

**FINANCE 604**  
**Statistics for Financial Applications**  
**Fall 2020 Course Outline**

**Master of Finance**  
**DeGroote School of Business**  
**McMaster University**

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***COURSE OBJECTIVE***

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*Statistics involves the study of collection, organization, presentation, analysis and interpretation of data. The ultimate goal of business statistics is business improvement through informed action when faced with uncertain outcomes. In this course we provide an introduction to some of the statistical analysis methods such as confidence intervals, hypothesis testing, experimental design and analysis of variance, and regression analysis to aid business decision-making. Practical experience applying these concepts will be reinforced through the use of application-based case studies, completed both individually and in groups.*

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***INSTRUCTOR AND CONTACT INFORMATION***

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**Instructor**

William Huggins  
[hugginsw@mcmaster.ca](mailto:hugginsw@mcmaster.ca)  
Office: Virtual  
Office Hours: by appointment  
Tel: (647) 289-9240  
Class Location: Virtual

**Student TA**

Parastoo Ostad  
[ostads@mcmaster.ca](mailto:ostads@mcmaster.ca)  
Office: Virtual  
Office Hours: TBA

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***COURSE ELEMENTS***

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Credit Value:	3	Leadership:	No	IT skills:	Yes	Global view:	No
A2L:	Yes	Ethics:	No	Numeracy:	Yes	Written skills:	No
Participation:	No	Innovation:	Yes	Group work:	Yes	Oral skills:	No
Evidence-based:	Yes	Experiential:	No	Final Exam:	No	Guest speaker(s):	No

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## ***COURSE DESCRIPTION***

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*This foundational course will to prepare students for professional work in finance, and for their later course in econometrics, by providing them with a firm foundation in the basics of hypothesis testing and regression analysis. The structure of scientific inquiry, and both the correct choice of tools and the interpretation of results will be emphasized. Topics include probability, sampling, confidence intervals, the formulation of falsifiable hypotheses, and both multiple and time series regression. The primary objectives will be on understanding how and when to apply statistical techniques to managerial problems, and on the translation of statistical output into actionable recommendations. Learning is reinforced through a series of small assignments and the completion of three case studies (two in groupwork).*

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## ***LEARNING OUTCOMES***

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Upon successful completion of this course, students will be able to complete the following key tasks:

- Understand sampling distributions, with emphasis on comparing population mean and variance
  - Understand the nature of statistical relationships between variables.
  - Explore regression analysis, including simple linear regression, and multiple linear regression.
  - Be able to identify common regression pitfalls.
  - Select appropriate factors and regression models for prediction.
  - Be sufficiently familiar with Excel to perform and analyze the output of statistical tests and regression models.
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## ***COURSE MATERIALS AND READINGS***

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**Required:** “Business Statistics, 3<sup>rd</sup> Canadian Edition”; Sharpe, De Veaux; 2018

- Avenue registration for course materials: <http://avenue.mcmaster.ca/>
- Harvard Business School Publishing Coursepack: <LINK ON AVENUE>
- “Business Statistics, 4<sup>th</sup> Canadian edition”; Sharpe, DeVeaux; 2020

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## **COURSE OVERVIEW AND ASSESSMENT**

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Missed assignments or cases **will receive a grade of zero** unless the student has submitted and been approved for a Notification of Absence or MSAF. Your final grade will be calculated as follows:

8 x Weekly Assignments (individual)	Sundays at 11:59pm EST (see class schedule)	16%
Case #1 – Hypothesis Testing (group)	(Oct 22) at 11:59pm EST	25%
Case #2 – Regression (group)	(Nov 19) at 11:59pm EST	25%
Case #3 – Comprehensive (individual)	(Dec 10) at 11:59pm EST	34%
Total		100%

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### **Asynchronous Content**

*To facilitate on-line learning, there are nine video series recorded to support this course (some assets from LinkedIn Learning are used to avoid re-inventing the wheel). You should watch each week's videos on your own time **BEFORE** our synchronous sessions on Fridays. You are encouraged to work through practice problems in the textbook but recommended problems will not be selected.*

### **Synchronous Content**

*Every Friday the class will “meet” using Zoom for (roughly) an hour to discuss content related to the core course topics, particularly as they relate to financial applications. Examples of how to use excel for statistical analysis will be demonstrated. On weeks when a case study is due the night before, we will discuss it in detail. Weekly TA office hours will also be held over Zoom at a time TBA*

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## **COURSE DELIVERABLES**

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### **“Weekly” Assignments**

*The 8 weekly assignments will be made available as “quizzes” on Avenue to Learn starting immediately after class on Fridays and remaining available **ONLY** until the following Sunday at 11:59pm EST. This means they will each need to be completed within 2.5 days. Each assignment consists of two questions (with sub-parts). These cannot be submitted after the deadline.*

