STAT 4200
Statistical Inference 2 (A01)
Winter Term 2013

Class Time	Monday / Wednesday 1:00 p.m. - 2:15 p.m.
Tutorial Time	Friday 1:00 p.m. - 2:15 p.m.
Location	316 Machray Hall
CRN	22797
Instructor	Dr. Saman Muthukumarana
Office	327 Machray Hall
	Telephone: 474-6274
	Email: `Saman_Muthukumarana@UManitoba.CA`

Office Hours Monday 9:00 – 10:30 a.m.
Wednesday 10:30 – 12:00 p.m.
(Or by appointment.)

Calendar Description Introduction to methods of hypothesis testing, including asymptotic and Bayesian methods. Not to be held with the former STAT 4140 (005.414).

Prerequisite STAT 4100; or consent of the Department.

Recommended Texts The following textbooks are recommended for reading and extra exercises and these are on 3 hours reserve in the Science Library.

- *Introduction to the Theory of Statistics* (Third Edition),
  A. M. Mood, F. A. Graybill, D. C. Boes, McGraw-Hill (1974).

- *Testing Statistical Hypothesis* (Third Edition),
  Lehmann and Romano, Springer Texts in Statistics (2005).
  A copy of e-book is available from SpringerLink via UoM Library server.

- *Statistical Inference* (Second Edition),
  Casella and Berger, Duxbury/Thompson Learning (2002).

- *Probability and Statistical Inference* (First Edition),
  Nitis Mukhopadhyay, Marcel Dekker (2000).

Assignments Assignments are due at the beginning of class on the due date. Late assignments will not be accepted. You are encouraged to discuss your difficulties with your classmates and me, but final submission must be written independently. Do not copy any part of another student's work. There will be zero tolerance on such incidences.

Midterm Tests The tentative date for mid-term tests are **February 25 and March 22, 2013**. These tests will be 90 minutes in length and there will be no makeup midterms for any reason. If you miss a exam due to a legitimate reason, your exam weight will transfer to the final exam.

Final Exam The final exam covers all course materials and will be 3 hours in length. The exams (including mid terms) are closed book.

Grading Scheme   The final grade will be determined as follows.

Assignments	10%
Mid-term Test 1	20%
Mid-term Test 2	20%
Final Examination	50%

Class Attendance   Lecture notes presented in class itself will make up the course material for the course. In addition, there will be in-class activities that will help you to understand the material. Assignments and extra problems will be discussed in tutorial sessions. So you must attend classes and tutorials regularly to avoid falling behind. The final exam will also resemble in part on problems discussed during classes.

Voluntary Withdrawal   The voluntary withdrawal deadline is **March 20, 2013**.

Course Outline   The course aims to provide a solid understanding of theory of interval estimation and hypothesis testing including following areas.

Interval Estimation

- Introduction, Pivotal Quantity, Methods of Finding Confidence Intervals, Methods of Evaluating Confidence Intervals
- Large Sample and Asymptotic Confidence Intervals, Approximate Maximum Likelihood Intervals
- Bayesian Interval Estimation

Tests of Hypotheses

- Simple Hypothesis verses Simple Alternative, Simple Likelihood Ratio Test, Most Powerful Test, Neyman - Pearson Lemma
- Composite Hypotheses, Generalized Likelihood Ratio Test, Uniformly Most Powerful Tests, Unbiased Tests, Asymptotic Distribution of Generalized Likelihood Ratio Test, Large Sample Tests
- Sequential Tests, Sequential Probability Ratio Test, Bayesian Tests

Academic Dishonesty   You are expected to be familiar with what constitutes academic dishonesty and it's consequences. Academic dishonesty is a serious offence and can be severe as suspension or expulsion from the University. More details of these terms and related issues are available at:
www.umanitoba.ca/science/undergrad/resources/webdisciplinedocuments.html.

Pandemic Advisory   Should major disruptions to university activities occur as a result of a pandemic, the course content, marks breakdown, and other provisions of this document may be adjusted as the circumstances warrant.

Registration Advisory   Important Note from the Dean of Science:
It is your responsibility to ensure that you are entitled to be registered in this course. This means that you:

- have the appropriate prerequisites, as noted in the calendar description, or have an appropriate permission from the instructor to waive these prerequisites;

- have not previously taken, or are concurrently registered in, this course and another that has been identified as "not to be held with" in the course description.

The registration system may have allowed you to register in this course, but it is your responsibility to check. If you are not entitled to be in this course, you will be withdrawn, or the course may not be used in your degree program. There will be no fee adjustment. This is not appealable. Please be sure to read the course description for this and every course for which you are registered.