MATHEMATICS (MTH)

MTH-010 Fundamentals of Arithmetic I
4 credits, Fall/Winter/Spring/Summer
This first course in arithmetic reviews operations on whole numbers, basic fractions, decimals, measurement, and basic geometry.

MTH-020 Fundamentals of Arithmetic II
4 credits, Fall/Winter/Spring/Summer
This second course in arithmetic is a prerequisite for the three math pathways. It reviews mathematical foundations such as fractions, percents, geometry, and effective study skills.
Prerequisites: MTH-010 with a C or better, or placement in MTH-020

MTH-020ES Fundamentos de Aritmética II
4 credits, Fall/Winter/Spring/Summer
Este segundo curso de aritmética es un requisito previo para las tres vías de matemáticas. Revisa fundamentos matemáticos como fracciones, porcentajes, geometría y habilidades de estudio efectivas.
Prerequisites: MTH-010 con una C o mejor, o ubicación en MTH-020

MTH-050 Technical Mathematics I
4 credits, Fall/Winter/Spring/Summer
Designed for career-technical students. Topics focus on critical thinking, problem solving, and mathematical communication using applications of arithmetic, measurement, geometry, and statistics and probability.
Prerequisites: MTH-020 with a C or better, or placement in MTH-050 or higher

MTH-050ES Matemáticas Técnicas I
4 credits, Not Offered Every Term
Este curso está diseñado para estudiantes de carreras técnicas. Los temas se centran en el pensamiento crítico, la resolución de problemas y la comunicación matemática utilizando aplicaciones de aritmética, mediciones, geometría, estadística y probabilidades.
Prerequisites: MTH-020 con una C o mejor, o ubicación en MTH-050 o superior

MTH-060 Algebra I
4 credits, Fall/Winter/Spring/Summer
An introduction to the algebra sequence. This class starts from foundational skills of arithmetic to build a rich understanding of linear models. Variables are introduced to represent changing quantities in applications and are used in tables, graphs, expressions, equations, inequalities, and systems. Multiple algebraic representations and strategies are used both with and without technology.
Prerequisites: MTH-020 with a C or better, or placement in MTH-060

MTH-065 Algebra II
4 credits, Fall/Winter/Spring/Summer
A second term in an algebra sequence, this course bridges foundational algebra skills to formal analysis of algebraic models. Linear and non-linear applications, including radical, absolute value, squaring, and polynomial relations are modeled graphically, numerically, and symbolically. Expressions, equations, and inequalities are utilized throughout. Multiple algebraic representations and strategies are used both with and without technology.
Prerequisites: MTH-060 with a C or better, or placement in MTH-065

MTH-080 Technical Mathematics II
3 credits, Winter/Spring
This course is the second in a sequence designed for career-technical students. The topics focus on critical thinking, problem solving, and mathematical communication using applications in arithmetic, algebra, geometry, and trigonometry.
Prerequisites: MTH-050 with a C or better, or placement in MTH-080

MTH-082A Wastewater Math I
1 credits, Fall
Quantitative component to understanding wastewater operations. Simple unit and flow rate conversions, fraction to decimal conversions and more complicated problem solving as applied to wastewater preliminary & primary treatment.
Corequisites: WET-110

MTH-082B Waterworks Math I
1 credits, Fall
Problem solving for waterworks applications. Introduction to basic algebra and mathematical concepts, conversions, and calculations encountered in the waterworks industry.
Corequisites: WET-111

MTH-082C Wastewater Math II
1 credits, Winter
Quantitative component to understanding analysis and operations of secondary wastewater systems. Flow rate, chemical dosage, treatment plant loading, treatment process efficiency, unit conversion and process control.
Prerequisites: MTH-082A and MTH-082B
Corequisites: WET-120

MTH-082D Waterworks Math II
1 credits, Winter
Problem solving for waterworks applications. Introduction to contact-time (CT) calculations, how to determine chemical concentrations, the pounds formula, and basic hydraulics.
Prerequisites: MTH-082A and MTH-082B
Corequisites: WET-121

MTH-082E Math for High Purity Water
1 credits, Fall
Basic math for high purity water concepts. Measurement accuracy, rounding rules & errors, significant figures, scientific notation, metric prefixes, simple statistics, average & standard deviation of a population.
Corequisites: WET-125

MTH-095 Algebra III
4 credits, Fall/Winter/Spring/Summer
This course focuses on foundational skills and ways of thinking that prepare a student for future STEM coursework. Linear, quadratic, and rational relations are approached through applications with a strong emphasis on modeling as a problem-solving technique. Multiple algebraic representations and strategies are used both with and without technology.
Prerequisites: MTH-065 with a C or better, or placement in MTH-095

MTH-098 College Math Foundations
4 credits, Fall/Winter/Spring/Summer
In our society, we see and hear about important topics and trends that involve numbers. In this class, participants work to understand and communicate what these numbers mean. Students will explore ways they interact with quantitative information in daily life, learn to effectively interpret and communicate quantitative information, and apply their own knowledge and experience to quantitative reasoning. Learning happens in small student groups, with technology, and through reflective writing. The class is project-based, meaning that students complete projects to demonstrate what they have learned.
Prerequisites: MTH-020 with a C or better, or placement in MTH-050, MTH-060, or MTH-098

