MATHEMATICS (MATH)

MATH 0097. Beginning Algebra. (3 Credits)
Prerequisite: COMPASS entrance score of 20-30 Credit Hours: (3-0-3) for institutional use only. A course designed to help students learn basic algebra and other topics necessary for Quantitative Skills and Reasoning. It is a study of elementary algebra, which will include real number sets, set operations, linear, quadratic and exponential functions and their graphs, and introductory probability and statistics.

MATH 0099. Intermediate Algebra. (3 Credits)
Prerequisite: COMPASS entrance score of 20-30 Credit Hours: (3-0-3) for institutional use only. A course designed to help students learn basic algebra topics to prepare them for college algebra. It is a study of elementary algebra, which will include the set of real numbers, linear sentences, linear functions and their graphs, and operations and factoring with polynomials.

MATH 0987. Foundations Quantitatve Reason. (3 Credits)
Prerequisite: COMPASS entrance score of 20-30 Credit Hours: (3-0-3) for institutional use only A course designed to help students learn basic algebra and other topics necessary for Quantitative Skills and Reasoning. It is a study of elementary algebra, which will include real number sets, set operations, linear, quadratic and exponential functions and their graphs, and introductory probability and statistics.

MATH 0989. Foundations for Coll Algebra. (3 Credits)
Prerequisite: COMPASS entrance score of 20-30 Credit Hours: (3-0-3) for institutional use only A course designed to help students learn basic algebra topics to prepare them for college algebra. It is a study of elementary algebra, which will include the set of real numbers, linear sentences, linear functions and their graphs, and operations and factoring with polynomials.

MATH 0996. Support for Elem. Statistics. (2 Credits)
Credit Hours: (2-0-2) for institutional use only Prerequisite: None Corequisite: MATH 1401 This Learning Support course is intended to provide corequisite support for students requiring remediation in mathematics while they are enrolled in Math 1401 - Elementary Statistics. Topics will parallel those being studied in Math 1401 and will include the qualitative skills needed to be successful in Math 1401. Topics will include sampling and data, graphical and numerical descriptive statistics, exploratory data analysis, basic probability theory, confidence intervals, and hypothesis testing.

MATH 0997. Support for Quantitatve Reason. (2 Credits)
Prerequisite: None Corequisite: MATH 1001 Credit Hours: (2-0-2) for institutional use only This Learning Support course is intended to provide corequisite support for students requiring remediation in mathematics while they are enrolled in MATH 1001 - Quantitative Reasoning. Topics will parallel those being studies in MATH 1001 and will include essential quantitative skills needed to be successful in MATH 1001. Among the topics to be discussed are logic, basic probability, data analysis and modeling from data.

MATH 0998. Algebra Asst/Quantitative Skls. (1 Credit)
Prerequisite: MATH 0097 or COMPASS entrance score of 31-41 Corequisite: MATH 1001 Credit Hours: (0-2-1) for institutional use only A course designed to help the student simultaneously address the learning support mathematics requirement and complete an Area A mathematics course, Math 1001. Covers polynomial, rational, and radical expressions and sentences, linear and quadratic functions, exponential and logarithmic functions and statistical reasoning.

MATH 0999. Support for Col Algebra. (2 Credits)
Prerequisite: None Corequisite: MATH 1111 Credit Hours: (2-0-2) for institutional use only This Learning Support course is intended to provide corequisite support for students requiring remediation in mathematics while they are enrolled in MATH 1111 - College Algebra. Topics will parallel those being studied in MATH 1111 and will include the essential quantitative skills needed to be successful in MATH 1111. This course provides an in-depth study of the properties of algebraic, exponential and logarithmic functions.

MATH 1001. Quantitative Skills & Reason. (3 Credits)
Credit Hours: (3-0-3). This course places quantitative skills and reasoning in the context of experiences that students will be likely to encounter. It emphasizes processing information in context from a variety of representations, understanding of both the information and the processing, and understanding which conclusions can be reasonably determined. Students must provide a graphing calculator.

MATH 1101. Math Modeling. (3 Credits)
Prerequisite: None Credit Hours: (3-0-3). This course is an introduction to mathematical modeling using graphical, numerical, symbolic, and verbal techniques to describe and explore real-world data and phenomena. Emphasis is on the use of elementary functions to investigate and analyze applied problems and questions, supported by the use of appropriate technology, and on effective communications of quantitative concepts and results.

