Mathematics

MATH 100 (3.00)

Introduction to Contemporary Mathematics

Students will be introduced to many topics from comtemporary mathematics. These are especially of interest to students in the social and information sciences. Topics include networks and graphs, the traveling salesman problem, scheduling linear programming, social choice, voting systems game theory, fair division, patterns, tilings form, similarity and symmetry.

Course ID: 055191
Consent: No Special Consent Required
Components: Lecture
Attributes: Mathematics (GEP), Mathematics (GFR)
Requirement Group: You must have scored a 3, 4 or 5 on the LRC MATH placement exam or passed MATH 106 with a grade of 'C' or better to enroll in this course.

MATH 106 (3.00)

Algebra and Elementary Functions

An introduction to the basic techniques and functions of mathematics. This course is especially recommended for those students who need to brush up due to a shaky high school preparation or for those who haven't had a mathematics course in several years. Topics include linear equations and inequalities; quadratic equations; polynomials; and rational functions and their inverses, including the exponential and the logarithm.

Course ID: 055194
Consent: No Special Consent Required
Components: Lecture, Seminar
Course Equivalents: MATH 106Y
Requirement Group: You must score a 2 or 3 on the LRC placement exam or have completed LRC 99 with a grade of 'C' or better to enroll in this course.

MATH 106Y (4.00)

Algebra and Elementary Functions

An introduction to the basic techniques and functions of mathematics. This course is especially recommended for those students who need to brush up due to a shaky high school preparation or for those who haven't had a mathematics course in several years. Topics include linear equations and inequalities; quadratic equations; polynomials; and rational functions and their inverses, including the exponential and the logarithm.

Course ID: 055195
Consent: No Special Consent Required
Components: Discussion, Lecture
Course Equivalents: MATH 106
Requirement You must score a 2 or 3 on the LRC placement exam or have completed LRC 99 with a grade of

Group: 'C' or better to enroll in this course.

MATH 115 (3.00)

Finite Mathematics

An introduction to linear algebra, matrices, set theory, combinatorial analysis and probability theory. Appropriate for students desiring a knowledge of elementary linear algebra and probability theory. Note: Not open to students who have passed any of MATH 221, STAT 350, 351, 355, 356 or 451.

Course ID: 055196
Consent: No Special Consent Required
Components: Lecture
Attributes: Mathematics (GEP), Mathematics (GFR)
Requirement Group: You must have completed MATH 106 or 106Y with a grade of "C" or better or scored a 3, 4 or 5 on the LRC MATH placement exam to enroll in this course.

MATH 131 (4.00)

Mathematics for Elementary School Teachers I

Intended primarily for prospective elementary school teachers. Structural aspects of mathematics and the 'why' of arithmetical computations. Topics include sets, functions, logic, numbers and number systems, numeration systems, properties of mathematical operations, techniques for computation, decimals, elementary number theory, metric and non-metric geometry, elements of probability and statistics. Note: Enrollment is intended primarily for students pursuing certification in elementary or secondary education:

Course ID: 055198
Consent: No Special Consent Required
Components: Lecture
Attributes: Mathematics (GEP), Mathematics (GFR)
Requirement Group: You must have completed MATH 106 or 106Y with a grade of "C" or better or scored a 3 on the LRC MATH placement exam to enroll in this course.

MATH 132 (4.00)

Mathematics for Elementary School Teachers II

Continuation of MATH 131.

Course ID: 055199
Consent: No Special Consent Required
Components: Lecture
Attributes: Mathematics (GFR)
Requirement Group: You must have completed MATH 106 or 106Y with a grade of "C" or better or scored a 3 on the LRC MATH placement exam to enroll in this course.

MATH 140 (3.00)

Differential Calculus

This course covers the fundamentals of the differential calculus with review of notions of analytic geometry and trigonometry as needed. Content includes limits; rate of change and velocity; derivatives and rules of differentiation; differentiation of polynomial, algebraic and trigonometric functions; curve sketching and optimization problems; and differentiation of inverse functions, anti-derivatives and indefinite integrals. Note: Math 140 does not cover all the

material of Math 151. It is equivalent to the first quarter of calculus at institutions on the quarter system.

Course ID: 055200
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 150 with a grade of "C" or better or scored a 5 on the LRC MATH placement exam to enroll in this course.

MATH 141 (3.00)

Integral Calculus

Topics of this course include: computation of areas, definition of the definite integral, integrals of algebraic and trigonometric functions, applications of integrals, the calculus of exponential and logarithmic functions, basic and advanced techniques of integration, numerical integration and improper integrals. Note: The combination of Math 140 and Math 141 includes all of the material of Math 151 and can serve as a prerequisite to Math 152. Math 141 is equivalent to the second quarter of calculus at an institution on the quarter system.

Course ID: 055201
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 140 or MATH155B with a grade of "C" or better before you can take this class.

MATH 142 (3.00)

Calculus Applications and Infinite Series

Topics of this course include: first introduction to differential equations; further applications of the differential and integral calculus; infinite sequences and series; Taylor and Maclaurin series for functions, including the trigonometric, logarithmic and exponential functions. Note: Completion of this course is equivalent to completion of Math 152. This is equivalent to the third quarter of calculus at institutions on the quarter system.

Course ID: 055202
Consent: No Special Consent Required
Components: Lecture
Attributes: Mathematics (GFR)
Requirement Group: You must have completed MATH 141 with a grade of "C" or better before you can enroll in this class.

MATH 150 (4.00)

Precalculus Mathematics

This course provides the mathematical preparation necessary for success in calculus. It also provides preparation for basic physics, computer science and engineering science courses. Topics covered include review of functions and graphing techniques; logarithmic and exponential functions; review of basic right-angle trigonometry followed by an extensive treatment of trigonometric functions, identities and applications to the analytic geometry of the conic sections, applications to two-dimensional vectors and to the geometry of complex numbers.

Course ID: 055203
Consent: No Special Consent Required
Components: Discussion, Lecture
Attributes: Mathematics (GEP), Mathematics (GFR)
Requirement Group: You must have completed MATH 106 or 106Y with a grade of "C" or better or scored a 4 or 5 on the LRC MATH placement exam to enroll in this course.

