MATH 105
Liberal Arts Mathematics
3 Credit Hours
This course is designed to increase an awareness of and an appreciation for mathematics as a mode of non-literary communication. The student will be introduced to topics selected from, but not limited to: algebra, geometry, calculators and computers, probability and statistics, the mathematics of social choice, management science, growth and symmetry and the mathematics of finance. The TI-83 plus or TI-84 plus graphing calculator is required. NOTE: Credit hours CANNOT be earned for this course if the student is concurrently enrolled or has previous credit for any mathematics course numbered above 105.

MATH 110
Geometry for Art and Design
3 Credit Hours
This course will develop students' quantitative reasoning skills through exploration of geometric measurement, formulas, and visualization in 2D and 3D. Topics include mathematical representation, interpreting models, drawing inferences, estimating for reasonableness, finding patterns, proving generalizations. Work of relevant artists will be studied to make connections with geometric concepts.

MATH 112
College Algebra
3 Credit Hours
Topics for this course include a problem-solving approach to the study of polynomial, rational, exponential and logarithmic functions, graphs, models, complex numbers, and conic sections. The graphing calculator is an integral part of this course. The TI-83 plus or TI-84 plus graphing calculator is required.

MATH 113
Trigonometry
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-112 with a grade of C or better
Topics for this course include trigonometric functions and their inverses, identities, trigonometric equations, formulas and solving triangles. The TI-83 plus or TI-84 plus graphing calculator is required.

MATH 121
Mathematics Content for Elementary Teachers I
3 Credit Hours
This course explores the underlying structure and basis for the mathematics taught in elementary school. Topics include functions, patterns and problem solving, numeration, operations on natural numbers, whole numbers and integers, rational numbers, number theory, and fraction models and operations. The TI-83 plus or TI-84 plus graphing calculator is required. Offered fall.

MATH 122
Mathematics Content for Elementary Teachers II
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-121 with a grade of C or better
This course explores the underlying structure and basis for the mathematics taught in elementary and middle school. Topics include rational and irrational numbers, real numbers, measurement, geometry and probability. The TI-83 plus or TI-84 plus graphing calculator is required. Offered spring.

MATH 132
Business Statistics
4 Credit Hours
Topics for this course include collecting, organizing, analyzing and interpreting data with an emphasis on business applications, descriptive statistics, sampling, probability, probability distributions, estimation, hypothesis testing, introduction to linear regression, and correlation analysis. Excel software is used throughout the course. The TI-83 plus or TI-84 plus graphing calculator is required. NOTE: Credit will not be granted for both MATH 132 and MATH 135.

MATH 135
Introduction to Statistics
4 Credit Hours
Topics for this course include collecting, organizing, analyzing and interpreting data with emphasis on a wide range of applications, descriptive statistics, sampling, probability, probability distributions, estimation, hypothesis testing, introduction to linear regression, and correlation analysis. Statistical software is used throughout the course. The TI-83 plus or TI-84 plus graphing calculator is required. NOTE: Credit will not be given for both Math 135 and Math 132.

MATH 200
Introduction to Discrete Mathematics
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-112 with a grade of C or better or placement
Topics for this course include number systems, set theory, logic, methods of proof, combinatorics, relations and functions, algorithms, recursion, and the Fibonacci sequence. The TI-89 graphing calculator is required.

MATH 201
Calculus with Analytic Geometry I
4 Credit Hours
Pre/Corequisite: P (RQ) MATH-113 with a grade of C or better or placement and C (RQ) MATHL-201 and E (RM) MATH-200
Topics for this course include review of: algebraic and trigonometric functions and their graphs, absolute value and inequalities, the concepts of limit and continuity, theory and techniques of differentiating and integrating algebraic and trigonometric functions and applications of differentiation. Maple software is used throughout the course. The TI-89 graphing calculator is required.

