MOS 2242B Statistics for Management and Organizational Studies

Course Outline: Section – 003 / Winter 2014

Monday 7:00 — 10:00 pm, UCC 146

1. COURSE INTRODUCTION

The purpose of this course is to introduce students to quantitative decision making skills, with an emphasis on analysis techniques in the business world. Topics include: descriptive statistics, probability, hypothesis testing, analysis of variance, correlation and regression, time series forecasting, and survey techniques. This is a 3 lecture hours, 0.5 course.

1.1 Course Goals

Our goal from this course is to:

1. Become more comfortable with data analysis
2. Learn how to quantify and present uncertainty
3. Learn the right questions to ask when presented with a data analysis

Practically speaking, by the end of the course you should be able to:

1. Determine whether men are significantly better paid than women? Or does it depend on other factors?
2. Interpret a marketing survey
3. Design process factors to achieve the greatest impact on quality, speed, and performance of services for a financial services company
4. Understand how demand uncertainty can affect customer satisfaction
5. Calculate a stock's expected rate of return

The other courses that this course is most relevant to include:

1. Marketing Management
2. Operations Management
3. Corporate Finance, Investment Management, Financial Engineering
4. Decision Analysis

1.2 Course Scope And Mission

The objectives of this course are to provide the statistical foundations required to make informed decisions, backed up by data, and acquire concepts to enable you to understand topics, such as

corporate risk, statistical process control, sampling error and forecasting, which will be encountered later in your management and organizational studies.

Concepts of variance, covariance and correlation form a corner stone of decision and portfolio analysis. The aim is to give you intuitive confidence in the use of statistical techniques, leaving the computational aspects to the computer, and to make you a critical user of analyses undertaken by others. The emphasis throughout the course is on concepts, rather than technical detail.

The major part of the course will be devoted to probability distributions, estimation (confidence intervals) and hypothesis testing. These are key concepts in statistical analysis. Because only one variable quantity is considered, these concepts come under the heading "univariate analysis". An example of where a hypothesis test could be used is in testing whether the average monthly return of a security is greater than a given risk-free rate of return.

The last part of the course concentrates on "multivariate analysis" because the focus is on relationships between several variables. For instance, do the returns on a certain stock move in line with market returns?

In general, the main topics to be reviewed include:

- Common probability distributions, such as normal, and binomial
- Analysis of sample data, including estimation, confidence intervals, deciding on sample size
- Detecting relationships in data, and estimating their regression equations
- Covariance, correlation, and regression analysis

1.3 Calendar Description

Antirequisite(s): Biology 2244A/B; Economics 2122A/B, 2222A/B; Geography 2210A/B; Health Sciences 3801A/B; Psychology 2810, 2820E, 2830A/B, 2885; Social Work 2205; Sociology 2205A/B; Statistical Sciences 2035, 2037A/B if taken before Fall 2010, 2141A/B, 2143A/B, 2244A/B, 2858A/B and the former 2122A/B.

Prerequisite(s): 1.0 course or equivalent from Calculus 1000A/B, 1100A/B, 1301A/B, 1501A/B; Mathematics 1225A/B, 1228A/B, 1229A/B, 1600A/B; and enrolment in BMOS.

Senate Regulations state: "Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites".

2. INSTRUCTOR INFORMATION

Instructor: Fouad Hassan-Mirzaei
Office: SSC 4434
E-mail: fhm.phd@ivey.ca
Telephone: 519-661-2111, ext. 86720

2.1 Office Hours

Regular office hours [SSC 4434]:

- Wednesday: 1:00-4:00pm
- The regular office hours will be held between the first day of classes, January 6, and the last day of classes, April 7.

Test office hours [SSC 4434]:

- The details of test office hours to be announced during lectures.

In addition to test office hours, other meeting times are available by appointment.

2.2 Additional assistance

Stats Help Centre

- Available free of charge to Western students (offered by the Dept. of Statistical & Actuarial Sciences)
- WSC 250
- Monday to Friday 8:30am-5:30pm

Tutor Referral Service

- Offered by the Dept. of Statistical & Actuarial Sciences
- http://www.stats.uwo.ca/modules/undergraduate/wrap.php?id=28
- MOS Dept. and the instructor do not maintain a list of tutors

2.3 Means of Communications

From the instructor to students:

- In-class announcements, Western e-mail, Office hours

From students to the instructor:

- Brief in-person discussion before/after class, Office hours, Western e-mail

3. COURSE INFORMATION

Day & time of lectures: Monday. 7:00-10:00pm (3 hours)
Location of lectures: UCC 146