MATH 151 (4.00)

Calculus and Analytic Geometry I

Topics of this course include limits, continuity, the rate of change, derivatives, differentiations formulas for algebraic and trigonometric functions, maxima and minima, integration and computation of areas. Areas and volumes of solids of revolution, applications. Note: Non-science oriented students should consider Math 155. Credit will not be given for both Math 151 and Math 155.

Course ID: 055205
Consent: No Special Consent Required
Components: Discussion, Lecture
Course Equivalents: MATH 151H
Attributes: Mathematics (GEP), Mathematics (GFR)
Requirement Group: You must have completed MATH 150 with a grade of "C" or better or scored a 5 on the LRC MATH placement exam to enroll in this course.

MATH 151H (4.00)

Calculus and Analytic Geometry I - Honors

Topics of this course include limits, continuity, the rate of change, derivatives, differentiations formulas for algebraic and trigonometric functions, maxima and minima, integration and computation of areas. Areas and volumes of solids of revolution, applications. Note: Non-science oriented students should consider Math 155. Credit will not be given for both Math 151 and Math 155.

Course ID: 055206
Consent: No Special Consent Required
Components: Discussion, Lecture
Course Equivalents: MATH 151
Attributes: Mathematics (GEP), Mathematics (GFR)
Requirement Group: You must be admitted to the HONORS COLLEGE and have completed MATH 150 with a C or better or scored a 5 on the LRC MATH Placement exam to enroll in this course.

MATH 152 (4.00)

Calculus and Analytic Geometry II

Topics of this course include logarithmic and exponential functions, inverse functions, methods of integration, improper integrals, hyperbolic functions, sequences and infinite series, power series, Taylor series, applications, conic sections and polar coordinates.

Course ID: 055208
Consent: No Special Consent Required
Components: Discussion, Lecture
Course Equivalents: MATH 152H
Attributes: Mathematics (GFR)
Requirement Group: You must complete MATH151 or MATH141 or MATH155B with a grade of C or better before taking this class.

MATH 152H (4.00)

Calculus and Analytic Geometry II - Honors

Topics of this course include logarithmic and exponential functions, inverse functions, methods of integration, improper integrals, hyperbolic functions, sequences and infinite series, power series, Taylor series, applications,

conic sections and polar coordinates.

Course ID: 055209
Consent: No Special Consent Required
Components: Discussion, Lecture
Course Equivalents: MATH 152
Attributes: Mathematics (GFR)
Requirement Group: You must be admitted to the Honors College, and must be completed Math 151 or Math 151H or Math 141 or Math 155 with a grade of C or better.

MATH 155 (4.00)

Applied Calculus

Basic ideas of differential and integral calculus, with emphasis on elementary techniques of differentiation and integration with applications, are treated in this course. Technology will be utilized to enhance understanding of the concepts and their applications. Not recommended for students majoring in mathematics, computer science, engineering, or physical sciences. Note: Credit will not be given for both MATH 151 and 155.

Course ID: 055211
Consent: No Special Consent Required
Components: Discussion, Lecture
Attributes: Mathematics (GEP), Mathematics (GFR)
Requirement Group: You must have completed MATH 106 or 106Y with a grade of "C" or better or scored a 4 or 5 on the LRC MATH placement exam to enroll in this course.

MATH 155B (1.00)

Calculus of Trigonometric Functions

The main topics of this course are the differentiation and integration of trigonometric functions, together with a treatment in greater depth of topics in MATH 155.

Course ID: 055212
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 155 with a grade of "C" or better before you can take this class.

MATH 215 (3.00)

Applied Finite Mathematics

The basic linear algebra of matrices used for solutions of large scale systems of linear equations is treated. Applications of matrices such as Leontieff models of multi-sector economics and the basics of the simplex method for solving linear economic optimization problems are discussed. Fundamental concepts of probability including basic combinatorial methods for probabilistic computations are studied. An introduction is given to decision theory. This treatment is in the context of Bayesian or statistical decision theory, though game theoretic versions may be discussed. Possible optional topics may include elementary Markov chains or the matrix algebra of spreadsheet operations.

Course ID: 055215
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 141 or MATH151 or MATH155 or MATH380 with a grade of 'C' or better or scored a 5 on the MATH placement exam before you can enroll in this course.

MATH 221 (3.00)

Introduction to Linear Algebra

Topics of this course include: linear equations, Gauss-Jordan reduction, matrices and determinants and their properties, vector spaces and subspaces, basis and dimension, linear transformations, kernel and range, eigenvalues and eigenvectors, and matrix diagonalization.

Course ID: 055216
Consent: No Special Consent Required
Components: Lecture
Course Equivalents: MATH 221H
Attributes: Mathematics (GFR)
Requirement Group: You must complete MATH141 or MATH151 or MATH380 with a grade of C or better.

MATH 221H (3.00)

Introduction to Linear Algebra - Honors

Topics of this course include: linear equations, Gauss-Jordan reduction, matrices and determinants and their properties, vector spaces and subspaces, basis and dimension, linear transformations, kernel and range, eigenvalues and eigenvectors, and matrix diagonalization.

Course ID: 055217
Consent: No Special Consent Required
Components: Lecture
Course Equivalents: MATH 221
Attributes: Mathematics (GFR)
Requirement Group: You must be admitted to the Honors College and have completed Math 141, or Math 151 or MATH 151H or Math 380 with a grade of C or better.

MATH 225 (3.00)

Introduction to Differential Equations

Topics of this course include: solutions of first- and second order linear differential equations, non-linear exact and separable equations, integrating factors, homogeneous equations, higher-order linear equations, initial and boundary value problems, solutions as functions of the equation parameters, Laplace transforms, power series solutions for Bessel and Legendre equations, difference equations and numerical methods. Recommended Preparation: MATH 251.

Course ID: 055218
Consent: No Special Consent Required
Components: Lecture
Attributes: Mathematics (GFR)
Requirement Group: You must have completed MATH 142 or MATH 152 with a grade of "C" or better.

