Mathematics & Computer Science (MATH, COMPSCI)

MATHEMATICS (MATH)

MATH-542

Applied Statistics 3 cr

This course will cover the basics of statistical testing, regression analysis, experimental design, analysis of variance, the use of computers to analyze statistical problems.

Prereq: MATH-253 or MATH-250 or consent of instructor.
Unreq: ECON-245.

MATH-555

Matrices And Linear Algebra 3 cr

Systems of linear equations, vector spaces, linear dependence, bases, dimension, linear mappings, matrices, determinants, quadratic forms, orthogonal reduction to diagonal form, eigenvalues, geometric applications.

Prereq: MATH-254 or concurrent registration.

MATH-575

Development Of Mathematics 3 cr

A study of the development of mathematical notation and ideas from prehistoric times to the present, with special emphasis being placed on elementary mathematics through the calculus. The development and historic background of the new math will be included.

Prereq: Consent of instructor.

MATH-580

Patterns Of Problem Solving 3 cr

This course will expose students to a variety of techniques useful in solving mathematics problems. The experiences gained from this course can be applied to problems arising in all fields of mathematics. The student will have the chance to see how some general techniques can be used as tools in many areas. Homework for this course will consist mostly of solving a large number of mathematics problems.

Prereq: MATH-280 or consent of instructor. (Consent will be given to students with substantial interest in problem solving, and adequate preparation.)

MATH-615
Modern Algebra And Number Theory For The Elementary Teacher 3 cr

An introduction to modern algebra with special emphasis on the number systems and algorithms which underlie the mathematics curriculum of the elementary school. Topics include sets, rings, integral domains, rational numbers, real numbers, complex numbers and polynomials. Students may not receive credit for both MATH-615 and MATH-652.

Prereq: MATH-149 and MATH-152.

MATH-616
Geometry For The Elementary Teacher 3 cr

A study of the intuitive, informal geometry of sets of points in space. Topics include elementary constructions, coordinates and graphs, tessellations, transformations, problem solving, and symmetries of polygons and polyhedra.

Prereq: MATH-149 and MATH-152.

MATH-617
Theory Of Numbers 3 cr

A study of the properties of integers, representation of integers in a given base, properties of primes, arithmetic functions, modulo arithmetic. Diophantine equations and quadratic residues. Consideration is also given to some famous problems in number theory.

Prereq: MATH-415/615, or MATH-452/652, or consent of instructor.

MATH-631
Topology 3 cr

An introduction to point-set topology, including such topics as topological spaces, mappings, connectedness, compactness, separation axioms, metric spaces, complete spaces, product paces and function spaces.

Prereq: MATH-255 and either MATH-280 or consent of instructor.

MATH-641
Probability Theory 3 cr

Probability spaces, discrete and continuous random variables, mathematical expectation, discrete and continuous distributions.

Prereq: MATH-255 or consent of instructor.

MATH-642
Mathematical Statistics 3 cr

This course will cover moment generating functions, moment of linear combinations of random variables, conditional expectation, functions of random variables, sampling distributions, the theory of estimation, Bayesian estimation, hypothesis testing, nonparametric tests, and linear models.

Prereq: MATH-441/641 and either MATH-355/555 or consent of instructor.

MATH-653
Abstract Algebra 3 cr

This course is a continuation of MATH-452/652 with emphasis on ring and field theory. Topics include a review of group theory, polynomial rings, divisibility in integral domains, vector spaces, extension fields, algebraic extension fields, etc.

Prereq: MATH-355/555 and MATH-452/652.

MATH-659
Partial Differential Equations 3 cr

Fourier analysis, partial differential equations and boundary value problems, complex variables, and its potential theory.

Prereq: MATH-361.

MATH-664
Advanced Calculus 3 cr

This course presents a rigorous treatment of the differential and integral calculus of single variable functions, convergence theory of numerical sequences and series, uniform convergence theory of sequences and series of functions, metric spaces, function of several real variables, and the inverse function theorem. This course contains a written component.

Prereq: MATH-301.

MATH-671
Numerical Analysis 3 cr

Emphasis on numerical algebra. The problems of linear systems, matrix inversion, the complete and special eigenvalue problems, solutions by exact and iterative methods, orthogonalization, gradient methods. Consideration of stability and elementary error analysis. Extensive use of microcomputers and programs using a high level language such as PASCAL.

Prereq: MATH-171 and MATH-355/555

MATH-690
Workshop 1-3 cr

MATH-694
Seminar 2 cr

MATH-696
Special Studies 1-3 cr

Prereq: Consent of instructor.

MATH-790
Workshop 1-6 cr

MATH-794
Seminar 1-3 cr

MATH-798
Individual Studies 1-3 cr

MATH-799
Thesis Research 1-6 cr

Students must complete a Thesis Proposal Form in the Graduate Studies Office before registering for this course.

COMPUTER SCIENCE (COMPSCI)

COMPSCI-507
Microcomputer Applications 3 cr

This course will treat a variety of applications of microcomputers, as well as their architecture, design and social impact.

Prereq: COMPSCI-171 or consent of instructor.

COMPSCI-690
Workshop 1-3 cr

Repeatable.
Prereq: Consent of instructor.

COMPSCI-694
Seminar 2 cr

COMPSCI-696

Special Studies 1-3 cr

Repeatable.
Prereq: Consent of instructor.

COMPSCI-790

Workshop 1-3 cr

COMPSCI-794

Seminar 1-3 cr

COMPSCI-798

Individual Studies 1-3 cr