STA447/STA2006 - Stochastic Processes

University of Toronto Winter 2014

Lectures: Thursday 6-9pm at SS1087
Instructor: Gun Ho Jang
e-mail: gunho@utstat.toronto.edu Put 'STA447' or 'STA2006' in subjects
Web page: http://www.utstat.toronto.edu/ghjang/teaching/sta447.php
Office: SS6025
Office Hours: Thursday 4-5pm or by appointments.

Course Description

This course will introduce some fundamental stochastic processes used in various disciplines including statistics, mathematics and engineerings. Topics covered: discrete time Markov chain, Poisson and renewal processes, Martingale, Brownian motion and diffusion processes, related limit theorems.

Prerequisite

Probability theory equivalent to STA347; Analysis equivalent to MAT257; Multivariate calculus similar to MAT235/MAT237.

Textbook

R. Durret (2012). Essentials of Stochastic Processes. Springer, 2nd ed.

References

P. Bremaud (2008). Markov Chains: Gibbs Fields, Monte Carlo Simulation, and Queues. Springer.
R. Durrett (2010). Probability: Theory and Examples. Cambridage University Press, 4th ed.
B. Oksendal (2010). Stochastic Differential Equations. Springer.
D. Williams (1991). Probability with Martingales. Cambridage University Press.

Evaluation

	proportion	date, time and location
Assignments	20%	6 sets
Mid-term test	35%	Thu February 13 between 6-9pm. Location TBA
Final exam	45%	TBA

Sta457H1 S 2014 Course Information

This course is an introduction to Time Series with applications to sciences and economics. This course is designed for senior undergraduate students and graduate students of statistics and other related disciplines.

Instructor Zhou Zhou, Office: SS6026B.

Phone: (416) 978-4032.

Email: zhou @ utstat.toronto.edu (The best way to reach me is via email).

Office Hours: Fridays 1:00pm to 3:00pm at SS6026B.

TA Lingling Fan.   Email: lingling@utstat.utoronto.ca.

Jinlong Fu   Email: jinlong@utstat.utoronto.ca.

Tianyi Jia   Email: Tianyi.jia@mail.utoronto.ca.

Eric Chan   Email: ericct.chan@mail.utoronto.ca.

TA office hours: TBA.

Lectures Tuesdays 6pm to 9pm; from January 7th to April 2rd, except for the second week (Jan. 14th) and the reading week (Feb. 18th). Held in MP103.

Textbook P.J. Brockwell and R.A. Davis, **Introduction to Time Series and Forecasting, second edition.** Springer-Verlag, 2002.

Readings G. Box, G.M. Jenkins and G. Reinsel, **Time Series Analysis: Forecasting & Control (3rd Edition).** Wiley, 2008.

Ruey S. Tsay, **Analysis of Financial Time Series, 2nd edition.** Wiley, 2005.

William W.S. Wei, **Time Series Analysis, Univariate and Multivariate Methods,** second edition, Pearson, 2006.

Computing There will be some computing exercises, in the **R** or **ITSM** language. R can be downloaded and installed for **free** at www.r-project.org. You can also find an introduction to R at the latter website. CD of ITSM2000 is included in the textbook. There is a tutorial of ITSM at Appendix D of the textbook.

Evaluation Final exam: **55%** (Scheduled by the Faculty) Cumulative.

Mid-term test: **35%** (Feb. 25th 6-8pm in class)

There will be no make-up midterms. If you have to miss the midterm, weights will be shifted to the final exam with valid evidences for absence.

HWs: **5%** Three times. The lowest HW score will be dropped.

Data Analysis Report: **5%**.

Syllabus Weeks 1 and 3: Chapter 1.

Weeks 3 and 4: Chapter 2.

Weeks 5 and 6: Chapter 3.

Week 7: Midterm. Includes first three chapters.

Week 8: Chapter 4.

Weeks 9 and 10: Chapter 5.

Weeks 10 and 11: Chapter 6.

Week 12: Chapter 10.3.

I will also cover some other topics regarding computer applications, and introduce you to the R language. Information on these topics will be provided by hardcopy handouts or on the web.