MATH 100  Mathematics Review  0 sem. hrs.
Refresher course in basic mathematics with goal of providing a good foundation for further study/use of mathematics. Topics include operations on integers, fractions and decimals; exponents and order of operation; ratios, proportions and percents; basic algebraic and geometric formulas. Credit, although tabulated within the 130 hours required for graduation, does not satisfy any part of the core curriculum requirements. By placement only. Offered every semester.

MATH 103 Algebra I  0 sem. hrs.
Real numbers, variable expressions, solving equations and applications of equations, polynomials, factoring, algebraic fractions, graphs and linear equations, systems of linear equations, inequalities, radical expressions, quadratic equations. Prerequisite for 103: by placement or successful completion of MATH 100 with a C or better grade. Offered every semester.

MATH 104 Algebra II  3 sem. hrs.
Real numbers, variable expressions, solving equations and applications of equations, polynomials, factoring, algebraic fractions, graphs and linear equations, systems of linear equations, inequalities, radical expressions, quadratic equations. Prerequisite for 104: By placement or successful completion of MATH 103 with a C or better. Offered every semester.

MATH 107 Mathematics I for Educators  3 sem. hrs.
Problem solving techniques, sets, development of and operations with the real number system, including whole numbers, fractions and decimals, number theory, algebra, probability, statistics, geometry, measurement, applications to early childhood and intervention specialist teaching, NCTM standards. Offered every semester. Prerequisite: one year of high school algebra.

MATH 108 Mathematics II for Educators  3 sem. hrs.
Problem solving techniques, sets, development of and operations with the real number system, including whole numbers, fractions and decimals, number theory, algebra, probability, statistics, geometry, measurement, applications to early childhood and intervention specialist teaching, NCTM standards. Offered every semester. Prerequisite: MATH 107, SEP students must complete both MATH 109-1 and 109-2 before taking 107.

MATH 109-1 Algebra Found/App I  3 sem. hrs.
A two-semester introduction to math at the collegiate level. The first semester focuses on developing foundational math skills while introducing students to basic algebra. The second semester continues the emphasis on skills development but introduces higher-level algebra concepts. Required Weekly tutoring in math in both courses. Equivalent to MATH 100 and MATH 103. Counts toward math proficiency requirement. Course available only to incoming first-year students by placement test. Students who successfully complete this sequence should follow it with MATH 104 or the 104 equivalent appropriate to their majors. Offered every year.

MATH 109-2 Algebra Found/App II  3 sem. hrs.
A two-semester introduction to math at the collegiate level. The first semester focuses on developing foundational math skills while introducing students to basic algebra. The second semester continues the emphasis on skills development but introduces higher-level algebra concepts. Required Weekly tutoring in math in both courses. Equivalent to MATH 100 and MATH 103. Counts toward math proficiency requirement. Course available only to incoming first-year students by placement test. Students who successfully complete this sequence should follow it with MATH 104 or the 104 equivalent appropriate to their majors. Offered every year.

MATH 110 DV: Math in the World  3 sem. hrs.
Explores a broad spectrum of mathematical topics with an emphasis on the many practical uses of mathematics in our society. This is a course in mathematical literacy, not manipulative techniques. Topics are selected from the environment, politics, polling, social ethics, choice and decision making, technology, management, statistics, size, shape and art. Offered every fall semester. Prerequisite: one year of high school algebra.

MATH 120 Ethnomathematics  3 sem. hrs.
Indigenous peoples provide examples of the concept of number, related symbols, graph theory (eg. sand paintings), kin relations, games of strategy and chance, logic of puzzles, organization of time and space, spatial configurations... Cultures selected from South America, Africa, Russia, Australia, Native American, Inuit, Maori. Increases understanding of mathematics and of other peoples. Recommended for non-science majors. Credit in Diversity Cluster. Offered every fall semester. Prerequisite: High school algebra and geometry.

MATH 130 DV: Math and the Environment  3 sem. hrs.
Shapes and patterns in nature are examined through various media thereby heightening awareness and appreciation of our environment. A special area of environmental concern, such as air or water quality, is explored in depth through examining data using mathematical modeling and appropriate technology. Offered fall semester on odd-numbered year. Prerequisite: High school algebra and geometry.

MATH 155 Elementary Functions I  3 sem. hrs.
Algebraic foundations, functions and graphs, polynomial functions, rational functions, exponential functions, logarithms and logarithmic functions, complex numbers. Offered every semester.

MATH 156 Elementary Functions II  3 sem. hrs.
Course deals almost exclusively with trigonometric functions. Basic trigonometry, trigonometric identities, trigonometric equations, and inverse trigonometric functions. Offered every semester. Prerequisite: MATH 155 with a grade of C or better.

