Topics for Exam 1

1. **Probability Spaces**
   - 1.1. Sample spaces
   - 1.2. σ–Fields
   - 1.3. Probability functions
   - 1.4. Independent events
   - 1.5. Conditional probability
2. **Random Variables**
   - 2.1. Continuous and discrete random variables
   - 2.2. Cumulative distribution function (cdf)
   - 2.3. Probability density function (pdf) and probability mass function (pmf)
3. **Examples of Random Variables**
   - 3.1. Discrete random variables: Bernoulli and Hypergeometric
   - 3.2. Continuous random variables: Uniform and Exponential

Relevant sections in the text: 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 3.1 and 3.2.

Relevant Chapters in Lecture Notes: 1, 2 and 3.

Relevant assignments: 1, 2, 3, 4, 5, 6 and 7.

Important Concepts

Sample space, σ–Field, probability function, probability space, random variable, continuous and discrete random variables, cumulative distribution function (cdf), probability mass function (pmf), and probability density function (pdf).

Important Skills

1. Know how to compute probabilities of events
2. Know how to compute the cdf and the pdf (or pmf) of a random variable