

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, Binomial 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, 7, 8 and 9.

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