

**UNIVERSITY OF TORONTO SCARBOROUGH**  
**Department of Computer and Mathematical Sciences**  
**STAB52H3 Introduction to Probability Summer 2017**

**Course Description:** STAB52 is a mathematical treatment of probability. In this course we discuss the mathematics that underlies most statistical methodology. The topics covered include: the probability model, density and distribution functions, computer generation of random variables, conditional probability, expectation, sampling distributions, weak law of large numbers, central limit theorem, Monte Carlo methods, Markov chains, Poisson processes, simulation, and applications.

Content, emphasis, etc. of the course is defined by means of the lecture material - not only the textbook. It is important to attend all lectures, as there is normally no simple way to make up for missed lectures (perhaps obtain another student's notes). There will also be many lecture examples using R statistical software, which students will be using.

**Important announcements, problem sets, additional examples, and other course info will be posted on blackboard and on course homepage. Check them regularly.**

**Instructor:** Mahinda Samarakoon

**E-mail:** mahinda@utsc.utoronto.ca

Note 1: When sending e-mail to an instructor, please use your U of T e-mail address.

Note 2: Depending on e-mail volume, I might not be able to reply to every email received.

**Office:** IC442

**Office hours:** Tue, Thu, Fri 12:00-13:00 and Wed 11:00-12:00 in IC404 (On some days, we will spend a part of the office hours in the classroom if the class is available after the lecture )

**Lectures:**

LEC01: 10-12 on Tuesdays in SY110 and 11-12 on Thursdays in IC130

LEC02: 10-11 on Wednesdays in IC130 and 10-12 on Fridays in IC130

**Webpage:** <http://fisher.utstat.utoronto.ca/~mahinda/stab52/STAB52.html>

**The textbook:** Probability and Statistics: The Science of Uncertainty by Michael J. Evans and Jeffrey S. Rosenthal, 2nd edition, published by W.H. Freeman.  
**Software:** We will use R for computations

## Tutorials

- Tutorials start from the second week of lectures (i.e. week starting from May 8). In preparation for tutorial, you should do the weekly assignment, posted on the web page.
- There will be a quiz in each tutorial.
- During quizzes, you can refer to your notes and/or the textbook.
- I drop your worst quiz when calculating your tutorial grade.
- You **must** write quizzes in the tutorial for which you are registered. If you write a quiz in a tutorial other than the one you are registered for, the grade for that quiz will be *zero*.

## Calculators

Hand calculators are cheap and useful. You need a calculator for test, exam and quizzes. Any cheap one with a square root and one memory button will do. Mean, standard deviation, sum, and sum of squares keys may save you a bit of time on occasion, but we do not recommend the purchase of expensive calculators to get keys with special statistical calculations. Tests and exams will be designed so that those calculators give no advantage. We emphasize the use of R software for doing any tedious or complex calculations. However, **it is important to have a calculator during tutorials/test/exam.**

## Missed Tests

There are **no make up tests or quizzes** in this course. If the test is missed for a valid reason, you must submit appropriate documentation to the course instructor **within one week of the test**. Print on it your name, student number, course number, and date. **If documentation is not received in time, your test mark will be zero. If a test is missed for a valid reason, its weight will be shifted to the final exam.**

## Assessment

Item	Percentage of grade
Tutorials ( based on quizzes)	15%
Midterm Test (a two-hour (approx.) test on a date to be announced)	30%
Final Exam (a three-hour final exam (comprehensive))	55%

## **Computing**

Students will be using, R for computing for computations. No previous computing experience is assumed.

## **Blackboard**

- Quiz grades, announcements etc. will be on Blackboard.
- Any problems with recording of marks should be brought to the attention of your TA (quizzes) or Instructor (exams). Contact the instructor if you cannot resolve problems with your TA.

## **ACCESSABILITY STATEMENT**

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. I will work with you and AccessAbility Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. The UTSC AccessAbility Services staff (located in S302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or [ability@utsc.utoronto.ca](mailto:ability@utsc.utoronto.ca).

## **ACADEMIC INTEGRITY STATEMENT**

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

**IN PAPERS AND ASSIGNMENTS:** Using someone else's ideas or words without appropriate acknowledgement. Submitting your own work in more than one course without the permission of the instructor. Making up sources or facts. Obtaining or providing unauthorized assistance on any assignment.

**ON TESTS AND EXAMS:** Using or possessing unauthorized aids. Looking at someone else's answers during an exam or test. Misrepresenting your identity.

**IN ACADEMIC WORK:** Falsifying institutional documents or grades. Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes. All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see <http://academicintegrity.utoronto.ca/>).

## STAB52 - TENTATIVE LECTURE GUIDE

Week	Readings	Problems
1	1.1-1.4	1.2.1, 1.2.4, 1.2.6, 1.2.9, 1.3.1, 1.3.4, 1.4.2, 1.4.8, 1.4.16
2	1.5-1.6	1.5.2, 1.5.3, 1.5.9, 1.5.12, 1.6.4
3	2.1 - 2.3	2.1.1, 2.1.4, 2.2.2, 2.2.5, 2.2.8, 2.3.2, 2.3.5, 2.3.9, 2.3.13
4	2.4 - 2.5	2.4.1-2.4.7, 2.4.10, 2.4.16, 2.5.1, 2.5.5, 2.5.7, 2.5.9, 2.5.12, 2.5.13, 2.5.17
5	2.6	2.6.1, 2.6.3, , 2.6.5, 2.6.7, 2.6.12
6	2.7	2.7.1, 2.7.3, 2.7.4, 2.7.9
7	2.8	2.8.1, 2.8.3, 2.8.5, 2.8.7, 2.8.13, 2.8.15
8	3.1, 3.2	3.1.1-3.1.7, 3.1.11, 3.2.1, 3.2.3, 3.2.5, 3.2.7, 3.2.9, 3.2.12
9	3.3-3.5	3.3.1, 3.3.3, 3.3.5, 3.3.7, 3.3.11, 3.3.13, 3.4.1, 3.4.3, 3.4.5, 3.4.13, 3.4.22, 3.5.1, 3.5.3, 3.5.11
10	3.6, 4.1 - 4.3	3.6.1, 3.6.3, 3.6.9, 3.6.11, 4.1.3, 4.1.4, 4.1.7, 4.2.1, 4.2.4, 4.2.10, 4.3.1, 4.3.2
11	4.4, 4.6	4.4.1, 4.4.4, 4.4.6, 4.4.9, 4.4.13, 4.6.1, 4.6.3, 4.6.6
12	11.1	11.1.1, 11.1.3, 11.1.7