



THE OHIO STATE UNIVERSITY

STAT 3201

Introduction to Probability for Data Analytics (24997)

Autumn 2026

Syllabus - Instructor Information

Oksana Chkrebtii

Professional Qualifications

PhD, Statistics, Simon Fraser University

MSc, Probability and Statistics, Carleton University

BMath Combined Honours, Statistics and Economics, Carleton University

Syllabus - Required or Recommended Readings

The required textbook for this course is:

Mathematical Statistics with Applications (7th edition), by Wackerly, Mendenhall, and Sheaffer

This textbook is also available online via the CarmenBooks links in the Carmen course menu. Textbook content will be supplemented with additional material. For computing with R, I recommend the online textbook:

Introduction to Probability and Statistics using R, by Kerns; available online at <https://ipsur.r-forge.r-project.org/book/download/IPSUR.pdf>

Syllabus - Course Schedule

Week	Topics / Materials	# of lectures	Notes
Week 1	Course introduction. Introduction to R. Installation of R and basic use (1.1–1.2).	2	Classes begin on Wednesday
Week 2	More on the basics of R. Summarization of data, graphical and numerical summaries. From summarization of a sample to inference about a population (1.3–1.6). Basics of probability: definitions and formal mathematics for probability (2.1–2.2).	3	-

Week	Topics / Materials	# of lectures	Notes
Week 3	Probability models for discrete data. Calculating a probability (2.3–2.5).	2	Monday is Labor Day; no class
Week 4	Counting methods. Conditional probability (2.6–2.7).	3	-
Week 5	Bayes' rule. Strategies for computing probabilities. Examples (2.8–2.13).	3	-
Week 6	Discrete random variables. Probability mass function, mean and variance. Bernoulli distribution (3.1–3.3).	3	-

Week	Topics / Materials	# of lectures	Notes
Week 7	Exam 1. Named discrete random variables: Binomial, Geometric, Negative Binomial, and Hypergeometric distributions (3.4–3.7).	3	One lecture devoted to Exam 1. Exam: Monday, Oct. 5
Week 8	Poisson distribution. Continuous random variables. Probability density function. Computing probabilities (3.8; 4.1–4.2).	2	Friday is Fall Break; no class
Week 9	Continuous random variables—mean and variance. Named continuous distributions. Uniform distribution. Normal (Gaussian) distribution (4.3–4.5).	3	-

Week	Topics / Materials	# of lectures	Notes
Week 10	Named continuous distributions. Exponential distribution. Gamma distribution. Beta distribution (4.6–4.7).	3	-
Week 11	Functions of random variables. Method of distribution functions. Method of transformation (6.1–6.4).	3	-
Week 12	Catch up. Exam 2.	2	One lecture devoted to Exam 2. Wednesday is Veterans Day. Exam: Friday, Nov. 13
Week 13	Sampling distributions. Simulations. The Central Limit Theorem (7.1–7.3).	3	-

Week	Topics / Materials	# of lectures	Notes
Week 14	Bivariate probability distributions. Computing probabilities. Marginal and conditional distributions (5.1).	1	Wednesday and Friday are Thanksgiving Break; no class
Week 15	A random sample (independent random variables) (5.2–5.4).	3	-
Week 16	Covariance and correlation. Conditional expected values (5.7, 5.11).	2	-
Final Exam	Comprehensive final exam	-	As scheduled by the registrar, in the regular classroom. Wednesday December 16, 2:00pm-3:45pm

Syllabus - University Policies

Office of Undergraduate Education - Standard Syllabus Statements

- [Academic Misconduct](#)

- [Religious Accommodations](#)
- [Accommodations for Disability and Illness](#)
- [Intellectual Diversity](#)
- [Grievances and Solving Problems](#)
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