# MATHEMATICS 151B

## ADVANCED CALCULUS II

**Texts:** (1) *Principles of Mathematical Analysis, Third Edition*, by W. Rudin
(2) *Calculus on Manifolds*, by M. Spivak

This is the second course in a three quarter sequence giving a rigorous development of mathematical analysis. Topics covered in the sequence include the real and complex number systems, sequences and series, continuity, differentiation, the Riemann-Stieltjes integral, sequences and series of functions, functions of several variables, and an introduction to Lebesgue integration.

| TOPICS | SUGGESTED NO. OF 50 MIN. CLASSES |
|---|---|

Sequences and series of functions ..... 6
(Rudin, Ch. 7)

Pointwise convergence, uniform convergence, behavior of the latter with respect to continuity conditions, integration and differentiation, equicontinuous families of functions, the Stone-Weierstrass approximation theorem.

Some special functions ..... 4
(Rudin, Ch. 8)

Power seies, the elementary transcendental functions, algebraic completeness of the complex numbers, Fourier series, the Gamma function.

Differential calculus in several variables ..... 12
(Rudin, Ch. 9; Spivak, Ch. 2)

Partial differentiation, Jacobian matrices and differentiability of multidimensional mappings, Inverse Function Theorem, Implicit Function Theorem, the Rank Theorem.