Mathematics (MATH)

Courses

MATH 011 Fundamentals of Mathematics* (3 Hours)
Prerequisites : (COLL 010 with a grade of "C" or higher or AAC 092 with a grade of "C" or higher or AAC 112 with a grade of "C" or higher) or appropriate score on the math placement test.
Fundamentals of Mathematics is designed for the student who needs to improve or review basic math skills and concepts. This course includes computation using integers, fractions, decimals, proportions and percents along with an overview of measurement, geometry and statistics. Fundamentals of Math provides the mathematical foundation upon which subsequent studies in mathematics and other areas depend. This course is the first in a sequence of courses leading to MATH 116 or higher. This course does not fulfill degree requirements.

MATH 014 Accelerated Prep for College Math* (5 Hours)
Prerequisites : (MATH 011 with a grade of "B" or higher or MATH 111 with a grade of "B" or higher) or an appropriate score on the math placement test.
This accelerated course includes all algebra topics needed to prepare a student for MATH 165, MATH 171, or MATH 173. The course is designed to help students acquire a solid foundation in the required skills of algebra. Students will simplify arithmetic and algebraic expressions, including those containing polynomials, rational expressions, rational exponents, radical expressions and complex numbers; solve linear inequalities; solve equations that are linear, quadratic, and quadratic in form as well as equations containing rational expressions or radicals; graph linear equations and inequalities; graph quadratic equations; and analyze linear equations, functions and non-functions. This course does not fulfill degree requirements.

MATH 015 Elementary Algebra* (3 Hours)
Prerequisites : (MATH 011 with a grade of "C" or higher or MATH 111 with a grade of "C" or higher) or appropriate score on the math placement test.
This is a beginning course in algebra, designed to help students acquire a solid foundation in the basic skills of algebra. Students will learn to simplify algebraic expressions, polynomials, rational expressions and square root expressions; solve equations and inequalities, including linear equations and quadratic equations; and graph linear equations. This course is the second in a sequence of courses leading to MATH 116 or higher. This course does not fulfill degree requirements.

MATH 051 Contemporary Mathematics Support Course* (2 Hours)
Prerequisites : Completion of JCCC placement requirements.
Corequisites: MATH 151.
This corequisite support course is designed to be taken concurrently with MATH 151 Contemporary Mathematics. The purpose of this course is to assist students in mastering skills and topics along with applying learning strategies and study techniques to promote success with the Contemporary Mathematics course objectives.

MATH 061 Elementary Statistics Support Course* (2 Hours)
Prerequisites : Completion of JCCC placement requirements.
Corequisites: MATH 161.
This corequisite support course is designed to be taken concurrently with MATH 161. The purpose of this course is to assist students in mastering skills and topics along with applying reading strategies to promote success with the Elementary Statistics course objectives.

MATH 071 College Algebra Support Course* (3 Hours)
Prerequisites : Completion of JCCC placement requirements.
Corequisites: MATH 171.
This corequisite support course is designed to be taken concurrently with MATH 171 College Algebra. The purpose of this course is to supplement College Algebra with individualized study plans that will assist students in mastering algebraic skills and topics along with applying learning strategies and study techniques to promote success with the College Algebra course objectives. 3 hrs. lecture/wk.

MATH 116 Intermediate Algebra* (3 Hours)
Prerequisites : (MATH 015 with a grade of "C" or higher or MATH 115 with a grade of "C" or higher) or appropriate score on the math placement test.
This course focuses on arithmetic and algebraic manipulation, equations and inequalities, graphs, and analysis of equations and graphs. Students will simplify arithmetic and algebraic expressions, including those containing rational expressions, rational exponents, radicals and complex numbers; solve equations including linear, quadratic, quadratic in form, as well as those containing rational expressions or radicals; graph linear inequalities in two variables; and analyze functions and non-functions.

MATH 118 Geometry* (3 Hours)
Prerequisites : (MATH 015 with a grade of "C" or higher or MATH 115 with a grade of "C" or higher) or appropriate score on the math placement test.
This course is an introductory approach to geometry. Topics will include lines, polygons, area, volume, circles, similarity, and congruence.

MATH 120 Business Mathematics* (3 Hours)
Prerequisites : (MATH 011 with a grade of "C" or higher or MATH 111 with a grade of "C" or higher) or appropriate score on the math placement test.
This is a course for the student who needs specific skills in mathematics to address business problems and business applications. Students will learn the mathematics involved in payroll, retailing, asset valuation, interest, finance, and the time value of money. Students will use a calculator and computer to solve a variety of applications.

MATH 130 Technical Mathematics I* (3 Hours)
Prerequisites : (MATH 011 with a grade of "C" or higher or MATH 111 with a grade of "C" or higher) or an appropriate score on the math placement test.
This course is the first of a two-semester sequence that will introduce the mathematical skills and concepts necessary in technical work. It will focus on the basics of algebra, geometry and their applications. Topics will include operations with polynomials, linear equations, systems of equations, formulas, basic geometry, and Boolean algebra.

