Topics for Exam 3

1. **Limiting Distributions**

    1.1. The Poisson distribution as a limit of binomial distributions.

    1.2. Convergence in distribution

    1.3. mgf Convergence Theorem

    1.4. Convergence in probability

    1.5. Chebyshev's Inequality and the weak Law of Large Numbers

    1.6. The Central Limit Theorem

2. **Estimation**

    2.1. Random samples

    2.2. The sample mean and sample variance

    2.3. Unbiased estimators

    2.4. Consistent estimators

    2.5. Confidence interval estimates

Relevant sections in the text: 5.4, 5.6, 5.7, 6.2, 6.3, 8.2, 8.3, 8.4 and 8.5.

Relevant sections in the lecture notes: 6.1, 6.2, 7.1, 7.2, 7.3, 8.1, 8.2, 8.3 and 8.4.

Relevant assignments: 17, 18, 19, 20, 21 and 22.

Important Concepts

Convergence in distribution, convergence in probability, limiting distribution.

Important Skills

1. Know how to apply the mgf convergence theorem.
2. Know how to apply the central limit theorem.
3. Know how to use Chebyshev's Inequality.
4. Know how to compute confidence interval estimates.