MTH-105Z Math in Society
4 credits, Fall/Winter/Spring/Summer
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.
Prerequisites: MTH-095 or MTH-098 with a C or better, or placement in MTH-111Z
Recommended Prerequisites: WRD-098 or placement in WR-121Z

MTH-108 Data Science Explorations
4 credits, Winter
In this survey course, students engage with concepts present in multiple fields devoted to understanding and using data. Technology is used throughout as a powerful and necessary tool for robust data exploration and analysis. Students should emerge from the course with a deeper knowledge of the crucial role of data in society and appropriate methodologies for data organization, visualization, analysis, and reporting. Emphasis is placed on preparing students for ethical and informed engagement with data both in future courses and life beyond academia.
Prerequisites: MTH-095 or higher with a C or better or placement into MTH-105Z or higher

MTH-111Z Precalculus I: Functions
4 credits, Fall/Winter/Spring/Summer
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.
Prerequisites: MTH-095 with a C or better, or placement in MTH-111Z
Recommended Prerequisites: WRD-098 or placement in WR-121Z

MTH-112Z Precalculus II: Trigonometry
4 credits, Fall/Winter/Spring/Summer
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.
Prerequisites: MTH-111Z with a C or better, or placement in MTH-112Z
Recommended Prerequisites: WRD-098 or placement in WR-121Z

MTH-211 Fundamentals of Elementary Math I
4 credits, Fall
A course designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Focuses on math anxiety and mindset, problem-solving, numeration systems, arithmetic, and number theory.
Prerequisites: MTH-095 with a C or better, or placement in MTH-111Z
Recommended Prerequisites: WRD-098 or placement in WR-121Z

MTH-212 Fundamentals of Elementary Math II
4 credits, Winter
A course designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Focuses on modeling and working with integers, fractions, decimals, ratios, percents, and the real numbers. Introduces elementary algebra and statistics. MTH-212 and MTH-213 can be taken in any order.
Prerequisites: MTH-211
Recommended Prerequisites: WRD-098 or placement in WR-121Z

MTH-213 Fundamentals of Elementary Math III
4 credits, Spring
A course designed to teach students to understand the basic concepts of mathematics and provide ideas for teaching these concepts to elementary school children. Focuses on geometry, measurement, geometric mapping, probability, and counting techniques. MTH-212 and MTH-213 can be taken in any order.
Prerequisites: MTH-211
Recommended Prerequisites: WRD-098 or placement in WR-121Z

MTH-231 Elements of Discrete Mathematics
4 credits, Winter
Students will be introduced to discrete structures and techniques for computing. The course, which is the first in the two-term sequence, aims to convey the skills in discrete mathematics that are used in the study and practice of computer science. Topics include: Sets; Graphs and Trees; Functions: properties, recursive definitions, solving recurrences; Relations: properties, equivalence, partial order; Proof techniques: inductive proof; Counting techniques and discrete probability.
Prerequisites: MTH-251Z

MTH-244 Statistics II
4 credits, Summer/Winter/Spring
The tools learned in Statistics I are purposed for inference of data via the use of hypothesis tests and confidence intervals for both one and two populations, linear regression, and chi-square tests.
Prerequisites: STAT-243Z with a C or better
Recommended Prerequisites: WRD-098 or placement in WR-121Z

MTH-251Z Differential Calculus
4 credits, Fall/Winter/Spring/Summer
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.
Prerequisites: MTH-112Z with a C or better, or placement in MTH-251Z
Recommended Prerequisites: WRD-098 or placement in WR-121Z

MTH-252Z Integral Calculus
4 credits, Fall/Winter/Spring/Summer
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.
Prerequisites: MTH-251Z with a C or better
Recommended Prerequisites: WRD-098 or placement in WR-121Z

MTH-253Z Calculus: Sequences and Series
4 credits, Summer/Winter/Spring
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.
Prerequisites: MTH-252Z with a C or better
Recommended Prerequisites: WRD-098 or placement in WR-121Z

MTH-254 Vector Calculus
5 credits, Summer/Fall/Spring
This course is an introduction to the study of vectors and analytic geometry in three-space, the calculus of vector-valued functions, and the calculus of several variables.
Prerequisites: MTH-252Z with a C or better

MTH-256 Differential Equations
4 credits, Summer/Winter
This course is an introduction to the study of first-order differential equations, first-order systems of differential equations, linear systems of differential equations, and applications of these topics.
Prerequisites: MTH-252Z with a C or better

MTH-261 Linear Algebra
4 credits, Summer/Fall/Spring
This course is an introduction to linear analysis of n-space: systems of linear equations, vectors, matrices, matrix operations, linear transformations, linear independence, span, bases, subspaces, determinants, eigenvalues, eigenvectors, inner products, diagonalization, and applications of these topics.
Prerequisites: MTH-252Z with a C or better
Recommended Prerequisites: WRD-098 or placement in WR-121Z

MTH-275 A Bridge to University Mathematics
3 credits, Not Offered Every Term
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. May be repeated for up to 6 credits.
Prerequisites: MTH-251Z