MATH 131 Technical Mathematics II* (3 Hours)
Prerequisites : MATH 130 with a grade of "C" or higher.
This course is the second of a two-semester sequence on the mathematical skills and concepts necessary in technical work. It will focus on more advanced algebraic skills, solving equations, and trigonometry. The topics will include polynomials, rational expressions, radical expressions, complex numbers, solving quadratic, rational, radical, exponential and logarithmic equations, and working with basic trigonometry.

MATH 151 Contemporary Mathematics* (3 Hours)
Prerequisites : Completion of JCCC placement requirements.
This course presents a non-algebraic approach to critical thinking and mathematical reasoning. Contemporary applications will be investigated through symbolic logic, set theory, measurement, consumer finance, probability, and descriptive statistics.

MATH 161 Elementary Statistics* (3 Hours)
Prerequisites : Completion of JCCC placement requirements.
This is an introductory course in statistical literacy and data awareness. Students will learn the basics of descriptive statistics, probability, sampling strategies, experimental design, inference, simple linear regression, and correlation. Use of statistical technology will assist in performing data analysis.

MATH 171 College Algebra* (3 Hours)
Prerequisites : MATH 014 with a grade of "C" or MATH 116 with a grade of "C" or higher or completion of JCCC placement requirements.
This course focuses on the study of functions and their graphs, techniques of solving equations, and applications. Students will analyze and graph non-functions and functions, including constant, linear, quadratic, piecewise-defined, absolute value, square root, polynomial, rational, exponential, and logarithmic functions; solve equations, including polynomial, absolute value, radical, rational, exponential, logarithmic, and systems of linear equations; solve inequalities, including absolute value, polynomial, rational, and systems of linear inequalities; and apply functions in real-world situations.

MATH 172 Trigonometry* (3 Hours)
Prerequisites : MATH 171 with a grade of "C" or higher or appropriate score on the math placement test.
This is a course in trigonometric functions and graphs. Emphasis will be on understanding function notation, definitions, algebraic relations, real-world applications, graphing in the real and complex plane, inverse functions, polar functions and vectors.

MATH 173 Precalculus* (5 Hours)
Prerequisites : (MATH 014 with a grade of "C" or higher or MATH 114 with a grade of "C" or higher) or MATH 116 with a grade of "C" or higher or an appropriate score on the math placement test.
MATH 173 is an accelerated course recommended for students with a strong high school math background (three to four years) who plan to take calculus. This course focuses on the study of functions and their graphs, solving equations and inequalities, recognition and creation of patterns, and the use of mathematical models. Included in the course are linear, power, polynomial, rational, radical, exponential, logarithmic, trigonometric and absolute value functions.

MATH 175 Discrete Mathematics and its Applications* (3 Hours)
Prerequisites : MATH 171 with a grade of "C" or higher or MATH 173 with a grade of "C" or higher or appropriate score on the math placement test.
This course is designed to present the beauty, scope, practical applications and relevance of mathematics. It will focus on applications of general interest drawn primarily from the social and biological sciences and business. Topics will be placed in a historical context, and mathematical reasoning will be stressed.

MATH 191 Math and Physics for Games I* (4 Hours)
Prerequisites : (MATH 171 with a grade of "C" or higher or MATH 173 with a grade of "C" or higher or appropriate score on math placement test) and GAME 121 with a grade of "C" or higher.
This introductory course focuses on the mathematics and physics concepts needed to program a variety of video game scenarios. Students will learn to use vectors and matrix transformations to model the motion of physical objects in two and three dimensions. Students will also learn various computer programming methods in order to model these mathematical and physical concepts. MATH 191 and PHYS 191 are the same course; enroll in only one.

MATH 201 Statistics* (3 Hours)
Prerequisites : MATH 171 with a grade of "C" or higher or MATH 173 with a grade of "C" or higher or appropriate score on the math placement test.
This is a beginning course in statistical analysis, the skill of making sense of raw data, constructing graphical representations of data, developing models for making predictions, performing tests to determine significant change and finding intervals for population values. Students will learn the basics of descriptive statistics, probability, sampling, confidence intervals, distributions, hypothesis testing, regression and correlation. Use of technology will be incorporated into course topics.

MATH 210 Mathematics for Elementary Teachers I* (3 Hours)
Prerequisites : MATH 171 with a grade of "C" or higher or MATH 173 with a grade of "C" or higher or appropriate score on math placement test.
This is the first of a two-course sequence for prospective teachers of elementary and middle school mathematics. The focus of this course is an in-depth investigation of the mathematical principles and concepts encountered in grades K-8. Topics include set theory, numeration systems, number sense, critical thinking, and problem-solving strategies. The use of appropriate techniques and tools, such as calculators, computers and manipulatives, will be integrated throughout the course in order to enhance the depth of understanding.

