ALL COURSES

MATHEMATICS

MATH XXXX: Mathematics
Three hours from one of the following:
MATH 1003 College Mathematics College Mathematics
MATH 1113 College Algebra College Algebra
Any higher level mathematics course

MATH 0803: Foundations of College Mathematics
Co-requisite: MATH 1003 College Mathematics
The purpose of this course is to prepare for college level mathematics those students whose mathematics background is inadequate. This course is a review of solving basic equations, operations, exponents, formulas, basic numeracy, statistics, percentages, scientific notation, conversions, and other mathematical skills. This course prepares students through a focus on problem solving, working with data, and emphasis on thinking critically.
Note: The grade in the course will be computed in semester and cumulative grade point averages, but the course may not be used to satisfy general education requirements nor provide credit toward any degree.
Note: A student who makes a D or F in MATH 0803 Foundations of College Mathematics must repeat the course in each subsequent semester until he or she earns a grade of C or better. Students who make a grade of C or better in MATH 0803 Foundations of College Mathematics must enroll in MATH 1003 College Mathematics the following semester.

MATH 0903: Beginning and Intermediate Algebra
Co-requisite: Students scoring below 17 on math section of the ACT; below 460 on the math section of the RSAT; or below 243 on arithmetic section of ACCUPLACER will be required to enroll in MATH 0900.
The purpose of this course is to prepare for college level mathematics those students whose mathematics background is inadequate. Content of the course is the language of algebra, fundamental operations, signed numbers, various equations, problem solving, special products and factoring, fractions, functions, graphs, exponents, and systems of linear equations.
Note: The grade in the course will be computed in semester and cumulative grade point averages, but will not be calculated in earned hours. The course may not be used to satisfy general education requirements nor provide credit toward any degree.
Note: A student who makes a D or F in MATH 0903 Beginning and Intermediate Algebra must repeat the course in each subsequent semester until he or she earns a C or better. Students who make a grade of C or better in MATH 0903 Beginning and Intermediate Algebra must enroll in MATH 1003 College Mathematics or MATH 1113 College Algebra the following semester.

MATH 1001: Orientation to Mathematics
This course is designed to provide information and enhance skills that will enable students to make a successful transition to college. The course will expose students to college resources, requirements, and promote the development of practical skills for college success. Learning experiences also include exploration of career paths available in the field of mathematics.

MATH 1003: College Mathematics
ACTS Common Course - MATH 1113 College Algebra
Prerequisite: Score of 19 or above on the math section of the ACTE; score of 500 or above on the math section of RSAT; score of 250 or above on the arithmetic section or quantitative reasoning, algebra, and statistics section of ACCUPLACER; or earn a grade of C* or higher in MATH 0803 Foundations of College Mathematics or MATH 0903 Beginning and Intermediate Algebra or TMAT 1203.
Co-requisite: Students not meeting the above prerequisite, will enroll in MATH 1003 College Mathematics and the co-requisite MATH 0803 Foundations of College Mathematics.
This quantitative literacy course focuses upon the mathematics of contemporary life. Topics include using and understanding number quantities and measurement, statistics, probability, finances (personal, state and national), and mathematical modeling.
Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 1110: College Algebra Lab
Co-requisite: MATH 1113 College Algebra with a math ACT score of 19 or 20.
The purpose of this course is to prepare students for college level mathematics whose mathematics background is inadequate. This a laboratory course designed to foster success in College Algebra and to provide additional active learning opportunities and assistance for application of the basic skills and concepts in College Algebra. The lab will take the major content areas from the college algebra class and reinforce the learning in those areas through extra practice and different perspectives.

MATH 1113: College Algebra
ACTS Common Course - MATH 1103
Prerequisite: Score of 21 or above on the math section of the ACTE; score of 530 or above on the math section of RSAT; score of 253 or above on the quantitative reasoning, algebra, and statistics section of ACCUPLACER; or earn a grade of C* or better in MATH 0903 Beginning and Intermediate Algebra.

Co-requisite: Students not meeting the above prerequisite but who score 19-20 on the math section of ACTE; score 500-520 the math section of RSAT; or score 250-252 on the Quantitative Reasoning, Algebra, and Statistics section of ACCUPLACER, will enroll in MATH 1113 College Algebra and the co-requisite: MATH 1110 College Algebra Lab.

Co-requisite: Students not meeting the above prerequisite but who score 17-18 on the math section of ACTE; score 460-490 the math section of RSAT; or score 243-249 on the Quantitative Reasoning, Algebra, and Statistics section of ACCUPLACER, will enroll in MATH 1113 College Algebra and the co-requisite: MATH 0903 Beginning and Intermediate Algebra.

Exponents and radicals, introduction to quadratic equations, systems of equations involving quadratics, ratio, proportion, variation, progressions, the binomial theorem, inequalities, logarithms, and partial fractions.

Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

Note: May not be taken for credit after completion of MATH 2703 Discrete Mathematics or any higher level mathematics course.

MATH 1203: Plane Trigonometry

ACTS Common Course - MATH 1203 Plane Trigonometry

Prerequisite: Math ACTE score of 22 or higher, MATH 1113 College Algebra, or consent of Mathematics Department.

