BOSTON UNIVERSITY
METROPOLITAN COLLEGE
COMPUTER SCIENCE DEPARTMENT

MET CS 546 INTRODUCTION TO PROBABILITY AND STATISTICS

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 6 quizes, each quiz covering one of the 6 Modules. These quizes will be given in class following the completion of each Module.

There will be one final test. 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:

Quizes	60%
Final assignment	30%
Class participation	10%

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: TBD.

Classes will take place on Mondays from 6:00 to 8:45 p.m. at CAS 226 (685-725 Commonweath Ave)

Schedule of Classes

1/27 and 2/3: **Module 1**: 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.

2/10 and 2/18: Module 2: Horizontal and vertical asymptotes, Inflection points, the antiderivative of a function, the definite integral of a function, and the fundamental theorem of calculus. **Quiz for Module 1 on 2/10.**

2/24 and 3/3: **Module 3:** K-samples, permutations, combinations, sample space, events, and the classical and statistical definitions of probability. **Quiz for Module 2 on 2/24.**

3/17 and 3/24: **Module 4:** Independent events, discrete random variables, Binomial distribution, and the approximation of the Binomial distribution. **Quiz for Module 3 on 3/17.**

3/31 and 4/7: **Module 5:** 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. **Quiz for Module 4 on 3/31.**

4/14 and 4/23: **Module 6:** 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. **Quiz for Module 5 on 4/14.**

4/28: Quiz for Module 6 on 4/28. Final review. Make up date for missed quizes.

4/30: Final assignment is sent; due by 5/5.

THERE WILL BE NO FINAL EXAM – 4/28 IS THE LAST CLASS