COURSE OBJECTIVE

This course provides an introduction to the application of statistical analysis in managerial decision-making. The concepts of statistical analysis are applied to a variety of topics, including decision-making, estimation by sampling, hypothesis testing, analysis of variance, simple linear and multiple regression.

INSTRUCTOR AND CONTACT INFORMATION

Section 01: M, W 6:30pm – 9:30pm  
Class Location: TBA

Instructor: Dr. Fouzia Baki  
bakif@mcmaster.ca  
Office: DSB 409  
Office Hours: appointment through email

Teaching Assistant: TBA

COURSE ELEMENTS

<table>
<thead>
<tr>
<th>Credit Value</th>
<th>Leadership</th>
<th>IT skills</th>
<th>Global view</th>
<th>Avenue</th>
<th>Ethics</th>
<th>Numeracy</th>
<th>Written skills</th>
<th>Innovation</th>
<th>Group work</th>
<th>Oral skills</th>
<th>Participation</th>
<th>Evidence-based</th>
<th>Experiential</th>
<th>Final Exam</th>
<th>Guest speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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</tbody>
</table>

COURSE DESCRIPTION

Theoretical Coverage:
The main emphasis will be on statistical inference, including confidence intervals, hypothesis testing, regression, and ANOVA.

Business Application Coverage:
Numerous examples will illustrate the practical applications of statistical inference. Emphasis will be placed on avoiding the many pitfalls that exist in applying statistical inference to business and economics. Students will be introduced to Excel.
LEARNING OUTCOMES

This course deals with basic statistical methods, in converting data into information, and further yet - into knowledge. Primary focus is on business related data, but data coming from other sources (e.g., economic, social, etc.) will also be explored, analyzed and discussed. Upon completion of the course, students will be able to:

- describe, summarize and interpret statistical (both qualitative and quantitative) data
- solve problems using appropriate probability theorems
- estimate, test and draw inferences about important characteristics of data
- do hypothesis testing
- use statistical software packages to perform basic analysis of data
- learn relationship between variables using regression analysis

REQUIRED COURSE MATERIALS AND READINGS

Avenue registration for course related materials
- http://avenue.mcmaster.ca

Textbook: Business Statistics (Second Canadian Edition) by Sharpe, De Veaux, Velleman and Wright

Three different packages available in the bookstore. You choose to buy EITHER of them.
1) Sharpe Physical text + MyStatLab
2) Sharpe Loose-Leaf, binder ready version + MyStatLab:
3) MyStatLab + etext (Stand Alone Access)

EVALUATION

Students have two grade schemes to choose from. By the end of second week, students need to know their preferred grade scheme. You may not be able to change this option after second week of classes.

<table>
<thead>
<tr>
<th>Component</th>
<th>Scheme #1</th>
<th>Scheme #2</th>
</tr>
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<tbody>
<tr>
<td>Assignment-submitted through MyStatLab</td>
<td>10%</td>
<td>X</td>
</tr>
<tr>
<td>Midterm 1</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>Midterm 2</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>Final</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>Class Work</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
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</table>

Midterms

Midterms are mandatory. All exams (midterm and final) will have multiple-choice questions and problem solving (not finalized yet). Formula sheets will be provided. Only the use of a
McMaster standard calculator is allowed during midterms and final in this course. See McMaster calculator policy at the following URL: http://www.mcmaster.ca/policy/Students-AcademicStudies/examinationindex.html

Midterm Exams Schedule

<table>
<thead>
<tr>
<th>Midterm</th>
<th>Date</th>
<th>Time</th>
<th>Rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm 1</td>
<td>Wednesday, May 18, 2016</td>
<td>6:30 – 8:30 PM</td>
<td>TBA</td>
</tr>
<tr>
<td>Midterm 2</td>
<td>Wednesday, June 1, 2016</td>
<td>6:30 – 8:30 PM</td>
<td>TBA</td>
</tr>
</tbody>
</table>

Final Exam
Final is mandatory. The final exam will be held on the last day of class. It will be three hour exam starting at 6:30 PM. Final exam will be cumulative unless otherwise notified in class.

