

MAT - MATHEMATICS

MAT 060 4 credit hours (lecture: 4 | lab: 0)

Prealgebra

Course is preparation for introductory algebra course. Content includes fundamental concepts, operations, and applications of arithmetic in basic algebraic contexts, including linear equations, statistics, square roots, graphing, and polynomials. Arithmetic topics treated include rational numbers, decimals, percents, and measurement. Course objectives will be achieved using computer-assisted learning, group discussions, and individual tutoring.

Prerequisite: Appropriate score on Mathematics Placement Test.

Instruction Type: In-Person | Online

Fee: \$5

MAT 065 5 credit hours (lecture: 5 | lab: 0)

Introductory Algebra

Course is preparation for Intermediate Algebra course. Content includes fundamental concepts, operations, and applications of arithmetic and algebra. Topics include whole numbers, integers, fractions, decimals, percents, linear equations and their graphs, slope, solving systems of equations, exponents, polynomials, linear inequalities and an introduction to factoring. Course objectives will be achieved using computer-assisted learning, group discussions, and individual tutoring.

Prerequisite: Appropriate score on Mathematics Placement Test.

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring | Summer

MAT 070 4 credit hours (lecture: 4 | lab: 0)

Elementary Algebra

Course prepares students for an intermediate algebra course by covering the fundamental concepts, operations, and applications of basic algebra. Algebraic topics include linear equations and inequalities, polynomial operations, graphing equations and inequalities in two variables, systems of equations, and early factoring techniques. Course objectives will be achieved using computer-assisted learning, group discussions, and individual tutoring.

Prerequisite: MAT 060 or appropriate score on Mathematics Placement Test.

Instruction Type: In-Person | Online

Fee: \$5

Term Typically Offered: Fall | Spring | Summer

MAT 080 4 credit hours (lecture: 4 | lab: 0)

Elementary Plane Geometry

Course introduces elements of plane geometry. Content includes points, lines, planes, angles, triangles, congruence, quadrilaterals, area, similarity and circles. Course objectives will be achieved using computer-assisted learning, group discussions, and individual tutoring.

Prerequisite: Successful completion of MAT 065 or MAT 070 or appropriate score on the Mathematics Placement Test.

Instruction Type: In-Person | Online

Fee: \$5

Term Typically Offered: Fall | Spring | Summer

MAT 085 4 credit hours (lecture: 4 | lab: 0)

Intermediate Algebra for General Education

Course is designed for students intending to move into a general education mathematics course (MAT 125: General Education Mathematics or MAT 131: Elementary Statistics). Students who wish to take MAT 122, MAT 126, MAT 128, MAT 140 or MAT 149 should enroll in MAT 095: Intermediate Algebra instead. The course covers selected topics from Intermediate Algebra such as real numbers, percents, exponents, polynomials, and linear, polynomial and exponential functions. The course also covers an introduction to financial math, logic and statistics, including simple and compound interest, Venn diagrams, and statistical studies and graphs.

Prerequisite: Successful completion of MAT 065 or MAT 070 or appropriate score on the Mathematics Placement Test.

Instruction Type: In-Person | Online | Hybrid

Term Typically Offered: Fall | Spring | Summer

MAT 087 2 credit hours (lecture: 2 | lab: 0)

Corequisite Support for General Education Mathematics

Course is designed as corequisite support for MAT 125 General Education Mathematics. Students who need corequisite support for MAT 131 should enroll in MAT 088 Corequisite Support for Elementary Statistics instead. The course covers selected topics from Intermediate Algebra such as percents, exponents, and square roots with emphasis on how these apply when modeling real-world problems. The course also covers college success material relevant to students in General Education Mathematics.

Prerequisite: Successful completion of MAT 065 or MAT 070 or appropriate score on the Mathematics Placement Test, and concurrent enrollment in MAT 125.

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring

MAT 088 2 credit hours (lecture: 2 | lab: 0)

Corequisite Support for Elementary Statistics

Course is designed as corequisite support for MAT 131 Elementary Statistics. Students who need corequisite support for MAT 125 should enroll in MAT 087 Corequisite Support for General Education Mathematics instead. The course covers selected topics from Intermediate Algebra such as percents, inequalities, exponents, square roots and graphing linear functions with emphasis on how these apply to statistical models. The course also covers college success material relevant to students in Elementary Statistics.

Prerequisite: Successful completion of MAT 065 or MAT 070 or appropriate score on the Mathematics Placement Test, and concurrent enrollment in MAT 131.

