Math 5651
Basic Theory of Probability and Statistics, Spring 2025 (Section 1)

SYLLABUS

Time and Place:	10:10 am - 12:05 pm TTh (01/21/25 - 05/01/25) Appleby Hall 319
Text:	M. H. DeGroot, M. J. Schervish. Probability and Statistics. 2012 Addison-Wesley, Fourth Edition.
Instructor:	Sergey G. Bobkov (Vincent Hall 228, bobkov@math.umn.edu)
Teaching Assistant:	Ratul Biswas (Vincent Hall 454, biswa087@umn.edu)
Office hours:	2:30 pm - 3:45 pm MW (with TA in Vincent Hall 454)

5651. **Basic Theory of Probability and Statistics**.
Elementary Probability: Basic concepts, classical probability, combinatorial methods, conditional probability, independent events, Bayes' theorem. Random variables: distribution, expectation, moments, variance, moment generating function. Random vectors: marginal distribution, functions of random variables. Special distributions. Poisson approximation. The law of large numbers. The central limit theorem.

WEEK	DATES	MATERIAL (preliminary distribution)
1	01-21 to 01-23	Introductory remarks, sections 1.4, 1.5, 1.6
2	01-28 to 01-30	1.7, 1.8, 1.9, 1.10
3	02-04 to 02-06	2.1, 2.2, 2.3
4	02-11 to 02-13	3.1, 3.2, 3.3
5	02-18 to 02-20	Tuesday: Test 1; 3.4, 3.5
6	02-25 to 02-27	3.6, 3.7, 3.8
7	03-04 to 03-06	3.9, 4.1, 4.2
8	03-11 to 03-13	Spring break
9	03-18 to 03-20	4.3, 4.4, 4.5
10	03-25 to 03-27	4.6, 4.7, 5.2
11	04-01 to 04-03	5.3, 5.4, 5.5
12	04-08 to 04-10	Tuesday: Test 2; 5.6, 5.7
13	04-15 to 04-17	5.8, 5.9, 5.10
14	04-22 to 04-24	6.2, 6.3
15	04-29 to 05-01	Review; Thursday: Test 3

Tests:	Tuesday, February 18, 2025
	Tuesday, April 7, 2025
	Thursday, May 1, 2025
Homeworks:	You will have 4 homeworks due on February 11, March 4, April 1, and April 22, 2025
Composition of grade:	Tests – 60%, homeworks – 40%. Every test is graded in the range of 20 points. Every homework is graded in the range of 10 points.

Homework Assignments Spring 2025

1	Due on February 11	Section 1.4	7
		Section 1.5	3, 4
		Section 1.6	1, 6
		Section 1.7	5, 7
		Section 1.8	4
		Section 1.9	7
		Section 1.10	1, 5
		Section 2.1	6
		Section 2.2	9, 12
		Section 2.3	5
		Section 2.5	3
2	Due on March 4	Section 3.1	2, 4
		Section 3.2	4
		Section 3.3	4, 6
		Section 3.4	4
		Section 3.5	3, 10
		Section 3.6	3, 6
		Section 3.7	1
		Section 3.8	4, 8
		Section 3.9	4
3	Due on April 1	Section 4.1	3, 8
		Section 4.2	3
		Section 4.3	7
		Section 4.4	3, 8
		Section 4.5	2, 3
		Section 4.6	12, 13
		Section 4.7	2, 7
		Section 4.9	4
		Section 5.2	6, 8
4	Due on April 22	Section 5.3	4
		Section 5.4	8, 14
		Section 5.5	2, 6
		Section 5.6	2, 11
		Section 5.7	2, 3, 4
		Section 5.8	5
		Section 5.9	6
		Section 6.2	6
		Section 6.3	2