

Stat5708 Course outline. Carleton University Fall 2021

Textbook: Probability & measure. Anniversary edition. By P. Billingsley.

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Grading: 3 assignments (Due online Oct. 10, Nov. 7, and Dec. 5). Each worth 10%), 1 midterm (Time **TBA**. 20%), and Final (Time and place TBA. 50%). Comprehensive passing grade 60%.

Below is a tentative time table.

Week	Section	Details
1-2	2	Probability measures, sigma fields, countable and noncountable sets, Lebesgue probability measure.
2-3	3	Construction of probability measures (extension and uniqueness), π - λ (Dynkin's) theorem, equality of two probability measures,
4-6	4	Lim sup and lim inf, independent events, Borel-Cantelli lemmas, Kolmogorov zero-one law
7-8	5,6, 20 and 21	Random variables (rv's), expected value. Markov inequality, distribution function. Convergence of sequences of rv's (almost sure and in probability), weak and strong laws of large numbers
9-10	16	Monotone convergence theorem, Fatou's lemma, Lebesgue's Dominated convergence theorem, Change of variable theorem, Uniform integrability.
11	18	Product of measures, Fubini's theorem
12	22	Sum of independent rvs, back to strong law of large numbers

If you miss the midterm or an assignment and provide a valid justification its grade will be added to the final exam. No make up test will be given. No late assignment will be accepted.