MATHL 201
Calculus Lab
0 Credit Hours
Pre/Corequisite: E (RQ) MATH-201

MATH 202
Calculus with Analytic Geometry II
4 Credit Hours
Pre/Corequisite: P (RQ) MATH-201 with a grade of C or better and E (RQ) MATHL-202
Topics for this course include: derivatives and integrals of transcendental functions, indeterminate forms, improper integrals, techniques and applications of integration, numerical integration, conic sections, parametric equations and polar coordinates. Maple software is used throughout the course. The TI-89 graphing calculator is required. Offered spring.

MATHL 202
Calculus Lab
0 Credit Hours
Pre/Corequisite: E (RQ) MATH-202

MATH 203
Calculus with Analytic Geometry III
4 Credit Hours
Pre/Corequisite: P (RQ) MATH-202 with a grade of C or better
Topics for this course include: vectors and vector calculus, analytic geometry in three-space, differentiation of functions of several variables, multiple integration and applications. Maple software is used throughout the course. The TI-89 graphing calculator is required. Offered fall.

MATH 211
Linear Algebra
4 Credit Hours
Pre/Corequisite: P (RQ) MATH-200 with a grade of C or better and E (RQ) MATH-202
This course includes elementary concepts of linear algebra, systems of linear equations, vectors and matrices, determinants, vector spaces, linear transformations, eigenvalues and eigenvectors and applications. Maple software is used throughout the course. The TI-89 graphing calculator is required. Offered spring.

MATH 301
Advanced Calculus
4 Credit Hours
Pre/Corequisite: P (RQ) MATH-202 with a grade of C or better
Topics for this course include: convergence, sequences, indeterminate forms, improper integrals, infinite series, Taylor and Fourier Series, applications, functions defined by integrals, the gamma and beta functions. Maple software is used throughout the course. The TI-89 graphing calculator is required. Offered spring.

MATH 303
Differential Equations
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-202 with a grade of C or better and C (RQ) MATH-301
Topics for this course include: differential equations of first order, second order and higher order linear differential equations, non-homogeneous equations; power series solutions to linear differential equations, numerical methods for solving linear and nonlinear differential equations. Maple software is used throughout the course. The TI-89 graphing calculator is required. Offered spring.

MATH 305
Probability and Statistics I
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-203 MATH-301 with a grade of C or better
Topics for this course include: exploratory data analysis, geographical techniques, measures of central tendency and variability, concepts of probability, Bayes' Rule, Expected Value, discrete distributions, continuous distributions, moment generating functions, and joint probability densities. The use of Minitab statistical software is included. The TI-89 graphing calculator is required. Offered fall.

MATH 306
Probability and Statistics II
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-305 with a grade of C or better
This course is a continuation of MATH 305 concerned with sampling distributions, confidence intervals and hypothesis testing (one sample, two sample, means, proportions, variances, chi-square), linear regression and correlation, with an emphasis on both theory and applications. The use of Minitab statistical software is included. The TI-89 graphing calculator is required. Offered spring.

MATH 307
Modern Geometry
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-202 with a grade of C or better, ENGL-120
Topics for this course include: the foundations of geometry as a mathematical system, elementary logic, advanced constructions, historical background and basic concepts of finite and infinite Euclidean and non-Euclidean geometries; cross ratio, affine and projective planes; the theorems of Ceva, Menelaus, Desargues, Pascal and Pappus.

MATH 308
History of Mathematics
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-202 with a grade of C or better ENGL-120
This course provides historical perspective of the development of mathematics with emphasis on the multicultural dimension from ancient to modern times. Students will do problems in the methods of the ancients and compare to modern solutions and learn to appreciate mathematics as a product of human effort. Historical development of calculus and other modern mathematical areas will be studied.

MATH 309
Abstract Algebra I
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-211 with a grade of C or better
Topics for this course include: integers, groups, subgroups, cosets, homomorphisms, permutation groups, rings, subrings, integral domains and fields.

MATH 313
Partial Differential Equations
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-203 with a grade of C or better MATH-303 with a grade of C or better
Topics for this course include: Partial differential equations of first order and second order, heat equations, wave equations, Laplace equations in one and in higher dimensions, homogeneous and inhomogeneous cases, and applications. Offered as needed.