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring

MAT 092 3 credit hours (lecture: 3 | lab: 0)

Intermediate Algebra Bridge

Course is intended for students who have successfully completed MAT 085, but wish to enroll in MAT 122, MAT 126, MAT 128 or MAT 140. Passing both MAT 085 and MAT 092 is equivalent to passing MAT 095 for enrollment in future courses. Course covers algebraic principles at an intermediate level. Content includes real and complex numbers, polynomials, factoring, radicals, rational expressions, quadratic equations and an introduction to logarithmic functions. Course objectives will be achieved using computer-assisted learning, group discussions, and individual tutoring.

Prerequisite: MAT 085, MAT 087 or MAT 088 with a minimum grade of C or appropriate score on the Mathematics Placement test.

Instruction Type: In-Person | Online | Hybrid

Term Typically Offered: Fall | Spring | Summer

- MAT 095** **4 credit hours (lecture: 4 | lab: 0)**
Intermediate Algebra
 Course is intended for students continuing in Math on the STEM/Business/Math for Elementary Education path (MAT 122, MAT 126, MAT 128, MAT 140 or MAT 149). Students interested in continuing to a general education math course (MAT 125: General Education Mathematics or MAT 131: Elementary Statistics) should enroll in MAT 085 instead. Course covers algebraic principles at an intermediate level. Content includes real and complex numbers, polynomials, factoring, radicals, rational expressions, quadratic equations and an introduction to functions including exponential and logarithmic functions. Course objectives will be achieved using computer-assisted learning, group discussions, and individual tutoring.
Prerequisite: Successful completion of MAT 065 or MAT 070 or appropriate score on the Mathematics Placement Test.
Instruction Type: In-Person | Online | Hybrid
Term Typically Offered: Fall | Spring | Summer
- MAT 102** **2 credit hours (lecture: 2 | lab: 0)**
Mathematics for Health Careers
 Course covers common Mathematics requirements for Allied Health Sciences. It includes a brief review of fractions, decimals, percents and ratio, the International System of Measurement (Metric); apothecary and household systems, system conversions and reading and calculating medication doses. Technology incorporated when appropriate.
Prerequisite: Successful completion of MAT 065 or MAT 070 or appropriate score on the Mathematics Placement Test.
Instruction Type: In-Person | Online | Hybrid
Term Typically Offered: Fall | Spring | Summer
- MAT 111** **4 credit hours (lecture: 4 | lab: 0)**
Business and Consumer Mathematics
 This course reviews arithmetic and introduces algebraic techniques for students pursuing Oakton degrees and certificates in business related fields. Content includes profit and loss, interest, amortization, installment transactions, percentage, discount, taxes, depreciation and statistics. Calculators and spreadsheets will be used where appropriate.
Instruction Type: In-Person | Online
Term Typically Offered: Fall | Spring
- MAT 114** **4 credit hours (lecture: 4 | lab: 0)**
Applied Mathematics I
 Course reviews arithmetic and introduces algebraic techniques. Content includes arithmetic, elementary algebra, geometry and scientific notation. Problems are drawn from the areas of technology, including electronics, architecture, facilities operation, fire science and building energy systems. Intended for students pursuing Oakton degrees and certificates in technological fields.
Instruction Type: In-Person | Online
Term Typically Offered: Fall | Spring
- MAT 116** **3 credit hours (lecture: 3 | lab: 0)**
Applied Mathematics II
 Course continues MAT 114. Content focus is on trigonometry and applications from engineering, physics and chemistry.
Prerequisite: MAT 114.
Instruction Type: In-Person | Online
- MAT 122** **3 credit hours (lecture: 3 | lab: 0)**
Trigonometry
 Topics discussed in this course include degree and radian measure, trigonometric and inverse trigonometric functions and their graphs, trigonometric identities, trigonometric equations, solving triangles, polar coordinates, complex numbers, vectors and parametric equations. Applications and technology are integrated throughout.
Prerequisite: MAT 092 or MAT 095 (formerly MAT 110) with a minimum grade of C or appropriate score on the Mathematics Placement Test.
Instruction Type: In-Person | Online
Term Typically Offered: Fall | Spring | Summer
- MAT 125** **4 credit hours (lecture: 4 | lab: 0)**
General Education Mathematics
 Course focuses on mathematical reasoning and the solving of real-life problems. Topics include: mathematics of finance, counting techniques and probability, statistics and mathematical modeling. Calculators/ computers used when appropriate.
Prerequisite: MAT 085 or MAT 095 (formerly MAT 110) with a minimum grade of C or concurrent enrollment in MAT 087 or appropriate score on the Mathematics Placement Test.
IAI General Education: M1 904
Instruction Type: In-Person | Online | Hybrid
Term Typically Offered: Fall | Spring | Summer
- MAT 126** **3 credit hours (lecture: 3 | lab: 1)**
Data Literacy
 Course delivers an overview of logical constructs and various data analysis skills for real-life problem-solving and decision-making. Topics include: statistical measures, hypothesis testing, correlation, regression, arguments, truth tables, control structures and systems of equations and inequalities. Formulating and estimating reasonable solutions to real-world problems using technology is integrated throughout the course.
Prerequisite: MAT 095 (formerly MAT 110) with a minimum grade of C or appropriate score on the Mathematics Placement Test.
IAI General Education: M1 901
Instruction Type: In-Person | Online
Term Typically Offered: Fall | Spring | Summer
- MAT 128** **3 credit hours (lecture: 3 | lab: 0)**
Foundations of Mathematics for Elementary Teachers I
 Course emphasizes development of critical thinking skills using mathematical language and notation appropriately to communicate ideas and solve a variety of problems. The course focuses on increasing mathematical knowledge upon which the elementary curriculum is based with a deeper conceptual understanding of the following topics; sets, real numbers, number theory and functions.
Prerequisite: MAT 092 or MAT 095 (formerly MAT 110) with a minimum grade of C or appropriate score on the Mathematics Placement Test; and successful completion of MAT 080, geometry proficiency or appropriate score on the Mathematics Placement Test.
Instruction Type: In-Person | Online | Hybrid
Term Typically Offered: Fall | Spring

