STAT/MTHE 353 - Probability II

Winter 2018

Instructor: Glen Takahara - Jeffery Hall 407
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Course Web Site: http://www.mast.queensu.ca/~stat353
All assignments and important announcements will be posted here.

Lecture: Slot 15 (Tuesday 12:30, Thursday 11:30, Friday 1:30), Jeffery 128

Office Hours: Tuesdays, 11:00 – 12:00


Assignments: There will be 9 homework assignments. These will be posted on the class web site; no paper copies will be handed out. Assignment 1 is due on Friday, Jan. 26. Solutions to the assignments will be posted on the course web page.

Grading: 20% homework, 20% mid-term test, 60% final exam.

Midterm Test is scheduled for Friday, Mar. 2 in class (1:30-2:30).

Prerequisites: STAT 269 or 351; MATH 110 or 111 or 112; MATH 281.

Course Outline

- **Multiple Random Variables**: multivariate distributions; joint probability, density, and distribution functions; marginal distributions; independent random variables; order statistics; multinomial distribution; transformations of \( n \) random variables; beta, gamma, \( \chi^2 \), \( t \) and \( F \) distributions (Chapter 9 of text and class notes).

- **Expectations Involving Multiple Random Variables**: expectation of a sum of random variables; covariance and correlation; calculating expectations by conditioning; multivariate normal distributions (Chapter 10 of text and class notes).

- **Limit Theorems**: moment generating functions; sums of independent random variables; markov and chebyshev inequalities; modes of convergence; laws of large numbers; chernoff bounds and large deviations; central limit theorem (Chapter 11 of text and class notes).

- Further topic TBA (see outline on course web page for possible topics).