Assignments

If you choose to do assignments, you must decide by the second week of class. Assignments are given, and marked through the MyStatLab website, which requires a separate registration process. When you buy your textbook from the bookstore, it will give you access to MyStatLab/ MyLab. You will only need to register once. After the registration process is complete, you will not need to enter the course key again. For technical problems or problems signing in, please send mylab an e-mail by clicking on the "Support" link. Regular assignments will make you better prepared for the tests. There will be assignments problems given through MyStatLab/ MyLab regularly. For this course, regular practice is one of the important keys to learn.

Classes
Class work is one of the components of your final grade. During the classes, Teaching Assistant (TA) and the instructor will help you to work on the given problems. If you have a laptop, please bring it to the class. Please make sure that you have Excel loaded in your laptop. Class works will be group and/individual work. After every class, we are going to collect and grade your work. Before you attend the class, you must go through the slides. Slides will be available under content section of the avenue site.

Grade Conversion
At the end of the course your overall percentage grade will be converted to your letter grade in accordance with the following conversion scheme.

<table>
<thead>
<tr>
<th>LETTER GRADE</th>
<th>PERCENT</th>
<th>LETTER GRADE</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>90 - 100</td>
<td>C+</td>
<td>67 - 69</td>
</tr>
<tr>
<td>A</td>
<td>85 - 89</td>
<td>C</td>
<td>63 - 66</td>
</tr>
<tr>
<td>A-</td>
<td>80 - 84</td>
<td>C-</td>
<td>60 - 62</td>
</tr>
<tr>
<td>B+</td>
<td>77 - 79</td>
<td>D+</td>
<td>57 - 59</td>
</tr>
<tr>
<td>B</td>
<td>73 - 76</td>
<td>D</td>
<td>53 - 56</td>
</tr>
<tr>
<td>B-</td>
<td>70 - 72</td>
<td>D-</td>
<td>50 - 52</td>
</tr>
</tbody>
</table>

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Communication and Feedback

Students who are uncomfortable in directly approaching an instructor regarding a course concern may send a confidential email to Operations Management Area Chair, Dr. Abad (abad@mcmaster.ca) or the Associate Dean (adbusac@mcmaster.ca).

Students who wish to correspond with instructors or TAs directly via email must send messages that originate from their official McMaster University email account. This protects the confidentiality and sensitivity of information as well as confirms the identity of the student. Emails regarding course issues should NOT be sent to the Area Administrative Assistants.

Instructors are required to provide evaluation feedback for at least 10% of the final grade to students prior to Week #4 in the term.

Instructors may conduct an informal course review with students by Week #4 to allow time for modifications in curriculum delivery.

Students who wish to have a course component re-evaluated must complete the following form:

http://www.mcmaster.ca/policy/Students-AcademicStudies/Form_A.pdf

In order for the component to be re-read:

- the component must be worth 10% or more of the final grade in the course
- students pay a fee of $50 in Gilmour Hall #209 and the receipt is then brought to Student Experience - Academic Office (formerly the APO) in DSB 104
- the Area Chair will seek out an independent adjudicator to re-grade the component
- an adjustment to the grade for the component will be made if a grade change of three points or greater on the 12 point scale (equivalent to 10 marks out of 100) has been suggested by the adjudicator as assigned by the Area Chair
- if a grade change is made, the student fee will be refunded

ACADEMIC DISHONESTY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

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It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at www.mcmaster.ca/academicintegrity.

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

**REQUESTING RELIEF FOR MISSED ACADEMIC WORK**

Students may request relief from a regularly scheduled midterm, test, assignment or other course component in the following ways:

a) for absences from classes lasting up to three (3) days; or
b) for absences from classes lasting more than three (3) days.

c) for conflicts arising from Student Experience - Academic Office approved events

**a) For absences from classes lasting up to three (3) days**

Students must use the MSAF (McMaster Student Absence Form). This is an on-line, self-reporting tool, for which submission of medical or other types of supporting documentation is normally not required. Students may use this tool to submit a maximum of one (1) request for relief of missed academic work per term as long as the weighting of the component is worth less than **25%** of the course weight. Students must follow up with their course instructors regarding the nature of the relief within two days of submitting the form. Failure to do so may negate the opportunity for relief. It is the prerogative of the instructor of the course to determine the appropriate relief for missed term work in his/her course. Details are described below.

If the value of the component is worth **25%** or more, students must report to their Faculty Office (the Student Experience – Academic Office for Commerce students) to discuss their situation and will be required to provide appropriate supporting documentation.