MATH 1111. College Algebra. (3 Credits)
Prerequisite: Exemption from or Completion of Learning Support Mathematics. Credit Hours: (3-0-3). This course is a functional approach to algebra that incorporates the use of appropriate technology. Emphasis will be placed on the study of functions, and their graphs, inequalities, and linear, quadratic, piece-wise defined, rational, polynomial, exponential, and logarithmic functions. Appropriate applications will be included.

MATH 1113. Precalculus. (3-4 Credits)
Prerequisite: Grade of C or better in MATH 1111 or Math SAT score of 500 or Math ACT score of 21 or eCore Prerequisitite: MATH 1101 or MATH 1111. Credit Hours: (4-0-4) or eCore (3-0-3) This course is designed to prepare students for calculus, physics, and related technical subjects. Topics include an intensive study of algebraic and transcendental functions accompanied by analytic geometry. Students must provide a graphing calculator.

MATH 1113H. Honors Precalculus. (4 Credits)
Prerequisite: Either MATH 1111 or a strong background in high school mathematics including the equivalent of MATH 1111 and a mathematics SAT score of at least 500 (mathematics ACT score of at least 21), acceptance into the Honors Program or permission of the Honors Program Coordinator. Credit Hours: (4-0-4) This course is designed to prepare students for calculus, physics, and related technical subjects. Topics include an intensive study of algebraic and transcendental functions accompanied by analytic geometry. This honors course will also include symbolic logic, mathematical induction, binomial theorem, and sequences. A primary goal of this course is to encourage students to think and to improve their logical and critical thinking abilities. It will also emphasize research which is an important part of this course where the students will apply mathematical ideas in real life problems. Students must provide a graphing calculator.

MATH 1401. Elementary Statistics. (3 Credits)
Prerequisite: MATH 1001, MATH 1111 or any higher level MATH course. Credit Hours: (3-0-3). This is a non-calculus based introduction to statistics. Course content includes descriptive statistics, probability theory, confidence intervals, hypothesis testing, and other selected statistical topics. Students must provide a graphing calculator.

MATH 1501. Calculus I. (4 Credits)
Prerequisite: Grade of C or better in MATH 1113 or Math SAT score of 600 or Math ACT score of 26. Credit Hours: (4-0-4). An analysis of functions, limits, continuity, the derivative, antidifferentiation, the definite integral, and applications. Students must provide a graphing calculator.

MATH 1501H. Honors Calculus I. (4 Credits)
Prerequisite: Grade of B or better in MATH 1113 or Math SAT score of 600 or Math ACT score of 26 or Honors Program Coordinator or Mathematics Dpeartment Head permission. Credit Hours: (4-0-4). An analysis of functions, limits, continuity, the derivative, antidifferentiation, the definite integral, and applications. Students must provide a graphing calculator.

MATH 1502. Calculus II. (4 Credits)
Prerequisite: MATH 1501. Credit Hours: (4-0-4). An analysis of derivatives and integrals of transcendental and inverse trigonometric functions, techniques of integration, improper integrals, L'Hopital's Rule, infinite series, and conics. Students must provide a graphing calculator.

MATH 2008. Foundations Of Numbers & Op. (3 Credits)
Prerequisite: MATH 1001, MATH 1101, MATH 1111, or MATH 1113 Credit Hours: (3-0-3) An introductory mathematics course for early childhood education majors. This course will emphasize the understanding and use of the major concepts of numbers and operations. As a general theme, strategies of problem solving will be used and discussed in the context of various topics.

MATH 2201. Intro to Linear Algebra. (3 Credits)
Prerequisite: MATH 1501. Credit Hours: (3-0-3). A study of linear algebra including systems of linear equations, matrix arithmetic, determinants, vector spaces, Euclidean n-space, inner product spaces, linear independence, bases, linear transformations, and eigenvalues and eigenvectors.

MATH 2501. Calculus III. (4 Credits)
Prerequisite: MATH 1502. Credit Hours: (4-0-4). An analysis of real-valued functions of several variables, polar coordinates, parametric equations, vectors in two and three dimensions, quadric surfaces, partial derivatives, multiple integrals, line integrals, and Stoke's and Green's theorems.

