Course Outline

Course Title: **Introduction to Stochastic Modeling and Simulation**

Speaker: Prof. Tiejun Li (PKU Math)

Date: July 23-27, 2018

Target: 2nd Year Undergraduate Students in Applied Math Summer School 2018

Lect1 Noise is everywhere

Lect2 Basic Monte Carlo Methods

Lect3 Markov Chains and Stochastic Modeling for Networks

Lect4 Brownian Motion and Stochastic Modeling for Complex Fluids

Lect5 Concepts in Statistical Inference

Refs:

1. S. Ross, Introduction to Probability Models, Academic Press, 1997.
2. W. Feller, An Introduction to Probability Theory and Its Applications, Vol. 1, John Wiley & Sons, 1950.
3. J.G. Kemeny and J.L. Snell, Finite Markov Chains, Springer, 1960.
4. D. MacKay, Information Theory, Inference and Learning algorithms, Cambridge University Press, 2003.
5. R. Bird, C. Curtiss, R. Armstrong and O. Hassager, Dynamics of Polymeric Liquids, Vol. 2, 1987.
6. C.P. Robert and G. Cassella, Monte Carlo Statistical Methods, Springer, 2004.

Rationale: The aim of this course is to stimulate the students' interest to the field of stochastic modeling and simulations by supplying interesting applications of stochastic methods in Science and Engineering, basic Monte Carlo methods in practice and basic modeling tools for random phenomenon.