A study of the properties of the trigonometric functions and their graphs, solution of right and oblique triangles, formulas and identities, inverse functions, and trigonometric equations.

Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 1914: Precalculus

ACTS Common Course - MATH 1305

Prerequisite: A math ACT score of 21 or above; score of 530 or above on the math section of RSAT; score of 253 or above on the quantitative reasoning, algebra, and statistics section of ACCUPLACER; or earn a grade of C or better in MATH 1113 College Algebra.

This course is designed to provide additional mathematical background before enrolling in the calculus sequence.

Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 2033: Mathematical Concepts I

Prerequisite: MATH 1003 College Mathematics or 1113, elementary education major

Elementary set theory, numeration systems, elementary number theory and the real number system.

Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 2043: Mathematical Concepts II

Prerequisites: A grade of C or better in MATH 2033 Mathematical Concepts I, elementary education major

A continuation of MATH 2033 Mathematical Concepts I, including a study of the elementary concepts of probability and statistics, and an informal study of geometry.

Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 2223: Quantitative Business Analysis

Prerequisites: A math ACT score of 22 or higher or grade of "C" or better in MATH 1113 College Algebra.

This course is designed to develop the ability to use quantitative methods in accounting, business, and economics; it includes models of cost, revenue, and profit, linear programming, and probability.

Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 2243: Calculus for Business and Economics

ACTS Common Course - MATH 2203

Prerequisites: A math ACT score of 22 or above or a C or above MATH 1113 College Algebra.

An introduction to the concepts of differentiation and integration. Emphasis will be placed on applications of calculus in business, economics, accounting, social sciences, and life sciences.

Note: May not be taken for credit after completion of MATH 2914 Calculus I or equivalent.

Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 2703: Discrete Mathematics

Prerequisite: A grade of C or above in MATH 1113 College Algebra or higher level mathematics course.

A study of topics basic to mathematics and computer science. The topics include logic, proofs, mathematical induction, set theory, combinatorics, relations, and graph theory.

Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 2914: Calculus I

ACTS Common Course - MATH 2405

Prerequisites: Math ACT score of 26 or higher, or a grade of C or higher in MATH 1914 Precalculus or MATH 1203 Plane Trigonometry or consent of instructor.

This is the first course in the calculus sequence that includes topics on functions, limits, continuity, differentiation and its applications, antiderivatives, inverse functions, and introduction to integration.

Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 2924: Calculus II

ACTS Common Course - MATH 2505
Prerequisite: C or above in MATH 2914 Calculus I or equivalent
A continuation of MATH 2914 Calculus I. Includes methods of integration and its applications, sequences, and series.
Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 2934: Calculus III

ACTS Common Course - MATH 2603
Prerequisite: C or above in MATH 2924 Calculus II or equivalent
Continuation of MATH 2924 Calculus II. The study of multi-dimensional calculus, including vector functions, partial differentiation, multiple integration and applications.
Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 3003: Foundations of Advanced Mathematics

Prerequisite: MATH 2703 Discrete Mathematics
A detailed presentation of the fundamental mathematical concepts required to enter advanced mathematical coursework: sets, logic, methods of mathematical proof, relations, functions, and cardinality.
Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 3033: Methods of Teaching Elementary Mathematics

Prerequisite: A grade of C or better in MATH 2043 Mathematical Concepts II and admission to Stage II.
A course on methods of teaching the mathematics of the elementary school using mathematical concepts and principles taught in these grades.
Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 3123: College Geometry

Prerequisite: MATH 2924 Calculus II
A formal approach to plane geometry with coordinates; sets, points, lines, planes, distance, and coordinate systems, angles, congruence, parallelism, and similarity.
Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 3203: Introduction to Analysis

Prerequisite: MATH 3003 Foundations of Advanced Mathematics
A careful development of the real number system and the theory of calculus on the real line.
Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 3243: Differential Equations I

Prerequisite: C or above in MATH 2924 Calculus II
A study of differential equations of the first order; linear equations of higher order including the methods of undetermined coefficients and variation of parameters; linear equations with constant coefficients; special equations of order two and systems of linear first-order differential equations using matrices.
Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 3703: Mathematics in the Secondary Schools

Prerequisites: SEED 2002 Education as a Profession and junior standing.
This course is an in-depth study of the mathematics curriculum currently taught in secondary schools with an emphasis on content knowledge for teaching. The course consists of classroom instruction and a field component.
Note: A grade of "C" or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 3772: Praxis II Mathematics: Content Knowledge Test Preparation

Offered: Spring
Prerequisite: Admission to Stage II of the teacher education program.
This course is designed to provide preservice teacher candidates in the Mathematics Teacher Licensure program with an intensive study of the mathematical knowledge and competencies assessed by the Praxis Mathematics: Content Knowledge test.

MATH 4003: Linear Algebra I

Prerequisite: MATH 2924 Calculus II
Matrices and matrix algebra, systems of linear equations, determinants, eigenvalues, eigenvectors, general vector spaces, linear transformations.
Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 4033: Abstract Algebra I

Prerequisite: MATH 3003 Foundations of Advanced Mathematics
A study of Groups and other algebraic structures. Topics include sub-groups, normal sub- groups, abelian groups, groups of permutations, homomorphisms, kernels, and range.

Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 4103: Linear Algebra II

Prerequisites: MATH 4003 Linear Algebra I or the consent of the Department of Mathematics.

A continuation of MATH 4003 Linear Algebra I with emphasis on abstract vector spaces, inner product spaces, linear transformations, kernel and range, and applications of linear algebra.

Note: MATH 5103 may not be taken for credit after completion of MATH 4103 Linear Algebra II or equivalent.

Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 4113: History of Mathematics

Prerequisite: MATH 2934 Calculus III

A study of selected topics from the history and nature of mathematics from ancient to modern times. Emphasis will be placed on the historical development of mathematics through a study of biographies of prominent mathematicians and the evolution of some important mathematical concepts. The fundamental role of mathematics in the rise, maintenance, and extension modern civilization will be considered.

Note: MATH 5113 may not be taken for credit after completion of this course.

Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 4123: Mathematical Modeling

Prerequisites: MATH 2703 Discrete Mathematics and MATH 3243 Differential Equations I

This course provides an introduction to the mathematical modeling process and applies this process to problems that may be modeled with pre senior level mathematics. Emphasis will be placed on connections of mathematics to application areas such as business, industry, economics, physical sciences, biological sciences, medicine and social sciences.

Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 4203: Advanced Logic

Cross-listed: PHIL 4103 Advanced Logic

Prerequisites: COMS 2903 Discrete Structures for Technical Majors or MATH 2703 Discrete Mathematics or PHIL 3103 Logic

A study of selected topics in advanced logic. Emphasis will be placed on proof theory, quantification theory, semantic tableaux, logicism, theories of completeness and consistency, and some consideration of the logical foundations mathematics.

MATH 4243: Differential Equations II

Prerequisites: MATH 3243 Differential Equations I and MATH 4003 Linear Algebra I or consent of the instructor.

A continuation of MATH 3243 Differential Equations I with emphasis on higher order and systems of differential equations.

Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 4273: Complex Variables

Prerequisite: MATH 2934 Calculus III

An introduction to complex variables. This course will emphasize the subject matter and skills needed for applications of complex variables in science, engineering, and mathematics. Topics will include complex numbers, analytic functions, elementary functions of a complex variable, mapping by elementary functions, integrals, series, residues and poles and conformal mapping.

Note: MATH 5273 may not be taken for credit after completion of this course.

Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 4343: Introduction to Partial Differential Equations

Prerequisites: MATH 2934 Calculus III and MATH 3243 Differential Equations I

This course is an introduction to partial differential equations with emphasis on applications to physical science and engineering. Analysis covers the equations of heat, wave, diffusion, Laplace, Dirichlet and Neumann equations. Course is suitable for senior level or first year graduate students in Mathematics, Physics, and Engineering.

Note: A grade of C or better must be earned in the course used to satisfy the general education mathematics requirement.

MATH 4703: Special Methods in Mathematics

Prerequisites: Admission to State II of the teacher education program.

Co-requisites: SEED 4054 Educating Developing, Diverse, and Exceptional Learners and SEED 4556 Classroom Application of Educational Psychology

This course provides preservice teacher candidates with knowledge of current research and practice in mathematics education; a setting in which to apply that knowledge; and the opportunity to assess their teaching performance and formulate a plan for improvement.

Note: A grade of "C" or better must be earned in the course to be used to satisfy the general education mathematics requirement.

MATH 4951: Undergraduate Research in Mathematics

Offered: On demand

Prerequisite: Departmental approval

Advanced students carry out independent research activity relating to a significant problem in a major field of study. Supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made.

Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 4952: Undergraduate Research in Mathematics
Offered: On demand
Prerequisite: Departmental approval
Advanced students carry out independent research activity relating to a significant problem in a major field of study. Supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made.
Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 4953: Undergraduate Research in Mathematics
Offered: On demand
Prerequisite: Departmental approval
Advanced students carry out independent research activity relating to a significant problem in a major field of study. Supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made.
Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 4954: Undergraduate Research in Mathematics
Offered: On demand
Prerequisite: Departmental approval
Advanced students carry out independent research activity relating to a significant problem in a major field of study. Supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made.
Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 4971: Mathematics Senior Seminar
Prerequisites: MATH 3203 Introduction to Analysis or MATH 4033 Abstract Algebra I, or departmental approval.
Students will engage in a research project under the guidance of faculty research advisors. The research area will depend on the interests of the students and available expertise of faculty advisors. The students will present their findings before their peers, faculty advisors, and members of the Mathematics Department Assessment Committee.

MATH 4991: Special Problems in Mathematics
The content and credit for this course will be designed to meet the needs of the student.
Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 4992: Special Problems in Mathematics
The content and credit for this course will be designed to meet the needs of the student.
Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 4993: Special Problems in Mathematics
The content and credit for this course will be designed to meet the needs of the student.
Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.

MATH 4994: Special Problems in Mathematics
The content and credit for this course will be designed to meet the needs of the student.
Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.