MATH 233 (3.00)

Fundamentals of Geometry

In this course, the student will learn and apply the principles of geometry as well as recognize and understand their relevance to the real world. Topics include fundamental concepts and patterns; geometric reasoning and proof; parallel and perpendicular lines as they relate to Euclidean, hyperbolic and elliptical geometry; triangle relationships and triangle congruence; exploring quadrilaterals; transformations and similarity; investigating right triangles, polygons, surface area and volume, and circles. Throughout the course, special emphasis is given to problem-

solving techniques.

Course ID: 100002
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 132 or MATH 150 with a grade of 'C' or better or have scored a 4 or 5 on the MATH placement exam.

MATH 251 (4.00)

Multivariable Calculus

Topics of this course include: vectors, lines, planes and surfaces in three dimensions. Vector functions and their derivatives. Partial derivatives, gradients, directional derivatives, maxima, minima and Lagrange multipliers. Multiple integrals, area, volume, surface area, integration in different coordinate systems. Line integral, Green's theorem, Stokes' theorem and divergence theorem.

Course ID: 055219
Consent: No Special Consent Required
Components: Discussion, Lecture
Course Equivalents: MATH 251H
Attributes: Mathematics (GFR)
Requirement Group: You must have completed MATH 142 or MATH 152 with a grade of "C" or better.

MATH 251H (4.00)

Multivariable Calculus

Topics of this course include: vectors, lines, planes and surfaces in three dimensions. Vector functions and their derivatives. Partial derivatives, gradients, directional derivatives, maxima, minima and Lagrange multipliers. Multiple integrals, area, volume, surface area, integration in different coordinate systems. Line integral, Green's theorem, Stokes' theorem and divergence theorem.

Course ID: 100128
Consent: No Special Consent Required
Components: Lecture
Course Equivalents: MATH 251
Attributes: Mathematics (GFR)
Requirement Group: You must be admitted to the Honors College and completed Math142 or Math152 with a grade of C or better.

MATH 290 (1.00 - 4.00)

Special Topics in Mathematics

This course is repeatable for credit.

Course ID: 055222
Consent: No Special Consent Required
Components: Lecture
Topics: Special Topics In Math, Top:Probabilty & Science, Topics: Calculus, Meyerhoff-Advance Calc, Spec Topics In Math, Insights Into Mathematic, Probability And Science, Topics In Math-Meyerhoff, Advanced Calculus, Topics: Calculus, Sp Topics In Math, Topics In Math:Meyerhoff, Creative Methods Of Math, Meyerhoff Scholarship, Calculus, Topics In Calculus

MATH 299 (1.00 - 4.00)

Independent Study in Mathematics

Course ID: 055223
Consent: No Special Consent Required
Components: Independent Study

MATH 301 (4.00)

Introduction to Mathematical Analysis I

This course is a systematic study of basic analysis with an emphasis on formal proofs, examples and counter examples. Topics include properties of the real line, sequences, series, limits, continuity and differentiation of functions, and Riemann Integration. Note: Highly recommended is CMSC 203.

Course ID: 055224
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 142 or MATH 152 in addition to MATH 221 with a grade of "C" or better before you can take this course.

MATH 302 (3.00)

Introduction to Mathematical Analysis II

Topics of this course include: continuity, differentiation of functions of several variables, uniform convergence of sequences of functions, multiple integration, contraction mapping principle, and implicit and inverse function theorems. Note: Credit will not be given for both Math 302 and Math 401.

Course ID: 055225
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 251 and MATH 301 with a grade of "C" or better.

MATH 306 (3.00)

Geometry

Topics of this course are to be selected from foundations of geometry, modern Euclidean geometry, non-Euclidean geometry, projective geometry and its subgeometries.

Course ID: 055227
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 301 with a grade of C or better.

MATH 341 (3.00)

Computational Methods

Basic computational methods for interpolation, systems of linear equations, least squares approximation, numerical quadrature, numerical solution of polynomial and transcendental equations. Emphasis on the methods and their computational properties, rather than on their analytic aspects.

Course ID: 055228

Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 142 or MATH 152 in addition to having completed MATH 221 and CMSC 201 with a grade of C or better.

MATH 355 (3.00)

Biomathematics

Topics in this course include: Introductions to discrete-time dynamical and continuous time differential equations with an emphasis on nonlinear interactions applied to biological systems; Basic stability analysis, graphical analysis, solution techniques; Introduction to probability to address randomness in biological processes including probability distributions; Basics of descriptive statistics in relation to the probabilistic models.

Course ID: 101992
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH152 and MATH 221 with a C or better.

MATH 380 (3.00)

Introduction to Operations Research

Linear programming, including the simplex method. Transportation, assignment and transhipment problems. Network problems. Not recommended for mathematics/statistics or computer science majors. Note: Credit will not be given for both Math 380 and Math 381.

Course ID: 055231
Consent: No Special Consent Required
Components: Lecture
Attributes: Mathematics (GFR)
Requirement Group: You must have completed MATH 115 or MATH 150 with a grade of "C" or better.

MATH 381 (3.00)

Linear Methods in Operations Research

Introduction to convex sets. Theory of linear programming. Applications to transportation and assignment problems. Introduction to graphs with applications to network problems, including shortest route and maximum flow problems. Introduction to game theory. Note: Credit will not be given for both Math 380 and Math 381.

Course ID: 055232
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 221 with a grade of C or better.

MATH 385 (3.00)

Introduction to Mathematical Modeling

This is a project-oriented course offering the opportunity to discover how various real world problems can be described and analyzed with the aid of simple mathematical models and computer simulations. Possible project topics include operation of a fuse, spread of pollutants in a river, propagation of an infectious disease, traffic flow on a highway, oscillating chemical reactions, etc. Specific selection of problems will depend on the background and interests of the students enrolled in the course. Students seeking elementary teacher certification in science or

math are particularly welcome. This course incorporates constructivist principles and has been designed as an MCTP course for students in the Maryland collaborative for Teacher Preparation Program.

Course ID: 055234
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH225 or MATH355 w/ a C or better

MATH 390 (1.00 - 4.00)

Special Topics in Mathematics

Course ID: 055236
Consent: No Special Consent Required
Components: Lecture
Topics: Intro. to Financial Math for Actuarial Students

MATH 401 (3.00)

Mathematical Analysis

Topics of this course include: elementary metric space topology, sequences, series, continuity, differentiation, Riemann integral, sequences and series of functions, and implicit and inverse function theorems. Note: Credit will not be given for both Math 302 and Math 401.

