MA 213
Basic Statistics and Probability

Time & Location: Lecture: TTh 12:30 - 2:00 PM, CAS Building, Room 224
Lab/Studio: 1 hour/week, Tues. or Wed. – Check your schedule
Discussion: 1 hour / week. Check your schedule

Website: Available through http://blackboard.bu.edu

Professors:
Uri Eden (Lectures 9/6 – 10/20; Studios 10/25 – 12/8)
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Course Description:

This course serves as an introduction to basic concepts and tools in probability and statistics. We begin with techniques for describing data. Then we study the elements of probability theory, including probability densities, means, variances, correlation, independence, the binomial distribution, and the central limit theorem. 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.

Textbook References:

Primary Textbook:

Statistics 11/E
McClave, J.T., Sincich, T. & Mendenhall, W.
Other References:

*Introductory Probability:*

*Other Statistics Texts:*

**Clickers:**

We will be using an audience response system (i.e. clickers) in class to poll for information, check comprehension, and collect data for analysis. You are required to bring your clicker to every lecture and lab/studio session. Clickers can be purchased from the BU bookstore or online.

**Laboratory/Studio Sections:**

The laboratory/studio sections provide you the opportunity to work in groups to solve problems in probability theory and data analysis. You will conduct experiments and use statistical software to solve these problems. You will be assigned to groups during the first studio section. This will be your group for the course project as well as the studio sections. Please coordinate within your group to ensure that at least one member brings a laptop computer to each section (There is no harm in more than one person bringing laptops). The statistical software for the class is JMP, which can be downloaded free from the BU software page: [https://www.bu.edu/software/stats/jmp/](https://www.bu.edu/software/stats/jmp/).

**Discussion Sections:**

The discussion sections provide you the opportunity to ask questions about any of the course material, past or current assignments, or any subjects beyond the material covered in lecture. We will also go through examples drawn from lectures and questions on the discussion board on the course website. Please complete all reading assignments before your section, and prepare questions in advance.

**Assignments:**

**Problem sets:**
Take-home problem sets will be assigned regularly and due one week from when they are assigned. These assignments will consist of problems taken from the course textbook and additional questions taken from other sources. Please feel free to collaborate on these, but each student should hand in their own problem set, which reflects your own understanding of the material. The problem sets will determine 25% of the final grade.
**Laboratory Reports:**
For each lab/studio section, there will be a prelab, in-lab, and postlab document with questions to answer. Each group should turn in one report, due one week after the lab section. The lab reports will determine 5% of the final grade.

**Data Collection and Analysis Project:**
You will work in groups to complete a semester long project, in which you will identify some interesting questions to address, collect data, and perform a statistical analysis using the methods we will learn in class. You will hand in a number of project milestones throughout the semester, submit a final project report, and present your findings to the class. Please see the Project description handout for more details about the project. The project will determine 20% of your final grade.

**Midterm Exam:**
There will be one in-class midterm exam, given on October 27th. If you cannot make it to class for an exam, a make-up exam can be arranged, which may be a written or oral exam, by contacting one of the professors in advance. The midterm exam will determine 20% of the final grade.

**Final Exam:**
The final exam for this course will be on Wednesday, December 21st from 9:00-11:00 AM. The final exam will not be offered at any other dates and times. The final exam will determine 30% of the final grade.

**Extra Credit Opportunities:**
There are a number of ways to earn extra credit for the course. In each class, there will be clicker questions to test your comprehension of the material; the more questions you get right, the more extra credit you earn. You will also earn a bonus for answering at least 90% of all the clicker questions in the lecture and lab/studio sections. We will also award extra credit points for outstanding participation in the discussion sections and in the forums on the course website.