122. Numerical Analysis II (3)
Prerequisite: Math 121. Current topics of interest in interpolation and approximation theory, dynamic programming, and optimization theory, Fourier analysis, numerical linear algebra, numerical solution of ordinary and partial differential equations.

123. Topics in Applied Mathematics (3)
Prerequisite: Math 77. Vector spaces and linear transformations, eigen values and eigen functions. Special types of linear and nonlinear differential equations; solution by series. Fourier transforms. Special functions, including gamma, hypergeometric, Legendre, Bessel, Laguerre and Hermite functions. Introduction to partial differential equations.

124. Applied Matrix Analysis (3)
Prerequisite: Math 77. Norms, canonical forms, quadratic forms, matrix semigroups and matrix groups, spectral theory, perturbation of spectra, variational principles, Markov processes. Applications to differential equations, optimization problems in physics, engineering and economics.

128. Complex Analysis (3) (Former Math 174)
Prerequisite: Math 77. Analytic functions of a complex variable, contour integration, series, singularities of analytic functions, the residue theorems, conformal mappings; applications to engineering and physics.

131. Game Theory and Linear Programming (3)
Prerequisite: Math 72 and permission of instructor; or Math 76. Introduction to linear programming, adaptation of the Dantzig simplex algorithm to linear programming problems; applications to diet, production and transportation problems. Games of chance; strategy. Minimax theorem for two-person zero-sum games; relationship to linear programming. Normal form of a game.

132. Mathematical Methods of Operations Research (3)
Prerequisite: Math 131 or permission of instructor. Algebraic and geometric representation of linear optimization models, simplex method, dynamic programming, integer programming, classical optimization theory, non-linear programming and algorithms, applications to the theory of transport, network and inventory models.

132L. Mathematical Methods of Operations Research (1)
Prerequisite: concurrent enrollment in Math 132. (Not required for Math 132.) Use of computers in setting up and solving problems in operations research.

141. Number Systems II (3)
Not open to students with credit in Math 151 or 171. Prerequisite: Math 41 or 71. Especially recommended for prospective teachers and minors. Development of the real number system and its subsystems from the formal point of view. Mathematical induction and definition by recursion. Axiomatic development of the various number systems and their interrelation.

143. History of Mathematics (3) (Former Math 103)
Prerequisite: Math 72 or 75. History of the development of mathematical concepts in algebra, geometry, number theory, analytical geometry, and calculus from ancient times through the 17th century, and selected topics from more recent times.

145. Problem Solving (3)
Prerequisite: at least one mathematics course in the 100–200 series. A study of formulation of problems into mathematical form; analysis of methods of attack such as specialization, generalization, analogy induction, recursion, etc. applied to a variety of non-routine problems. Topics will be handled through student presentation.

151. Principles of Algebra (3)
Prerequisite: Math 76 or 141. Groups, cyclic groups and normal subgroups; rings, integral domains and polynomials; fields.