Course objectives: This MS course is a first foray into the world of probability and statistics. At the end of this course, you will have a basic toolkit for analyzing and understanding data, and you will have learned why and how probability and statistics are interrelated.

Course topics: This course covers the following topics: Fundamentals of probability theory and statistical inference used in engineering and applied science; Probabilistic models, random variables, useful distributions, expectations, law of large numbers, central limit theorem; Statistical inference: point and confidence interval estimation, hypothesis tests, linear regression.

Prerequisites: Calculus, including multiple integration.

Classroom: NWC 501; meeting times: 4:10pm – 5:25pm Mon/Wed.

Class material: We use the book “Introduction to Probability and Statistics for Engineers and Scientists, Fifth Edition” by Sheldon Ross. If you choose to use an earlier edition, it is your responsibility to ensure you study the right materials and make the right exercises. Supplementary class material will be posted on Courseworks, https://courseworks.columbia.edu. The lecture notes are available through this link.

Project: Students are required to do a group project using financial data. The project will require you to do some computer programming. At the end of the semester, each team is required to submit a report on your project as well as a web app. A guideline for its length is 4–8 pages (excluding references, the app, and computer code). You are also required to submit your computer code. All team members are expected to contribute to all aspects of the project work (statistical analysis, coding, writing). Students will be asked to provide confidential feedback about the work contribution of his/her team members through peer evaluations.

Homework Assignments: You will receive one set of homework assignments every week, and it is due before class on Wednesdays.

- Homework needs to be submitted electronically through Courseworks in PDF format.
- Any homework that is not handed in or submitted after the deadline will receive a zero grade and computed in the homework grade. NO EXCEPTIONS. Emails requesting for extensions will be ignored, but your lowest homework score will be dropped.
- A representative sample of the homework problems will be graded, not necessarily all problems.
- Start immediately on the homework so that you can take full advantage of office hours.
- You may discuss homework with classmates, in which case you have to mention on your homework with whom you have discussed it. You will get full credit for any correct answers given. Copying is not allowed.

R and Rstudio: Some of the homework requires some coding in R, and part of the project deliverable is a web app in R. To complete these parts of the course, you need to download and install R, Rstudio desktop, and Shiny. Use http://www.rstudio.com as a starting point.

Exams: There is one in-class midterm and a final exam. The midterm will be on October 19, 2016. See the SEAS final exam calendar on http://registrar.columbia.edu/content/exams (once available) for the date and time of our final exam.
Grading Homework 10%; Midterm 35%; Final exam 40%; Project 15%.

Your grade for the project is based on five equally weighted components: correctness, content, style/mechanics (for the report), and code quality, user experience (for the app). Each of the team members receives the same project grade, but the peer evaluations may be taken into account.

Homework or exams are only re-graded if they are accompanied by a clear reason for re-grading. No re-grading requests can be submitted after one week has passed from returning the homework or exam.

- To submit a homework re-grading request, write an email to all grading course assistants explaining what and why you want re-graded. Attach the annotated PDF downloaded from Courseworks.
- To submit a coding re-grading request, write an email to Jamie explaining what and why you want re-graded. Attach the annotated PDF downloaded from Courseworks.
- To submit an exam re-grading request, return your exam to Professor Dieker accompanied by a cover sheet explaining what and why you want re-graded.

Office hours My office hours are Mondays 6:15pm-7:30pm in 419 Mudd. Call my office at (212) 853-0683 if the DSI door is locked. Further course team office hours will be announced through CourseWorks. No appointments are needed during any of the office hours, please take advantage of them!

Honor Code Students are reminded to observe the IEOR Code of Academic Integrity. Any form of academic dishonesty can result in a serious deduction from your final grade or even a grade of F in the course.

Miscellaneous A couple of miscellaneous comments:

- Attending lectures is not obligatory but it is highly recommended.
- No use of cell phones during class.
- Electronic devices in class are only allowed in the back row.
- Do not post course materials on websites such as coursehero, I do not want these websites to profit financially from my work. Since I own the copyright, this is stealing.
- If you miss an exam due to a real emergency or serious illness:
  - You must notify me immediately (as is feasible) before the exam.
  - It is your responsibility to provide appropriate convincing documentation to support a request.
  - If your documentation is fraudulent in any way, or if you misrepresent your reasons for missing an exam, you will receive an F in the course.

If you miss an exam for legitimate reasons, then it will be my prerogative to either administer a make-up exam of my choosing (i.e., oral or written) or to add the weight for the missed exam to the final exam weight. You will not be excused for any personal business, such as interviews, social gatherings, etc. All unexcused absences will result in an exam grade of zero.

- Special classroom accommodations or testing accommodations such as extended exam time are only made upon recommendation by Disability Services.