STA 3021 Introduction to Stochastic Processes
Fall 2021

Classes: Monday 6:00 PM – 8:45 PM

Instructor: Changryong Baek
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Office Hours: By appointment.

Course description:

- This course aims at a gentle introduction to stochastic process. Stochastic process refers to probabilistic modelling of underlying dynamics evolving either by time or space. We will first start with reviewing some basic probability and mathematical statistics such as probability space, random variables and expectation. Then, discrete stochastic processes such as discrete Markov Chain and Poisson process will be studied extensively. Then, we will extend to the continuous case which covers random walk and Brownian motion. A brief introduction to stationary process will be provided if time permitted. Focus will be on the **understanding of concepts and theoretical properties**.

Recommended Prerequisite:

- Six basic courses for Statistics major. It includes good understanding of matrix algebra (STA 2017) and mathematical statistics (STA 2014). Strongly recommended to take statistical inference (STA 3003) before taking this course. Some of them will be reviewed, but I will not explain every details.

Course Webpage:

- Course webpage is located at "icampus" (https://icampus.skku.edu/).

Required Textbook:

- *Introduction to Probability Models* by Sheldon M. Ross, 11th edition.

Other books on Stochastic Processes:

- *Introduction to Stochastic Processes*. Erhan Cinlar. Classical entry level book on stochastic processes.
- *Introduction to stochastic processes*. Paul G. Hoel, Sidney C. Port and Charles J. Stone. Another popular book on stochastic process, excellent exposition on Markovian processes.

Syllabus: Tentatively, Ch 1-3 will be briefly reviewed and Ch4, 5 will be studied thoroughly. Some selected topics on Ch6, 7 and 10 will be covered.

Attendance:

- Attendance is mandatory. It is your obligation as a college student. You need to attend classes more than 75% to get the credit (This is the university policy.) Be on time and be sure to consider your classmates, e.g. switch off your cell phone during class.

Homeworks:

- Homework problems will be posted on"icampus" regularly. You are not required to return homeworks, but it will be the basis for exams.

Exams:

- Two midterms and one final are scheduled. All exams are closed-book, closed-note with no formula sheets allowed.

Schedule:

Midterm 1	TBD, (in-class)	30%
Midterm 2	TBD, (in-class)	35%
Final	Dec 6, 2021 (in-class)	35%
Total		100%

Academic misconduct:

- Academic Honesty / Honor Code / Student Code of Conduct will be observed at all times in this course. In case of any academic misconduct, you will get an F and may subject to file on University Judiciaries.

Problems/ Suggestions:

- Each student should feel comfortable approaching the Instructor with any problems s/he has with the course. Please feel free to visit my office during the office hour or e-mail me for any further questions/concerns/suggestions.

Disclaimer:

- Instructor reserves the right to change the syllabus if it is academically advisable and necessary.