course is designed for students who need a thorough review of arithmetic including whole numbers, fractions, and decimals. This course will integrate problem-solving related to ratios, proportions and percent. Solving basic equations and operations with signed numbers will be introduced. In addition, this course is intended to familiarize students with the calculator functions related to the applications above.

MA 100 Introduction to College Math with Lab
2 Class Hours, 4 Lab Hours, 4 Quarter Credit Hours
Prerequisites: or (MA 041 and MA 042) or MA 044
Topics to be covered in this lab-based introductory algebra course include operations with signed numbers, rules for exponents, polynomial operations, solutions to linear equations in one variable, and several applications important to various programs.

MA 105 Basic College Math with Lab
4 Class Hours, 2 Lab Hours, 5 Quarter Credit Hours
Prerequisites: or (MA 041 and MA 042) or MA 044
Topics to be covered in this lab-based introductory algebra course include operations with signed numbers, rules for exponents, polynomial operations, solutions to linear equations in one variable, and several applications important to various programs.

MA 109 Math for Life Science
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: or (MA 041 and MA 042) or MA 044
This course is designed to assist in the understanding of the proper techniques needed to perform accurate dosage calculations; vital signs in order to ensure patient safety. This course will focus on developing the mathematical skills, critical thinking and quantitative reasoning methods needed to apply medical language and systems of measurement to solve problems in a variety of healthcare settings.

MA 110 Introduction to College Math
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: MA 044 or (MA 041 and MA 042)
Topics to be covered in this introductory algebra course include operations with signed numbers, rules for exponents, polynomial operations, solutions to linear equations in one variable, and several applications important to various programs.

MA 121 Business Math
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: MA 110 or MA 100 or MA 105 or MA 109
This is an elementary applied course studying such business topics as interest rates, discounts, payrolls, markups, depreciation, insurance, mortgages, and basic statistics.

MA 125 Technical Math I
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: MA 100 or MA 110 or MA 105
Topics to be studied include the analytic geometry of a straight line, systems of linear equations, trigonometry, vectors and their applications, and quadratic equations.

MA 200 Applied Math for Business
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: MA 110 or MA 100 or MA 105
MA 200 is designed to help with the transition from basic algebra to more advanced business-related courses, such as statistics and finance. Applications will be stressed throughout the course. Specific topics include linear functions, quadratic functions, descriptive statistics, exponential functions, and annuities.

MA 210 Technical Math II
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: MA 125
The following four major topics and their applications will be studied: Cramer's Rule, exponential and logarithmic functions, trigonometry, and complex numbers.

MA 300 Statistics
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: MA 125 or MA 200 or MA 301
This introductory course stresses the use of statistics as a management tool for decision-making. The focus is on descriptive statistics, communicating statistical data, concepts of probability distribution, estimation, and hypothesis testing.

MA 301 Math for Management Studies
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: MA 105 or MA 110 or MA 125 or MA 200 or MA 210 or MA 100
MA 301 is designed to transition students from basic algebra to more advanced business applications. Specific topics include percent increase and decrease problems; linear and quadratic functions with cost, revenue, profit, supply and demand function applications; descriptive statistics; exponential and logarithmic functions with exponential growth and decay applications; compound interest and annuities. There are video examples of how to do some problems in Excel as an introduction to that program.

MA 310 Calculus I
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: MA 210
Limits will be introduced, and the derivatives and integrals of algebraic functions will be studied at length. Applications include rectilinear motion, curve sketching, maxima and minima problems, related rates, and area under a curve.

MA 315 Math for Game Developers
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: MA 210
Students will study the essential math necessary to become a successful game developer. Topics include vectors, matrices, transformations, collision detection, random numbers, rendering techniques and optimizations.

MA 320 Calculus II
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: MA 310
This continuation of Calculus I begins with derivatives of transcendental functions and proceeds with their integration. Additional topics include integration by parts, partial fractions, and numerical methods. Applications of the integral to area, volume, motion, and work will be stressed.

MA 330 Engineering Calculus I
6 Class Hours, 6 Quarter Credit Hours
Students will learn about the limits and derivatives of functions, with dedicated exploration of the derivatives of polynomials, and trigonometric, exponential, logarithmic, and hyperbolic functions. Rules and theories associated with limits and differentiation will be covered, including the chain rule, implicit differentiation, the Mean Value Theorem, and L'Hôpital's Rule. Students will also be introduced to the fundamental theorem of calculus and integrals as the antiderivative. Key concepts from this course will include derivatives as a rate of change, how the derivative helps identify maxima and minima of functions, how integrals represent the accumulation of change, and how derivatives can indicate the shape of a function.

MA 340 Engineering Calculus II
6 Class Hours, 6 Quarter Credit Hours
Prerequisites: MA 330
This course primarily covers integral calculus, including the calculation of areas under curves, areas between curves, arc lengths, and various methods of finding volumes of solids and surface areas. Integrals of exponential, logarithmic, trigonometric functions will be covered, as well as the methods of integration by parts, trigonometric substitution, partial fractions, numerical integration, and improper integrals, Differential equations will also be introduced. Sequences and series will be explored, including infinite, alternating, power, and Taylor and Maclaurin series, with divergence, integral, and comparison tests being applied in order to understand the nature of a given series

MA 350 Engineering Calculus III
6 Class Hours, 6 Quarter Credit Hours
Prerequisites: MA 340
This course takes the basic concepts from Calc I and II and applies them to functions of multiple variables, different coordinate systems, and vectors. Calculus of parametric curves and calculating area and arc length in polar coordinates will be covered. Students will explore applications of differentiation of functions of several variables, including partial derivatives, directional derivatives and gradients, and Lagrange multipliers, Multiple integration topics will include double integrals over rectangular and general regions, double integrals in polar coordinates, triple integrals, triple integrals in cylindrical and spherical coordinates, and changes of variables. Vector calculus topics will cover vector fields, line and surface integrals, conservative vector fields, Green's Theorem, divergence and curl, Stokes' Theorem, and the Divergence Theorem. Topics covered in this course will have direct applications to other engineering subjects, including Heat Transfer, Fluid Dynamics, and electrical and magnetic field theory.

MA 355 Discrete Math
4 Class Hours, 4 Quarter Credit Hours
Course is currently in development.

MA 356 Linear Algebra
4 Class Hours, 4 Quarter Credit Hours
Course is currently in development.

MA 360 Advanced Engineering Math
6 Class Hours, 6 Quarter Credit Hours
Prerequisites: MA 350
This course will supply students with the mathematical skills and knowledge necessary for upper level engineering courses. Topics covered will include complex analysis, types of differential equations and methods of solving them, and linear algebra.

MA 370 Eng. Probability & Statistics
4 Class Hours, 4 Quarter Credit Hours
Prerequisites: MA 340
Probability and statistics are studied from the perspective of engineering applications. Topics include discrete and continuous random variables, linear regression and correlation, variance, sampling distributions, and hypothesis testing. MINITAB or R is used throughout the course.