

# MATHEMATICS (MA)

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## **MA-050 - Fundamental of Mathematics and Algebra** (3 cr)

This course prepares students for their college level work by introducing abstract concepts and critical thinking skills. It covers solving and graphing linear equations, interpreting formulas, and application problems.

## **MA-115 - Quantitative Reasoning** (3 cr)

This course is designed to introduce students to applications of mathematics used in a variety of disciplines. The course requires students to use critical thinking skills and mathematical models in order to make sound decisions and problem-solve. Topics include inductive and deductive reasoning, algebraic problem-solving, networks and graph theory, financial management, sequences, series, voting, and apportionment.

*Prerequisite:* MA-050 or placement

## **MA-120 - Finite Mathematics & Linear Modeling** (3 cr)

This course introduces students to topics in mathematics, which challenge their skills of analysis and logical thinking. Topics include critical thinking, sets, logic, and linear modeling.

*Prerequisite:* MA-115 or equivalent

## **MA-135 - Statistical Applications** (3 cr)

This course emphasizes statistical reasoning, sampling methodology, probability, descriptive statistics, and inference. It includes analysis and interpretation of statistical data generated in the fields of sociology, criminal justice, allied health and hospitality. Common errors in sampling, data interpretation, and research design will be addressed. Topics include statistical thinking, descriptive statistics, the normal distribution, frequency distributions, confidence interval estimates, hypothesis testing, data interpretation and analysis and an introduction to research design.

*Prerequisite:* MA-115 or equivalent or placement

## **MA-142 - Precalculus** (3 cr)

This course is for students who plan to continue their education and need the prerequisite skills for higher-level math courses. Topics include: a review of polynomial functions, trigonometric functions and their graphs, trigonometric formulas and identities, as well as sequences and series.

*Prerequisite:* MA-115 or placement or with approval

## **MA-210 - Number Theory: Conceptual Understanding Of Mathematical Principles** (3 cr)

This course serves to provide pre-service teachers with a deep conceptual understanding of mathematics and number theory across topics that they will be expected to teach. Topics include number sets, numeration systems, number theory, and properties of the natural numbers, integers, rational, and real number systems with an emphasis on problem solving and critical thinking. In addition, students will gain facility with creating and using mathematical notation, develop a habit of looking for reasons and creating mathematical explanations, and become more comfortable exploring unfamiliar mathematical situations. Mathematical reasoning and precision of language are emphasized. Education students only.

*Prerequisite:* MA-135

## **MA-230 - Discrete Mathematics** (3 cr)

This course is designed for Computer Science majors and Computer Information Systems majors. It is a survey course of topics in elementary discrete mathematics and its applications. Topics are selected from combinatorics in which the size and structure of sets are determined; Boolean algebras and their structures, especially logic and set theory, with applications in the analysis and design of electronic circuits; and basic graph and di-graph theory including classes of graphs like trees and bipartite graphs, Eulerian graphs and Hamiltonian graphs.

*Prerequisite:* MA-142

## **MA-235 - Statistics for Business Decisions I** (3 cr)

This course is a survey of statistical techniques and their applications to business. Topics include: frequency distributions, sampling techniques, confidence intervals and hypothesis testing, and laws of probability theory. Examples are extensively used to demonstrate and apply these techniques to cases relevant to business and may include applications such as analysis and interpretation of profitability, marketing, and production line quality.

*Prerequisite:* MA-115 or equivalent or placement

## **MA-242 - Calculus I** (3 cr)

This course focuses on topics related to business fields, specifically economics. Topics include: the derivative, graphing functions, the definite integral and realistic applications that illustrate the use of calculus in other disciplines.

*Prerequisite:* MA-142 or placement

## **MA-335 - Statistics for Business Decisions II** (3 cr)

This course is a continuation of MA-235 Statistics for Business Decisions I. Topics include hypothesis testing, correlation and regression, and analysis of variance. Emphasis is placed on applications to economics, marketing, and the social sciences. Computer software is available to augment the course.

*Prerequisite:* MA-235 or placement

## **MA-348 - Linear Algebra** (3 cr)

Linear algebra is the study of linear systems of equations, vector spaces, and linear transformations. The mathematical procedures used for solving problems using systems of linear equations is a basic tool. This class will concentrate on the mathematical theory and methods of linear algebra. The student will become competent in solving linear equations, performing matrix algebra, calculating determinants, and finding eigenvalues and eigenvectors.

*Prerequisite:* MA-242

## **MA-352 - Calculus II** (3 cr)

This course is designed for Business and Computer Science majors. It is an extension of MA-242 Calculus I. Topics include techniques of integration, trigonometric functions and differential equations with applications to business, economics, ecology, medicine and general interest.

*Prerequisite:* MA-242 or placement

## **MA-362 - Calculus III** (3 cr)

This course is designed for students majoring in Business Administration, Computer Science, or Information Systems and students intend to pursue advanced degrees. Topics will include vectors and geometry of space, functions of several variables, multiple integral, and vector analysis.

*Prerequisite:* MA-352