Course ID: 055237
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 301 with a grade of C or better.

MATH 404 (3.00)

Introduction to Partial Differential Equations I

Quasi-linear and non-linear first-order equations, calculus of variations, linear second order equations and their classification, self-adjoint operators, Sturm Liouville problems and eigenfunction expansions, fundamental solutions and Green's functions, distributions, boundary and initial value problem for potential, wave and heat equations, integral transforms and asymptotic expansions.

Course ID: 055239
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 225 and MATH 251 with a grade of "C" or better before you can take this class.

MATH 407 (3.00)

Intro to Modern Algebra & Number Theory

The basic abstract algebraic structures (rings, integral domains, division rings, fields and Boolean algebra) will be introduced, and the fundamental concepts of number theory will be examined from an algebraic perspective. This will be done by examining the construction of the natural numbers from the Peano postulates, the construction of the integers from the natural numbers, the rationals as the field of quotients of the integers, the reals as the ordered field completion of the rationals and the complex numbers as the algebraic completion of the reals. The basic concepts of number theory lead to modular arithmetic; ideals in rings; and to examples of integral domains, division

rings and fields as quotient rings. The concept of primes yields the algebraic concepts of unique factorization domains, Euclidean rings, and prime and maximal ideals of rings. Examples of symmetries in number theory and geometry lead to the concept of groups whose fundamental properties and applications will be explored.

Course ID: 055241
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 301 with a grade of C or better.

MATH 408 (3.00)

Introduction to Abstract Algebra

Topics of this course include a deeper examination of the structure of groups, including Sylow theorems and the fundamental theorem of abelian groups; a further study of rings, including modules and linear algebra over rings; polynomial and matrix rings; field theory, including Galois theory; and applications such as nonsolubility of quintic polynomials by radicals and geometric nonconstructilibity.

Course ID: 055242
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 407 with a grade of "C" or better before you can take this course.

MATH 409 (3.00)

Introduction to Mathematical Logic

Propositional and first-order logic are developed. The basic framework of formal languages, logical structures and their models is given. Formal deductive systems for logical proofs is set in an algorithmic framework. The completeness and compactness theorems for consistent axiom systems are proven, including the Lowenheim-Skolem theorems. The last half of the course focuses on the work of Goedel. Using Goedel's numbering of number theoretic formulae and proofs, his theorem asserting the incompleteness (inability to prove all true statements) of any consistent axiomatization of the natural numbers that is recursively given are proven. Related results of Tarski and Rosser, his second incompleteness theorem; the impossibility of Peano arithmetic, if consistent, to prove its own consistency are also proven. Time permitting, the course will introduce Goedel's proof of the consistency of Cantor's continuum hypothesis and axiom of choice with the usual axioms of set theory. This course is repeatable for credit.

Course ID: 055243
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 301 or CMSC 441 or PHIL 346 with a grade of "C" or better before you can take this course.

MATH 410 (3.00)

Introduction to Complex Analysis

Complex number plane and functions of a complex variable, differentiability and analyticity. Cauchy-Riemann equations, integration in the complex plane, Cauchy's theorem, power series, analytic continuation, Laurent series, improper integrals, gamma function, calculus of residues, evaluation of real integrals, argument principle, meromorphic functions and entire functions. Note: Recommended Math 301.

Course ID: 055244
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 251 with a grade of "C" or better before you can take this course.

MATH 411 (3.00)

Linear Algebra

Topics of this course include finite-dimensional vector spaces, subspaces, basis, dimension, linear transformations, matrices, linear functionals, dual space, dual-basis theorem, direct sum, quotient space, determinants, eigenvalues, minimal polynomial, characteristic polynomial, Cayley-Hamilton theorem, companion matrices, invariant subspaces, similarity, diagonalization, rational and Jordan canonical forms, nilpotent operators, inner product spaces, Gram-Schmidt orthogonalization, orthogonal matrices and spectral theorem.

Course ID: 055245
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 301 with a grade of C or better.

MATH 413 (3.00)

Number Theory

Following a review of elementary number theory through Fermat's little theorem, the course treats: unique factorization, element orders, Euler's function and Carmichael's lambda functions, primitive elements, quadratic reciprocity,the prime-number theorem and elementary analytic number theory, and quadratic number fields. Optional topics may include: computational number theory, finite fields, cyclotomic fields and Fermat's last theorem.

Course ID: 055247
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 407 with a grade of "C" or better before you can take this course.

MATH 421 (3.00)

Introduction to Topology

Topics of this course include metric spaces, topological spaces, derived topological spaces, separation axioms, closure and continuity, covering properties and compactness, connectedness, metrizability, complete metric spaces, and introduction to homotopy theory.

Course ID: 055248
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 302 or MATH 401 with a grade of C or better.

MATH 423 (3.00)

Differential Geometry

The differential geometry of curves and surfaces, curvature and torsion, moving frames, the fundamental differential forms, and intrinsic geometry of a surface. Note: Recommended Preparation: Math 301.

Course ID: 055249
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 221 and MATH 251 with a grade of C or better.

MATH 426 (2.00)

Introduction to Math Software Packages: MATLAB

The student will become familiar with the usage of Matlab, an advanced numerical linear algebra package that is widely used in teaching and research. Matlab is an interactive tool for high-performance numerical computations, visualization and programming. Matlab performs complex matrix algebra, computes matrix factorizations (such as LU, QR and SVD) and eigenvalues, solves linear systems of equations, provides extensive 2-D and 3-D visualization tools, and possesses programming tools used in scripts and functions..

Course ID: 055251
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 152 or MTH221 and CMSC 201 with a C or better.

MATH 427 (1.00)

Mathematical Software Packages: Maple

The student will become familiar with the usage of Maple, an advanced computer algebra package that is widely used in teaching and research. Maple performs symbolic computations such as integration, differentiation, factoring and simplifying algebraic expressions, solving linear and non-linear systems, solving differential equations exactly or in power series, complex algebra, matrix algebra, plotting in 2-D and 3-D, and animated plots.

