STAT 3800: Mathematical Statistics, Winter 2011 (A01)

Tentative Course Outline

Instructor:	Brad Johnson
Office:	322 Machray Hall
E-mail:	brad_johnson@umanitoba.ca (**Note**: I will only respond to e-mail from UMNet ID's)
Class-time:	MWF 9:30 a.m. – 10:20 a.m. (316 Machray Hall)
Lab-time:	M 2:30 p.m. – 3:20 p.m. (315 Buller)
Office hours:	WF 10:30 a.m. – 11:30 a.m.

Calendar Description: (Lab Required) Multivariate distributions and transformations, order statistics, sampling distributions, convergence, introduction to statistical inference. Not to be held with the former STAT 3600 (005.360).

Prerequisite(s): Prerequisite: STAT 3400 or the former STAT 3500 (005.350) (C). Prerequisite or Concurrent requirement: Whichever of MATH 2720 (MATH 2721, 136.272) or MATH 2730 (MATH 2731, 136.273) not yet taken.

Course web-page: Course materials will be made available through the Angel Learning system (`https://angel.cc.umanitoba.ca/`).

Textbook: *An Intermediate Course in Probability*. Allan Gut. Springer Texts in Statistics. Springer: New York (2003). [Available free as a SpringerLink e-Book through the library].

Other Resources: Not required. On 2 hour reserve in the Science Library

Introduction to Mathematical Statistics. 6th Edition. Hogg, McKean and Craig. Pearson/Prentice Hall. 2005.

Introduction to Probability and Mathematical Statistics. 2nd Edition. Bain and Engelhardt. Duxbury/Thompson Learning. 1992.

Statistical Inference. Casella & Berger. Duxbury. 2002.

Topics: We will cover the first 6 chapters of the textbook.
- Multivariate Random Variables (transformations, sampling distributions, etc.)
- Conditioning (basically a review).
- Transforms (generating functions, moment generating functions, etc.)
- Order Statistics.
- The Multivariate Normal Distribution (definitions, distribution of quadratic forms, Cochran's Theorem, etc.).
- Convergence (in distribution, in probability, in r-mean, almost sure)
- Other topics as time permits.

2010/11 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.

Midterm Tests:	There will be 2 tests scheduled during the Lab time (Mondays @ 2:30 p.m. - 3:20 p.m. in 315 Buller). Each of these tests is worth 25% of your final grade. The tentative dates are Monday, February 7, 2011 and Monday, March 14, 2011, but these are **subject to change**.
	Note: There will not be any makeup (deferred) mid-term exams for this course. If you miss a mid-term exam, **have a valid excuse**, and **notify me within 48 hours of the scheduled exam**, your final exam will be re-weighted to account for an additional 25% of your final grade per test.
Assignments:	There will be no *formal* assignments for this course. I will, periodically, distribute sets of problems for you to work on. The midterm tests and final examination will be based, in part, on these or similar problems. You are free (and encouraged) to work in groups on these but you must be able to complete the work individually on tests/examinations. Additional problems may be posted to the Angel Learning system (`https://angel.cc.umanitoba.ca/`).
Lab:	Once a week, starting January 18th, there will be a compulsory lab held in 315 Buller (2:30 – 3:20 p.m.). Generally, a teaching assistant will be solving selected problems (taken from the list of supplementary problems) and answering other questions that you might have. **There are two midterm tests during the Lab time.**

Grading Scheme:

Mid-term Test 1	25%
Mid-term Test 2	25%
Final Exam	50%
Total	100%

Voluntary Withdrawal:	The voluntary withdrawal deadline is **March 18, 2011**.
Academic Dishonesty:	It is important that you understand what constitutes academic dishonesty and that you are familiar with the very serious consequences. Links to resources that that describe academic dishonesty (including plagiarism, cheating, inappropriate collaboration and examination impersonation) can be found at: umanitoba.ca/science/student/webdisciplinedocuments.html or through the Faculty of Science home page at: www.umanitoba.ca/science. Typical penalties imposed within the Faculty of Science for academic dishonesty are also described. See also the sections in *THE UNIVERSITY OF MANITOBA UNDERGRADUATE CALENDAR 2009–2010* dealing with academic integrity, including plagiarism, cheating and (im)personation at examinations (Sections 4.2.8 on page 28 and 7 on page 29).
REGISTRATION ADVISORY:	**IMPORTANT NOTE TO STUDENTS FROM THE FACULTY 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 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. For example, BIOL 1000 cannot be held for credit with BIOL 1020. 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 in which you are registered.