MATH 160 Euclidean Geometry  3 sem. hrs.
Axiomatic and transformational geometry, originated by Euclid, modified by Descartes and others. Points, lines, angles, parallels, planes, space, triangles, polygons, circles, measurement, congruency, similarity, area, volume, coordinates, isometries, constructions. Emphasis on deductive reasoning. Use of ancient tools and modern technology. Foundation for teaching of geometry and further study of modern geometries. Offered spring semester of odd-numbered years. Prerequisite: high school algebra and geometry.
MATH 200 Intro to Stats and Analytics  3 sem. hrs.
This course is an introduction to statistics using Excel. Topics include: descriptive measures, central tendency, variance, correlation, regression, hypothesis testing, and some practical applications. Excel application can also include interest rate calculations for investments and loans.
Prerequisite: MATH 103 or equivalent.

MATH 207 Calculus I  4.5 sem. hrs.
Limits, continuity, derivatives, anti-derivatives, integration and the fundamental theorem of calculus. Offered every semester.
Prerequisite: MATH 156 with a grade of "C" or better or placement.

MATH 207A Calculus I  3 sem. hrs.
Limits, continuity, derivatives, anti-derivatives, integration and the fundamental theorem of calculus. Offered every semester.
Prerequisite: MATH 156 with a grade of "C" or better or placement.

MATH 207B Calculus I  2 sem. hrs.
Limits, continuity, derivatives, anti-derivatives, integration and the fundamental theorem of calculus. Offered every semester.
Prerequisite: MATH 156 with a grade of "C" or better or placement.

MATH 208 Calculus II  4 sem. hrs.
Transcendental functions, methods of integration, improper integrals, sequences and series, Taylor series, polar coordinates, parametric equations. Offered every spring semester.
Prerequisite: MATH 207 with a grade of "C" or better or placement.

MATH 210 Math for MCE  3 sem. hrs.
This course covers the basic introduction to discrete mathematics and calculus. Concepts include permutations and combinations, sequences and series, graphs, set theory, limits, differentiation, and integration. Historical context will be provided for all topics. This course does not count towards a mathematics major or minor.
Prerequisite: MATH 155 or placement.

MATH 220 Finite Mathematics  3 sem. hrs.
Systems of linear equations; matrices including basic operations and inverse of a square matrix; systems of linear inequalities; Linear programming including the simplex method; Logic and Sets; Basic Counting Principles; Permutations and Combinations; Elementary probability theory including equiprobable models, conditional probability and Bayes' theorem; Markov Chains including regular Markov Chains and absorbing Markov Chains.
Prerequisite: MATH 104 or equivalent.

MATH 221 Statistics  3 sem. hrs.
Elementary theory of probability and statistics, frequency distributions, binomial distributions, normal distributions, means, variances, standard deviations, sampling, confidence limits, testing of hypotheses, applications drawn from real world situations. Does not count toward the 33 hours required for a major in Mathematics. Offered every semester.
Prerequisite: MATH 104 or equivalent.

MATH 230 Discrete Patterns I  3 sem. hrs.
Prerequisite: MATH 155 or equivalent with permission.

MATH 231 Discrete Patterns II  3 sem. hrs.
Algorithms and Combinatorics. Logic, circuits, Karnaugh maps. Proofs, including quantified statements and mathematical induction. Relations, graphs, trees. Languages and finite-state machines. Offered every fall.
Prerequisite: MATH 230 with a "C" or better.

MATH 255 Complex Variables I  3 sem. hrs.
Introduction to complex numbers and their geometry, functions of one complex variable and their differentiation and the fundamental theorem of algebra.
Prerequisite: MATH 207 with a grade of C or better.

MATH 299 Financial Math  3 sem. hrs.
To fill special student needs or take advantage of a visiting professor or serve as an experimental offering of a contemplated regular course. May be repeated as new topics are presented. With permission of department chair.

MATH 307 Calculus III  4 sem. hrs.
Vectors, analytic geometry of three-dimensional space, partial derivatives, multiple integrals, theorems of Green and Stokes. Prerequisite MATH 208 with a grade of C or better. Offered every fall semester.

MATH 313 Linear Algebra I  3 sem. hrs.
Concepts, algorithms, proofs and applications over these topics: systems of linear equations, matrices, determinants, finite-dimensional vector spaces, eigenvalues, orthogonality, quadratic forms. Related topics may be included such as complex numbers, base transformation, linear programming, and finite-state Markov chains. Offered every fall.
Prerequisite: MATH 207 and MATH 230 or permission of the instructor; MATH 313 is required for the Mathematics major and strongly recommended for the Computer Science major.

MATH 314 Linear Algebra II  3 sem. hrs.
Concepts, algorithms, proofs and applications over these topics: systems of linear equations, matrices, determinants, finite-dimensional vector spaces, eigenvalues, orthogonality, quadratic forms. Related topics may be included such as complex numbers, base transformation, linear programming, and finite-state Markov chains. MATH 313 is required for the Mathematics major and strongly recommended for the Computer Science major. Offered spring semester of odd-numbered year.
Prerequisite: Grade of "C" or better in MATH 313.

MATH 321 Prob/Statistical Infer I  3 sem. hrs.
Introduction to classical probability theory including sample spaces, events, discrete and continuous probability distributions. Prerequisite for 321: MATH 307 with a grade of C or better. Offered every spring semester.

