STAT 1000 Section A01

Basic Statistical Analysis 1

Summer 2015

Instructor Zeny Mateo
319 Machray Hall
Telephone: 204-474-6707
Email: Zeny.Mateo@umanitoba.ca

Time MWF 8:30 a.m. – 10:25 a.m.
Location 208 Armes
CRN 30297

Office Hours

Monday	1:00 p.m. – 2:00 p.m.
Tuesday	10:00 a.m. – 11:00 a.m.
Wednesday	1:00 p.m. – 2:00 p.m.

(or by appointment)

Web Pages UM Learn: http://umanitoba.ca/umlearn
Statistics: http://umanitoba.ca/statistics

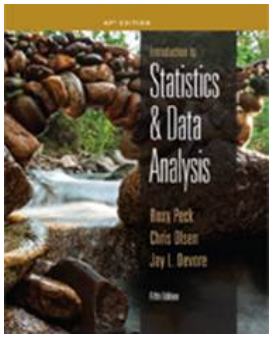
Course Objectives

The main objective of this course is to provide both an understanding of, and hands-on experience with, data. The course focuses on concrete and realistic examples from a wide variety of fields. It is expected at the end of this course, the student should be able to:

- analyze and present the data
- design the experiments and observational studies
- use probabilities to describe and assess random events
- use tests of statistical significance to answer questions of a scientific nature

Textbook & Resources

Peck, Roxy, Chris Olsen, and Jay Devore, *Introduction to Statistics and Data Analysis*, Fifth Edition. Cengage Learning, 2014 (ISBN: 978-1-3056-4983-5). This book has a bundled JMP access code for students who wish to use JMP on their own computers.
This course uses i►clickers for participation marks. Additional resources may be posted on UM Learn.
All course notes, assignments, 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.



Course Content

This course covers material in chapters 1–10 of the textbook with some topics omitted.

Chapter	Title	Page Numbers
1	The Role of Statistics and the Data Analysis Process	1–16
2	Collecting Data	29–68
3	Graphical Methods for Describing Data	80–134
4	Numerical Methods and Describing Data	152–190
5	Summarizing Bivariate Data	202–239; 263–266
Term Test 1	Covers materials in chapters 1–5. The test is on Friday, May 22, 2015 from 5:00 p.m. – 6:30 p.m.	
6	Probability	283–301
7	Random Variables and Probability Distributions	352–366; 381–387; 393–410
8	Sampling Variability and Sampling Distributions	437–456
Term Test 2	Covers materials in chapters 6–8. The test is on Friday, June 5, 2015 from 5:00 p.m. – 6:30 p.m.	
9	Estimation Using A Single Sample	461–496
10	Hypothesis Testing Using a Single Sample	505–510; 516–536
Final Exam	Covers materials in chapters 1–10 with emphasis on chapters 9–10. The exam is on Saturday, June 20, 2015 from 12:30 p.m. – 3:30 p.m.	

The *omitted* topics are:

§5.4	Nonlinear Relationships and Transformations	244–262
§6.4	Conditional Probability	305–315
§6.6	General Multiplication Rule	326–332
§6.7	Estimating Probabilities Empirically Using Simulation	336–343
§7.4	Mean and Standard Deviation of a Random Variable	367–378
§7.5	Geometric Distributions	388–390
§7.7	Normalizing Transformations	411–415
§7.8	Using the Normal Distribution to Approximate a Discrete Distribution	419–422
§10.2	Errors in Hypothesis Testing	510–513
§10.5	Power and Probability of Type II error	539–547

Evaluation

The assignments in this course will be done in UM Learn (formerly Desire2Learn). There will be six assignments, the best five of which will count towards your final grade. Assignments will be **due at 11:59 p.m.** on the respective due dates.

Note that assignment extensions will not be given to individual students.

Your i►clicker must also be registered on UM Learn in order for you to receive participation marks. Your i►clicker participation gets translated to your final marks as follows:

- For every recorded response, you get one point.
- If your response is *correct*, you get a second point.
- Your total score is the sum of all your points, rounded.

0–49%	0 final marks
50–74%	3 final marks
75–100%	5 final marks

You are responsible for bringing your i►clicker to class and ensuring that it has functional batteries. The use of another student's i►clicker constitutes **impersonation** and is **strictly forbidden** under the University of Manitoba's academic dishonesty policy. (See the section on the following page.)

Assignments	10%
i►clicker Questions / Participation	5%
Term Test I	20%
Term Test II	20%
Final Examination	45%

Subject to the caveat in the paragraph below, the following are the minimum percentage grades required to receive each of the various letter grades: A+ (90%), A (80%), B+ (75%), B (70%), C+ (65%), C (60%), D (50%).

There is an **additional requirement** for obtaining a C in the course: **to obtain a grade of C or better, you must obtain at least 50% on the final examination.**

Note that the voluntary withdrawal date is June 9, 2015 (by which time you will have received your marks for the first two term tests and several assignments).

Statistics Help Centre

In room 111 Machray Hall (which contains a number of computers), graduate students and senior undergraduate students in statistics are available to help you at the following times (from May 4 until June 17):

Monday	10:30 a.m. – 12:30 p.m.
Wednesday	10:30 a.m. – 12:30 p.m.
Friday	10:30 a.m. – 12:30 p.m.

Note: The lab will be closed on holidays.

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; as well typical penalties) can be found at:
`http://umanitoba.ca/science/undergrad/resources/webdisciplinedocuments.html`.

See also:
`http://umanitoba.ca/student/resource/student_advocacy/cheating_plagiarism_fraud.html`.

After STAT 1000

After you have completed STAT 1000, you may want to take further courses in statistics, or possibly become a statistician! So, what courses should you take? Here are the options for your next course:

> **STAT 2000 (Basic Statistical Analysis II)** is a continuation of STAT 1000. This course, which is taken by students in many disciplines, covers more advanced statistical methods and leads to further courses in applied statistics. The only requirement to take this course is a grade of C or better in STAT 1000.
>
> **STAT 2400 (Introduction to Probability)** introduces the basic concepts of probability and provides a solid foundation for further courses in mathematical statistics. Applications of probability in many areas are provided, including forensic science, games of chance, genetics, reliability and statistical inference. The prerequisites for STAT 2400 are a grade of C or better in STAT 1000 and in one of MATH 1700 or MATH 1690.

STAT 2000 and STAT 2400 are required courses for the honours or major program in statistics.