Please visit the following page for more information about MSAF: http://academiccalendars.romcmaster.ca/content.php?catoid=13&navoid=2208#Requests_for_Relief_for_Missed_Academic_Term_Work

**b) For absences from classes lasting more than three (3) days**

Students cannot use the MSAF. They MUST report to their Faculty Office (the Student Experience – Academic Office for Commerce students) to discuss their situation and will be required to provide appropriate supporting documentation.

Students who wish to submit more than one request for relief of missed academic work per term cannot use the MSAF. They must report to the Student Experience – Academic Office and discuss their situation with an academic advisor. They will be required to provide supporting documentation and possibly meet with the Manager.

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c) For conflicts arising from Faculty Office approved events

Students unable to write a mid-term at the posted exam time due to the following reasons: religious; work-related (for part-time students only); representing university at an academic or varsity athletic event; conflicts between two overlapping scheduled mid-term exams; or other extenuating circumstances, have the option of applying for special exam arrangements. Please see the DeGroote Missed Course Work Policy for a list of conflicts that qualify for academic accommodation http://ug.degroote.mcmaster.ca/forms-and-resources/missed-course-work-policy/

Such requests must be made to the Student Experience – Academic Office at least ten (10) working days before the scheduled exam along with acceptable documentation. Non-Commerce students must submit their documentation to their own Faculty Office and then alert the Student Experience – Academic Office of their interest in an alternate sitting of the midterm.

Adjudication of all requests must be handled by the Student Experience – Academic Office. Instructors cannot allow students to unofficially write make-up exams/tests.

The MSAF cannot be used during any final examination period.

If a mid-term exam is missed without a valid reason, students will receive a grade of zero (0) for that component.

**Policy for Approved Missed Academic Work**

Students who cannot write a test, and have advanced knowledge and permission as described above, will be given the opportunity to write an alternate version of the test and an alternate time.

Students who did not write a test, and subsequently provide an MSAF submission, or documentation for which they have been approved by the Student Experience – Academic Office, will have the weight of the missed work reallocated across other course components. The student must follow up with the instructor to understand this process and decision.

Students who submit an MSAF, or have been approved by the Student Experience – Academic Office, for an assignment deadline, will be given an extension of 3 days for the assignment. Please note, the student will ultimately be required to submit the assignment.

**Student Accessibility Services**

Student Accessibility Services (SAS) offers various support services for students with disabilities. Students are required to inform SAS of accommodation needs for course work at the outset of term. Students who require academic accommodation must contact Student
Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca

For further information, consult McMaster University’s Policy for Academic Accommodation of Students with Disabilities;


**POTENTIAL MODIFICATIONS TO THE COURSE**

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

**DETAILS FOR ONLINE COMPONENT**

In this course we will be using avenue to Learn and MyLab. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

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<table>
<thead>
<tr>
<th>Classes</th>
<th>Topic</th>
<th>Text Book Connections</th>
</tr>
</thead>
</table>
| Class 1 | • Course Overview  
          • Introduction of Statistics  
          • Overview of Data (context of data, different data types)  
          • Surveys and sampling  
          • Displaying and Describing data (You are familiar with the materials that are covered during the first class) | • Outline will be posted on avenue site  
          • Chapters 1, 2, 3, 4 and 5 |
| Class 2 | Association and correlation of data, Linear regression | Chapters 6 and 7 |
| Class 3 | Review of probability rules, probability distributions, discussion of Poisson and Exponential Distributions Sampling Distribution | 8.4, 8.5, 9.1; 9.4; 9.7; 9.8; 9.12 Ch. 10 |
| Class 4 | Confidence intervals for proportions Testing hypothesis about proportions Midterm review | Chapters 11 and 12 |
| Class 5 | Confidence intervals and hypothesis tests for means, Comparing two means | Chapters 13 and 14 |
| Class 6 | Design of experiments and ANOVA, Midterm review | Chapter 15 |
| Class 7 | Inference for counts | Chapter 16 |
| Class 8 | Introduction to linear regression Inference for regression | Chapter 18 |
| Class 9 | Understanding regression residual and Multiple regression | Chapters 19 and 20 |

Midterm and final syllabus will be determined and notified in the class.