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

Instructor and Contact Information

C01: M W Th 10:30 – 11:20  
C02: M We Th 13:30 – 14:20  
C03: M Th 15:30 – 16:20  
   Tu 16:30 – 17:20  
Evening: We 19:00 – 22:00  
Tutorial 01: We 12:30 - 13:20  
Tutorial 02: We 9:30 - 10:20  
Tutorial 03: M 9:30 – 10:20  
Class Location: ITB/AB102  
Class Location: KTH/B135  
Class Location: ABB/102  
Class Location: ITB/AB102  
Tut. Location: KTH/B135  
Tut. Location: KTH/B135  
Tut. Location: ABB/102

Instructor: Dr. Fouzia Baki  
Teaching Assistant: TBA  
bakif@mcmaster.ca  
Office: DSB 409  
Office Hours: M W Th 12-1 @DSB409  
or by appointment through email

Course Elements

Credit Value: 3  
Leadership: Yes  
IT skills: Yes  
Global view: Yes  
Avenue: Yes  
Ethics: Yes  
Numeracy: Yes  
Written skills: Yes  
Participation: Yes  
Innovation: No  
Group work: Yes  
Oral skills: Yes  
Evidence-based: Yes  
Experiential: Yes  
Final Exam: Yes  
Guest speaker(s): Yes
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. In addition, 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: Suggested List $136.50
   ISBN: 9780133740714
2) Sharpe Loose-Leaf, binder ready version + MyStatLab: Suggested List $124.40
   ISBN: 9780133448337
3) MyStatLab + etext (Stand Alone Access): Suggested List $93.00
   ISBN: 9780321821881

EVALUATION

Students have two grade schemes to choose from. By the end of third week, students must know their preferred grade scheme. You will not be able to change this option after that.
Component | Scheme #1 | Scheme #2
--- | --- | ---
Assignment-submitted through MyStatLab | 10% | X
Midterm | 30% | 35%
Group Project | 20% | 20%
Final | 40% | 45%
Total | 100% | 100%

**Exams: Midterm and Final**

Final and midterm are mandatory. All exams (midterm and final) will have multiple-choice questions and problem solving. Details will be notified prior to the exam date. 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](http://www.mcmaster.ca/policy/Students-AcademicStudies/examinationindex.html)

**Midterm Exam Schedule**

<table>
<thead>
<tr>
<th>Midterm</th>
<th>Date</th>
<th>Time</th>
<th>Rooms</th>
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</thead>
<tbody>
<tr>
<td>Midterm</td>
<td>Saturday Oct. 25, 2014 (Tentative)</td>
<td>2:30 – 4:30 PM</td>
<td>TBA</td>
</tr>
</tbody>
</table>

**Final Exam**

The final exam will be held during the final exam period in December. The exact date, time and location will be determined by the Registrar's Office.

**Assignments**

If you choose to do assignments, you must decide by the third 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 of any page. Regular assignments will make you better prepared for the tests. There will be assignments and practice problems given through MyStatLab/ MyLab regularly. For this course, regular practice is one of the important keys to learn.

You must attend tutorials. During the tutorials, Teaching Assistants (TAs) will solve some problems. Remember that tutorials are valuable components in your learning.

**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>
<tr>
<td>F</td>
<td>00 - 49</td>
<td></td>
<td></td>
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</tbody>
</table>

**Code of conduct**

You and hundreds of others are attending classes and tutorials. Please be courteous to each other, the instructor and the teaching assistants. Turn off your cell phones before class starts. Please **do not** listen to music, play computer games, check emails or Facebook, text message, read the newspaper, or hold loud conversations that may be disruptive to the rest of the class. Laptop computers should be used only for taking notes during class. If you have questions or comments, please raise your hand or come to see me later.

**Communication and Feedback**

Students that are uncomfortable in directly approaching an instructor regarding a course concern may send a confidential and anonymous email to the respective Area Chair or Associate Dean:

http://www.degroote.mcmaster.ca/curr/emailchairs.aspx

Students who wish to correspond with instructor 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 Administrative Assistant.

Instructors should conduct an informal course review with students by Week #4 to allow time for modifications in curriculum delivery. Instructors should provide evaluation feedback for at least 10% of the final grade to students prior to Week #8 in the term. 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 (receipt is then brought to APO)
- 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

www.degroote.mcmaster.ca
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.