### **Group and Individual Case Studies**

*All case studies must be purchased through HBS at the link provided above (roughly \$15). Final reports are to be submitted to electronic drop boxes set up on Avenue (only one submission per group is required) by 11:59pm EST on the dates listed above. Because the cases will be discussed in class the following morning, late submissions cannot be accepted. **You should make every attempt to form a group within the first two weeks of class so you can begin working together by October.***

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## **GRADING SCALE**

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For graduate courses the grade conversion scales are available through the following link:

<https://academiccalendars.romcmaster.ca/content.php?catoid=42&navoid=8734#2.6.1> Averaging of Letter Grades

MBA and Master of Finance Grading Scale:

<b>Grade</b>	<b>Points</b>	<b>Equivalent Percentages</b>	<b>Pass/Fail</b>
A+	12	90-100	P+
A	11	85-89	P
A-	10	80-84	
B+	9	75-79	
B	8	70-74	
B-	7	60-69	
F	0	59 and under	F

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## **COMMUNICATION AND FEEDBACK**

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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. All students must receive feedback regarding their progress prior to the final date by which a student may cancel the course without failure by default.

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## **REQUESTING RELIEF FOR MISSED ACADEMIC WORK**

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In the event of an absence for medical or other reasons, students should review and follow the Missed Term Work regulations that are outlined on the Master of Finance website;

<https://mfin.degroote.mcmaster.ca/current-students/missed-term-work/>

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## ***ACADEMIC INTEGRITY***

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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. **It is your responsibility to understand what constitutes academic dishonesty.**

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.

For information on the various types of academic dishonesty please refer to the [Academic Integrity Policy](https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/), located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>

The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

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## ***AUTHENTICITY/PLAGIARISM DETECTION***

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**Some courses may** use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software.

**All submitted work is subject to normal verification that standards of academic integrity have been upheld** (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to [www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity).

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### ***COURSES WITH AN ON-LINE ELEMENT***

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**Some courses may** use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, 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 a course that uses on-line elements 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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### ***CONDUCT EXPECTATIONS***

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As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the [Code of Student Rights & Responsibilities](#) (the “Code”). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students’ access to these platforms.

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### ***ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES***

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Students with disabilities who require academic accommodation must contact [Student Accessibility Services](#) (SAS) at 905-525-9140 ext. 28652 or [sas@mcmaster.ca](mailto:sas@mcmaster.ca) to make arrangements with a Program Coordinator. For further information, consult McMaster University’s [Academic Accommodation of Students with Disabilities](#) policy.

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## ***ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)***

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Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the [RISO](#) policy. Students should submit their request to their Faculty Office ***normally within 10 working days*** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

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## ***COPYRIGHT AND RECORDING***

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Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors.

Recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

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## ***EXTREME CIRCUMSTANCES***

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The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

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## ***ACKNOWLEDGEMENT OF COURSE POLICIES***

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Your enrolment in Finance 604 will be considered to be an implicit acknowledgement of the course policies outlined above, or of any other that may be announced during lecture and/or on A2L. **It is your responsibility to read this course outline, to familiarize yourself with the course policies and to act accordingly.**

Lack of awareness of the course policies **cannot be invoked** at any point during this course for failure to meet them. It is your responsibility to ask for clarification on any policies that you do not understand.

## COURSE SCHEDULE

### FINANCE 604 Statistics for Financial Applications Fall 2020 Course Schedule

Week	Asynchronous Content (Videos)	Reading List (chapters)	Synchronous Content	Deliverables Due
1	Visualizing Data series	4, 5	Introduction to the course	
2	Probability series	8	Probability in Corporate Finance	Sept 27: Assignment 1
3	Sampling Distributions series	9, 10	Probability Distributions in Portfolio Management	Oct 4: Assignment 2
4	Confidence and Hypotheses series	13	Introduction to Case #1; how to tackle case studies	Oct 11: Assignment 3
5	T-Tests for Means and Proportions series	14, 12	T-Tests in Excel	Oct 18: Assignment 4
6			<b>Case #1 Discussion</b>	<b>Oct 22: Case #1</b>
7	F & Chi Tests series	15, 16	ANOVA & Chi Tests in Excel	Nov 1: Assignment 5
8	Correlation and Regression series	6, 7, 19	Diversification and Asset Pricing	Nov 8: Assignment 6
9	Multiple Regression series	20, 21	Arbitrage Pricing Theory models	Nov 15: Assignment 7
10			<b>Case #2 Discussion</b>	<b>Nov 19: Case #2</b>
11	Time Series series...	22	Prices and Forecasting	Nov 29: Assignment 8
12			Review	
13			<b>Case #3 Discussion</b>	<b>Dec 10: Case #3</b>