



General Course Information

Instructor: Alex Maynard
Email: Available on-line at http://www.amaynard.org/guelphemail.jpg
Web: See Courselink for link to external course home page
Office Location: MacKinnon 741
Office Hours: Tue, Thu 11:30pm-12:00pm outside Rich 2529 after lecture and 3:20pm-3:50pm outside MACS 209 before lecture. provisional and subject to change.
Department/School: Department of Economics and Finance
Class Schedule: Tue, Thu,, 10:00am-11:20am, Rich 2529
Tue, Thu, 4:00pm-5:20pm, MACS 209
Pre-requisites: The prerequisite for this course is a 1000-level university mathematics course. This is required to ensure that you have recent mathematical experience.

Course Description

This goal of this course is to introduce students to both probability theory and statistics, as they are used in business and economics. If we think about most of the important decisions we make in real life, they almost all involve planning for an uncertain future. Probability theory provides an intuitive and powerful tool for thinking about such decisions and consequently plays an important role in fields such as business, finance, economics, and insurance. It also forms the basis for statistics, which offers a meaningful ways to analyse the massive amounts of data available to businesses, governments, and researchers. Statistics is used to inform important decisions in areas as diverse as business marketing, financial asset allocation, pharmaceutical drug testing, monetary policy, and the pricing of insurance premiums, to name just a few examples. This course will prepare students both to conduct and understand the type of statistical analysis that is often critical to successful decision making in business and government.

Indicative Content

Please note that some topics discussed in lecture may not be included in the textbook and some topics in the readings may not be discussed in lecture. In order to do well in this course, it is strongly suggested that you both complete the readings and attend the lectures. It could be a costly mistake to assume that you can use the book as a substitute for the lectures or vice-versa. The following schedule is only approximate. Below is a preliminary list of topics covered. These may be updated as the course progresses. I will set my pace according to the comfort level of the class and may cover either more or less than what is listed below.

Table with 3 columns: Approximate Week, Text book Chapters, Topic. Row 1: 1, 1, What is Statistics

2	2,3	Graphical Statistical Techniques
3	4	Numerical Descriptive Techniques
3	5	Data Collection and Sampling
4	6	Probability
5	7	Random Variables and Discrete Probability Distributions
6	8	Continuous Probability Distributions
7	9	Sampling Distributions
8	10	Introduction to Estimation
9	11	Introduction to Hypothesis Testing
10	12	Inference About a Population
11	13	Inference About Comparing Two Populations
12	16	Simple Linear Regression and Correlation
13	17	Multiple Regression

## Course Assessment

			<b>Associated Learning Outcomes</b>	<b>Due Date/location</b>
<b>Assessment 1:</b>	25%	Data Analysis Assignments	Course Learning Outcomes 1,3,4,6	Between 4-5 assignments in total. Provisional due dates (subject to change) are Mondays Oct 5 <sup>th</sup> , Oct 19 <sup>th</sup> , Nov 2 <sup>nd</sup> , Nov 16 <sup>th</sup> , and Nov 30 <sup>th</sup> .
<b>Assessment 2:</b>	30%	Mid-term Exam	Course Learning Outcomes 2,3,5,6	<i>Friday, Oct 23<sup>th</sup>, 2015, 7-9 pm in Rozanski 104</i>
<b>Assessment 3:</b>	45%	Final Exam	Course Learning Outcomes 2,3,5,6	<i>Wednesday, Dec 16<sup>th</sup>, 8:30AM-10:30AM.</i>
<b>Assessment 4:</b>	0%	Optional problems	Course Learning Outcomes 2,3,5,6	To be covered in lab on the following provisional dates: Sep 17 <sup>th</sup> -18 <sup>th</sup> , Oct 8 <sup>th</sup> -9 <sup>th</sup> , Nov 5 <sup>th</sup> -6 <sup>th</sup> , Nov 19 <sup>th</sup> -20 <sup>th</sup> .

**Total** 100%

## Teaching and Learning Practices

### Lectures

Lectures may be based on a combination of both pre-prepared slides, some of which may be provided on the course web page, and impromptu discussion and blackboard work. The lectures will complement, but not strictly follow, the textbook. There is no substitute for attending lecture. Attendance may be taken for informational purposes, but is not a component of the course mark.

