Topics for Exam 2

1. **Probability**

  1.1 Random experiments, sample space, events and probabilities

  1.2 Stochastic independence

  1.3 Conditional probabilities

  1.4 Random Variables: Discrete and Continuous

  1.5 Probability distribution

  1.6 Expected values and variance

2. **Stochastic Models**

  2.1 Modeling bacterial mutations

   2.1.1 Bernoulli trials

   2.1.2 Binomial distribution

   2.1.3 Poisson distribution

  2.2 Modeling service time at a checkout counter

   2.2.1 State diagrams

   2.2.2 Probability density functions

   2.2.3 Exponential distribution

  2.3 Random Processes

   2.3.1 State diagrams

   2.3.2 Poisson random process

   2.3.3 Application to bacterial mutations

Relevant sections in the online class notes: Sections 4.1 and 4.2.

Important Concepts: Random experiments; sample space; events; probability; conditional probability; stochastic independence; expected value; variance; random process.

Important Skills: Know how to compute probability distributions of random variables; know how to compute expectations and variances.