3.1 Textbook

Required: Bowerman, B.L., O'Connell, R.T., Schermer, J.A., & Adcock, J. (2011). Business Statistics in Practice (2nd Canadian ed.). New York, NY: McGraw-Hill. [ISBN 0-07-000237-1]

- No need to bring the textbook to every lecture
- Textbook online resources ("Connect") registration URL: **http://connect.mcgraw-hill.com/class/f_h_mirzaei_winter_2014_section_3**

3.2 Lecture slide book

***Required*:** Tajima, M. Printed by the Custom Course Book (#M10690). Available from the Book Store (UCC, lower level).

- Bring to **every** lecture
- The slide book does not define what is covered in exams. See Section 4 ("Exam Information") for exam coverage information.

3.3 Course Objectives

Rooted in principles of the **evidence-based management (EBM)**, this course will focus on enhancing students' ability to obtain and evaluate statistical evidence, which is critical for making a variety of business decisions and policies.

3.4 Course Format

The course format will consist of lectures. It is expected that students will attend all lectures. ***If students miss a lecture*** for any reason, it is their responsibility to catch up on their own by reading the corresponding textbook sections and doing the corresponding end-of-section exercise questions in the textbook.

Students are strongly encouraged to participate in the classroom discussion. Private discussions that are distracting to others will not be tolerated; and those involved in the distracting private discussion will be asked to finish the conversation outside of the classroom.

3.5 Evaluation

There are 4 exams in this course:

- Test 1 = 10%
- Test 2 = 20%
- Test 3 (midterm) = 30%
- Test 4 (final exam) = 40%.

The Dan Program has a grade policy which states that for courses in the 2000 range, the class average must fall between 65% and 70% for all sections of a course taught by the same instructor. In very exceptional circumstances only, class averages outside this range may be approved by the Assistant Director or the Director. Class averages are not grounds for appeals.

4. EXAM INFORMATION

All exams are multiple choice in format, and are closed book (i.e., students are not allowed to use their own formula sheets or crib notes during the exam).

The coverage for 4 exams is defined by the **textbook sections** (not by the lecture slide book). See the table below ("Section coverage") for which sections are covered in each exam.

Exams are **not cumulative** of previous exam coverage. Hence, students are required to write all four exams in this course.

	Test 1	**Test 2**	**Midterm**	**Final Exam**
% of course grade	10%	20%	30%	40%
Date	Monday, Jan. 20	Monday, Feb. 3	Monday, Mar. 17	Set by the Registrar's Office (during April 11-30)
Time	7:00-8:00pm (1 hour)	7:00-8:30pm (1.5 hours)	7:00-9:00pm (2 hours)	Set by the Registrar's Office (2 hours)
Location	UCC 146 (in-class)	UCC 146 (in-class)	UCC 146 (in-class)	Set by the Registrar's Office
No. of chapters	3	4	3	4
Chapters covered	Chapters: 1, 2 & 3	Chapters: 4, 5, 6 & 7	Chapters: 8, 9 & 14	Chapters: 10, 11, 12 & 16
Section covered (exam coverage)	Sections: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.7, 2.8, 3.1, 3.2	Sections: 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 5.4, 6.1, 7.1, 7.2	Sections: 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 14.1, 14.2	Sections: 10.1, 10.2, 10.4, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 11.10, 11.11, 12.1, 12.2, 12.3, 12.4, 12.5, 12.6, 12.7, 12.8, 16.1, 16.2, 16.6, 16.7
No. of multiple choice questions	20 (7 questions from Ch. 1; 7 questions from Ch. 2; 6 questions from Ch. 3)	20 (5 questions from each of 4 chapters covered)	30 (10 questions from each of 3 chapters covered)	40 (10 questions from each of 4 chapters covered)
Exam total mark	1 mark per question, a total of 20 marks	1 mark per question, a total of 20 marks	1 mark per question, a total of 30 marks	1 mark per question, a total of 40 marks
To be provided on exam paper	The details of test materials to be announced during lectures.			
Type of questions	Each exam will have **both** conceptual and calculation questions. – Definitions/descriptions of terminology, theoretical concepts, analysis methods/procedures, formulas, assumptions, distributions, degrees of freedom, etc. – Graphs and charts: definitions, descriptions, components, process/method of building a graph/chart, interpretation of what the graph/chart shows, etc. – Calculation based on formulas – Interpretation of numbers (e.g., calculation result) – Interpretation of computer output (for Chapters 10, 11, 12 & 16 only) – Understanding of choice of formulas, methods, graphs/charts, etc. (e.g., when and why would you use one formula over another?): pay attention to the type of data/scenario/assumptions			
Review materials	- Review **all** corresponding lecture slides/examples. - Understand **all** corresponding **textbook sections**. - Do **all** corresponding end-of-section exercise questions. - Do **all** corresponding end-of-chapter supplementary exercise questions. ↳ Answers to most odd-numbered questions are provided on pp. 670-677 of the textbook. ↳ Answers to most even-numbered questions are provided on OWL (under "Resources"). *** ***No past exam questions*** are available as review materials.			

