MATH 350 (Section 011), Spring 2018
Probability Theory and Simulation Methods

Instructor:
Vu Dinh
Email: vucdinh@udel.edu
Office: Ewing 312

For questions about homework or material, consult me during office hours or by email. Please include the course number in the subject line of the email.

Class Times: MWF 12:20-1:10 pm, Alison Hall 228

Office Hours: Tuesday-Wednesday 1:30pm-3pm, Ewing Hall 312, or by appointment.

Web page: `http://vucdinh.github.io/m350s18`
Visit this page regularly. It will contain homework assignments, lecture notes, etc.

Prerequisites: MATH 243. Restrictions: Requires basic knowledge of the counting principles in permutation and combination (MATH 210 or MATH 230).

Reference: The main text is S. Gharahmani, *Fundamentals of Probability with Stochastic processes, 3rd edition.* This text is required.

Topics:

- Axioms of probability (Chapter 1),
- Conditional probability and independence (Chapter 3),
- Discrete random variables; special discrete distributions (Chapters 4,5),
- Continuous random variables, special continuous distributions (Chapters 6,7),
- Bivariate and multivariate distributions (Chapter 8 and Section 9.1),
- Expectations and Variances (Chapter 10),
- Limit theorems (Chapter 11),
- Selected topics from Chapters 12, 13.

Homework: Assignments will be posted on the web every other Wednesday (starting from the first week) and will be due on Friday of *the following week*, *at the beginning of* lecture. No late homework will be accepted. Your lowest homework score will be dropped in the calculation of your overall homework grade.

Quizzes: To encourage you to keep up with reading and understanding the concepts, at the end of some chapters, there will be a short quiz during class. The quiz dates will be announced at least 1 class in advance. Your lowest quiz score will be dropped.

Exams: There will be a midterm on 03/21 and a final exam during exams week.

Evaluation:

- Overall scores will be computed as follows:
  25% homework, 10% quizzes, 25% midterm, 40% final
- No letter grades will be given for homework, midterm, or final. Your letter grade for the course will be based on your overall score.
- The lowest homework scores and the lowest quiz score will be dropped.
- Here are the letter grades you can achieve according to your overall score.
  - $\geq 90\%$: At least A
  - $\geq 75\%$: At least B
  - $\geq 60\%$: At least C
  - $\geq 50\%$: At least D

Data Analysis: We will do data analysis using an open source statistical system called R

`http://cran.r-project.org/`

To install R:

- Windows: Go to `http://cran.r-project.org/bin/windows/base/` and download using the link saying "Download R 3.x.y for Windows"
- Mac: `http://cran.r-project.org/bin/macosx/R-latest.pkg`
- Linux: Go to `http://cran.r-project.org/bin/linux/` and download as needed.
- To program in R, you have the option to work in RStudio, an open source development environment `http://www.rstudio.com/ide/download/`.

Ethics:

- You **must** write up solutions on your own.
- You may **never** read or copy solutions of other students.
- For each homework, you **must** write your name and UDel ID.
- You may use books and online resources for help, but you **must** credit all such sources and **never** copy the material verbatim.

Please refer to UD's Guide to Academic Integrity `http://www.udel.edu/studentconduct/ai.html`. In particular, note that copying solutions in whole or in part from other students or **any other source** without acknowledgement constitutes cheating. Any student found cheating risks automatically failing the class and will be referred to the Office of Student Conduct.