Topics for Exam 2

1. **Sampling from a normal distribution**

   1.1. The t distribution.

   1.2. Interval estimate for the mean of a normal distribution.

2. **Goodness of Fit Test**

   2.1. Multinomial Distribution

   2.2. The Pearson Chi–Square statistic

   2.3. Asymptotic distribution of the Pearson Chi–Square Statistic.

   2.4. Chi–Square Goodness of Fit Test

3. **Hypothesis Testing**

   3.1. The language and logic of hypothesis testing: Null and alternative hypotheses; simple and composite hypotheses; rejection or critical region; Type I and Type II errors

   3.2. Significance of a test: significance level and power of a test.

   3.3. Making a decision: Rejection criterion and p–value.

Relevant sections in the text: 5.3, 5.5 and 5.7.

Relevant sections and chapters in notes: Section 2.3, Chapter 3 and Appendix A.

Relevant assignments: 6, 7, 8, 9 and 10.

Important Concepts

Confidence interval; null and alternative hypotheses; simple and composite hypotheses; rejection or critical region; Type I and Type II errors; significance level, power of a test, and p–value.

Important Skills

1. Know how to estimate parameters from a normal distribution
2. Know how to perform a goodness of fit test.
3. Know how to determine the significance level and power of a test.