Mathematics (MATH)

MATH 5305 Graduate Research Project **3 SCH (3)**
A Graduate Research Project must be completed and submitted to the Graduate Office for a grade to be assigned, otherwise IP notations are recorded. This course is specifically designed for Plan II and Plan III students. Prerequisite: departmental approval.

MATH 5306 Thesis **3 SCH (3)**
Designed for thesis option students. The course requires completion of thesis research. Prerequisite: departmental approval. May be repeated for maximum of 6 semester hours.

MATH 5321 Real Analysis **3 SCH (3-0)**
Lebesgue integration and Lebesgue measure. LP spaces. Differentiability properties of monotone functions.

MATH 5322 Complex Analysis **3 SCH (3-0)**
The complex field, topology of the complex plane, analytic functions, conformal mappings, power series, integration, residues.

MATH 5323 Partial Differential Equations **3 SCH (3-0)**
An introduction to the fundamental notions and/or methods in the theory of partial differential equations. Includes Fourier series, the wave equation, the potential equation and the heat equation.

MATH 5325 Advanced Linear Algebra **3 SCH (3-0)**
Vector spaces and linear transformations, orthogonality, eigenvalues, and numerical methods. Prerequisite: consent of the instructor.

MATH 5340 Matrix Methods Linear Models **3 SCH (3-0)**
Common matrix methods in statistical applications, including eigenvalues and eigenvectors; the Moore-Penrose inverse; matrix differentiation; the distribution of quadratics forms. Prerequisite: STAT 4303 and MATH 3340 or equivalents.

MATH 5341 Abstract Algebraic Theories **3 SCH (3-0)**
Groups and their generalizations. Homomorphism and isomorphism theorem. Direct sums and products. Linear spaces and representations. Field extensions and Galois groups. Prerequisite: MATH 4340 or its equivalent.

MATH 5360 Analytic Decision Theory **3 SCH (3-0)**
Introduction to mathematical decision theory and game theoretic analysis. Classification of games, definitions in game theory, sequential-/simultaneous-move games, pure and mixed strategies, equilibrium concepts and matrix games. Prerequisite: MATH 3340 or equivalent.

MATH 5374 Numerical Analysis **3 SCH (3-0)**
Underlying principles of numerical analysis. Topics include: finite differences and interpolation, numerical differentiation and integration, solving algebraic and transcendental equations, computations with matrices, the method of lease squares, and numerical solutions of differential equations. Attention is given to the solutions of problems using computer. Prerequisite: MATH 4341 or equivalent.

MATH 5390 Advanced Topics in Math **1-3 SCH (1-3)**
Different areas of advanced mathematics with emphasis on rigor, critical reasoning and the concept of proof. May be repeated as topic changes.