Material from ASV
February 1, 2018

The book of Anderson, Seppäläinen, and Valkó, is somewhat more comprehensive than the 302 lectures, and while I can recommend to read the whole book, the following parts of it are particularly close to what has been covered in the lectures, and are recommended material. The suggested exercises are advanced (exercises with star even outside the scope of the lecture), and are meant for people who are not challenged by the weekly assignments. Do not attempt them before you have spent sufficient time on the assignments.

**Week 1.**
Wednesday: Examples 1.6 and 1.7. See also appendix B for set theory. Exercise 1.3, 1.29(a)
Friday: Definition 1.1, Fact 1.8 and the paragraph before it, Remark 1.9, Section 1.4 until (including) Fact 1.23. Exercise 1.14, 1.42, 1.57*, 1.61*, 1.63*

**Week 2.**
Monday: Section 1.2 and Appendix C. We also mentioned sampling with replacement, without order. Exercise 1.29(b), 1.40, 1.56*
Wednesday: Section 1.2 and appendix C. Exercise 1.39, 1.49, 1.52
Friday: We discussed applications of urn problems, namely finding the probability of a faulty election to have produced the wrong winner, and a probabilistic strategy to estimate the number of balls in an urn of unknown size (maximum likelihood estimator). These are treated in detail only in later chapters of ASV. You may want to read the section “Hypergeometric distribution” starting on page 65, however.

**Week 3.**
Monday: Example 2.44 and pages 43-44. Exercise 2.3, 2.82
Friday: Pages 47-54. Exercise 2.60, 2.77

**Week 4.**
Monday: Exercise 2.85.
Wednesday: Section 1.5, section 2.4. Exercise 2.64, 2.78, 2.83, 2.88
Friday: Negative Binomial Distribution: Definition 7.6 and Example 7.7.

**Week 5.**
Monday: Section 3.3 until (including) Example 3.25. Exercise 3.12 (challenge*: also show the normalization property), 3.51
Wednesday: Formulas (3.24), (3.27), Definition 3.44, Fact 3.48, Fact 3.52, Equation (8.4). Exercise 3.15, 3.56, 3.57, 3.58, 3.74

(Updated regularly)