Topics for Exam 2

1. **Estimation**

   1.1 Sampling distributions

   1.2 Independent Bernoulli random variables and the Binomial distribution

   1.3 The Central Limit Theorem

   1.4 Estimating proportions: Confidence interval

   1.5 Confidence interval for the mean

2. **Goodness of Fit Test**

   2.1 The Chi–Squared distance

   2.2 The Chi–Squared distribution

   2.3 The Chi–Squared goodness of fit test

3. **Association Between Categorical Variables**

   3.1 Two-way tables

   3.2 Joint distributions; marginal distributions; independence.

   3.3 The Chi–Squared test for independence

Relevant chapters and sections in the text:

- Chapter 5 on *Sampling Distributions*
- Section 6.1 on *Estimating with Confidence*
- Chapter 9 on *Analysis of two–way tables* and *Goodness of Fit*

Relevant chapters in the Class Notes:
Chapters 4, 5, 6 and Appendix A

Important Concepts

Binomial distribution; the Central Limit Theorem; the normal distribution; the Chi–Squared distribution; confidence interval estimates; goodness of fit; two–way tables.

Important Skills

1. Know how to obtain confidence intervals for means and proportions
2. Know how to perform a goodness of fit test
3. Know how to Chi–Squared test of independence