

University of Manitoba  
Department of Statistics

## Winter Term – 2014

### STAT 3800

**Course Title:** Mathematical Statistics (CRN: 22059)

**Instructor:** Alexandre Leblanc  
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**Course schedule:** Monday/Wednesday/Friday from 1:30 to 2:30 pm, in 315 Buller.  
(See course calendar on p. 4.)

**Lab schedule:** Monday from 2:30 to 4 pm, in 315 Buller.  
(See course calendar on p. 4.)

**Office hours:** Tuesday from 9:30 to 11:00 am,  
Friday from 10:30 am to 12:00 pm (noon),  
or by appointment.

**Textbook:** Gut, A. (2009), *An Intermediate Course in Probability*, 2<sup>nd</sup> edition, Springer.  
(Textbook available for free on Springer online through the library.)

A copy of the textbook should be available on four-hour reserve at the Science Library.  
Also, copies of

- *A Course in Probability* (Weiss, 2006),
- *Introduction to Mathematical Statistics*, 7<sup>th</sup> edition (Hogg, McKean, Craig, 2013)

are available on four-hour reserve at the Science Library.

**Prerequisites:** STAT 3400 (with a grade of C or better), and a co-requisite of MATH 2720 (or 2721) or MATH 2730 (or 2731), whichever not yet taken.

#### Course material available online:

Course material, including course notes and lists of supplementary problems (some taken from the textbook) will be posted on the JUMP portal. Specific information related to tests and exams will also be posted there.

<b>Breakdown of the marks:</b>	Tests (2)	50%	(2/3 better test – 1/3 other)
	Final Exam	50%	

## **Supplementary problems:**

There are no assignments to be handed in for credit in this course. However, different lists of supplementary problems (some taken from the textbook) will be provided to the students. Each test/exam will ask for at least two problems taken from those lists, in original or slightly modified form.

## **Notes regarding tests and exam:**

- There will be two 90-minute tests, currently scheduled for Monday, February 3 and Monday, March 10, between 2:30 and 4 pm (i.e. during the lab). The location used for writing the tests is yet to be determined.
- The final exam will be held on a date to be selected later by the Registrar's office and will be 3 hours in duration.
- Should you miss a test, you will be assigned a mark of zero unless you
  1. provide a valid excuse with acceptable documentation,
  2. notify me within 48 hours of the scheduled test (phone and e-mail are fine).The other test and the final exam would then respectively count for 25% and 75% of your final mark for the course.
- Should you miss both tests and
  1. provide a valid excuse with acceptable documentation for both tests,
  2. notify me within 48 hours of missing each test,the final exam would then count for 100% of your final mark for the course.
- Make-up tests will not be scheduled.
- Students who miss one test, with or without valid documentation, will be reported to the Dean's office as having incomplete term work. This could have repercussions on their ability to write a deferred exam for the course, should such a deferral be requested.
- Students who miss both tests, with or without valid documentation, will be reported to the Dean's office as having completed no term work. This will have repercussions on their ability to write a deferred exam for the course, should such a deferral be requested.

## **Labs:**

There is a ninety-minute lab every week. Attendance is not obligatory, but is very strongly suggested. Note, however, that the two tests will take place during the lab. Also, the first lab will be replaced by a lecture. (See course calendar on p. 4-5.)

During labs, the teaching assistant will generally be solving selected problems (taken from the list of supplementary problems) and answering other questions that you might have.

### **Brief outline of the covered topics:**

We will normally cover Chapters 1-6 of the textbook. The Introduction Chapter (unnumbered) contains an interesting, yet very formal, review of material that is prerequisite for this course. A solid knowledge of the material covered in STAT 2400 and 3400 is crucial to be successful in STAT 3800.

Time permitting, the units covered in this course will be:

1. Random Vectors, Multivariate Distributions and Transformations
2. Conditioning
3. Transforms – Generating and Characteristic Functions
4. Order Statistics
5. The Multivariate Normal Distribution
6. Convergence and Large Sample Approximations

### **About 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 describe academic dishonesty (including plagiarism, cheating, inappropriate collaboration and examination impersonation) can be found at:

<http://www.umanitoba.ca/faculties/science/undergrad/resources/webdisciplinedocuments.html>

or through the Faculty of Science home page at:

<http://www.umanitoba.ca/faculties/science>

Typical penalties imposed within the Faculty of Science for academic dishonesty are also described.

### **Important note regarding course registration:**

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.

### **Intellectual property of course materials:**

All course notes, lists of problems, tests, exams, practice exams and solutions are the intellectual property of your instructor. Reproduction or distribution of these materials is strictly forbidden without the consent of the Department of Statistics.

**Tentative calendar for the course:**

Note the first lecture is on Monday, January 6 and the last one is on Wednesday, April 9. The first Lab will take place on Monday, January 13. The January 6 lab slot will be used for a regular lecture.

**January 2013:**

Monday	Tuesday	Wednesday	Thursday	Friday
		1	2	3
6 Lecture + Lecture	7	8 Lecture	9	10 Lecture
13 Lecture + Lab	14	15 Lecture	16	17 Lecture
20 Lecture + Lab	21	22 Lecture	23	24 Lecture
27 Lecture + Lab	28	29 Lecture	30	31 Lecture
				13

**February 2013:**

Monday	Tuesday	Wednesday	Thursday	Friday
3 Lecture + Test 1	4	5 Lecture	6	7 Lecture
10 Lecture + Lab	11	12 Lecture	13	14 Lecture
17 Mid-Term Break NO CLASSES	18 Mid-Term Break NO CLASSES	19 Mid-Term Break NO CLASSES	20 Mid-Term Break NO CLASSES	21 Mid-Term Break NO CLASSES
24 Lecture + Lab	25	26 Lecture	27	28 Lecture
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**March 2013:**

Monday	Tuesday	Wednesday	Thursday	Friday
3 Lecture + Lab	4	5 Lecture	6	7 Lecture
10 Lecture + Test 2	11	12 Lecture	13	14 Lecture
17 Lecture + Lab	18	19 Lecture <b>Last Day for VW's</b>	20	21 Lecture
24 Lecture + Lab	25	26 Lecture	27	28 Lecture
31 Lecture + Lab				

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**April 2013:**

Monday	Tuesday	Wednesday	Thursday	Friday
	1	2 Lecture	3	4 Lecture
7 Lecture + Lab	8	9 Lecture <b>Last Day of Classes</b>	10	11 Examination Period
14 Examination Period	15 Examination Period	16 Examination Period	17 Examination Period	18 Examination Period
21 Examination Period	22 Examination Period	23 Examination Period	24 Examination Period	25 Examination Period
28	29	30		

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This document is dated January 2, 2014.