Mathematics (M)

M 095. Intermediate Algebra. 3 Credits.
This course is for students not ready for college level mathematics and covers the pre-algebra through intermediate algebra mathematics skills needed for college level mathematics courses. The course is delivered in a lab setting allowing students to progress at their own level with the aid of an on-site instructor. The class is organized into three distinct levels of Arithmetic, Beginning Algebra, and Intermediate Algebra with the student required to complete each segment in sequence. Arithmetic topics include concepts and topics of the real number system: including numeric operations, decimals, exponents, radicals, integers, ratios, proportions, fractions, factors, prime numbers, and numeric story problem applications. Beginning Algebra topics include: Power numbers, radicals, logarithms, rational expressions, linear properties, graphs, ordered pairs, relations, polynomial factoring, functions, solutions to linear and systems of two equations. Intermediate Algebra topics include determinants, complex distance and slope, relating data to equation type, application formulas, and application story problems. This course may be repeated as necessary.

M 105. Contemporary Mathematics. 3 Credits.
This course is designed to meet the general education mathematics requirement. It surveys some of the important ideas and practical applications in mathematics and uses a variety of mathematical skills and technology to solve real problems. Topics include problem solving, financial math, mathematical modeling (linear and quadratic), and elementary statistics. Students my be required to take M 105L concurrently in accordance with Board of Regents Policy 301.16 as explained in this catalog under General Education Course Placement.

M 105L. Contemporary Math Lab. 1 Credit.
This course supports the student in successful completion of M 105. Students will have lab time to work on refining their mathematical skills needed in M 105 and beyond. Students will use lab time with more individual attention to work on mathematical concerns. This course must be taken concurrently with M 105 as needed, in accordance with Board of Regents Policy 301.16, as explained in this catalog under General Education Course Placement.

M 112. Trigonometry & Complex Numbers. 2 Credits.
This course presents analytic trigonometry fundamental concepts including: trigonometric and circular functions, solutions of triangles with law of sines/cosines, solutions of trigonometric equations, identities, graphs, inverse functions, and vector principles. Prerequisite: ACT score 25-26 or M 121.

M 121. College Algebra. 3,4 Credits.
This course surveys a wide variety of topics including: properties and theorems of the real and complex number systems, the function concept including inverse functions, graphing techniques, linear, quadratic, polynomial, exponential and logarithmic functions, solving systems of equations in two or more variables using matrices and matrix algebra. The development of problem-solving skills is emphasized. Students may be required to take M 121L concurrently in accordance with Board of Regents Policy 301.16 as explained in this catalog under General Education Course Placement.

M 121L. Algebra Lab. 1 Credit.
This course supports the student in successful completion of M 121. Students will have lab time to work on refining their mathematical skills needed in M 121 and beyond. Students will use lab time with more individual attention to work on mathematical concerns. This course must be taken concurrently with M 121 as needed, in accordance with Board of Regents Policy 301.16, as explained in this catalog under General Education Course Placement.

M 130. Math for Elementary Teachers I. 3 Credits.
The topics included in this course are directly related to elementary mathematics education. The specific number topics included in this course include: numeral system, problem solving, set theory foundation of the real number system, arithmetic algorithms, statistics, probability, and algebra notations. The specific geometry topics include: plane and solid shape classification and properties, congruence, similarity, symmetry, trigonometry, measurement, and transformations. Prerequisite: M 095 or ACT score of 20 or higher or university placement examination.

M 131. Math for Elementary Teacher II. 3 Credits.
Topics relative to elementary mathematics education including algebra, statistics, and number theory. Focuses primarily on geometric concepts. Prerequisite: M 130.

M 151. Precalculus. 4 Credits.
The topics included in this course are: trigonometric and circular functions, solutions of triangles with the law of sines/cosines, trigonometric equations, identities, graphs, inverse functions, vectors; mathematical induction, complex numbers, sequences and series, linear equations, conics, polar coordinates, and parametric equations. Prerequisite: ACT scores 25-26 or university placement examination.

M 162. Applied Calculus. 3 Credits.
The topics included in this course are: differentiation and integration with positive reinforcement of concepts in algebra, trigonometry and analytic geometry. Prerequisite: ACT scores 25-26 or M 121 or M 151 or university placement examination.

M 165. Calculus for Technology. 4 Credits.
Calculus with emphasis on problems of interest to engineering technologists. Includes analytic geometry, differentiation, and introduction to integration. Prerequisite: ACT score 25+ or M 121 or university placement examination.

M 166. Calculus for Technology II. 4 Credits.
Calculus with emphasis on problems of interest to engineering technologists. Includes integration, infinite series, and differential equations. Prerequisite: M 165 or university placement examination.

M 171. Calculus I. 3-5 Credits.
Developing the concepts of calculus and analytic geometry including rates of change, limits, derivatives and anti-derivatives, concepts of integration, and the application of integration. Prerequisite: M 151 or both M 121 and M 112.

M 172. Calculus II. 5 Credits.
Further development of the concepts of integration and applications, work with infinite series, plane curves, and parametric vectors and vector valued functions, and partial differentiation. Prerequisite: M 171.

M 191. Special Topics. 3 Credits.
Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number.

M 192. Independent Study. 3-5 Credits.
Provides an opportunity for students to engage in directed research and study on an individual basis rather than in a formal class environment.

M 273. Multivariable Calculus. 5 Credits.
Introduction to the calculus of variables including partial derivatives, extremes, tangent planes, multiple integrals, and applications and vector analysis. Prerequisite: M 172.

M 291. Special Topics. 3 Credits.
Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number.

M 292. Independent Study. 3-4 Credits.
Provides an opportunity for students to engage in directed research and study on an individual basis rather than in a formal class environment.

M 301. Math Technology for Teachers. 3 Credits.
Use of computers in the classroom focusing on software systems in current use in University and public school situations. The software systems studied are used primarily in science and mathematics but are also adapted for use in developing communication skills.

M 311. Ordinary Diff Equations/System. 3 Credits.
Ordinary differential equations and LaPlace Transforms. Prerequisite: M 172.

M 326. Number Theory. 3 Credits.
Selected topics from real number theory and congruencies. Prerequisite: M 172.

M 327. Methods for Teaching Sec Math. 3 Credits.
Theories and techniques of teaching secondary mathematics. Investigation of methodology of content presentation and practice teaching techniques. Major developments in mathematics curriculum.

M 329. Modern Geometry. 3 Credits.
Study of Euclidean Geometry, selected topics from non-Euclidean Geometry. Prerequisite: M 172.

M 333. Linear Algebra. 3 Credits.
Study of Vector spaces and linear transformations which act on vector spaces, focusing on linear transformations and their matrix representations. Prerequisite: M 172.

M 351. Algebraic Structures I. 3 Credits.
Introduction to mathematical groups, rings, fields, and polynomial rings. Prerequisite: M 172.

M 391. Special Topics. 3 Credits.
Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number.

M 392. Independent Study. 3 Credits.
Provides an opportunity for students to engage in directed research and study on an individual basis rather than in a formal class environment.

M 440. Numerical Analysis. 3 Credits.
An introduction to numerical analysis which including error analysis, real roots of equations, numerical integration, and numerical solutions of ordinary differential equations. Prerequisites: M 311 and one higher-level computer programming language course.

M 491. Special Topics. 3 Credits.
Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number.

M 492. Independent Study. 3 Credits.
Provides an opportunity for students to engage in directed research and study on an individual basis rather than in a formal class environment.