Math 6710

PROBABILITY THEORY

Instructor: E. B. Dynkin

Probability spaces.
Extension theorems.
Measurable mappings—Random variables.
$\pi - \lambda$ and the Multiplicative systems theorems.
Review of the Lebesgue theory, Fubini’s and the Radon-Nikodym theorems.
Conditioning, Independence, Kolmogorov’s 0-1 law, The Borel-Cantelly lemma,
Kolmogorov’s inequality, Series with independent terms.
Strong laws of large numbers, Weak laws of large numbers.
Laplace transform and generating functions, Branching processes.
Fourier transform-characteristic functions, Inversion formula, Central limit theorem (the Lindeberg-Feller conditions), Infinitely divisible distributions and the corresponding limit theorems, Stable distributions.
Poisson point process, White noise, Multivariate normal distribution.