MATH 212 Math for Elementary Teachers II* (3 Hours)
Prerequisites : MATH 210 with a grade of "C" or higher or department approval.
This is the second of a two-course sequence for prospective teachers of elementary/middle school mathematics. The focus of this course is an in-depth investigation of the mathematical principles and concepts encountered in grades K-8. Topics include probability, statistics, measurement, and shapes including congruency, similarity, and transformations. The use of appropriate techniques and tools, such as calculators, computers, and manipulatives, will be integrated throughout the course in order to enhance the depth of understanding.

MATH 231 Business and Applied Calculus I* (3 Hours)
Prerequisites : MATH 171 with a grade of "C" or higher or MATH 173 with a grade of "C" or higher or an appropriate score on a placement test.
This is the first course in calculus as it applies to business; the social, behavioral and biomedical sciences; and other fields. Concepts include measuring the slope of a curve, writing equations of tangent lines, finding maximum and minimum points, determining the rate of change of a function, and measuring the area under a curve. Algebraic skills and application problems are stressed. Specific calculus topics include finding limits; differentiation of algebraic, exponential and logarithmic functions; and integration of algebraic and exponential functions. Trigonometry (MATH 172) can be taken concurrently with MATH 231 for those students planning to enroll in MATH 232 in subsequent semesters.

MATH 232 Business and Applied Calculus II* (3 Hours)
Prerequisites : MATH 231 and (MATH 172 with a grade of "C" or higher or MATH 173 with a grade of "C" or higher) or an appropriate score on the math placement test.
This is the second course in a two-semester series on calculus that covers five techniques of integration, differentiation and integration of trigonometric functions, differential equations, and functions of several variables as applied to business, statistics, biology and the social sciences.

MATH 241 Calculus I* (5 Hours)
Prerequisites : MATH 172 with a grade of "C" or higher or MATH 173 with a grade of "C" or higher or an appropriate score on a placement test.
This is the first of a three-semester sequence on calculus designed for engineering, physics and math majors. Rates of change and areas will be studied. To accomplish this, the students will study and apply limits and continuity. Differentiation and integration of algebraic, trigonometric and transcendental functions will also be a major focus of this course. This course may offer Honors sections; check the current credit class schedule for details.

MATH 242 Calculus II* (5 Hours)
Prerequisites : MATH 241 with a grade of "C" or higher.
This is the second course of a three-semester sequence on calculus. Integration is covered with an emphasis on analytical, numerical, and graphical methods. Techniques of integration are used to solve scientific and geometric applications. Infinite series are analyzed for convergence and applied to the representation of functions.

MATH 243 Calculus III* (5 Hours)
Prerequisites : MATH 242 with a grade of "C" or higher.
This is the third course in a three-semester sequence on analytic geometry and calculus. Topics include vector-valued functions, functions of several variables, multiple integration, and vector analysis.

MATH 246 Elementary Linear Algebra* (3 Hours)
Prerequisites : MATH 242 with a grade of "C" or higher.
This sophomore-level introduction to linear algebra uses a matrix-oriented approach, with an emphasis on problem solving and applications. The course focus is on matrix arithmetic, systems of linear equations, properties of Euclidean n-space, eigenvalues and eigenvectors, orthogonality and vector spaces.

MATH 254 Differential Equations* (4 Hours)
Prerequisites : MATH 243 with a grade of "C" or higher.
This course will cover standard types of equations that involve rates of change. In particular, this is an introductory course in equations that involve ordinary derivatives. Both qualitative and quantitative approaches will be used. Standard types and methods will be covered, including Laplace transforms, infinite series, and numerical methods. Basic linear algebra will be developed to solve systems of differential equations.

MATH 285 Statistics for Business* (4 Hours)
Prerequisites : MATH 231 with a grade of "C" or higher or MATH 241 with a grade of "C" or higher.
This is a beginning course in statistical analysis using calculus, with an emphasis on applications to business. The skill of making sense of raw data is important and includes constructing graphical representations of data, developing models for making predictions, performing tests to determine significant change, and finding intervals for population values. Students will learn the basics of descriptive statistics, probability, sampling, confidence intervals, hypothesis testing, linear regression, and an introduction to quality control. Students must have an understanding of calculus concepts in order to successfully complete this course.

MATH 290 Independent Study* (1-7 Hour)
Prerequisites : 2.0 GPA minimum and department approval.
Independent study is a directed, structured learning experience offered as an extension of the regular curriculum. It is intended to allow individual students to broaden their comprehension of the principles of and competencies associated with the discipline or program. Its purpose is to supplement existing courses with individualized, in-depth learning experiences. Such learning experiences may be undertaken independent of the traditional classroom setting, but will be appropriately directed and supervised by regular instructional staff. Total contact hours vary based on the learning experience.

MATH 292 Special Topics:* (1-3 Hour)
Prerequisites : Department approval.
MATH 292 allows students to investigate in-depth a single theme or topic in mathematics. This may be accomplished by expanding upon a subject introduced in current course offerings or exploring a subject not addressed in the curriculum of the mathematics department. Special Topics may be repeated for credit but only on different topics. Total contact hours vary with topic. This is a repeatable course and may be taken more than once for credit.