a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

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STAT 547C, Topics in Probability
2021/2022, Term 1
Instructor: Professor Ben Bloem-Reddy

Time and Place: Tuesday/Thursday 11:30am-1:00pm, ESB 4192
Please check course website regularly, as this may change.

Description: A graduate-level course in probability with an emphasis on the basic tools that are applied in statistical science and related areas. The course will cover some basic measure theory as required (though less than in previous versions of the course): the axioms of probability and the construction of probability measures, random variables, and Lebesgue integration. From there, topics such as independence, characteristic functions, convergence, and conditional expectation/probability will take us from classical probability and statistics into more modern material.

Prerequisite/Corequisite: Stat 460/560 or equivalent. Ideally, one upper division undergraduate course in probability, and one in analysis. Please contact the instructor if in doubt.

Textbook/course material: J. Jacod and P. Protter, Probability Essentials, 2nd edition, Springer (2004).
Note: the pdf of this textbook is freely available via UBC Library (https://tinyurl.com/yjyfqmc3).

References:
E. Çinlar, Probability and Stochastics, Springer-Verlag New York (2011).
Note: the pdf of this textbook is freely available via UBC Library.

A. Gut, Probability: A graduate course, 2nd edition. Springer.
Note: the pdf of this textbook is freely available via UBC Library.

R. Durrett, Probability: Theory and Examples, 5th edition, Cambridge U. Press (2019).
Note: the pdf of this textbook is freely available via the author's website.

P. Billingsley, Probability and Measure, 3rd edition, John Wiley & Sons, New York (1995).

Website: https://stat.ubc.ca/~benbr/courses/stat547c-fa21 and Canvas

Assessment: Assignments: 20%; Exercises/participation: 10%; Midterm: 30%; Final: 40%.

Topics to be covered: Foundations of probability (axioms, language, random variables, distributions and densities); integration and expectation; independence; asymptotics (laws of large numbers, modes of convergence, Central Limit Theorems); conditioning.