Course ID: 055252
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 152 or MTH221 and CMSC 201 with a C or better.

MATH 430 (3.00)

Matrix Analysis

Topics in this course will include a review of basic matrix operations, determinants, rank, matrix inverse and solving linear equations. The course then will study partitioned matrices, eigenvalues and eigenvectors, spectral decomposition, singular-value decomposition, orthogonal projections, idempotent matrices,quadratic forms, extrema of quadratic forms, non-negative definite and positive definite matrices, and matrix derivatives.

Course ID: 055253
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 251 and MATH 301 with a grade of "C" or better.

MATH 432 (3.00)

History of Mathematics

An examination of the conceptual development of mathematics and the roles played by the people central to its development. Key periods of focus will be the Greco-Roman classical era, the development of mathematics from the Renaissance through the birth of the calculus, the rise of mathematical rigor and abstraction in the 18th and 19th centuries, and the continuing evolution of mathematics and its impact on modern society in the 20th century. Ancilliary topics such as ethno-mathematics and humanistic-mathematics may be addressed. Note: This course does not qualify as an upper division mathematics/statistics elective for majors or minors, but it does qualify as a supplementary elective.

Course ID: 055254
Consent: No Special Consent Required
Components: Lecture

Attributes: Writing Intensive
Requirement Group: You must have completed MATH 301 with a grade of C or better.

MATH 441 (3.00)

Introduction to Numerical Analysis

Topics of this course include: numerical linear algebra, interpolation, numerical differentiation and integration, solution of nonlinear equations, acceleration of convergence and numerical treatment of differential equations.

Course ID: 055255
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must complete CMSC201 and Math225 and Math251 and Math301 with a grade of C or better before you can enroll in this class.

MATH 447 (3.00)

Introduction to Parallel Computing

This course introduces students to scientific computing on modern parallel computers. Examples of numerical algorithms will be taken from several areas of mathematics, including numerical analysis and numerical linear algebra. Students will discuss the implications of the parallel architecture on the design of numerical algorithms. Parallel computing equipment will be made available to students enrolled in the course. The course includes a significant portion of instruction dedicated to learning the parallel programming language on that machine. The class also includes a review of serial programming that is integrated into the presentation of sample codes.

Course ID: 100326
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed CMSC 201 or equivalent with a grade of C or better.

MATH 452 (3.00)

Introduction to Stochastic Processes

This is a non-measure theoretic course. Topics include general Markov chains (branching process, queuing processes, birth and death processes, and Poisson processes), second-order processes (Gaussian processes and Wiener processes) and an introduction to stochastic differential equations.

Course ID: 055256
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed STAT 355 or STAT 451 with a grade of "C" or better before you can take this course.

MATH 456 (3.00)

Mathematical Methods for Science and Engineering

Vector analysis and tensors, Sturm-Liouville problems and Fourier series, complex analysis, integral transforms and variational calculus.

Course ID: 055257
Consent: No Special Consent Required
Components: Lecture

Requirement Group: You must complete MATH 221 and MATH 225 and MATH 251 with a grade of C or higher.

MATH 465 (3.00)

Introduction to Artificial Neural Networks

This course gives a systematic introduction to artificial neural networks, which represent a rather new and fundamentally different approach to computing and information processing. Providing parsimonious universal approximators for static and dynamic mappings, synthetic methodologies for building models and/or solutions, abilities to learn from and adapt to environments, and massively parallel computation paradigms, the artificial neural networks have formed a powerful approach to solving nonlinear or complex problems in a broad spectrum of areas including signal speech/image processing, system control, pattern recognition, robotics, financial management, digital communication, etc. This course will cover multi-layer perceptrons, recurrent neural nets, global minimization for training, adaptive and robust neural nets, neural filtering, identification # and control, support vector machines, self-organizing maps, etc.

Course ID: 055260
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 221 and MATH 251 and MATH 301 and STAT 451 all with a grade of 'C' or better before you can enroll in this course.

MATH 469 (3.00)

Mathematical Physiology

Mathematical Physiology develops qualitative and quantitative mathematical models of and answers to questions in physiology. The objective of this course is to expose students from any of a number of scientific disciplines, who have a background in ordinary differential equations, basic biology, and some computation (i.e., familiarity with software such as Matlab), to the exciting synergy of mathematics and physiology. The course will use ordinary differential equations to study non-dimensionalization, asymptotic and perturbation theory, and bifurcation theory. We will perform stochastic simulation and derive certain partial differential equations. These techniques will be applied to physiological topics from biochemical reactions and ion channel kinetics to systems involving cardiac, pancreatic, or neuronal function and malfunction. Recommended Course Preparation: BIOL141 or equivalent.

Course ID: 101913
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 225 with a grade of "C" or better to take this class.

MATH 475 (3.00)

Combinatorics and Graph Theory

General enumeration methods, difference equations, generating functions. Elements of graph theory, including transport networks, matching theory and graph algorithms. Introduction to finite geometries and block designs.

Course ID: 055265
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 301 with a grade of C or better.

MATH 476 (3.00)

Introduction to Game Theory

Purely non-cooperative or zero-sum games between two players are introduced. In simple cases, solutions of such games use techniques of saddle points or other geometric means. VonNeumann's Min-Max theorem assures optimal mixed strategies. In general, linear programming techniques must be employed. Study of convex sets in Euclidean spaces, in particular of polyhedra, and polytopes is necessary for full understanding of the general case. In non-zero sum situations with two or more players, the fundamental results of John Nash assuring equilibria in mixed strategies and on arbitration or bargaining schemes are studied. For cooperative games with many players, several solution concepts are studied, including Shapley values and core allocations. Diverse application are considered. Purely noncooperative or zero-sum games between two players are introduced. Solutions of such entail techniques of finding saddle points or geometric means in simple cases.

Course ID: 055266
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 221 and MATH 251 with a grade of C or better.

MATH 479 (1.00)

Mathematical Problem Solving Seminar

Mathematical problem-solving techniques, mathematical communication skills. Problem sessions with problems ranging from pre-calculus to analysis, algebra, geometry, combinatorics and probability. Problems ranging from quickies to mini research problems. Students will develop and reinforce skills from previous mathematics courses and will be introduced to topics from more advanced courses. This course is repeatable for a maximum of 8 credits.

