

# MTH - MATHEMATICS

## MTH010 Conceptual Arithmetic

Credits 4

Summer/Fall/Winter/Spring

**Registration Requirement:** Co-requisite: Students may be concurrently enrolled in either RD090 or WR090, or IECC201R or IECC201W; it is NOT recommended that students take RD090, WR090 and MTH010 at the same time (any 2 but not all 3).

This course is for students who need to master the concepts of whole numbers, fractions or decimals. The emphasis of the course is on understanding concepts, estimation, simple measurement, language usage and reasoning skills. Real world applications are used and the reasonableness of answers is stressed. Calculator use is taught for computation. A scientific calculator with a fraction key, algebraic logic and expression playback is required. A specific model of calculator may be required.

**Additional Course Fee:** \$6.00

## MTH020 Applied Arithmetic and Pre-algebra

Credits 4

Summer/Fall/Winter/Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH010; each with a grade of "C" or higher; or placement above stated course levels. A scientific/graphing calculator with fraction output capabilities is required.

This course is intended for both the career-technical and baccalaureate-prep student. It includes the use of mathematics as a language, rational number operations, estimating and approximating, scientific notation, ratios, percents, proportions, the metric and U.S. Customary systems, formula development and evaluation and practical geometry. A scientific/graphing calculator with fraction output capabilities is required and its use is fully integrated in the course. A specific model of calculator may be required.

**Additional Course Fee:** \$6.00

## MTH058 Quantitative Reasoning I

Credits 6

Summer/Fall/Winter/Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH020; each with a grade of "C" or higher; or placement above stated course levels.

Quantitative Reasoning I prepares students to use non-STEM mathematics to become contributing citizens, educated consumers and effective users of numerical information. Students gain number sense, build estimation skills and solve realistic problems. Students use reasoning, percents, proportions, and formulas. Technology, especially spreadsheets, is used as a problem-solving tool. Clear communication of processes using words, data and symbols is emphasized. This course prepares the student for MTH098 and then MTH105.

**Additional Course Fee:** \$6.00

## MTH060 Beginning Algebra I ★

Credits 4

Summer/Fall/Winter/Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH020; each with a grade of "C" or better, or placement above stated course levels. A graphing calculator is required. A TI-83 Plus or TI-84 is recommended.

This is the first half of the beginning algebra course for both the baccalaureate-prep and career-technical student emphasizing problem-solving and practical applications using numerical, algebraic and graphical models. The topics covered include the real number system, positive integer exponents, unit conversions and dimensional analysis, simplifying algebraic expressions, modeling and solving problem situations with linear equations and formulas, the Cartesian plane and applications which require the Pythagorean Theorem. A graphing calculator is required and its use is fully integrated in the course.

**Additional Course Fee:** \$6.00

## MTH065 Beginning Algebra II ★

Credits 4

Summer/Fall/Winter/Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH060; each with a grade of "C" or better, or placement above stated course levels. A graphing calculator is required. A TI-83 Plus or TI-84 is recommended.

This is the second half of the beginning algebra course for both the baccalaureate-prep and career-technical student emphasizing problem-solving and practical applications using numerical, algebraic and graphical models. The topics covered include graphs and equations of lines, negative integer exponents, solving formulas and rational equations and practical geometry. A graphing calculator is required and its use is fully integrated in the course.

**Additional Course Fee:** \$6.00

## MTH084 Applied Trigonometry with Modeling

Credit 1

Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH065; each with a grade of "C" or better, or placement above stated course levels.

This is an introductory course in applied trigonometry. Topics covered include right triangle trigonometry and an introduction to models of compound interest. Practical applications are emphasized.

**Additional Course Fee:** \$6.00

## MTH095 Intermediate Algebra with Right Triangle Trigonometry ★

Credits 5

Summer/Fall/Winter/Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH065; each with a grade of "C" or higher, or placement above stated course levels. A graphing calculator is required; TI-83 Plus or TI-84 is recommended.

This is an interactive, technology-based course, which investigates the connections and interplay among various mathematical topics for both the baccalaureate-prep and technical-prep student. The concept of function is introduced informally. Linear and quadratic functions and their graphs are covered in-depth. Other topics include rational exponents, radical and rational equations, linear and non-linear systems and right triangle trigonometry. A heuristic approach to problem-solving is emphasized with problem situations modeled numerically, algebraically and graphically.

