

**BOSTON UNIVERSITY
METROPOLITAN COLLEGE
COMPUTER SCIENCE DEPARTMENT**

**MET CS 546 QUANTITATIVE METHODS FOR INFORMATION
SYSTEMS**

Course Overview

The first part of this course lays down the mathematical foundation for the study of Probability Theory and Statistics. Functions, Combinatorial Mathematics, Differentiation and Integration fundamentals are covered. The second part of the course concentrates on the study of Discrete and Continuous Distributions.

Prerequisites

High School/College Algebra

Learning Objectives

By the end of this course the student will have learned:

Techniques to find limits of sequences and functions, differentiating and integrating techniques, continuous functions, asymptotes and graphing techniques, permutations and combinations, the classical and statistical definitions of probability, conditional probability, random variables, the mathematical expectation and the variance of random variables, Binomial, Poisson and Geometric distributions, the strong law of large numbers, discrete and continuous distribution functions, Normal distribution and the central limit theorem

Textbook:

Recommended book:

1. **Forgotten Calculus** by Barbara Bleau, Barron's Educational Series. ISBN #: 0-7641-1998-2

Evaluation and Grading

Lecture material should be reviewed before the next class since any questions on old material will be addressed only at the beginning of class.

There will be four tests and quizzes during the course (the exact schedule of tests will be determined as course proceeds; the dates will be announced in advance). If any grading criteria event is missed it will be the responsibility of the student to arrange a mutually agreeable schedule for completion of work.

Grades will be based on:

Class participation	10%
Tests and quizzes	90%

Academic Honesty

The course is governed by the Academic Conduct Committee policies regarding plagiarism (any attempt to represent the work of another person as one's own). This includes copying (even with modifications) of a program or segment of code. You can discuss general ideas with other people, but the work you submit must be your own. Collaboration is not permitted.

Instructor Information

Andrew Gorlin
Email: asgorlin@bu.edu

Office hours: Monday, 4:30-6 p.m.

Classes are scheduled at: 808 Commonwealth Ave., room 109

Schedule of Classes

Weeks 1 and 2: Functions, images and preimages, one-to-one functions, limit of a sequence of numbers, continuous functions, derivatives of functions, rules of differentiation, points of local maximum and minimum, and graphs of functions.

Weeks 3 and 4: Horizontal and vertical asymptotes, Inflection points, the antiderivative of a function, the definite integral of a function, and the fundamental theorem of calculus.

Weeks 5 and 6: K-samples, permutations, combinations, sample space, events, and the classical and statistical definitions of probability.

Weeks 7 and 8: Independent events, discrete random variables, Binomial distribution, and the approximation of the Binomial distribution.

Weeks 9 and 10: Geometric distribution, the math expectation and the variance of a random variable, independent random variables, strong law of large numbers, and the properties of distribution functions.

Weeks 11 and 12: Continuous distribution functions, density functions, the math expectation, and the variance of a continuous random variable, standard deviation, normal distribution, and the Central Limit Theorem.

Quizzes and tests schedule: TBD