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 two ways:

a) for missed coursework worth less than 30% of the final grade (and/or absences lasting less than 5 days); or
b) for missed coursework worth 30% or more of the final grade (and/or absences lasting more than five (5) days

a) For missed coursework worth less than 30% of the final grade (and/or absences lasting less than 5 days)

Students must use the MSAF (McMaster Student Absence Form) for their first incidence of missed coursework worth less than 30% for each term. 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 29% of the final grade or less. 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.

If the value of the component is worth 30% or more, students must report to the APO to discuss their situation and will be required to provide appropriate supporting documentation.

www.degroote.mcmaster.ca
b) For missed coursework worth 30% or more of the final grade (and/or absences lasting more than five (5) days

Students MUST report to the APO to discuss their situation and will be required to provide appropriate supporting documentation. If approved, students will be given access to the MSAF system where they will be required to enter the details of the missed coursework for which they were approved. 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.

Students who wish to submit more than one request for relief of missed academic work per term cannot use the online MSAF tool without permission. They must report to the APO and discuss their situation with an academic advisor. They will be required to provide supporting documentation and possibly meet with the Manager.

The MSAF cannot be used during any final examination period.

Regarding Midterm Conflicts
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 Academic Programs Office at least ten (10) working days before the scheduled mid-term along with acceptable documentation. Instructors cannot themselves allow students to unofficially write make-up exams/tests. Adjudication of the request must be handled by the Academic Programs Office.
If a mid-term exam is missed without a valid reason, students will receive a grade of zero (0) for that component.

Student Accessibility Services

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.

RESEARCH USING HUMAN SUBJECTS

Research involving human participants is premised on a fundamental moral commitment to advancing human welfare, knowledge and understanding. As a research intensive institution, McMaster University shares this commitment in its promotion of responsible research. The fundamental imperative of research involving human participation is respect for human dignity and well-being. To this end, the University endorses the ethical principles cited in the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans:

http://www.pre.ethics.gc.ca

McMaster University has mandated its Research Ethics Boards to ensure that all research investigations involving human participants are in compliance with the Tri-Council Policy Statement. The University is committed, through its Research Ethics Boards, to assisting the research community in identifying and addressing ethical issues inherent in research, recognizing that all members of the University share a commitment to maintaining the highest possible standards in research involving humans.

If you are conducting original research, it is vital that you behave in an ethical manner. For example, everyone you speak to must be made aware of your reasons for eliciting their responses and consent to providing information. Furthermore, you must ensure everyone understands that participation is entirely voluntary. Please refer to the following website for more information about McMaster University’s research ethics guidelines:

http://reo.mcmaster.ca/

Organizations that you are working with are likely to prefer that some information be treated as confidential. Ensure that you clarify the status of all information that you receive from your client. You MUST respect this request and cannot present this information in class or communicate it in any form, nor can you discuss it outside your group. Furthermore, you must continue to respect this confidentiality even after the course is over.
**DETAILS FOR ONLINE COMPONENT**

In this course we will be using Avenue to Learn. 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.
## TENTATIVE COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Week of</th>
<th>Topic</th>
<th>Text Book Connections</th>
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| Sept. 1 and 8    | • 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 most of the materials that are covered in these classes) | • Outline will be posted on avenue site  
                 • Chapters 1, 2, 3, 4 and 5                      |
| Sept. 15 and 22  | Association and correlation of data, Linear regression | Chapters 6 and 7                                            |
| Sept. 29 and Oct. 6 | 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                                               |
| Oct. 13 and 20   | Confidence intervals for proportions  
                     Testing hypothesis about proportions  
                     Midterm review | Chapters 11 and 12                                         |
| Oct. 27 and Nov. 3 | Confidence intervals and hypothesis tests for means, Comparing two means | Chapters 13 and 14                                         |
| Nov 10           | Design of experiments and ANOVA, Midterm review | Chapter 15                                                 |
| Nov. 17          | Inference for counts | Chapter 16                                                 |
| Nov. 24          | Introduction to linear regression  
                     Inference for regression | Chapter 18                                                 |
| Nov. 30          | Understanding regression residual and Multiple regression and Final Review | Chapters 19 and 20                                         |