Helwan University
Faculty of Computers and Information

Course Syllabus

Department of Computer Science
Probability and Statistics II

Office Hours: See webpage.

Prerequisites: Elementary calculus, e.g., MA 111 and MA 112.

Objectives: This is a standard course in probability theory for students in applied sciences. The course covers the basics of probability theory and emphasizes the importance of both mathematical rigor and intuition. For fulfilling that objective we cover almost all proofs, give the intuition behind the mathematics, and give many examples from real life applications and by using real datasets. After finishing that course the student should be comfortable when exposed to basic probability concepts during his study in computer science.

Text: Rice, J.A., *"Mathematical statistics and data analysis"*. 3rd ed, 2007.

Course Syllabus: We will almost cover the first 6 chapters of the book. We will cover basics of counting, law of total probability, Bayes's rule, random variables, Discrete random variables, continuous random variables, moments, multivariate distributions, joint density functions, marginal distributions, covariance, functions of random variables, transformations, and Central Limit Theorem.

Assignments: Assignments will include both, problems and computer exercises. Either Matlab or R is preferable for solving the computer exercises. **No late assignments please**.

Grading Policy: 60% of the grade will be on the final exam, 20% on homeworks, and 20% on midterm exam. Solving assignments, in both formats the paper-and-pencil and computer exercises, is crucial for acquiring the skills to solve the exam.

General Info:

- All handouts, grades, and assignments will be posted on the course webpage.
- For applications on real data sets see the CD accompanying the book or the webpage of the book..