Some of the material covered in lecture is technical in nature and students should not be discouraged if they have trouble understanding the notation or formulas the first time they see them. You will get more out of the lectures if you review the relevant lecture note slides and/or the textbook sections ahead of lecture. It is also recommended that you review your lecture notes with a paper and pencil in hand and that you try your best to work your way through the examples and formulas. Talking your way through the reasoning and intuition is also useful. You should not hesitate to ask questions in class, after class, or during office hours. The instructor and TA(s) are here to help you understand the material.

### Labs

Mrs. Lucia Costanzo, MA, MSc, MLIS, analyst at the Data Resource Centre (DRC) will hold special sessions on September 24-25 in your regularly scheduled labs. Her sessions will explain the resources available to help you find suitable data for your Data Analysis Assignments. Please do not miss this lab/lecture session. The remaining labs will focus on the Data Analysis Assignments near the due dates for the project and on solutions to textbook or old exam questions on other weeks. Attendance may be taken for informational purposes, but is not a component of the course mark.

## Course Resources

### Required Texts:

Gerald Keller, *Statistics for Management and Economics*, Ninth OR Tenth Edition. South Western.

A copy of the textbook has been placed on reserve at the library. Either a new or used copy of the textbook may be used, but note that versions prior to editions 9 and 10 are not supported.

### Other Resources:

Outlines for some of the lecture materials covered in class will be posted on the external class web page. Links and logon information will be provided in Courselink. These lecture/slide outlines are not self-explanatory. You will get the most out of them if you print them out, read them ahead of time, and then bring them with you to class.

## Course Policies

### Data Analysis Project Policies (includes grading policies)

Students are required to form teams of two to complete all the Data Analysis Assignments together. You are free to form your own homework teams, but should do so by the third lecture. If you cannot find a teammate please let your instructor know and he/she will assign you a teammate if possible. Only in

exceptional cases will groups of one or three be permitted.

Each group will work on their own data set, which you will be asked to collect as part of the first assignment. It is important to select a data set on a topic that genuinely interests both teammates.

Assignments must be submitted using Drop Box under Groups on course links. A single copy of the assignment should be submitted with the names and student numbers of all group members included on it. Hard copies may be requested when electronic files are unclear. Please note that software is used to verify the originality of your assignments.

All students will benefit from a 48-hour grace period after the original due date of the data analysis assignments and the lowest assignment mark will be dropped when computing the total assignment grade for the semester. In all but exceptional circumstances, this should allow enough flexibility to accommodate any unforeseen events that could otherwise impact your work. In fairness to the vast majority of students who are responsible in handing in their work on time, a deduction of one mark out of 10 (10% penalty) will be applied on the first minute that the assignment is handed in after the grace period. An additional 2 marks (out of 10) will be deduction will be applied every 24 hours thereafter. Assignments handed in after the end of the grace period must be e-mailed to the appropriate TA, with subject line "ECON\*2740: Late Assignment".

Both teammates are expected to contribute substantively to every assignment and are expected to work collaboratively and to be responsive to each other's e-mails/communications. If a team is not functioning well, either team member may request to disband the team within five calendar days of the official due date of any assignment by sending an e-mail from their own university e-mail address to their teammate's University e-mail address and to my University e-mail address, including the following information: full name of each team-mate including yourself, group number, and brief reason for requesting that the team disband. Requests to disband cannot be made outside of the five day window mentioned above, except if one team-member is non-responsive to e-mails/communications for a period of three days or longer. If the request to disband is approved, both team members must promptly share all work done to date. Thereafter, they will work on the remaining assignments individually. No academic consideration will be given to any student due to the malfunction and/or disbandment of a team. It is each student's responsibility to find a suitable teammate.

### **Midterm Policies (includes grading policies)**

The midterm exam covers all aspects of the course, including the lectures, sections, assignments, and reading. However, some sections of the textbook will be emphasized more heavily than others. The best way to gauge which topics are emphasized is through regular attendance in lecture and lab. Practicing questions from past exams is also highly recommended. These can be found on the course web page.

The midterm for all sections will be held at the same time.

