

CSCI 3352 – Test 1 Review Sheet

Basically, this test covers everything that we have done so far in the class. I'm listing those things out here along with the major points that I expect to put on the exam. I can't claim this list is exhaustive, but it can help give you some direction for studying. The format of the test will resemble the quizzes with just more questions. Don't expect to do a lot of math, but do expect that you might have to tell me what math you would do to figure something out. Some of the questions will be linked together related to a single simulation study.

Basics of Simulation – Know what simulations are and the various reasons we use them.

Know the different categories of simulations beyond just the discrete event type.

Simple Examples – Understand how discrete event systems can be used to model simple systems like the single server queue or an inventory system. Know what these can tell us and what types of stats we might use to get that information. You should probably be able to run through a single server queue type system given numbers pulled from appropriate random variates.

More Complex Examples – Understand how discrete event systems can be used to produce more complex simulations. You should understand how different levels of detail are needed to answer different types of questions about a system.

Simulation Software – Know the two main classes of simulation software that you might run into.

Basic Statistics – Know the key concepts of statistics that we have talked about. That means knowing the formulas for things like $E(X)$, $\text{Var}(X)$, $\text{Cov}(X, Y)$, etc. and know how and when you would use them.

Verification, Validity, and Credibility – Understand these three terms and what things you might do to attain each of them in a real simulation study.

Continuous Systems – Know how ODEs can be used to model continuous systems and how we solve ODEs numerically on a computer.

Distributions – Have a feel for the various continuous and discrete distributions as well as what they are good for. Understand why it is important to use distributions instead of just means and why having the right distribution is important. Given data, know the approaches that you could take to find the proper distribution.