

Mathematics (MATH)

MATH 0745 Essential Skills for Algebra

2 Credits

Prerequisite: placement test.

This course reviews and develops fundamental arithmetic skills regarding rational numbers and introduces techniques for solving basic linear equations. Topics include whole numbers, integers, fractions, decimals, ratios, rates, proportions, percent, linear equations, and applications. Students must supply a scientific calculator. Credits in this course will not satisfy any degree or certificate requirements. This course is offered as satisfactory/unsatisfactory only.

(2 contact hours)

MATH 0850 Beginning Algebra

3 Credits

Prerequisite: A grade of "SC" or better in MATH 0745 or placement test.

This course is designed for students who have never taken algebra. Topics include simplification of algebraic expressions, order of operations, solutions and graphs of linear equations, systems of two linear equations in two unknowns, simple linear inequalities, compound linear inequalities, absolute value equations and inequalities, polynomial arithmetic, integer exponents, and scientific notation. Techniques include numerical, analytical, and graphical methods. Credits in this course will not satisfy any degree or certificate requirements.

(3 contact hours)

MATH 0950 Intermediate Algebra

3 Credits

Prerequisite: A grade of "SC" or better in MATH 0850 or placement test.

This course continues the development of basic algebra concepts. Topics include factoring polynomials, solving polynomial equations, rational expressions, rational equations, radical expressions, radical equations, solving quadratic equations, graphing quadratic equations, and an introduction to the complex number system.

(3 contact hours)

MATH 1330 Statistics for the Health Sciences

(OT36) 3 Credits

Prerequisite: A grade of "SC" or better in MATH 0850 or placement test.

This course introduces the fundamental topics in statistics as they relate to the health science field. Topics include experimental design, graphical and numerical descriptive statistics, fundamentals of probability, the binomial and normal distributions, sensitivity analysis, hypothesis testing, analysis of variance, regression analysis, chi-square analysis, and nonparametric tests.

(3 contact hours)

MATH 1331 Statistics Hlth Sciences (B)

4 Credits

Prerequisite: A grade of "SC" or better in MATH 0745 or placement test.

This course introduces the fundamental topics in statistics as they relate to the health science field. Topics include experimental design, graphical and numerical descriptive statistics, fundamentals of probability, the binomial and normal distributions, sensitivity analysis, hypothesis testing, analysis of variance, regression analysis, chi-square analysis, and nonparametric tests. Fulfilling all requirements of an introductory statistics course for the health sciences, this course provides additional time designed to address the needs of students who will benefit from additional instruction with fundamental mathematics skills. Because of duplication in course content, students with credit for MATH 1330 Statistics for the Health Sciences or its equivalent should not take this course.

(4 contact hours)

MATH 1550 Statistics (A)

(OT36) 4 Credits

Prerequisite: A grade of "SC" or better in MATH 0850 or placement test.

This course covers introductory topics in statistics, including statistical methods used to gather, analyze, and present data; fundamentals of probability and probability distributions; inferential statistics through estimation and hypothesis testing; correlation and regression; tests for independence; and analysis of variance.

(4 contact hours)

MATH 1551 Statistics (B)

5 Credits

Prerequisite: A grade of "SC" or better in MATH 0745 or placement test.

This course covers introductory topics in statistics, including statistical methods used to gather, analyze, and present data; fundamentals of probability and probability distributions; inferential statistics through estimation and hypothesis testing; correlation and regression; tests for independence; and analysis of variance. Fulfilling all requirements of an introductory statistics course, this course provides additional time designed to address the needs of students who will benefit from additional instruction with fundamental mathematics skills. Because of duplication in course content, students with credit for MATH 1550 Statistics or its equivalent should not take this course.

(5 contact hours)

MATH 1600 Survey of College Mathematics**(OT36) 3 Credits***Prerequisite: A grade of "SC" or better in MATH 0850 or placement test.*

This course explores systems of linear equations, Gauss-Jordan elimination, matrices, matrix algebra, linear programming, simplex method, mathematics of finance, probability, statistics, random variables, and the binomial and normal distributions. Students must supply a graphing calculator.

(3 contact hours)

MATH 1650 College Algebra (A)**(OT36) 4 Credits***Prerequisite: A grade of "SC" or better in MATH 0950 or placement test.*

This course investigates relations and functions numerically, analytically, and graphically. Topics include solutions of polynomial and rational equations and inequalities; exponential and logarithmic equations; systems of linear and non-linear equations; conic sections; sequences and series; and mathematical modeling. Students will need to supply a graphing utility; the instructor will provide details.

