

INTRODUCTION TO PROBABILITY MODELS

MATH 8650

Course Description:

This is an introduction to probability modeling including Poisson Processes, Markov chains, birth-death processes, queueing models and renewal theory. Applications will be an important part of the course. **3 credits**

Prerequisites:

MATH 4740/8746, MATH/CSCI 4760/8766, STAT 3800/8805, or permission of instructor

Major Topics:

- 1) Review of basic MATH 4740 material, 1 or 2 weeks
- 2) Conditioning Arguments and Applications, 3 or 4 weeks
- 3) Markov Chains - Discrete Time, 4 or 5 weeks
- 4) Renewal Processes, 2 weeks
- 5) Markov Chains - Continuous Time/Queues, 2 or 3 weeks

Textbook:

Ross, Sheldon M. *Introduction To Probability Models, 11th ed.* Cambridge: Academic Press, 2014.

Additional Topics:

Additional topics not covered in the textbook include probability models for estimating animal abundance, mathematical inequalities such as Jensen's inequality, and others.

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