4.1 Calculator

Students are allowed to bring calculators to the exams. The calculators must be:

- Non-programmable
- No built-in statistical formulas

The calculators that are not suitable for this course's exams will be removed from the owner. If you are not sure about the suitability of your calculators, please show it to the instructor before the exam for approval.

4.2 Scantron Sheets

Student answers for multiple choice questions will be submitted on a scantron sheet. The students must fill in one and only one oval per question on the scantron sheet. Blank ovals will receive zero marks. Two or more filled ovals will also receive zero marks.

Warning: The scanner may not recognize lightly coloured or half-filled/half-erased ovals and treat them as blanks. The scanner reads the scantron sheet best when the students use quality HB pencils, do not doodle anywhere on their sheets, and use white erasers. It is the students' responsibility to fill in the ovals completely.

Multiple choice questions in the exams will be processed via computer software and may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

4.3 What to Bring

- Student ID
- Quality HB pencils and white erasers
- Non-programmable, no-statistical-formula calculators
- No formula sheets and crib notes
- No dictionaries
- No cell phones on desk or on person during the exam

4.4 Exam Result

Exam marks will be e-mailed individually to students' Western e-mail addresses. Please ensure that your ***Western inbox is not full.***

Exam papers will not be returned to students but may be reviewed in the instructor's office during the office hours.

The weight (i.e., % of course grade) of each exam will **not** be adjusted. Extra assignments to improve grades will **not** be available. Grades will **not** be adjusted on the basis of need.

4.5 Missing Exams

Missed exams will receive **zero marks** unless a legitimate excuse is presented by the student and the student writes a make-up exam that is scheduled by the instructor. If you miss an exam, please follow the steps below:

Step 1: If you miss an exam for any reason, you must e-mail the instructor as soon as you are able about the reason why you missed the exam.

Step 2: Then, you must report to the Social Science Academic Counselling (SSAC) Office (SSC 2105) as soon as you are able with proper documentation.

Step 3: After the instructor receives a notification from the SSAC Office, the instructor will then e-mail you to schedule a make-up exam.

4.6 Make-Up Examinations

There are no predetermined make-up dates in this course, and the make-up exams will not be arranged prior to the original exam date.

A make-up exam will be arranged when there is an **exam conflict**. The university policy states that an exam conflict consists of having **3 exams within 23 hours**.

If it is not feasible to schedule a make-up exam before the next exam, the make-up exam can be scheduled even after the next exam. For example, a make-up for Test 1 should ideally be scheduled before the Test 2 date; if that is not possible (e.g., prolonged illness), the make-up for Test 1 can be written after Test 2 date or even after the Final Exam, as long as the student has the SSAC Office approval.

Students are required to write all 4 exams in this course. The weight (i.e., % of course grade) of each exam will not be adjusted or shifted. A missed exam will receive zero marks unless the student writes a make-up exam.

5. LECTURE SCHEDULE

The following schedule is a guideline only and subject to change due to, for example, extreme weather conditions, etc.

