



## CAS MA 583 SYLLABUS

Introduction to Stochastic Processes

July 2 - August 10, 2018

Mon./Tues./Wed./Thurs. 9-11 am

Location: HAR 240

### **Instructor:**

Jingwei Ma

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Course Website: [http://math.bu.edu/people/majw/MA583\\_2018/MA583\\_2018summer.html](http://math.bu.edu/people/majw/MA583_2018/MA583_2018summer.html)

Office : MCS B44, 111 Cummington Street

Office Hours : Mon./Tues./Thurs. 3pm - 4pm or by appointment

### **Course Description:**

Basic concepts and techniques of stochastic process as they are most often used to construct models for a variety of problems of practical interest. The course will cover basic stochastic processes such as simple random walk, Markov chains, Martingales, Poisson processes, and Brownian motion as well as applications like birth and death processes, queuing theory, renewal processes, and reliability.

**Prerequisite(s):** (CAS MA 581 or CAS MA 381) or consent of instructor. The students are required to have a solid understanding of basic probability and calculus.

### **Required Text(s):**

- *An Introduction to Stochastic Modeling*, 4<sup>th</sup> edition, Mark Pinsky and Samuel Karlin, Academic Press.

### **Recommended Text(s):**

- *A First Course in Stochastic Processes*, 2<sup>nd</sup> edition, Howard M. Taylor and Samuel Karlin, Academic Press.
- *Stochastic Processes*, 2<sup>nd</sup> edition, S.M. Ross, John Wiley & Sons, New York.

We plan to cover chapter 2-9 in the required textbook depending on how the lecture goes.

### **Homework:**

Homework for practice and for credit will be assigned **every two lectures**, collected weekly on Thursday lectures and returned on Monday lectures.

You may discuss homework problems with classmates and the tutor in the Tutoring room MCS B 24 (this is also a good place to meet with classmates). However, (AND THIS IS VERY IMPORTANT), when you write up your final copy of your homework, you must work

alone. This will guarantee that you understand the solution—it is very easy to tell when a solution has been copied, so be sure to write up your solutions (showing YOUR work) independently, once you know how to do the problem. If you get help from others, please list who they work with on their paper, including the tutoring room tutor.

Lowest homework score will be dropped. **NO LATE HW WILL BE ACCEPTED FOR ANY REASON!**

**Exam:**

There will be an in-class midterm and an in-class final for this course. Each will take 2 hours. Midterm exam will be held on Jul. 19th (Thursday), and final exam will be held on Aug. 9th (Thursday). **NO** calculators, textbooks, notebooks, formula sheets or phones during the exam. Formulas will be provided on the exam. Make-up exams will be offered if you have an emergency, and tell me in advance. Note that there will be one problem numbered as "Last problem" for extra credits in both the midterm and final exam. However, it is particularly difficult, so only attempt it if you have completed the other problems as best you can.

**Grade Policies:**

Homework	20%
Midterm Exam	35%
Final Exam	45%

**Communications:**

Communications are very important!! If you have any emergency or questions about this course, please feel free to email me or visit me during office hours. Homework and lecture outlines will be updated on the course website.

**University Policy:**

If you observe a work-restricted religious holiday during the term, please let me know immediately and arrangements will be made in accordance with University Policy.

**Academic Conduct:**

Students are responsible to read and understand the provisions of the CAS Academic Conduct Code. Cheating is absolutely not allowed; otherwise, you will be referred to the University Academic Standards Committee for disciplinary action.

**Important Dates:**

<b>Date</b>	<b>Milestones</b>
Jul. 2 Mon	Class Begins.
Jul. 4 Wed	Holiday, classes suspended.
Jul. 6 Fri	Substitute schedule of classes (Wednesday schedule).
Jul. 9 Mon	<b>Last day to drop without a 'W' grade. Last day to register/add courses/audit.</b>
Jul. 19 Thu	<b>Midterm Exam.</b>
Jul. 25 Wed	<b>Last day to drop with a 'W' grade.</b>
Aug. 9 Thu	<b>Final Exam.</b>