MTH 091. DEVELOPMENTAL ALGEBRA 3 cr. hrs.
This developmental course provides the student with a review of arithmetic and algebraic skills designed to provide sufficient mathematical proficiency necessary for entry into Elementary Algebra. Prerequisite: Appropriate mathematics placement score.

MTH 098. ELEMENTARY ALGEBRA 3 cr. hrs.
This course is a review of the fundamental arithmetic and algebra operations. The topics include the numbers of ordinary arithmetic and their properties; integers and rational numbers; the solving of equations; polynomials and factoring; and an introduction to systems of equations and graphs. Prerequisite: MTH 091 with a grade of "C" or better or appropriate mathematics placement score.

MTH 100. INTERMEDIATE COLLEGE ALGEBRA 3 cr. hrs.
This course provides a study of algebraic techniques such as linear equations and inequalities, quadratic equations, systems of equations, and operations with exponents and radicals. Functions and relations are introduced and graphed with special emphasis on linear and quadratic functions. This course does not apply toward the general core requirement for mathematics. Prerequisite: MTH 098 with a "C" or better or appropriate mathematics placement score.

MTH 110. FINITE MATHEMATICS 3 cr. hrs.
This course is intended to give an overview of topics in finite mathematics together with their applications, and is taken primarily by students who are not majoring in science, engineering, commerce, or mathematics (i.e., students who are not required to take Calculus). This course will draw on and significantly enhance the student's arithmetic and algebraic skills. The course includes sets, counting, permutations, combinations, basic probability (including Baye's Theorem), and introduction to statistics (including work with Binomial Distributions and Normal Distributions), matrices and their applications to Markov chains and decision theory. Additional topics may include symbolic logic, linear models, linear programming, the simplex method and applications. Prerequisite: All core mathematics courses in Alabama must have a minimum Prerequisite high school Algebra I, Geometry, and Algebra II with an appropriate mathematics placement score. An alternative to this is that the student should

successfully pass with a "C" or higher (S if taken as pass/fail)
MTH 100 Intermediate College Algebra.

MTH 112. PRECALCULUS ALGEBRA 3 cr. hrs.

This course emphasizes the algebra of functions – including
polynomial, rational, exponential, and logarithmic functions.
The course also covers systems of equations and inequalities,
quadratic inequalities, and the binomial theorem. Additional
topics may include matrices, Cramer's Rule, and mathematical
induction. Prerequisite: All core mathematics courses in
Alabama must have a minimum Prerequisite high school
Algebra I, Geometry, and Algebra II with an appropriate
mathematics placement score. An alternative to this is that
the student should successfully pass with a "C" or higher (S
if taken as pass/fail) MTH 100 Intermediate College Algebra.

MTH 113. PRECALCULUS TRIGONOMETRY 3 cr. hrs.

This course includes the study of trigonometric (circular
functions) and inverse trigonometric functions, and includes
extensive work with trigonometric identities and trigonometric
equations. The course also covers vectors, complex numbers,
DeMoiver's Theorem, and polar coordinates. Additional topics
may include conic sections, sequences, and using matrices
to solve linear systems. Prerequisite: All core mathematics
courses in Alabama must have a minimum Prerequisite high
school Algebra I, Geometry, and Algebra II with an appropriate
mathematics placement score. An alternative to this is that
the student should successfully pass with a "C" or higher (S if
taken as pass/fail) MTH 112.

MTH 116. MATHEMATICAL APPLICATIONS 3 cr. hrs.

This course provides applications of mathematics and includes
selected topics from consumer math and algebra. Some types
included are integers, percent, interest, ratio and proportion,
metrics system, probability, linear equations, and problem
solving. This is a terminal course designed for students
seeking an AAS degree or Certificate and is not intended to
transfer. and does not meet the general core requirements for
mathematics. Prerequisite: MTH 091 with a "C" or better or
appropriate mathematics placement score.

MTH 120. CALCULUS AND ITS APPLICATIONS 3 cr. hrs.

This course is intended to give a broad overview of calculus
and is taken primarily by students majoring in Commerce

and Business Administration. It includes differentiation and integration of algebraic, exponential, and logarithmic functions and applications to business and economics. The course should include functions of several variables, partial derivatives (including applications), Lagrange Multipliers, L'Hopital's Rule, and multiple integration (including applications). Prerequisite: All core mathematics courses in Alabama must have a minimum Prerequisite high school Algebra I, Geometry, and Algebra II with an appropriate mathematics placement score. An alternative to this is that the student should successfully pass with a "C" or higher MTH 112.

MTH 125. CALCULUS I 4 cr. hrs.

