110. Symbolic Logic (3) (See Phil 110)

114. Linear Algebra (3)

Prerequisite: Math 6 or 7A. Vectors and vector spaces, transformation of coordinates, linear transformations, geometry of real vector spaces; matrices, algebra of matrices, eigenvalues, diagonalization, and quadratic forms.

115. Modern Algebra (3)

Prerequisite: Math 102 or 114. Introduction to fundamental concepts of modern algebra such as groups, rings, integral domains, and fields.

116. Theory of Numbers (3)

Prerequisite: Math 3; or Math B and 130. Divisibility, greatest common divisor, Euler's function, continued fractions, congruences, quadratic residues, Diophantine equations.

117. Advanced Engineering Mathematics (3)

Prerequisite: Math 6 or 7B. Ordinary differential equations; Laplace transform; orthogonal, Gamma and Bessel functions; vector analysis; partial differential equations; functions of a complex variable.

118A-B. Advanced Calculus (3-3)

Prerequisite: Math 6 or 7B. The real number system; function theory, continuity, differentiability; partial differentiation; multiple integrals; line and surface integrals; Fourier series and integrals; infinite series.

119. Differential Equations (3)

Prerequisite: Math 6 or 7B; Physics 4A. Definition and classification of differential equations; general, particular, and singular solutions; existence theorems; theory and technique of solving certain differential equations; applications.

121. Numerical Analysis (3)

Prerequisite: Math 6 or 7A. Finite difference and Lagrangian interpolation formulas; numerical solution of equations, systems of equations, and differential equations.

130. Introduction to Modern Mathematics (3)

Prerequisite: Math B. Logic, set theory, probability, linear programming, Markov chains, applications to economics, psychology, and sociology.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

200. Foundations of Mathematics (3) (Same as Phil 200)

Prerequisite: Math 102, 110, or permission of instructor. Mathematical logic with applications to the development of the real number system and philosophy of mathematics.

202. Fundamental Concepts of Mathematics (3)

Prerequisite: Math 6 or 7A. Fundamental notions regarding number theory, number system, algebra of number fields; functions, limits, calculus, and differential equations. Primarily for those planning to teach mathematics.

205. Functions of a Complex Variable (3)

Prerequisite or concurrently: Math 119. Analytic functions, conformal mapping, analytic continuation, meromorphic functions, contour integration and the residue theorem, Laplace transform.