**Additional Course Fee:** \$6.00

**MTH098 Quantitative Reasoning II**

Credits 4

Fall/Winter/Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH058; each with a grade of "C" or better, or placement above stated course levels. Students need a calculator and computer access. Calculator needs MathPrint, fraction and editing capability. Quantitative Reasoning II prepares students to use non-STEM mathematics to become contributing citizens, educated consumers and effective users of numerical information. Students develop critical thinking skills and solve realistic problems. Students use iterative processes, advanced percents, linear and exponential functions, and data in mathematical modeling. Technology, especially spreadsheets, is used as a problem-solving tool. Clear communication of processes using words, data and symbols is emphasized. This course prepares the student for MTH105.

**Additional Course Fee:** \$6.00**MTH105Z Math in Society**

Credits 4

Summer/Fall/Winter/Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH095 or MTH098; each with a grade of "C" or better; or placement above stated course levels.

An exploration of present-day applications of mathematics focused on developing numeracy. Major topics include quantitative reasoning and problem-solving strategies, probability and statistics, and financial mathematics; these topics are to be weighted approximately equally. This course emphasizes mathematical literacy and communication, relevant everyday applications, and the appropriate use of current technology.

**Additional Course Fee:** \$6.00**This course fulfills:** Non-Lab Science**MTH111Z Precalculus I: Functions ★**

Credits 4

Summer/Fall/Winter/Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH095; each with a grade of "C" or better; or placement above stated course levels.

A course primarily designed for students preparing for trigonometry or calculus. This course focuses on functions and their properties, including polynomial, rational, exponential, logarithmic, piecewise-defined, and inverse functions. These topics will be explored symbolically, numerically, and graphically in real-life applications and interpreted in context. This course emphasizes skill building, problem solving, modeling, reasoning, communication, connections with other disciplines, and the appropriate use of present-day technology.

**Additional Course Fee:** \$6.00**This course fulfills:** Non-Lab Science**MTH112Z Precalculus II: Trigonometry**

Credits 4

Summer/Fall/Winter/Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH111/MTH111Z; each with a grade of "C" or better; or placement above stated course levels.

A course primarily designed for students preparing for calculus and related disciplines. This course explores trigonometric functions and their applications as well as the language and measurement of angles, triangles, circles, and vectors. These topics will be explored symbolically, numerically, and graphically in real-life applications and interpreted in context. This course emphasizes skill building, problem solving, modeling, reasoning, communication, connections with other disciplines, and the appropriate use of present-day technology.

**Additional Course Fee:** \$6.00**This course fulfills:** Non-Lab Science**MTH211 Fundamentals of Elementary Mathematics I**

Credits 4

Fall

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH095; each with a grade of "C" or higher; or placement above stated course levels. A scientific calculator with a fraction key is required.

This course is part one of mathematics for future K-8 teachers. The course includes problem-solving, functions, the structure of number systems, operations on whole numbers and number theory. Various concrete, pictorial and heuristic problem-solving strategies are used along with algorithmic problem-solving. A required computer component will reinforce the concepts of the course.

**Additional Course Fee:** \$6.00**This course fulfills:** Non-Lab Science**MTH212 Fundamentals of Elementary Mathematics II**

Credits 4

Winter

**Registration Requirement:** MTH211 with a grade "C" or higher.

This course includes mathematics for future K-8 teachers. The course includes problem-solving, the structure of the integer, rational and real number systems, operations on integers, fractions and decimals, ratio and proportion, the meaning and use of percent and graphical statistics. Various concrete, pictorial and heuristic problem-solving strategies are used along with algorithmic problem-solving. A required computer component will reinforce the concepts of the course.

**Additional Course Fee:** \$6.00**This course fulfills:** Non-Lab Science**MTH213 Fundamentals of Elementary Mathematics III**

Credits 4

Spring

**Registration Requirement:** MTH212 with a grade of "C" or higher.

This course is mathematics for future K-8 teachers. Various concrete, pictorial and heuristic problem-solving strategies are used to explore geometry, measurement, probability and numerical statistics. The course includes two- and three-dimensional shapes and their properties, standard/nonstandard measurement basic probability and numerical statistics.