The Midterm will be held out-of-class (see course assessment above). A make up exam will be scheduled for students with a doctor's note or who have notified their instructor by e-mail of a legitimate conflict prior to the exam. Please bring a signed letter with you to the make up exam stating the reason for the missed exam and attaching appropriate documentation (such as a doctor's note). Be sure to keep a photocopy for your records. For students who miss both the midterm and the make up midterm exam, the course assessment will be re-weighted so that the midterm is worth 0% and the final exam is worth 75%. In other words, in this case, the final exam mark will replace the midterm mark.

### **Final Exam Policies (includes grading policies)**

Please also note that the final exam is a cumulative exam. It covers the entire semester and all aspects of the course. You are strongly encouraged to practice questions from old final exams posted on the course web page. The final for all sections will be held at the same time (see course assessment above).

**Optional Problems Policies**

Optional problems from the textbook and/or past exams will be posted on the course web page to help you practice learning the material. These will not be turned in or graded. Some of the problems may be taken up during labs and you are encouraged to come by my office hours if you have questions relating to them. Please note that problems from past exams are more indicative of exam difficulty than textbook problems. Practicing problems from both the textbook and old exams is an important component to learning the material.

**Policy on Re-grade Request**

Any request to remark an exam or assignment must be addressed to your instructor in writing (hard copy) within six weeks and must include the following (i) your name, contact information (telephone and email), and signature, (ii) a clear description of where and why you feel that you were graded in error, and (iii) the following statement exactly as it appears here "In requesting a re-grade I certify that I have not written on, erased, or in any way changed my copy of the exam/assignment since it was handed back to me. I understand that to do so would constitute a serious academic offense. I also understand that my entire exam/assignment will be re-graded (with particular attention paid to the points that I have brought up) and understand that as a result my score on the exam/assignment could fall as well as rise."

## University Policies

### Academic Consideration

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for

Academic Consideration: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

### Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

<https://www.uoguelph.ca/registrar/calendars/undergraduate/2015-2016/>

### Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Centre for Students with Disabilities as soon as possible.

For more information, contact CSD at 519-824-4120 ext. 56208 or email [csd@uoguelph.ca](mailto:csd@uoguelph.ca) or see the website: <http://www.csd.uoguelph.ca/csd/>

### Course Evaluation Information

Please refer to: <https://www.uoguelph.ca/economics/course-evaluation>

### Drop date

The last date to drop one-semester courses, without academic penalty, is **November 6, 2015**. For regulations and procedures for Dropping Courses, see the Academic Calendar:

<https://www.uoguelph.ca/registrar/calendars/undergraduate/2015-2016/>

## Course Learning Outcomes

### Skills:

1. Written communication – As part of the Data Analysis Project, students must describe their data, explain and motivate the statistical analysis to be undertaken and describe and interpret their results.
2. Analytical Problem Solving – Both the textbook and lectures include examples showing how to solve problems in statistics and probability. The optional problems and problems from old exams posted on the course web page provide hands on practice. Both the midterm and final exams include problem solving as a core component.
3. Problem Solving in a Real World Context - Virtually all of the problems that students tackle in this course have direct relevance to real world problems. For example, hypothesis testing has a wide range of applications, such as evaluating a manufacturer's claim that say the average life of its tyres is 90,000 kilometres or examining the claim that household incomes in two cities are identical. The textbook, lectures, optional problems and old exam problems all provide practice with problem solving in a real world context. Both the midterm and final exam include this as core components. The Data Analysis Project provides hands on experience analysing a real world problem of the student's choice with real world data.
4. Computer Skills – For their Data Analysis Project, students use a spreadsheet to analyze data.

### Knowledge and Understanding:

5. Mathematical Methodology (calculus, algebra, optimisation, etc.). Both probability and statistics involve extensive use of mathematics. Thus both the textbook and lectures develop new mathematical concepts and applications. These ideas are reinforced via the optional assignments and questions from old exams and tested on both the midterm and final.
6. Statistical and Econometric Methodology (including basic data analysis, sampling, probability, hypothesis testing, confidence intervals, regression analysis, robustness). Both the lectures and textbook cover basic data analysis, sampling, probability, hypothesis testing, confidence intervals, and regression analysis. These topics are reinforced via the optional assignments and questions from old exams and tested on both the midterm and final. The Data Analysis Projects provides hands on training in the application of this methodology.