

MATH 130C– Suggested Syllabus

Textbook: *Introduction to Probability Models*, by S. Ross

Week	Chapter	Topics
1		Definition of stochastic system, continuous vs discrete, one-sided vs. two-sided.
2	4	Markov Property, definition of Markov Chain. Chapman-Kolmogorov equations, classification of states.
3	4 (cont.)	Stationary probabilities and applications (genetics, arrival processes.
4	4 (cont.)	Applications: Gambler's Ruin, Kelly criterion, Drug trials.
5	4 (cont.)	Mean time in transient States, MIDTERM.
6	4 (cont.); part of 6	Markov Chain Monte Carlo, Hidden Markov Chains, intro to continuous Markov Chains.
7	10	Intro to Brownian Motion, Hitting times.
8	10 (cont.)	Maximum Variable, Gambler's ruin (version 3).
9	10 (cont.)	Brownian motion with Drift, Geometric Brownian Motion.
10	10 (cont.)	Stock Option pricing, White noise, Gaussian Processes.