	Date	Chapters	Textbook sections (= exam coverage)
1	Jan. 6	*Introduction to the course* **Chapter 1:** Introduction to Business Statistics **Chapter 2:** Descriptive Statistics	 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 2.1, 2.2
2	Jan. 13	*Test 1 overview* **Chapter 2:** Descriptive Statistics **Chapter 3:** Probability	 2.3, 2.4, 2.5, 2.7, 2.8 3.1, 3.2
3	Jan. 20	**TEST 1 (7:00 - 8:00pm)** **UCC 146**	7 questions from Ch. 1 7 questions from Ch. 2 6 questions from Ch. 3
		Regular lecture **(8:30-10:00pm)** **Chapter 4:** Discrete Random Variables **Chapter 5:** Continuous Random Variables	 4.1, 4.2, 4.3 5.1, 5.2, 5.3, 5.4
4	Jan. 27	*Test 2 overview* **Chapter 6:** Sampling Distributions **Chapter 7:** Confidence Intervals	 6.1 7.1, 7.2
5	Feb. 3	**TEST 2 (in-class, 7:00 - 8:30pm)** **UCC 146**	10 questions from Ch. 4 or 5 10 questions from Ch. 6 or 7
6	Feb. 10	**Chapter 8:** Hypothesis Testing	8.1, 8.2, 8.3, 8.4, 8.5, 8.6
	Feb. 17	Reading Week – No Class	
7	Feb. 24	**Chapter 9:** Statistical Inferences Based on Two Samples	9.1, 9.2, 9.3
8	Mar. 3	**Chapter 9:** Statistical Inferences Based on Two Samples	9.4, 9.5, 9.6
9	Mar. 10	*Midterm overview* **Chapter 14:** Chi-Square Tests	 14.1, 14.2
10	Mar. 17	**MIDTERM (in-class, 7:00 - 9:00pm)** **UCC 146**	10 questions from each of Chapters 8, 9 &14
11	Mar. 24	**Chapter 10:** Experimental Design and Analysis of Variance	10.1, 10.2, 10.4
12	Mar. 31	**Chapter 11:** Correlation Coefficient and Simple Linear Regression Analysis	11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 11.10, 11.11
13	Apr. 7	*Final exam overview* **Chapter 12:** Multiple Regression **Chapter 16:** Time Series Forecasting	 12.1, 12.2, 12.3, 12.4, 12.5, 12.6, 12.7, 12.8 16.1, 16.2, 16.6, 16.7
	During exam period (April. 11-30)	**FINAL EXAM**	**10 questions from each of Chapters 10, 11, 12 & 16**

5.1 Other Important Dates

Jan. 6 Winter term classes begin
Jan. 14 Last day to add MOS 2242B
Mar. 7 Last day to drop MOS 2242B
Apr. 8 Winter term classes end
Apr. 9-10 Study days
Apr. 11-30 Final exam period

5.2 Lecture Preparation

Before coming to the lecture, it is strongly recommended that students **skim** through the corresponding textbook sections. Make a "**question list**" of concepts that you are not sure about. During the lecture, try to get answers for your questions. If your question is not answered, please bring it up during the lecture, after the lecture, or during the office hours.

5.3 Lecture Review

After each lecture, it is strongly recommended that students read the corresponding textbook sections and understand all concepts covered there. It is also strongly recommended that students promptly attempt the corresponding **end-of-section** exercise questions (***not* end-of-*chapter*** supplementary exercise questions — use the end-of-chapter questions as exam review questions).

Answers to most odd-numbered questions are provided on pp. 670-677 of the textbook. Answers to most even-numbered questions are provided on OWL (under "Resources").

6. ACCESSIBILITY

DAN Management and Organizational Studies strives at all times to provide accessibility to all faculty, staff, students and visitors in a way that respects the dignity and independence of people with disabilities. Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may wish to contact Services for Students with Disabilities (SSD) at 661-2111, ext. 82147 for any specific questions regarding an accommodation. More information about "Accessibility at Western" is available at: http://accessibility.uwo.ca.

7. UNIVERSITY POLICIES

Illness

The University recognizes that a student's ability to meet his/her academic responsibilities may, on occasion, be impaired by medical illness. Illness may be acute (short term), or it may be chronic (long term), or chronic with acute episodes. The University further recognizes that medical situations are deeply personal and respects the need for privacy and confidentiality in these matters. However, in order to ensure fairness and consistency for all students, academic accommodation for work representing 10% or more of the student's overall grade in the course shall be granted only in those cases where there is documentation supplied (see below for process) indicating that the student was seriously affected by illness and could not reasonably be expected to meet his/her academic responsibilities.

Documentation shall be submitted, as soon as possible, to the appropriate Dean's office (the Office of the Dean of the student's Faculty of registration/home Faculty) together with a request for relief specifying the nature of the accommodation being requested. These documents will be retained in the student's file, and will be held in confidence in accordance with the University's Official Student Record Information Privacy Policy [http://www.uwo.ca/univsec/handbook/general/privacy.pdf].

Once the petition and supporting documents have been received and assessed, appropriate academic accommodation shall be determined by the Dean's Office in consultation with the student's instructor(s). Academic accommodation may include extension of deadlines, waiver of attendance requirements for classes/labs/tutorials, arranging Special Exams or Incompletes, re-weighting course requirements, or granting late withdrawals without academic penalty.

