Tentative schedule

- **Lecture 01** - Arrangements with/without repetition. Ex 1, 2, 7, 9 from chapter 1.
- **Lecture 02** - Permutations with/without repetition, combinations without repetition. Ex 9 (again), 13, 14, 16, 19, 21 from chapter 1.
- **Lecture 03** - Combinations with repetition. Ex 25, 28, 31 from chapter 1. Sample space, events, axioms of probability.
- **Lecture 04** - Inclusion-exclusion identity. Ex 10, 12, 15, 17 from chapter 2.
- **Lecture 05** - Computing a probability using a partition, number of subsets of a set. Ex 18, 20, 25, 33, 38 from chapter 2.
- **Lecture 06** - Inclusion-exclusion identity. Ex 42, 46 (birthday problem), 52, 54 from chapter 2 (Homework 1 due: Ex 3, 8, 10, 15, 17, 20, 29, 32 from chapter 1).
- **Lecture 07** - Conditional probability, computing a probability by conditioning on a partition. Bayes’ formula. Ex 1, 7, 8, 10 from chapter 3.
- **Lecture 08** - Ex 17, 22, 29, 37, 45 from chapter 3.
- **Lecture 09** - Global/pairwise independence. Ex 48, 70, 78 (by partitioning and conditioning) from chapter 3 (Homework 2 due: Ex 13, 16, 43, 45, 55 from chapter 2).
- **Lecture 10** - Random variables, probability mass function, expected value. Ex 4, 14, 20 from chapter 4.
- **Lecture 12** - Ex 40, 49, 78 from chapter 4. Expected value of binomial and geometric random variables (Homework 3 due: Ex 11, 18, 23, 30, 38, 47, 53, 74 from chapter 3).
- **Lecture 13** - Poisson random variable, approximation of binomial by Poisson, rate of occurrence. Ex 51, 61, 63 from chapter 4.
- **Lecture 14** - Review of chapters 1–3.
- **Lecture 15** - First Midterm Exam (chapters 1–3).
- **Lecture 16** - Review of first midterm exam.
- **Lecture 17** - Density functions, continuous random variables, distribution functions, expected value. Ex 1, 4, 5 from chapter 5.
- **Lecture 18** - Uniform random variable. Ex 8, 11, 13, 31a from chapter 5.
- **Lecture 19** - Exponential random variable, density of a function of a random variable. Ex 31b, 32, 33, 40 from chapter 5 (Homework 4 due: Ex 28, 35, 48, 56, 71, 82 from chapter 4).
- **Lecture 20** - Joint probability mass/density functions, marginals, particular case of independent random variables. Ex 10, 16 from chapter 6.
- **Lecture 21** - Ex 19, 22, 25 from chapter 6.
- **Lecture 22** - Sum of independent Poisson random variables. Ex 27, 32, 12 from chapter 6 (Homework 5 due: Ex 2, 6, 34, 37 from chapter 5).
- **Lecture 23** - Ex 9, 13 from chapter 6.
- **Lecture 24** - Expected value of the sum of random variables. Ex 18, 22 from chapter 7. Ex 2.42, 2.51, 2.72 from ”Introduction to probability models”.
- **Lecture 25** - Computing expected values by conditioning. Ex 3.24, 3.40, 3.44 from ”Introduction to probability models”.
- **Lecture 26** - Review of chapters 4–6.
- **Lecture 27** - Second midterm exam (chapters 4–6).
- **Lecture 28** - Review of second midterm exam.
- **Lecture 29** - Review of chapters 1–3.
- **Lecture 30** - Review of chapters 4–6.

Review material for the exams

**Combinatorial analysis**
- Permutation without repetition: Ex 1.7, 1.10. Permutation with repetition: Ex 1.8, 1.9. Combination with repetition: Ex 1.31, 1.32.

**Axioms of probability**
- Symmetric probability space: Ex 2.15, 2.16. Inclusion-exclusion identity: Ex 2.54, 2.55.

**Conditional probability**

**Discrete random variables**
- Find probability mass function/expected value of general discrete random variables: Ex 4.28. Identify classical random variables in concrete experiments: Ex 4.48, 5.4, 4.61, 4.71.

**Continuous random variables**
- Compute probabilities, distribution function and expected value from the density function: Ex 5.4, 5.8. Find density function from distribution function: Ex 5.37, 5.40.

**Jointly distributed random variables**
- Compute probabilities/marginals using the joint density function: Ex 6.10, 6.13, 6.22. Find joint density function of independent random variables (product): Ex 6.13, 6.27.