

MA 2300 MATHEMATICS FOR MANAGEMENT SYLLABUS

This is a one-quarter course designed for students in the Administrative Sciences department. The course is divided into three segments: Functions and Algebra, Calculus of Single-variable Functions, and Calculus of Multi-variable Functions.

Text: *Brief Calculus and Its Applications* by Goldstein, Lay, and Schneider, seventh edition, Prentice-Hall.

1. Functions and Algebra.

In the text: Chapter 0, all sections, and Chapter 1, section 1.

Topics include: Functions and their graphs; linear and quadratic functions; the algebra of functions; solving equations (including factoring and the quadratic formula); exponents and power functions; graphing functions, with special attention to the graphs of straight lines; applications of functions and their graphs; and, the slope of a straight line. Basic algebra skills are reviewed as needed.

Students who need additional help in algebra may wish to purchase an algebra review book. Any of the following would provide a good review of basic algebra skills: **Forgotten Algebra** by Barbara Lee Bleau, Barren's Educational Series, Inc.; **Practical Algebra** by Peter Selby and Steve Slavin, Second Edition, John Wiley and Sons, Inc.; or, in the Schaum's Outline Series, **College Algebra**.

2. Calculus of Single-variable Functions.

In the text: Chapter 1, sections 2 - 8; Chapter 2, all sections; Chapter 3, sections 1 and 2; Chapter 4, all sections; Chapter 5, sections 1 and 2; and, Chapter 6, sections 1-3.

Topics include: The definition of the derivative and related topics (limits and continuity); techniques of differentiation; applications of the derivative to rates of change, curve sketching, and optimization; exponential and logarithmic functions and their derivatives; applications of exponential and logarithmic functions; and, integration.

The focus in this part of the course is on the techniques and applications of differential calculus. Applications include: Finding slopes; the interpretation of the derivative as a rate of change; marginal analysis; the use of the derivative to solve optimization problems; and, exponential growth and decay. Curve sketching will be taught, but not emphasized.

A few days are allocated for a quick look at integration. The emphasis is on basic antidifferentiation (no special integration techniques) and the interpretation of the definite integral as the net change in the value of a function over an interval.

3. Calculus of Multi-variable Functions

In the text: Chapter 7, sections 1 - 4.

Topics include: An introduction to multivariable functions; level curves; finding partial derivatives, including second-order and mixed partial derivatives; interpretation of a partial derivative as a rate of change; relative extrema of functions of two variables; and