STAT 3502B: Probability and Statistics

Term & Section **Instructor** **Email** **Office hours**	Winter 2021, Section B Dr. Mohamedou Ould Haye mohamedouhaye@cunet.carleton.ca By appointment only (on zoom).

All classes are live on zoom. No recordings
Invitations will be sent out via culearn. Tutorials are on BBB.

Timetable	The course involves 3 hours of lectures and one hour tutorial per week. Tutorials will start **the week of January 25, 2021.**
Assignments	There will be **four** assignments with specific due dates. All assignments count towards the term mark. Late assignments will not be accepted.
Calculators	Only non-programmable calculators may be used for the tests and final exam.
Midterm, final exam and assignments policies	There will be **three** 1-hour quizzes during tutorial time (10:30-11:30) on Thursday Feb. 25, March 11 and 25. There will be no make-up, early, or delayed tests; exceptions will be made in accordance with the university academic accommodation policies (see below). If you miss a test you will receive a zero unless you provide your instructor with a proper documented reason (e.g., medical) within one week, in which case the weight of that test will be shifted to the final exam. The same rule applies to each assignment. **Final exam:** 3 hours**.** The time and date TBA by Carleton University.

Final exam and quizzes are all multiple choice.

Grading	Final exam: 50%. Quizzes: 30%. Assignments: 20%.
Textbook	Probability and Statistics for Engineering and Sciences. 9th edition. By Jay L. Devore. Student Solutions Manual (SSM), by Mathew A. Carlton.
Note	Culearn provides course information and contact information, updates, quizzes, Final, assignments and their solutions, as well as problem sets to be discussed in tutorials, and some practice problems following the end of each chapter.

Paul Menton Centre: Students with disabilities requiring academic accommodations in this course must contact a coordinator at the Paul Menton Centre for Students with Disabilities to complete the necessary Letters of Accommodation. After registering with the PMC, make an appointment to meet and discuss your needs with your instructor in order to make the necessary arrangements as early in the term as possible, but no later than two weeks before the first assignment is due or the first test requiring accommodations. Please note the deadline for submitting completed forms to the Paul Menton Centre is **March 19, 2021**.

Academic Accommodation: You may need special arrangements to meet your academic obligations during the term because of disability, pregnancy or religious obligations. Please review the course outline promptly and write to your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. It takes time to review and consider each request individually, and to arrange for accommodations where appropriate. Please make sure you respect these timelines particularly for in-class tests, midterms and final exams. You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at http://carleton.ca/equity/accommodation

STAT 3502B **Approximate weekly outline** **Winter 2021**

Week	Topics	Text sections
1	Random experiment, sample space, events, axioms of probability, rules of probability, counting methods, conditional probability	2.1-2.4
2-3	Conditional probability cont. and independence; Bayes' theorem; Random variables and discrete probability distributions; probability (mass) function; distribution function; expected values and variances of discrete random variables; rules of expected values and variances.	2.4,2.5,3.1-3.3
4	Special discrete distributions: binomial, hypergeometric, geometric, negative binomial, Poisson. Poisson process.	3.4-3.6
5	Continuous random variables and their probability distributions; probability density function; distribution function; expected values and variances of continuous random variables, normal distribution; normal approximation to discrete distributions.	4.1-4.3
6	Gamma distribution; exponential distribution and its relationship with Poisson distribution;	4.4
7	Joint distributions; independent random variables; expected values, covariance, and correlation.	5.1-5.2
8	Sums of random variables; Central Limit Theorem; statistics and their sampling distributions; distribution of the sample mean; distribution of a linear combination.	5.3-5.5
9	Point estimation: definition of a point estimator, desirable properties of a point estimator (unbiasedness, minimum variance, consistency), methods of point estimation.	6.1-6.2
10	Interval estimation: definition of a confidence interval, interpreting confidence interval, large-sample confidence intervals, t distribution, small-sample estimation, confidence intervals for the mean of a normal distribution, chi-square distribution, confidence intervals for the variance of a normal distribution.	7.1-7.4
11	Statistical hypothesis; null and alternative hypotheses; critical and acceptance regions; test procedure; type I error; type II error; level of significance; p-value; power of a test; power function of a test.	8.1,8.4
12	Tests about population mean; tests for population proportion; two sample tests about population mean. Z-tests and t-tests.	8.2-8.3, 9.1-9.2

Warning: The above weekly schedule is subject to change. Make sure you keep up to date with any changes in order of presentation, etc.

Important 2020-2021 University dates and deadlines including Winter break can be found at https://carleton.ca/registrar/registration/dates-and-deadlines/