This is the first of three courses in the basic calculus sequence taken primarily by students in science, engineering, and mathematics. Topics include the limit of a function; the derivative of algebraic, trigonometric, exponential, and logarithmic functions; and the definite integral and its basic applications to area problems. Applications of the derivative are covered in detail, including approximations of error using differentials, maximum and minimum problems, and curve sketching using calculus. Prerequisite: All core mathematics courses in Alabama must have a minimum Prerequisite high school Algebra I, Geometry, and Algebra II with an appropriate mathematics placement score. An alternative to this is that the student should successfully pass with a "C" or higher MTH 113 or MTH 115.

MTH 126. CALCULUS II 4 cr. hrs.

This is the second of three courses in the basic calculus sequence. Topics include vectors in the plane and in space, lines, and planes in space, applications of integration (such as volume, arch length, work and average value), techniques of integration, infinite series, polar coordinates, and parametric equations. Prerequisite: All core mathematics courses in Alabama must have a minimum Prerequisite high school Algebra I, Geometry, and Algebra II with an appropriate mathematics placement score. An alternative to this is that the student should successfully pass with a "C" or higher MTH 125.

MTH 131. MATHEMATICS IN GENERAL EDUCATION I
3 cr. hrs.

This course is designed for general education and for all students in education programs except those who will concentrate on science or mathematics. Emphasis is on the structure of the number system from the integers to the real numbers, logic, numeration systems, prime numbers, basic concepts of algebra, elementary probability and statistics, graphs, informal geometry, and the metric system. This course does not apply toward the general core requirement for mathematics for the Associate in Science program and is not intended to transfer. This course is intended to satisfy the mathematics requirement for students seeking an AAS degree or a Certi icate.

MTH 227. CALCULUS II 4 cr. hrs.
This course is the third of three courses in the basic calculus sequence. Topics include vector functions, functions of two or more variables, partial derivatives (including applications), quadric surfaces, multiple integration, and vector calculus (including Green's Theorem, Curl and Divergence, surface integrals, and Stokes' Theorem. Prerequisite: MTH 126 with a "C" or better.

MTH 231. MATH FOR THE ELEMENTARY TEACHER I
3 cr. hrs.
This course is designed to provide appropriate insights into mathematics for students majoring in elementary education and to ensure that students going into elementary education are more than pro icient in performing basic arithmetic operations. Topics include logic, sets and functions, operations and properties of whole numbers and integers including number theory; use of manipulatives by teachers to demonstrate abstract concepts; and by students while learning these abstract concepts as emphasized in the class. Upon completion, students are required to demonstrate pro iciency in each topic studied as well as to learning teaching techniques that are grade level and subject matter appropriate, and test for mathematical pro iciency and the learning of teaching concepts. Prerequisite: MTH 100.

MTH 232. MATH FOR THE ELEMENTARY TEACHER II
3 cr. hrs.
This course is the second of a three-course sequence and is designed to provide appropriate insights into mathematics for students majoring in elementary education and to ensure

that students going into elementary education are more than proﬁcient at performing basic arithmetic operations. Topics include numeration skills with fractions, decimals, and percentages, elementary concepts of probability and statistics, and analytic geometry concepts associated with linear equations and inequalities. The use of manipulatives and calculators in the teaching and learning process is stressed. Upon completion, students will test for mathematical proﬁciency and the learning of teaching concepts. Students also will demonstrate an appropriate teaching technique by preparing a lesson and teaching it to the class for their ﬁnal exam grade. Prerequisite: MTH 231.

MTH 237. LINEAR ALGEBRA 3 cr. hrs.
This course introduces the basic theory of linear equations and matrices, real vector spaces, bases and dimension, linear transformations and matrices, determinants, eigenvalues and eigenvectors, inner product spaces, and the diagonalization of symmetric matrices. Additional topics may include quadratic forms and the use of matrix methods to solve systems of linear differential equations. Prerequisite: MTH 126 with a "C" or better.

**MTH 238. APPLIED DIFFERENTIAL EQUATIONS I
3 cr. hrs.**
This course includes an introduction to numerical methods, qualitative behavior of ﬁrst order differential equations, techniques for solving separable and linear equations analytically, and applications to various models (e.g. populations, motion, chemical mixtures, etc.); techniques for solving higher order linear differential equations with constant coefﬁcients (general theory, undetermined coefﬁcients, reduction of order and the method of variation of parameters), with emphasis on interpreting the behavior of the solutions, and applications to physical models whose governing equations are of higher order; and the Laplace transform as a tool for the solution of initial value problems whose inhomogeneous terms are discontinuous. Prerequisite: MTH 227.

MTH 265. ELEMENTARY STATISTICS 3 cr. hrs.
This course provides an introduction to methods of statistics, including the following topics: sampling, frequency

distributions, measures of central tendency, graphic representation, reliability, hypothesis testing, confidence intervals, analysis, regression, estimation, and applications. Probability, permutations, combinations, binomial theorem, random variables, and distributions may be included. Prerequisite: MTH 100 with a "C" or better or appropriate