MATH 439
Computational Probability Models (3 units)

Course Outline

Topics	# of Weeks
Review of Probability and Computing Probability by Conditioning: • Event and Sample Space • Conditional Probability, Bayes' Theorem • Discrete and Continuous Random Variables • Computing Probability and Expectation by Conditioning	4.0
Discrete Time Markov Chains: • Chapman Kolmogov Equation • Classification of States • Limiting Probabilities, Applications • Branching Processes, Times Reversibles Markov Chains • Markov Chain Monte Carlo	4.0
Exponential and Poisson Process: • Exponential Distribution • Poisson Process and Nonhomogeneous Poisson Process • Generalizations of Poisson Process	2.5
Continuous Time Markov Chains: • Birth and Death Processes, Transition Probabilities • Limiting Probabilities and Applications • Introduction to the Brownian Motion, Wiener Process and Applications	2.5
Exams	1.0

Textbook: <u>Introduction to Probability Models, 9th Edition</u> by Sheldon Ross

Adopted: Spring 2007