# McGill University
# Department of Mathematics and Statistics
# MATH 323 (Probability Theory)

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**Instructor:** Sanchayan Sen
**Office:** Burnside Hall, Room 1209
**Office hours:** Tuesday 15:00–18:00 (starting 17 January, 2017)
**Email:** sanchayan.sen1@gmail.com
**Lectures:** Tuesdays and Thursdays, 13:05–14:25
**TA:** James McVittie, Office: Burnside Hall, Room 1018
**TA's email:** james.mcvittie@mail.mcgill.ca
**Tutorial hours:** Wednesdays 13:00–14:00 in Burnside Hall, Room 1214
**TA's office hours:** Will be confirmed
**Textbook:** Mathematical Statistics with Applications (7th Edition) by *Dennis Wackerly, William Mendenhall, and Richard L. Scheaffer*.

**Grading scheme:**

| | Formula 1 | Formula 2 |
|---|---|---|
| **Assignments:** | 15% | 15% |
| **Midterm:** | 25% | 0% |
| **Final exam:** | 60% | 85% |

**Final Mark:** is the greater of the marks computed from these two formulas.

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

**Course outline:** The objective of this course is to get a broad idea about some frequently used probability models and to learn some basic results and techniques in probability theory. Most of the material for the course will be drawn from the first seven chapters of the textbook. The book does not, however, contain everything we intend to cover in this course, but they will be discussed in the class.
**Topics:** Sample spaces, events, probability and conditional probability, Bayes' Theorem, independence, discrete and continuous random variables, multivariate distributions, expectation, Chebychev's theorem, Chernoff's bound, law of large numbers, moment generating functions, special probability distributions including the binomial, Poisson, geometric, hypergeometric, multinomial, and normal distribution, functions of random variables, central limit theorem.

**Assignments:** There will be four assignments. The due date for each assignment will be clearly specified and strictly enforced.

**Midterm exam:** The midterm exam will be scheduled either in the second or the third week of February. Details will be confirmed soon. There will be no re-take for the midterm. If you miss the midterm exam, your final mark will be calculated using Formula 2.

- RIGHT TO SUBMIT IN ENGLISH OR FRENCH WRITTEN WORK THAT IS TO BE GRADED:

  In accord with McGill University's Charter of Students, Rights, students in this course have the right to submit in English or in French any written work that is to be graded. The right

applies to all written work that is to be graded, from one-word answers to dissertations, except in courses in which acquiring proficiency in a language is one of the objectives.

- ACADEMIC INTEGRITY STATEMENT REQUIRED ON COURSE OUTLINES:

  McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/integrity for more information).