



General Course Information

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Office Location MacKinnon 718
Office Hours See Courselink
Department/School Department of Economics and Finance

Class Schedule: Tue, Thu, 1pm-2:20pm, LA 204

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.

Approximate Week	Text book Chapters	Topic
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

			Associated Learning Outcomes	Due Date/location
Assessment 1:	30%	Data Analysis Assignments	Course Learning Outcomes 1,3,4,6	Between 5-7 assignments in total. Each due 1-2 weeks after they are handed out.
Assessment 2:	25%	Mid-term Exam	Course Learning Outcomes 2,3,5,6	<i>Feb 25th</i> in class
Assessment 3:	45%	Final Exam	Course Learning Outcomes 2,3,5,6	<i>Apr 14th</i> , 7-9 PM.
Assessment 4:	0%	Optional problems	Course Learning Outcomes 2,3,5,6	
Total	100%			

Teaching and Learning Practices (*as appropriate*)

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. Most importantly, you should not allow yourself to get discouraged. As with so many things in life, it is essential to keep trying your best even if you face obstacles.

Labs

Labs will be used as informal question and answer periods (group office hours). These will tend to 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.

Course Resources

Required Texts:

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

A copy of the textbook has been placed on reserve at the library.

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 me know and I 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 ten marks (out of 100) will be applied on the first minute that the assignment is handed in after the grace period. An additional 20 mark deduction will be applied every 24 hours thereafter.

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. Practicing questions from past exams is also highly recommended. These can be found on the course web page.

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 midterm is worth 0% and the final exam is worth 70%. 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 covers all aspects of the course. You are strongly encouraged to practice questions from old final exams posted on the course web page.

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 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.

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 promise 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 or see the website: <http://www.csd.uoguelph.ca/csd/>

Course Evaluation Information

Please refer to the [Course and Instructor Evaluation Website](#)

Drop date

The last date to drop one-semester courses, without academic penalty, is **March 11, 2016**. For regulations and procedures for Dropping Courses, see the Academic Calendar:

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

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 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, students learn the statistical foundations of portfolio analysis, which is particularly relevant to students in business and economics. 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.