202. Fundamental Concepts of Mathematics (3)
Prerequisite: Math 151, 161 and 171. Fundamental notions regarding number theory, number systems, algebra of number fields; functions.

210. Foundations of Mathematics (3)
Prerequisite: Math 110 or 151. Formal introduction to theories of inference, first order theories, completeness metatheorems, consistency metatheorems, decision problems.

216. Topics in Number Theory (3; max total 6)
Prerequisite: Math 116. An investigation of topics having either historical or current research interest in the field of number theory.

221. Advanced Numerical Analysis (3)
Prerequisite: Math 121. Linear equations and matrices; parabolic, hyperbolic, and elliptic differential equations; constructive function theory.

223. Principles and Techniques of Applied Mathematics (3)
Prerequisite: Math 123 or permission of instructor. Linear spaces and spectral theory of operators.

224. Optimization Methods (3)
Prerequisite: Math 123 or permission of instructor. Techniques for optimizing static and dynamic systems, calculus of variations, Hamiltonian canonical form, maximum principle; with applications.

228. Functions of a Complex Variable (3) (Former Math 274)
Prerequisite: Math 128, 171. Representation theorems of Weierstrass and Mittag-Leffler, normal families, conformal mapping and Riemann mapping theorem, analytic continuation, Dirichlet problem.

251. Abstract Algebra I (3)
Prerequisite: Math 153T or permission of instructor. Semi-groups, groups, groups with operators, rings, fields, lattices.

252. Abstract Algebra II (3)
Prerequisite: Math 153T, 251. Vector spaces, linear transformations, sets of linear transformations, Euclidean and unitary spaces, infinite dimensional vector spaces.

263. Point Set Topology (3)
Prerequisite: Math 172. Basic concepts of point set topology, set theory, topological spaces, continuous functions; connectivity, compactness and separation properties of spaces. Topics selected from function spaces, metrization, dimension theory.

265. Differential Geometry (3)
Prerequisite: Math 165, 172. Study of geometry of curves and surfaces in Euclidean space; including an introduction to Riemannian geometry and theory of manifolds.

271. Real Variables (3)
Prerequisite or concurrently: Math 173T. Theory of sets; cardinals; ordinals; function spaces, linear spaces; measure theory; theory of modern integration and differentiation.

272. Functional Analysis (3)
Prerequisite: Math 271. The Lebesgue-Stieltjes integral and its generalizations, integral equations, Hilbert and Banach spaces, linear transformations (bounded and unbounded).

290. Independent Study (1-3; max see reference)
See *Academic Placement—Independent Study.*

291. Seminar (3)
Prerequisite: graduate standing. Presentation of current mathematical research in field of student's interest.