Course ID: 055267
Consent: No Special Consent Required
Components: Lecture
Topics: Math Problem Solving Sem

MATH 480 (1.00)

Senior Seminar

This course is repeatable for credit.

Course ID: 055268
Consent: No Special Consent Required
Components: Lecture

MATH 481 (3.00)

Mathematical Modeling

Derivation and analysis of mathematical models of phenomena from physics, engineering and other exact sciences. Topics include stability of equilibria of dynamical systems with emphasis on the qualitative aspects of solutions, phase plane analysis and linearization of non-linear systems. Additional topics from catastrophe theory, bifurcation, optimization and chaos will be covered as time permits. Examples will be drawn from population dynamics, flywheel governor, a model for heartbeat, bang-bang controls, self-sustained oscillations and morphogenesis.

Course ID: 055269
Consent: No Special Consent Required
Components: Lecture
Attributes: Writing Intensive
Requirement Group: You must complete MATH 221 and MATH 225 and MATH 251 with a grade of C or higher.

MATH 482 (3.00)

Nonlinear Optimization

Introduction to convex analysis. One-dimensional minimization. Unconstrained optimization in algorithms, global convergence and rates of convergence. Quasi-Newton techniques. Convex programming: optimality conditions and duality. Penalty and Barrier methods.

Course ID: 055270
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 251 and MATH 301 with a grade of 'C' or better before you can enroll in this course. MATH 301 can be taken concurrently..

MATH 483 (3.00)

Linear and Combinatorial Optimization

Integer programming. The traveling salesman problem. Advanced linear programming techniques. Complexity. Projective methods in linear programming.The Karmarkar method.

Course ID: 055271
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 381 with a grade of "C" or better before you can take this course.

MATH 484 (3.00)

Stochastic Methods in Operations Research

Topics of this course include: introduction to Markov chains, Poisson processes, introduction to queuing theory, Stochastic programming, introduction to deterministic and Stochastic dynamic programming.

Course ID: 055272
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed STAT 355 or STAT 451 with a grade of "C" or better before you can take this course.

MATH 485 (3.00)

Introduction to the Calculus of Variations

This course will provide a modern introduction to basic results of the classical calculus of variations. Special emphasis will be given to the theory of second-order conditions. Considerable attention will be devoted to physical applications of variational methods.

Course ID: 055273
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 221 and MATh225 and MATH 251 and MATH 301 all with a grade of C or better before you can enroll in this class.

MATH 486 (3.00)

Discrete Dynamical Systems

The course will address ideas from discrete dynamical systems, including fixed points, periodic points, bifurcations, and an explanation of period 3 implied chaos. Fractals such as Sierpinski's gasket, Julia sets and Mandelbrot sets also will be introduced. This course is repeatable for a maximum of 6 credits.

Course ID: 055274
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 221 & MATH 225 & MATH 301 all with a grade of 'C' or better before you can enroll in this class.

MATH 487 (3.00)

Continuous Dynamical Systems

This course aims to develop an understanding of the theory behind the rich qualitative behavior of dynamical systems modeled by ordinary differential equations. Topics covered includes existence and uniqueness of solutions, linear systems, characterization of behavior near equilibria, stability and Lyapunov functions, Hartman-Grobman theorem, Poincaré-Bendixson theorem, Hamiltonian systems, bifurcations and chaos.

Course ID: 101920
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must complete MATH225 and MATH251 and MATH301 with a grade of C or better.

MATH 490 (1.00 - 4.00)

Special Topics in Mathematics

This course is repeatable for credit.

Course ID: 055275
Consent: No Special Consent Required
Components: Lecture
Topics: Modeling And Simulation, Designs And Codes, Intro To Math Logic, Mathematical Biology, Special Topics In Math, Top:Putnam Competition, Top:Intro To Game Theory, Intro To Game Theory, Dynamical Sys& Dif Equat, Topic: Fluid Mechanics, Math Comp Packgs:Matlab, Queueing Theory, Intro Art Neural Network, Artif/Neural Networks, Intro To Dynamical Struc, Game Theory, Top: Intro Coding Theory, Topic:Complx Analysis II, Industrial Mathematics, Designs & Codes, Asymptotic Analy, Dynmcl Founds Of Nuerosc, Mathematics & Biology, Top:Matrix With Applctns, Sp Topics In Mathematics, Compu Abstract Algebra, Num Sol Partial Diff Eq, Top:Math For Engr,Scntst, Top: Appl/Numer Analysis, Top:Greenhouse Effect, Top:Complex Analysis II, Probability Thry Act Sci, Spec Topics: Geometry, Topics In Linear Algebra, App Math & Num Analysis, Dynamic Systems, Comp Informational Ret, Numerical Solutions, Asymptotic Analysis, Rathinam Dynamical Syst & Differential Equations, Mathematical Physiology

MATH 495 (3.00)

Topics in the Mathematics of Operations Research

Introduction to recent and advanced techniques of optimization and operations research. The course will be redefined from time to time and will reflect the instructor's interests.

Course ID: 055276
Consent: No Special Consent Required
Components: Lecture

MATH 496 (1.00 - 4.00)

Mathematics Practicum

Under faculty direction, students will write a report dealing with mathematical concepts or techniques utilized or implemented in internships or cooperative education or in the workplace. Variable credit course repeatable for a maximum of 4 credits.

Course ID: 055277
Consent: No Special Consent Required
Components: Lecture

MATH 497 (3.00)

Senior Thesis

The student will be required to prepare an exposition of either a significant area of mathematics or of the results of a student research project. Typically, the former will be in connection with an upper-division course the student has completed or independent study (MATH 499).

Course ID: 055278
Consent: No Special Consent Required
Components: Thesis Research

MATH 499 (1.00 - 4.00)

Independent Study in Mathematics

Under this heading, a student may agree to a course with a particular faculty member on a topic not covered in the regular curriculum. The arrangements with the faculty member must be made before the student registers for the course. This course is repeatable for credit.