Academic accommodation shall be granted only where the documentation indicates that the onset, duration and severity of the illness are such that the student could not reasonably be expected to complete his/her academic responsibilities. (Note: it will not be sufficient to provide documentation indicating simply that the student was seen for a medical reason or was ill.) A form to be completed by off-campus physicians is available at: **http://counselling.ssc.uwo.ca/forms/medicalNote.pdf**

Whenever possible, students who require academic accommodation should provide notification and documentation in advance of due dates, examinations, etc. Students must follow up with their professors and their Academic Counselling office in a timely manner.

In the case of a final examination in the course, the student must arrange for a Special Examination or Incomplete through their Dean's office, for which you will be required to provide acceptable documentation.

If you feel that you have a medical or personal problem that is interfering with your work, you should contact your instructor and the Faculty Academic Counselling Office as soon as possible. Problems may then be documented and possible arrangements to assist you can be discussed at the time of occurrence rather than on a retroactive basis. In general, retroactive requests for grade revisions on medical or compassionate grounds will not be considered.

The student must write a make-up exam if the regularly scheduled exam is missed for reasons for which adequate documentation is received by the instructor (this documentation must be supplied by the Academic Counselling office).

University Policy on Cheating and Academic Misconduct

Cheating on exams will not be tolerated; students are referred to the university policy on scholastic offenses (see section 9.0 below). Looking at the test of another student, allowing another student to view your exam, or obtaining information about a test in advance are all examples of cheating. Students found cheating will receive a zero (0%) on that exam. A number of safeguards will be employed to discourage cheating. For example, examination supervisors (proctors) of the tests may ask students to move to another seat during the exam, cover their paper, avert their eyes from other students' papers, remove baseball caps, etc. This is not meant as a personal affront or as an accusation of cheating, rather as vigilant attempts at proctoring. A copy of guidelines about how to avoid cheating can be obtained from the office of the Ombudsperson, Room 251 University Community Centre, (519) 661-3573.

Students are responsible for understanding the nature of and avoiding the occurrence of plagiarism and other academic offenses. Students are urged to read the section on Scholastic Offenses in the Academic Calendar. Note that such offenses include plagiarism, cheating on an examination, submitting false or fraudulent assignments or credentials, impersonating a candidate, or submitting for credit in any course without the knowledge and approval of the instructor to whom it is submitted, any academic work for which credit has previously been obtained or is being sought in another course in the University or elsewhere. If you are in doubt about whether what you are doing is inappropriate, consult your instructor. A claim that "you didn't know it was wrong" will not be accepted as an excuse.

The penalties for a student guilty of a scholastic offense include refusal of a passing grade in the assignment, refusal of a passing grade in the course, suspension from the University, and expulsion from the University.

Procedures for Appealing Academic Evaluations

In the first instance, all appeals of a grade must be made to the course instructor (informal consultation). If the student is not satisfied with the decision of the course instructor, a written appeal must be sent to the Assistant Program Director or Designate of the BMOS program. If the response of the Assistant Director is considered unsatisfactory to the student, he/she may then appeal to the Dean of the Faculty in which the course of program was taken. Only after receiving a final decision from the Dean, may a student appeal to the Senate Review Board Academic. A Guide to Appeals is available from the Ombudsperson's Office.

Support Services

- The Registrar's office can be accessed for Student Support Services at: ***http://www.registrar.uwo.ca***
- Student Support Services ***(including the services provided by the USC listed here)*** *can be reached at:* ***http://westernusc.ca/services/***
- Student Development Services can be reached at: ***http://www.sdc.uwoca***
- Students who are in emotional/mental distress should refer to Mental Health@Western ***http://www.uwo.ca/uwocom/mentalhealth/*** for a complete list of options about how to obtain help."

Short Absences

If you miss a class due to minor illness or other problems, check your course outlines for information regarding attendance requirements and make sure you are not missing a test or exam. Cover any readings and arrange to borrow the missed lectures notes from a classmate.

Extended Absences

If you are absent more than approximately two weeks or if you get too far behind to catch up, you should consider reducing your workload by dropping one or more courses. The Academic Counsellors can help you to consider the alternatives. At your request, they can also keep your instructors informed about your difficulties.

Academic Concerns

If you are in academic difficulty, it is strongly recommended that you see your academic counsellor.

For The University of Western Ontario Senate Regulations, please see the Handbook of Academic and Scholarship Policy at: http://www.uwo.ca/univsec/handbook/