(4 contact hours)

MATH 1651 College Algebra (B)**6 Credits***Prerequisite: A grade of "SC" or better in MATH 0850 or MATH 1400 or placement test.*

This course investigates relations and functions numerically, analytically, and graphically. Topics include solutions of polynomial and rational equations and inequalities; exponential and logarithmic equations; systems of linear and non-linear equations; conic sections; sequences and series; and mathematical modeling. Students will need a graphing utility; the instructor will provide details. Fulfilling all requirements of a college algebra course, this course provides additional time designed to address the needs of students who will benefit from additional instruction with fundamental mathematics skills. Because of duplication in course content, students with credit for MATH 1650 College Algebra or its equivalent should not take this course.

(6 contact hours)

MATH 1700 Trigonometry**(OT36) 3 Credits***Prerequisite: MATH 1650 or placement test.*

This course includes the study of trigonometric functions and inverse trigonometric functions and their graphs; solutions of right and oblique triangles and their applications; solutions of trigonometric equations; the use of identities, vectors, and complex numbers; and graphs of polar and parametric equations. Students will need to supply a graphing utility; the instructor will provide details.

(3 contact hours)

MATH 1890 Finite Mathematics**(OT36) 4 Credits***Prerequisite: MATH 1650 or permission of instructor.*

This course explores finite mathematics as applied to business, social sciences, and life sciences. Topics include linear systems of equations, Gauss-Jordan, matrices, matrix algebra, Leontief Input-Output analysis, linear programming, simplex method, mathematics of finance, probability, statistics, random variables, binomial and normal distributions, Markov chains, and game theory. Student must supply a graphing calculator.

(4 contact hours)

MATH 2400 Calculus for Business, Social, and Life Sciences**(OT36) 5 Credits***Prerequisite: MATH 1650 or permission of instructor.*

This course explores differential and integral calculus as applied to business, social sciences, and life sciences. Topics include functions, limits, and derivatives of algebraic, exponential, and logarithmic functions; applications of derivatives to maximum and minimum values of a function; cost, revenue, profit, supply, and demand; growth rates; decay rates, definite and indefinite integrals, improper integrals, differential equations, multivariable calculus, applications of the integral, consumers' and producers' surplus, integration of rate functions, growth models, and Cobb-Douglas production functions. Students must supply a graphing calculator.

(5 contact hours)

MATH 2500 Calculus and Analytical Geometry I**(OT36) 5 Credits***Prerequisite: MATH 1700 or placement test.*

This is the first course in a three-semester sequence study of differential and integral calculus for students majoring in mathematics, science, or engineering. Topics include limits and continuity, the derivative, differentiation, the differential, applications of differentiation, the indefinite integral, the definite integral, and the calculus of the transcendental functions. Students will need to supply a graphing utility; the instructor will provide details.

(5 contact hours)

MATH 2600 Calculus and Analytical Geometry II**(OT36) 5 Credits***Prerequisite: MATH 2500 or permission of instructor.*

This is the second course in a three-semester sequence study of differential and integral calculus. Topics include applications of integration, techniques of integration, L'Hopital's rule, improper integrals, sequences, infinite series, power series, Taylor's series, conic sections, parametric equations, polar coordinates, and applications. Students will need to supply a graphing utility; the instructor will provide details.

(5 contact hours)

MATH 2700 Calculus and Analytical Geometry III**(OT36, TAG) 5 Credits***Prerequisite: MATH 2500, MATH 2600; or permission of instructor.*

This is the third course in a three-semester sequence study of differential and integral calculus. Topics include vectors, differential calculus of functions of more than one variable, directional derivative, gradients, applications of partial derivatives, multiple integration, and line integrals. Students will need to supply a graphing utility; the instructor will provide details.
(5 contact hours)

MATH 2800 Linear Algebra**(OT36, TAG) 4 Credits***Prerequisite: MATH 2500; or permission of instructor.*

This course includes a study of systems of linear equations, matrix algebra, determinants, vector spaces, linear transformations, eigenvalues, eigenvectors, diagonalization, and applications. Students will need to supply a graphing utility; the instructor will provide details.
(4 contact hours)

MATH 2850 Differential Equations**(OT36, TAG) 4 Credits***Prerequisite: MATH 2500, MATH 2600; or permission of instructor.*

This course includes a study of techniques for solving first order differential equations, techniques for solving linear differential equations, elementary applications, power series solutions, the Runge-Kutta method, the Laplace transform, and applications of differential equations to physical problems. Students will need to supply a graphing utility; the instructor will provide details.
(4 contact hours)

