102. Sampling Theory and Methods (3) (Former Math 106)
Prerequisite: one semester of statistics, and Math 70 or 72 or 75. Basic concepts of sampling; probability sampling, stratification, clusters, single and multiple-stage designs; estimation procedures, non-sampling errors; illustrations from agriculture, biology, and social sciences.

107. Introduction to Probability and Statistics (3)
Prerequisite: Math 77 (or concurrent). Basic concepts required for applications of probability theory; standard discrete and continuous models; random variables; conditional distributions; limit theorems.

108. Statistics (3)
Prerequisite: Math 107. Criteria used for selecting particular procedures of data analysis, derivation of commonly used procedures; topics from sampling, normal theory, nonparametrics, elementary decision theory.

109. Applied Probability (3)
Prerequisite: Math 107. Introduction to stochastic processes and their applications in science and industry. Markov chains, queues, stationary time series.

110. Symbolic Logic (3)
Prerequisite: Math 71 or 75 or permission of instructor. An informal treatment of the theory of logical inference, statement calculus, truth-tables, predicate calculus, interpretations applications.

111. Theory of Sets (3)
Prerequisite: Math 71 or 75 or permission of instructor. Set theory from an informal axiomatic foundation, relations and functions, cardinal numbers, ordinal numbers, applications.

113. Theory of Computation (3)
Prerequisite: Math 20. Computability, effective procedures, algorithms; finite-state and infinite machines; Turing machines, recursive functions; limitations of effective computability, the halting problem, the debugging problem; computable and noncomputable real numbers.

114. Discrete Structures (3)
Prerequisite: Math 20, and 72 or 75. Directed and undirected graphs; algebraic structures in computer science; representation of trees and graphs, searching and sorting techniques; application to computer science.

116. Theory of Numbers (3)
Prerequisite: Math 72 or 75. Divisibility, greatest common divisor, Euler's function, continued fractions, congruences, quadratic residues, Diophantine equations, different forms of the Prime Number Theorem, Mobius inversion formula.

118. Graph Theory (3)
Prerequisite: Math 72 or 75. Permutations and combinations; generating functions; recurrence relations, principle of inclusion and exclusion, Polya's theory of counting; fundamental concepts of graphs, trees and circuits, planar and dual graphs; applications to networks, programming, etc.

120. Structures of Programming Languages (3)
Prerequisite: working knowledge of FORTRAN or COBOL and Math 72 or 75. Formal definition of programming language; global properties of algorithmic languages; list processing, string manipulation, data description, simulation languages; language structure in FORTRAN, ALGOL.

121. Numerical Analysis I (3)
Prerequisite: Math 77. Finite difference and Lagrangian interpolation formulas; numerical solution of equations, systems of equations, and differential equations; principles of coding and programming computers.