Course ID: 055279
Consent: No Special Consent Required
Components: Independent Study

MATH 99 (0.00)

Introductory Algebra

Designed for the student with little or no knowledge of algebra. Topics include properties of integers and real numbers, linear equations and inequalities, operations on monomials and simple polynomials, factoring second-degree polynomials, rational expressions, properties of exponents and square roots, and graphing inequalities. Three institutional credits (not applicable to the degree) are given.

Course ID: 055190
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have scored a 1 on the LRC MATH placement test to enroll in MATH 99.

Statistics

STAT 121 (4.00)

Introduction to Statistics for the Social Sciences

Introduction to statistical methods common to social science applications. Topics include descriptive statistics, elementary probability theory, concepts of sampling and principles of statistical inference. Note: Not open to students who have passed a higher level statistics course with a grade of "C" or better.

Course ID: 057048
Consent: No Special Consent Required
Components: Discussion, Lecture
Attributes: Mathematics (GEP), Mathematics (GFR)
Requirement Group: You must have scored a 3, 4 or 5 on the LRC MATH placement exam or passed MATH 106 with a grade of 'C' or better to enroll in this course.

STAT 290 (1.00 - 4.00)

Special Topics in Statistics

Course ID: 057050
Consent: No Special Consent Required
Components: Lecture

STAT 299 (1.00 - 4.00)

Independent Study in Statistics

Course ID: 057051
Consent: No Special Consent Required
Components: Lecture

STAT 350 (4.00)

Statistics with Applications in the Biological Sciences

Organization and presentation of data, summary of descriptive measures, probability, binomial and normal distributions, sampling natural populations and the estimation of population parameters, hypothesis testing, chi-square analysis experimental designs and the analysis of variance, linear regression and correlation, and non-parametric statistics. Students will be introduced to statistical computing. All the statistical procedures will be illustrated using data from biology and the health sciences. Note: Not open to students who have passed or are concurrently taking Stat 351, Stat 355, Stat 355H, Stat 453 or CMPE 320. This course does not satisfy the statistics requirement for CMSC majors and does not qualify as part of the math major or minor.

Course ID: 057052
Consent: No Special Consent Required
Components: Discussion, Lecture
Attributes: Mathematics (GEP), Mathematics (GFR)
Requirement Group: You must have completed one of the following with a grade of 'C' or better MATH 150 or MATH151 or MATH152 or MATH155 or MATH225 or MATH251 or have placed into MATH 151 through the LRC Math exam.

STAT 351 (4.00)

Applied Statistics for Business and Economics

Organization and presentation of data, summary of descriptive measures, probability, binomial, normal distributions and Pareto distribution, estimation of population parameters, sampling distributions, hypothesis testing, chi-square analysis, analysis of variance, linear regression and correlation, index numbers, time seried analysis and forecasting. Students will be introduced to statistical computing. All the statistical procedures will be illustrated using data from management, business and economics. Note: Not open to students who have passed or are concurrently taking Stat 351, Stat 355, Stat 355H, Stat 453, or CMPE 320. This course does not satisfy the statistics requirement for CMSC majors and does not qualify as part of the math major or minor.

Course ID: 057053
Consent: No Special Consent Required
Components: Discussion, Lecture
Attributes: Mathematics (GEP), Mathematics (GFR)
Requirement Group: You must have completed one of the following with a grade of 'C' or better MATH 150 or MATH151 or MATH152 or MATH155 or MATH225 or MATH251 or have placed into MATH 151 through the LRC Math exam.

STAT 355 (4.00)

Introduction to Probability and Statistics for Scientists and Engineers

An introduction to applied statistics designed for science majors and others with demonstrated quantitative ability. Topics include nature of statistical methods, random variables and their distribution functions, general principles of estimation and hypothesis testing. A laboratory introduces students to computer techniques in statistical analysis. Note: Not open to students who have passed with a grade of "C" or better or are currently taking Stat 350, Stat 351, Stat 355H, Stat 453 or CMPE 320.

Course ID: 057054
Consent: No Special Consent Required
Components: Discussion, Lecture
Attributes: Mathematics (GFR)
Requirement Group: You must have completed MATH 142 or MATH152 or MATH225 or MATH251 with a grade of 'C' or better

STAT 355H (4.00)

Introduction to Probability and Statistics for Scientists and Engineers-Honors

An introduction to applied statistics designed for science majors and others with demonstrated quantitative ability. Topics include nature of statistical methods, random variables and their distribution functions, general principles of estimation and hypothesis testing. A laboratory introduces students to computer techniques in statistical analysis. Note: Not open to students who have passed with a grade of "C" or better or are currently taking Stat 350, Stat 351, Stat 356, Stat 453 or CMPE 320.

Course ID: 101986
Consent: No Special Consent Required
Components: Discussion, Lecture
Requirement Group: You must be admitted to the Honors College and have completed MATH142 or MATH152 or MATH225 or MATH251 with a C or better.

STAT 405 (3.00)

Survey Sampling

Sampling versus total enumeration, planning of sample surveys, simple random sampling, stratified sampling, systematic sampling, cluster sampling, double and multistage sampling, variance estimation, problem of non-response and practical case studies.

Course ID: 057056
Consent: No Special Consent Required
Components: Lecture

Requirement Group: You must have completed STAT 453 with a grade of C or better.

STAT 414 (3.00)

Environmental Statistics

The purpose of this course is to study statistical methods used in environmental applications. This course includes a brief review of the basic methods of inference for percentiles, means and differences in mean with special emphasis on non-parametric methods, which are used widely in environmental applications. The course will cover the following topics: analysis of variance, estimation of components of variance and regression methodology using environmental data. Methods of analyzing data with observations that are below detection limits. Parametric and non-parametric methods of estimating trends in seasonal and auto-correlated data. Sampling methods that are particularly useful in environmental applications will be discussed.

Course ID: 057057
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed STAT 350 or STAT 351 or STAT 355 or STAT 451 with a grade of C or better.

STAT 417 (3.00)

Introduction to Time Series Data Analysis

Concepts in time series analysis, such as stationarity; some commonly used time series models, such as autoregressive moving average models, are introduced using examples. Time series data analysis tools, namely, auto-correlation function (ACF), partial autocorrelation function (PACF), detrending, differencing and forecasting will be discussed using real data sets. Some selected topics from time series modeling, such as transfer function models and intervention models, will be discussed. Data analysis using statistical software such as SPLUS will be an integral part of the course.