MATH 2900 Special Topics in Mathematics**1-3 Credits**

These specialized courses provide in-depth examinations of mathematics topics not covered in detail elsewhere in the curriculum.
(1-3 contact hours)

Business Mathematics**MATH 1040 Applied Business Mathematics****2 Credits**

This course introduces mathematical computations as they are used for specific business applications. The course emphasizes word problems, as well as skill problems, using basic algebraic equations and the percentage formula. The course also covers applications for merchandising and payroll.
(2 contact hours)

MATH 1050 Mathematics of Finance**2 Credits**

This course emphasizes the application of mathematics and basic algebra skills to various accounting and finance concerns/problems. Students will apply concepts of simple interest, compound interest, discounting, annuities, present value, annual percentage rate (APR), and financial ratios.
(2 contact hours)

MATH 2130 Business Statistics**4 Credits***Prerequisite: MATH 1040 or MATH 1050 or MATH 1600 or higher.*

This course introduces students to the collection, analysis, and graphic presentation of data and the application of statistical methods to the solution of practical business problems. The course covers descriptive statistics, mathematics of probability, and statistical inference. This course is a requirement in the accounting program and several information technology and computer science programs.
(4 contact hours)

MATH 2135 Business Statistics II**3 Credits***Prerequisite: MATH 2130 or permission of instructor.*

This course is a continuation of the introduction to business statistics. The course introduces students to hypothesis testing, analysis of variance, regression and correlation analysis, nonparametric methods, statistical process controls, and the application of these methods to the solution of practical business problems. This course forms part of a two-course sequence to meet the Ohio Transfer Assurance Guide (TAG) requirements for business statistics. Students must take both this course and MATH 2130 (Business Statistics I) for transfer purposes.
(3 contact hours)

Engineering Mathematics

MATH 1080 Introduction to Technical Mathematics

4 Credits

Prerequisite: MATH 0745 or MATH 0890 or placement test.

The course is to meet the needs of engineering technology students as they encounter problems that occur in the world of work. The course emphasizes the use of a scientific calculator to cover algebra from basic equations, the metric system, conversion factors, the use of measurement equipment and common geometric relationships. Right angle trigonometry, and practical applications from a variety of technical areas with emphasis on logical thinking and application to engineering problems. Blueprint reading topics will include lines, views, dimensions, notes, and sections. Common symbols used on drawings for welding and tolerances are introduced. Students must have a scientific calculator, however when continuing the technical math series the recommended calculator type is the TI-84 Plus. (4 contact hours)

MATH 1180 Technical Mathematics I

4 Credits

Prerequisite: MATH 1080 or placement test.

The course is designed to meet the needs of engineering technology students as they encounter problems that occur in the world of work. The course will provide students with a stronger foundation in algebra and trigonometry, with emphasis on logical thinking and application to engineering problems. Topics include algebraic concepts and operations from basic equations through systems of equations and quadratic equations, functions and graphs; using manual methods and graphing calculators. Students will have an understanding of right triangle trigonometry, sine and cosine law to solve oblique triangles, vector analysis with trigonometric functions, and graphing trigonometric equations. Emphasis will be on solving application problems with hands-on analysis of typical engineering technology criteria. Students must supply a graphing calculator for this course. The recommended calculator type is the TI-84 Plus. Students who have successfully taken MATH 1001 have met the prerequisites for this course. (4 contact hours)

MATH 1280 Technical Mathematics II

4 Credits

Prerequisite: MATH 1180 or placement test. The course is designed to meet the needs of engineering technology students as they encounter problems that occur in the world of work.

Topics introduced are exponents, radicals, exponential and logarithmic functions, complex numbers, higher degree equations, systems of equations and inequalities, matrix algebra, plane analytic geometry and calculus, with an emphasis on applications to engineering technology. Topics also include derivatives, integration and their applications. Students must supply a graphing calculator for this course. The recommended calculator type is the TI-84 Plus. Students who have successfully completed MATH 1101 have met the prerequisite requirements to take this course. (4 contact hours)

MATH 1400 Technical Mathematics

4 Credits

Prerequisite: MATH 0850 or placement test.

This technical mathematics course specializes in the application of mathematics to the engineering technologies. The course emphasizes critical thinking by placing students in problem-solving situations and supporting students as they learn to make decisions, carry out plans, and judge results. Within contextualized situations, students will use concepts and skills associated with measurement, algebra, geometry, trigonometry, and vectors as tools as they develop the algebraic and analytical skills necessary in engineering technologies. A scientific calculator that is capable of solving vectors, complex numbers and simultaneous equations, such as the TI-36X or Casio FX-115, is required for the course. (4 contact hours)