MATH 322 Prob/Statistical Infer II  3 sem. hrs.
Introduction to classical statistics, hypothesis testing, confidence intervals and non-parametric statistics. Prerequisite for 322: MATH 321 with a grade of "C" or better. Offered fall semester of even-numbered years.

MATH 340 Theory of Interest  3 sem. hrs.
Measurement of interest, simple and compound interest, present and accumulated value, amortization, sinking funds, bonds and other securities and practical applications.
Prerequisite: for MATH 208 with a grade of "C" or better.

MATH 341 Intro to Financial Math  3 sem. hrs.
Advanced topics on bonds and other securities; yield rates, cash flow analysis; the term structure of interest rates; duration, convexity and immunization; and introduction of options and other derivatives.
Prerequisite: MATH 340 with a grade of "C" or better.
MATH 390 Internship 1-3 sem. hrs.
Interns receive practical learning experience outside the academic setting. This involves structured activities with an internship mentor and faculty mentor working with you to help you gain practical experience in applied mathematics in a corporate or organizational setting. A final report or presentation will be involved. Requires permission of the Director of Mathematics and agreement of the relevant authority on the employer's side. May not be repeated. Offered by arrangement.

MATH 390A Internship 1-3 sem. hrs.
Interns receive practical learning experience outside the academic setting. This involves structured activities with an internship mentor and faculty mentor working with you to help you gain practical experience in applied mathematics in a corporate or organizational setting. A final report or presentation will be involved. Requires permission of the Director of Mathematics and agreement of the relevant authority on the employer's side. May not be repeated. Offered by arrangement.

MATH 390B Internship 1-3 sem. hrs.
Interns receive practical learning experience outside the academic setting. This involves structured activities with an internship mentor and faculty mentor working with you to help you gain practical experience in applied mathematics in a corporate or organizational setting. A final report or presentation will be involved. Requires permission of the Director of Mathematics and agreement of the relevant authority on the employer's side. May not be repeated. Offered by arrangement.

MATH 399 Special Topics 3 sem. hrs.
To fill special student needs or take advantage of a visiting professor or serve as an experimental offering of a contemplated regular course. May be repeated as new topics are presented. With permission of department chair.

MATH 402 Introduction Modern Geometry 3 sem. hrs.
Study of axiomatic and transformational geometries selected from finite geometry, Euclidean geometry, projective geometry, non-Euclidean geometries, fractal geometry, and topology. Offered fall of odd-numbered years. Prerequisite: MATH 313 with a grade of "C" or better.

MATH 405 Intro to Modern Analysis I 3 sem. hrs.
Logic and proofs applied to continuous domains. Sets, functions and coordinality. Natural numbers and induction; ordered fields and the completeness axiom and compact sets. Sequences: convergence, limit theorems, monotone and cauchy sequences, subsequences. Offered fall semester of odd-numbered years. Prerequisites: MATH 230 and MATH 307 with a grade of "C" or better.

MATH 406 Intro to Modern Analysis II 3 sem. hrs.
Limits and continuity, uniform continuity; differentiation, l'Hopital's Rule, Taylor's theorem; the Riemann integral and the Fundamental Theorem of Calculus; infinite series and convergence tests; sequences and series of functions. Offered times depend on demand. Prerequisite: MATH 405 with a grade of "C" or better.

MATH 410 Elem Differential Equations 3 sem. hrs.
Equations of first and second orders, linear equations with constant coefficients, solutions in series, numerical approximations. Offered spring semester of even-numbered years. Prerequisite: MATH 313, 307 with a grade of "C" or better.

MATH 421 Introduction Modern Algebra I 3 sem. hrs.
Theoretical, axiomatic approach to algebraic structures. Mappings, equivalence relations, groups, homomorphisms, rings, ideals. Offered fall semester of even-numbered years. Prerequisite: MATH 313 and 307 with a grade of "C" or better.

MATH 422 Introduction Modern Algebra II 3 sem. hrs.
Continuation of MATH 421. Groups, rings, ideals, fields, integral domains, polynomials, vector spaces. Offered times depend on demand. Prerequisite: MATH 421 with a grade of "C" or better.

MATH 431 App Regression & Time Series Ana 3 sem. hrs.
Applied Regression Analysis emphasizes the concepts and the analysis of data sets. It provides a review of the key concepts in simple linear regression, matrix operations, and multiple regression. Methods and criteria for selecting regression variables and geometric interpretations are discussed. Polynomial, trigonometric, analysis of variance, nonlinear, time series, logistic, random effects, and mixed effects models are also discussed. Detailed case studies and exercises based on real data sets are used to reinforce the concepts.

MATH 450 Math Seminar 1 sem. hr.
Reading of mathematical papers or monographs and presentations of subjects at baccalaureate level. Disseminating and writing of level appropriate proofs. Must be taken three times to satisfy the major requirements. Offered every semester.

MATH 490 Independent Study/Research 3 sem. hrs.
With permission of the Division Chair and Vice President for Academic Affairs. By arrangement.