MATH 3001. Topics in Early Child Math. (3 Credits)
Prerequisites: Admission to Candidacy, Bachelor of Science, Early Childhood Education, and MATH 2008 Credit Hours: (3-0-3) This course will provide early childhood teacher candidates with mathematical foundations in topics which include algebra concepts, mathematical modeling and logical reasoning.

MATH 3002. Geometry for Elem Teachers. (3 Credits)
Prerequisite: Admission to Candidacy, Bachelor of Science, Early Childhood Education and MATH 3001 Credit Hours: (3-0-3) Topics include plane figures, polygons and tessellations, space figures, symetric figures, systems of measurement, area and perimeter, volume and surface area, congruence and similarity mappings, and topological mappings.

MATH 3003. Data Analysis, Probabil & Conn. (3 Credits)
Prerequisite: Admission to Candidacy, Bachelor of Science, Early Childhood Education, and successful completion of MATH 3001 and MATH 3002. Credit Hours: (3-0-3) This is a capstone course for the early childhood candidate that teaches data analysis and probability. In addition, there will be opportunites to connect mathematical content to other disciplines as well as to develop instructional methods.

MATH 3100. Number Systems. (3 Credits)

MATH 3200. Foundation of Adv Math. (3 Credits)
Corequisite: MATH 1502 Credit Hours: (3-0-3) Elementary logic, set theory, function and relations, and other selected topics from discrete mathematics with emphasis on mathematical proof including induction.

MATH 3301. Foundations of Geometry. (3 Credits)
Corequisite: MATH 3200 Credit Hours: (3-0-3) Rigorous study of the properties of Euclidean geometry with special attention to incidence and metric properties and introduction to elementary properties of non-Euclidean geometries.

MATH 3401. Number Theory. (3 Credits)
Prerequisite: MATH 3200 Credit Hours: (3-0-3) Survey of topics from number theory to include divisibility , prime numbers, congruences, linear and nonlinear Diophantine equations, and quadratic residues.

MATH 3502. Differential Equations. (3 Credits)
Prerequisite: MATH 1502 Credit Hours: (3-0-3) Study methods for solving differential equations including first-order and higher order differential equations. Includes power sereies solutions and numerical methods.

MATH 3601. Combinatorics. (3 Credits)
Prerequisite: MATH 1502 Credit Hours: (3-0-3) Counting principles such as permutations, combinations, derangement; pigeon hole and inclusion/exclusion principles; partitions; generating functions; and recurrence relations.

MATH 4001. Probability & Statistics. (3 Credits)
Prerequisite: MATH 1502 Credit Hours: (3-0-3) Collection, organization, and description of data, probability, random variables, probability distributions, Central Limit Theorem, sampling, estimation and testing of hypotheses.

MATH 4101. Abstract Algebra. (3 Credits)
Prerequisite: MATH 2201 and MATH 3200 Credit Hours: (3-0-3) Introductioin to algebraic structurs: groups, rings, integral domains and fields, including the basic facts of group and ring homomorphisms.

MATH 4300. Graph Theory. (3 Credits)
Prerequisite: MATH 3200 Credit hours: (3-0-3) Survey of topics in graph theory including Euler and Hamilton paths, shortest paths, maximum flow, trees, spanning trees and matching and coloring problems.

MATH 4401. Numerical Analysis. (3 Credits)
Prerequisite: MATH 1502, MATH 2201, and CSCI 1301 Credit Hours: (3-0-3) Numerical solution of linear and non-linear equations, interpolation and polynomial approximation, numerical differentiation and integration, numberical solution of differential equations, errors and floating point arithmetic.

MATH 4501. Introduction to Analysis. (3 Credits)
Prerequisites: MATH 2501 and MATH 3200 Credit Hours: (3-0-3) An introduction to the study of analysis with an emphasis on proving theorems. Topics include the topology of the set of real numbers, sequences, limits, continuity, differentiation, integration, and series.

MATH 4900. Senior Seminar. (3 Credits)
Prerequisite: MATH 3200 Credit Hours: (3-0-3) Capstone course for mathematics majors with emphasis on mathematical communication.

MATH 4905. Special Topics in Math. (3 Credits)
Prerequisite: Announced with the course Credit Hours: (3-0-3) Special topics in mathematics not included in curriculum described in the catalog.

MATH 4906. Undergrad Research in Math. (3-6 Credits)
Prerequisite: Announced with the course Credit Hours: (1-4-3) Independent rsearch under the supervision of a faculty mentor. Includes literature review, project, and presentation of results.