MATH 314
Integral Equations
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-202 with a grade of C or better
Topics for this course include: Fredholm integral equations, Volterra integral equations, Integro-differential equations, Singular integral equations, First and second kind integrals. Offered as needed.

MATH 315
Numerical Analysis
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-202 with a grade of C or better
Topics for this course include: iterative solutions to non-linear equations, Newton-Raphson and secant methods, numerical solutions of ODEs, numerical integration methods, interpolation and curve fitting. Maple software is used throughout the course. The TI-89 graphing calculator is required. Offered as needed.

MATH 321
Discrete Methods
3 Credit Hours
Pre/Corequisite: P (RQ) Math-200 with a grade of C or better
Topics for this course may include some of the following: Euler and Hamilton circuits, graph coloring, matching theory, applied combinatorics, mathematical induction, equivalence relations and congruence classes, recurrence relations, generating functions and applications. Student presentations and lab projects (both group and individual) are an integral part of this course. The TI-89 or TI-83 plus graphing calculator is required. Offered as needed.

MATH 331
Theory of Interest
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-202 with a C or better
Topics for this course include: compound interest, annuities, bonds, measurement of mortality, life annuities, life insurance, premiums and reserves. A financial calculator is required for this course. Offered every other spring.

MATH 336
Real Analysis
3 Credit Hours
Pre/Corequisite: P (RQ) MATH-301 with a grade of C or better
This course is intended to deepen and broaden students' knowledge of the theory of calculus. Topics for this course include: properties of real numbers, sequences and series, continuity, differentiation, integration, metric spaces and topology.

MATH 350
Selected Advanced Topics in Mathematics Education
1 to 3 Credit Hours
Courses offered on an occasional basis devoted to select advanced mathematical education topics. Offered as needed.

MATH 351
Methods of Teaching Middle Level (Grades 5-8) Mathematics
3 Credit Hours
Focal points include principles, standards, current issues, implications of research, and resources and instructional methods related to the teaching and learning of middle level (grades 5-8) mathematics. Offered fall.

MATH 360
Selected Topics in Advanced Mathematics
1 to 3 Credit Hours
Possibilities include: real analysis; complex analysis; number theory; topology; transform methods; partial differential equations; integral equations, Abstract Algebra II; Differential Geometry. Prerequisite: See the division director. Offered at least once each academic year.

MATH 375
Methods of Teaching Mathematics, Grades 9-12
3 Credit Hours
Pre/Corequisite: P (RQ) at least 30 hours in the mathematics major and P (RQ) MATH-301
Focal points include: principles, standards, current issues, implications of research, and resources and instructional methods related to the teaching and learning of secondary (grades 9-12) mathematics. 30 clinical hours. Offered fall.

MATHL 375
Secondary Mathematics edTPA Workshop
0 Credit Hours
Pre/Corequisite: C (RQ) MATH-375
Students will complete activities for Task 1 Planning for Mathematics Instruction and Assessment, Task 2 Instructing and Engaging Students in Learning, and Task 3 Assessing Student Learning. Topics include: lesson planning for a learning segment, development of assessments, analysis of mathematical language and facilitation of conceptual understanding, procedural fluency, mathematical reasoning and problem-solving skills in the mathematics classroom. Offered fall.

MATH 390
Internship
1 to 12 Credit Hours
For students who perform internships and/or present an off-campus experience judged by the faculty advisor and division director to be of significant value in mathematical studies. Offered as needed.

MATH 399
Senior Seminar
1 Credit Hour
Pre/Corequisite: P (RQ) Senior standing and program consent
The purpose of the Senior Seminar is to provide a culminating experience in mathematics for Mathematics majors, Actuarial Science majors, and Mathematics with Secondary Education majors. The student will conduct research on an advanced topic with guidance from a faculty mentor, prepare a paper, prepare a poster and give a presentation based on the research to faculty and students of the program. The student is expected to attend all presentations given during the semester.