MAT 129 **3 credit hours (lecture: 3 | lab: 0)****Foundations of Mathematics for Elementary Teachers II**

Course emphasizes development of critical thinking skills using mathematical language and notation appropriately to communicate ideas and solve a variety of problems. Focuses on increasing mathematical knowledge upon which the elementary curriculum is based with a deeper conceptual understanding of the following topics: recognizing and analyzing two- and three-dimensional geometrical shapes; measurement, triangle congruence and similarity; Euclidean constructions; coordinate and transformational geometry; statistics and probability. Technology incorporated when appropriate.

Prerequisite: MAT 128 with a minimum grade of C.

IAI General Education: M1 903

Instruction Type: In-Person | Online | Hybrid

Term Typically Offered: Fall | Spring

MAT 131 **4 credit hours (lecture: 4 | lab: 0)****Elementary Statistics**

This course introduces statistics for students in physical, biological and social sciences. Content includes frequency distributions; measures of central tendency and variation; elements of probability theory; statistical inference; sampling techniques and correlation, regression and ANOVA.

Prerequisite: MAT 085 or MAT 095 (formerly MAT 110) with a minimum grade of C or concurrent enrollment in MAT 088 or appropriate score on the Mathematics Placement Test.

IAI General Education: M1 902

Instruction Type: In-Person | Online | Hybrid

Term Typically Offered: Fall | Spring | Summer

MAT 140 **4 credit hours (lecture: 4 | lab: 0)****College Algebra**

Topics discussed in this course include functions and their graphs, polynomial and rational functions, exponential and logarithmic functions, systems of linear and nonlinear equations, matrices, sequences and series, and study skills. Applications and technology are integrated throughout.

Prerequisite: MAT 092 or MAT 095 (formerly MAT 110) with a minimum grade of C or appropriate score on the Mathematics Placement Test; and successful completion of MAT 080, geometry proficiency or appropriate score on the Mathematics Placement Test.

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring | Summer

MAT 143 **4 credit hours (lecture: 4 | lab: 0)****Finite Mathematics**

Course introduces Finite Mathematics through the study of matrices, linear programming, sets, counting and probability theory, Markov chain (and/or game theory), and the mathematics of finance with applications to the field of social sciences and business. Computers are used for computational aspects of Finite Mathematics.

Prerequisite: MAT 140 with a minimum grade of C or appropriate score on Mathematics Placement Test.

IAI General Education: M1 906

Instruction Type: In-Person | Online | Hybrid

Term Typically Offered: Fall | Spring | Summer

MAT 144 **3 credit hours (lecture: 3 | lab: 0)****Discrete Mathematics**

Course introduces mathematical induction and recursion; set theory; relations and functions; logic, combinatorics, graph theory and trees; Boolean Algebra, probability, matrices and analysis of algorithms. Credit toward graduation cannot be received for both MAT 144 and CSC 144.

Prerequisite: MAT 140 with a minimum grade of C or an appropriate score on the Mathematics Assessment Test.

