

Final Exam – Information

PLACE AND TIME: Thursday, December 17, 7:45AM, VV B211 (our usual classroom)

WHAT'S ON THE EXAM?

- The exam is cumulative, you should know everything that we covered during the semester. However, it will put more weight on the last third. You can expect problems similar to the ones you have seen in the assignments and in class. (Read the list of covered topics for a more detailed list!)
- Besides the material needed for the two midterms you should be familiar with the following sections of the textbook: **10.3, 11.1-11.5** and also the extra lecture notes on Markov Chains
Note: there are a bunch of rather complicated examples in the textbook. If I did not discuss them explicitly in class then you should not worry about those.
You should know the meaning of the Law of Large Numbers and you should know (and be able to apply) the Central Limit Theorem.
- You should be able to solve problems related to the following material (besides the ones listed for the two midterms). Note that this is not an extensive list.
 - Correlation of discrete random variables (E.g. problems from Section 10.3: 1, 4, 5, 6)
 - Computing the moment generating function of a random variable, computing moments from the m.g.f, computing the probability mass function from the m.g.f, m.g.f. of sums of independent random variables (E.g. review problems from Chapter 11: 2, 3, 4, 6)
 - Estimating probabilities using the Markov and Chebysev inequalities. Getting sharp estimates using the central limit theorem. (E.g. review problems from Chapter 11: 11, 12, 13, 16, 18,)
 - Basic properties of a Markov Chain, how to compute probabilities using the transition probability function and the transition probability matrix, checking if a Markov chain is irreducible or regular, finding the stationary distribution (and the limit of the n -step transition probabilities) (E.g. problems from Section 12.3: 5, 8 (just identify the transition probability matrix), 11, 16 and the problems from the posted lecture notes)