Introduction to Probability
(Spring 2018 schedule)

Textbook: Anderson/Seppäläinen/Valkó, *Introduction to Probability* (ISBN 9781108415859)

NOTE: This schedule is subject to change.

Book Chapter	**Sections**	**Homework, Evaluations, Schedule**
Appendix A-D **Ch 1: Experiments with random outcomes**	Things to know from calculus; Set notation and operations; Counting; Sums, products, and series Sample spaces and probabilities; Random sampling; Infinitely many outcomes; Consequences of the rules of probability; Random variables: a first look	**B.1-7** **C.1-9, 11-13, 18, 19** **D.1-5, 9** **1.1-3, 5-7, 9-17, 20, 23, 27, 31-33, 36** **Quiz #1: Wed, Feb 7 (class #4)**
Ch 2: Conditional probability and independence	Conditional probability Bayes' formula Independence Independent trials	**2.1-13, 20, 21, 23, 25, 26** **(Tue, Feb 20 is a Mon schedule)** **Quiz #2: Wed, Feb 21 (class #7)**
Ch 3: Random variables **Appendix E**	Probability distributions of random variables Cumulative distribution function Expectation; Variance; Gaussian distribution Table of values for $\Phi(x)$	**3.1-10, 15-18, 23** **Quiz #3: Wed, Mar 7 (class #11)** **Exam #1: Wed, Mar 14 (class #13)**
Ch 4: Approximations of the binomial distribution **Appendix F**	Normal approximation; Law of large numbers Applications of the normal approximation Poisson approximation Exponential distribution Table of common probability distributions	**4.1-10, 13, 14, 16, 17, 21, 23** **Quiz #4: Mon, Mar 26 (class #16)**
Ch 5: Transforms and transformations	Moment generating function Distribution of a function of a random variable	**5.1-11, 16** **(Spring Recess: Mar 30-Apr 8)**
Ch 6: Joint distribution of random variables	Joint distribution of discrete random variables Jointly continuous random variables Joint distributions and independence	**6.1-11, 14, 15** **Quiz #5: Mon, Apr 16 (class #19)**
Ch 7: Sums and symmetry	Sums of independent random variables Exchangeable random variables	**7.1-8, 11-13, 21, 22** **Exam #2: Mon, Apr 30 (class #23)**
Ch 8: Expectation and variance in the multivariate setting	Linearity of expectation; Expectation and independence; Sums of moment generating functions; Covariance and correlation; The bivariate normal distribution	**8.1-10, 13-16, 19, 21, 31** **Quiz #6: Wed, May 9 (class #26)**
Ch 9: Tail bounds and limit theorems	Estimating tail probabilities (Markov, Chebyshev inequalities) Law of large numbers; Central limit theorem Monte Carlo method	**9.1-7, 9-12, 17**
Ch 10: Conditional distribution	Conditional distribution of a discrete random variable Conditional distribution for jointly continuous RVs Conditional expectation	**10.1-6, 8, 9, 11, 13, 15, 16** **Quiz #7 (if time)**
FINAL EXAM		**FINAL EXAM**