**Additional Course Fee:** \$6.00**This course fulfills:** Non-Lab Science

**MTH251Z Differential Calculus**

Credits 4 Summer/Fall/Winter/Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH112; each with a grade of "C" or higher, or placement above stated course levels.

This course explores limits, continuity, derivatives, and their applications for real-valued functions of a single variable. These topics will be explored graphically, numerically, and symbolically in real-life applications. This course emphasizes abstraction, problem-solving, modeling, reasoning, communication, connections with other disciplines, and the appropriate use of technology.

**Additional Course Fee:** \$6.00

**MTH252Z Integral Calculus**

Credits 4 Summer/Fall/Winter/Spring

**Registration Requirement:** MTH251Z with a grade of "C" or higher. This course explores Riemann sums, definite integrals, and indefinite integrals for real-valued functions of a single variable. These topics will be explored graphically, numerically, and symbolically in real-life applications. This course emphasizes abstraction, problem-solving, modeling, reasoning, communication, connections with other disciplines, and the appropriate use of technology.

**Additional Course Fee:** \$6.00

**MTH253Z Calculus: Sequences and Series**

Credits 4 Winter

**Registration Requirement:** MTH252Z, with a grade of "C" or higher. This course explores real-valued sequences and series, including power and Taylor series. Topics include convergence and divergence tests and applications. These topics will be explored graphically, numerically, and symbolically. This course emphasizes abstraction, problem-solving, reasoning, communication, connections with other disciplines, and the appropriate use of technology.

**Additional Course Fee:** \$6.00

**MTH254 Calculus IV: Multivariable/Vector Calculus Part 1**

Credits 5 Fall/Spring

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH252; each with a grade of "C" or higher. This course includes an introduction to multivariable functions, partial derivatives, and integration with multivariate functions. It also includes an introduction to vector calculus including dot and cross products, gradients and directional derivatives, optimization of multivariable functions, vector-valued functions including parametric curves in space and motion, vector fields, and applications.

**Additional Course Fee:** \$6.00

**This course fulfills:** Non-Lab Science

**MTH255 Calculus V: Multivariable/Vector Calculus Part 2**

Credits 5 Winter

**Registration Requirement:** MTH254 with a grade of "C" or better. The CAS-capable calculator is required. A required computer component is included outside of class.

This course is a study of vector calculus including vector fields, line integrals, FTC, Green's Theorem, flux, divergence, curl and Stokes' Theorem. It also includes parametric curves and surfaces, as well as change of coordinates via the Jacobian. The CAS-capable calculator is required. A required computer component is included outside of class.

**Additional Course Fee:** \$10.00

**This course fulfills:** Non-Lab Science

**MTH256 Differential Equations**

Credits 5 Spring

**Registration Requirement:** MTH252 with a "C" or better. This introductory course examines the application of ordinary differential equations as mathematical models for a variety of disciplines. Students explore analytical, graphical and numerical techniques for solving ordinary differential equations and systems of ordinary differential equations. A systems approach is used with relevant linear algebra concepts developed as needed. A CAS-capable graphing calculator is required.

**Additional Course Fee:** \$6.00

**This course fulfills:** Non-Lab Science

**MTH261 Linear Algebra**

Credits 4 Spring

**Registration Requirement:** MTH252 with a grade of "C" or better. This course is a study of vectors, matrices, systems of equations, linear transformations, determinants and eigenvectors, primarily in the setting of finite real vector spaces (though examples of other spaces are used in context). Students are introduced to formal proof writing. This course provides the linear algebra necessary for the study of multivariable calculus, differential equations and abstract algebra. A CAS-capable calculator is required (e.g. TI-nSpire CX CAS or TI-89).

**Additional Course Fee:** \$6.00

**This course fulfills:** Non-Lab Science

**MTH275 A Bridge to Upper-Division Mathematics**

Credits 3 Winter

**Registration Requirement:** RD090 and WR090, or IECC201R and IECC201W; and MTH251; each with a grade of "C" or higher. This is a bridge course designed to help students transition from computation-based mathematics to the more proof-based curriculum typical of junior and senior collegiate-level mathematics courses. Students will construct and validate proofs, explore the nature of mathematics, and navigate some of the systems and conventions used within the mathematics community. Prerequisite MTH251.

*Course fees are subject to change. Additional section fees (web, hybrid, etc.) may apply.*

- ★ Course offered online
- 🌐 Cultural Literacy course