

**Instructor:** Professor Mamikon Ginovyan  
Department of Mathematics and Statistics  
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**Class Meetings:** 12:30 - 2:00 pm, Tuesdays and Thursdays

**Office Hours:** 4:00 - 5:30 pm, Tuesdays and Thursdays, or by appointment.

**Teaching Fellow:** Karen Yeats, MCS 151

**Office Hours:** 9:30 - 11:30 am, Wednesdays, or by appointment.

**Tutoring:** MCS 144

**Text:** *STATISTICS* by James T. McClave and Terry Sincich, Ninth Edition, Prentice Hall, 2003  
(with *Student's Solutions Manual*)

**Course Objectives:** This course serves as an introduction to basic concepts and tools in probability and statistics. We begin with how to describe data. Then we study the elements of probability theory. Finally, we combine data description and probability theory into an approach to statistical inference. Students should emerge from this course with the ability to incorporate a variety of skills in analyzing and reasoning from data.

**Classes:** Class attendance and participation are vital. Arriving on time, being prepared for the new material, and leaving only at the end of class, are absolutely necessary to get the most out of this course. You should read the materials in the book that a lecture covers before attending the lecture. Lectures have the highest priority for exam content and proper manner of presentation of solutions.

**Prerequisites:** A good background in high school algebra.

**Homework:** Homework will be assigned regularly during the course and a due date will be announced. *No late homework will be accepted.* To receive full credit for your solutions of the homework problems, all work must be shown. Check your solutions to odd problems in the Student's Solutions Manual. Turn in even problems only.

**Examinations:** There will be *two midterms and one final (cumulative)*. Policy regarding the exams will be announced later. All exams are required and there will be **no make up exam**. Exams will take place according to the following schedule:

**Midterm I:** Thursday, February 24

**Midterm II:** Thursday, April 14

**Final:** Tuesday, May 10

**Final Grade Distribution:**

**Homework:** 20%, **Midterm I:** 25%, **Midterm II:** 25%, **Final:** 30%

**Software:** Students must have access to MS Excel (or another similar program) and a graphing calculator to do most of the homework.

**Class Website:** Handouts and other course information will be made available on the course website: <http://math.bu.edu/people/kayeats/teaching/ma213.html>.

**Course Outline (tentative):**

**Chapter 1. Statistics, Data, and Statistical Thinking:** Introduction and overview - Fundamental elements of statistics, types of data, collecting data (2 lectures).

**Reading:** All Sections

**Chapter 2. Methods for Describing Sets of Data:** Descriptive statistics – graphical methods; numerical methods, numerical measures of central tendency and variability (4 lectures).

**Reading:** Sections 2.1 - 2.8

**Chapter 3. Probability:** Introduction to probability - elementary probability, the additive and multiplicative rules, conditional probability (4 lectures).

**Reading:** All Sections

**Chapter 4. Discrete Random Variables:** Probability distributions for discrete random variables, the binomial and Poisson distributions (3 lectures).

**Reading:** Sections 4.1 - 4.5

**Chapter 5. Continuous Random Variables:** Probability distributions for continuous random variables, normal distribution, normal approximation to the binomial distribution (4 lectures).

**Reading:** All Sections

**Chapter 6. Sampling distributions:** Properties of sampling distributions; the central limit theorem (2 lectures).

**Reading:** All Sections

**Chapter 7. Inferences Based on a Single Sample. Estimation with Confidence Intervals:** One-sample inference for population mean and proportion; sample size calculations (4 lectures).

**Reading:** All Sections

**Chapter 8. Inferences Based on a Single Sample. Tests of Hypothesis:** One-sample hypothesis testing about population mean and proportion; observed significance levels:  $p$  -values (4 lectures).

**Reading:** Sections 8.1 - 8.5

**Chapter 9. Inferences Based on Two Samples. Confidence Intervals and Tests of Hypothesis:** Two-sample statistical inferences about two population means and proportions (2 lectures).

**Reading:** Sections 9.1 - 9.3

**Review**

**Note:** BU has a strict policy against cheating and plagiarism. Any form of cheating or plagiarism will not be tolerated.