Course ID: 057058
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed STAT 355 or STAT 453 with a grade of C or better.

STAT 418 (3.00)

Applied Multivariate Methods

Topics include multiple regression, partial and multiple correlations, the multivariate normal distribution, statistical inference for mean vector and covariance matrix, multivariate analysis of variance, principal components, canonical correlations, discriminant analysis, factor analysis and cluster analysis use of statistical packages. This course is repeatable for credit.

Course ID: 057059
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 221 and either STAT 355 or STAT 453 with a grade of "C" or better.

STAT 419 (3.00)

Introduction to Biostatistics

Topics include an introduction to statistics used in epidemiologic studies and clinical trials, measures of association, logistic regression, co-variate adjustment, introductory life table analysis, Cox regression, randomization techniques, ethics in human experimentation and statistical analysis using SAS. This course is repeatable for credit.

Course ID: 057060
Consent: No Special Consent Required
Components: Lecture
Topics: Intro To Biostatistics
Requirement Group: You must have completed STAT 454 with a grade of "C" or better before you can take this course.

STAT 420 (3.00)

Statistics for Bioinformatics

This course surveys the statistical methodology underlying current bioinformatics techniques. Topics to be covered include: dynamic programming, including the Needleman-Wunsch algorithm and Smith-Waterman algorithm; methods of inference, including maximum likelihood and Bayesian approach; Markov models, including Markov chains, hidden Markov models and inferences for these models; Monte-Carlo Markov chain methods, including Gibbs sampling and Metropolis-Hastings algorithm; extreme-value theory, including Gumbel distribution and significance of alignments; cluster analysis, including hierarchical methods, Kmeans method and determination of number of clusters; classification methods, including CART algorithm and QUEST algorithm; generalized linear models, including model types, inference and statistics for model fit; model validation, cross-validation; and predictive assessment.

Course ID: 057061
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 152 and either STAT 350 or STAT 355 with a grade of "C" or better.

STAT 432 (1.00)

Statistical Computer Packages and Their Applications

The student will become familiar with the commercial statistical package, SAS, its use for various statistical applications.

Course ID: 057062
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed STAT 350 or STAT 351 or STAT 355 or STAT 453 with a grade of C or better.

STAT 433 (3.00)

Statistical Computing

Topics include pseudo-random numbers and tests for pseudo-randomness, sampling methods, direct methods, rejection sampling, variance reduction importance sampling, stochastic simulation methods, randomization tests, and the jackknife and the bootstrap. Additional topics such as Gibbs sampling, Markov chains, Monte-Carlo and EM algorithm may be covered.

Course ID: 057063
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed STAT 355 or STAT 453 with a grade of C or better.

STAT 451 (3.00)

Introduction to Probability Theory

Topics include probability spaces and probability calculus, random variables and their distribution functions, the calculus of expectations, characteristic functions and large sample theory. Note: Recommended CMSC 203.

Course ID: 057064
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed MATH 251 with a grade of "C" or better before you can take this course.

STAT 453 (3.00)

Introduction to Mathematical Statistics

Principles of statistical decision theory, theories of estimation and hypothesis testing, optimality, power functions, estimation by confidence intervals and decision-making.

Course ID: 057066
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed STAT 451 with a grade of C or better.

STAT 454 (3.00)

Applied Statistics

Introduction to statistical computing and statistical computation packages: BMD and SPSS. Multiple regression and correlation analysis, analysis of variance and covariance, non-linear regression, contingency table analysis, design of experiments, and robust and non-parametric methods. Note: Approved by the Society of Actuaries to satisfy its Validation by Educational Experience (VEE) in Applied Statistical Methods.

Course ID: 057067
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed STAT 350 or STAT 351 or STAT 355 or STAT 453 with a grade of C or better.

STAT 455 (3.00)

Design of Experiments and Quality Controls

Topics include principles of experimental design, randomized designs and analysis of variance, Latin square designs, incomplete block designs, factorial designs, control charts for variables and attributes, cusum chart, acceptance sampling, response surface methodology and the Taguchi approach to parameter designs.

Course ID: 057068
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed STAT 453 with a grade of C or better.

STAT 470 (1.00)

Probability for Actuarial Science

This brief course is intended to prepare students to take Society of Actuaries Exam Course P/1 Probability.

Course ID: 057069
Consent: No Special Consent Required
Components: Lecture
Requirement Group: You must have completed STAT 451 with a grade of C or better.

STAT 490 (1.00 - 4.00)

Special Topics in Statistics

This course is repeatable for credit.

Course ID: 057070
Consent: No Special Consent Required
Components: Lecture
Topics: Intro To Bioinformatics, Data Mining, Special Topics In Stat, Biostatistics, Prob Theory Actuarial Sc, Statistical Data Mining, Intro To Data Mining, Math Models In Evol Biol, Bayesian Analysis, Intro To Bayesian Stat, Plan For Env Data Collec, Stochastic Methods

STAT 496 (1.00 - 4.00)

Statistics Practicum

Under faculty direction, students will write a report dealing with statistical concepts or techniques utilized or implemented in internships, cooperative education or in the workplace. Note:This course is repeatable for a maximum of 16 credits or 4 attempts. Recommended Preparation: Permission of the instructor.

Course ID: 057071
Consent: No Special Consent Required
Components: Lecture

STAT 497 (3.00)

Senior Thesis

The student will be required to prepare an exposition of either a significant area of statistics or of the results of a student research project. Typically, the former will be in connection with an upper-division course the student has completed or independent study (STAT 499). This course is repeatable for a maximum of 6 credits.

Course ID: 057072
Consent: No Special Consent Required
Components: Thesis Research

STAT 499 (1.00 - 4.00)

Independent Study in Statistics

Under this heading, a student may agree to a course with a particular faculty member on a topic not covered in the regular curriculum. The arrangements with the faculty member must be made before the student registers for the course.

Course ID: 057073

Consent: No Special Consent Required
Components: Independent Study