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 mass function (pmf) for discrete random variables.

    2.4. Bernoulli, Binomial, Geometric and Hypergeometric distributions.

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

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

Important Concepts

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

Important Skills

1. Know how to compute probabilities of events.
2. Know how to compute conditional probabilities.
3. Know how to whether or not events are independent.
4. Know how to apply the law of total probability.
5. Know how to compute the pmf and the cdf a random variable.