IAI General Education: M1 905

IAI Major: CS 915

Instruction Type: In-Person | Online | Hybrid

Term Typically Offered: Fall | Spring | Summer

MAT 149 **5 credit hours (lecture: 5 | lab: 0)****Precalculus**

Topics discussed in this course include functions and their graphs, polynomial and rational functions, exponential and logarithmic functions, trigonometric and inverse trigonometric functions and their graphs, trigonometric identities, trigonometric equations, solving triangles, polar coordinates, complex numbers, vectors, systems of equations, conic sections, parametric equations, and sequences and series. Applications and technology are integrated throughout.

Prerequisite: MAT 092 or MAT 095 (formerly MAT 110) with a minimum grade of A or appropriate score on the Mathematics Placement Test; and MAT 080 or geometry proficiency.

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring | Summer

MAT 180 **4 credit hours (lecture: 4 | lab: 0)****Calculus for Business and Social Science**

Course introduces concepts of functions and relations and the basic ideas of differential and integral calculus. Content focus is on applications to the fields of social science and business.

Prerequisite: MAT 140 or MAT 149 with minimum grade of C or an appropriate score on the Mathematics Assessment Test.

IAI General Education: M1 900-B

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring | Summer

MAT 190 **4 credit hours (lecture: 4 | lab: 0)****Business Statistics**

Course introduces modern statistics and is designed for business students. Content includes descriptive statistics, probability, statistical inference, sampling techniques, correlation, regression, and analysis of variance. Course incorporates use of technology when appropriate.

Prerequisite: MAT 140 with a minimum grade of C or appropriate score on the Mathematics Placement Test.

IAI Major: BUS 901

Instruction Type: In-Person | Online | Hybrid

Term Typically Offered: Fall | Spring | Summer

MAT 250 **5 credit hours (lecture: 5 | lab: 0)****Calculus I**

Course is first in calculus and analytic geometry. Content focuses on limits, continuity, derivatives, indefinite integrals and definite integrals, applied to algebraic, trigonometric, exponential and logarithmic functions, and applications of differentiation and integration. Technology integrated throughout course.

Prerequisite: MAT 149 or both MAT 140 and MAT 122, with minimum grade of C or appropriate score on the Mathematics Placement Test.

IAI General Education: M1 900-1

IAI Major: MTH 901

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring | Summer

MAT 251 **4 credit hours (lecture: 4 | lab: 0)**

Calculus II

Course is second in calculus and analytic geometry. Content focuses on differentiation and integration of transcendental functions such as inverse trigonometric functions; hyperbolic functions and inverse hyperbolic functions; applications of the definite integral; sequences and series; power series representations; parametric and polar coordinates; techniques of integration and improper integrals. Calculators/computers used when appropriate.

Prerequisite: MAT 250 with minimum grade of C.

IAI General Education: M1 900-2

IAI Major: MTH 902

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring | Summer

MAT 252 **4 credit hours (lecture: 4 | lab: 0)**

Calculus III

Course surveys topics of calculus for multivariable functions. Content focus is on vectors, functions of several variables, curves and surfaces, differentiation, partial derivatives, multiple integrals, and line integrals. Technology integrated throughout.

Prerequisite: MAT 251 with minimum grade of C.

IAI General Education: M1 900-3

IAI Major: MTH 903

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring | Summer

MAT 260 **3 credit hours (lecture: 3 | lab: 0)**

Introduction to Linear Algebra

Course covers matrices and the algebra of linear systems as well as an introduction to proof-writing. Content includes equations, vector spaces, real inner product spaces, linear transformations, determinants, eigenvalues, eigenvectors, diagonalizability, quadratic forms and symmetric matrices. Calculators/computers used when appropriate.

Prerequisite: MAT 251 with minimum grade of C.

IAI Major: MTH 911

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring | Summer

MAT 262 **3 credit hours (lecture: 3 | lab: 0)**

Ordinary Differential Equations

Course presents the solution of ordinary differential equations with applications, power series, Laplace transformations, systems of linear differential equations and numerical methods. Technology will be used when appropriate.

Prerequisite: MAT 252 with minimum grade of C.

IAI Major: MTH 912

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring | Summer

MAT 290 **1-4 credit hours (lecture: 1-4 | lab: 0-4)**

Topics in Mathematics

Course covers variety of different topics during different semesters. Topics are selected from amongst current advances and faculty expertise. Typical course concentrations might be History of Mathematics or Introduction to Mathematical Modeling. Course may be taken for credit up to four times on different topics. Fee varies. Prerequisite may vary by topic.

Instruction Type: In-Person | Online