

IEOR 4701: Stochastic Models in Financial Engineering

REVIEW GUIDE for Midterm Exam

Monday, July 30, in class, 10:00am-2:00pm

This exam will be Open Book, but only the Ross textbook plus the class lecture notes and one extra 8×11 page of notes

No other books, no calculators

The exam will cover the material assigned up to July 30 with the exception of continuous-time Markov chains (Chapter 6). In your review please give careful attention to the following topics.

EMPHASIZED TOPICS

1. Chapter 1. conditional probability. Bayes formula as in Example 1.14.
2. Chapter 2.
 - (a) exponential and normal distributions, Sections 2.3.2 and 2.3.4, concise summary hand-out for exponential, Examples 2.50-2.52 for the normal distribution
 - (b) jointly distributed random variables, section 2.5, especially covariance, pp. 53-55
 - (c) law of large numbers and central limit theorem, p. 79, and the lecture notes for July 11, additive and multiplicative models of stock prices.
4. Chapter 4. DTMC's, and lecture notes of July 16. Ways to analyze (i) irreducible and (ii) absorbing DTMC's.
 - a. The definition of a Markov process.
 - b. The Gambler's Ruin Problem, Section 4.5.1, and Section 2 of Markov Mouse notes.

To supplement the textbook, you might Google these notions and look up the summary definitions and properties from Wikipedia or from Wolfram MathWorld.