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McMaster University
DeGroote School of Business
Financial Econometrics I, MFIN 701

Course Outline
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Prof. John M. Maheu   2024

Office:	DSB-305
Office Hours:	After class or by appointment
Phone:	905-525-9140 ext. 26198
Class Times:	C01 Mon 7-10pm
Email:	maheujm@mcmaster.ca
Homepage:	http://avenue.mcmaster.ca/
TA:	TBA, email:
TA Office Hours:	TBA

Course Description:

This course introduces students to the theory and application of econometric techniques for testing economic and financial theory and forecasting. It covers the basic tools of estimation and inference in the framework of the linear regression model. The main topics include specification of an econometric model, hypothesis testing, model selection, forecasting, time-series models and maximum likelihood estimation.

Grading:

30% Assignments
30% Project, due end of term, exact date TBA
40% 2 Term tests each 20%: Mar 26 and April 8
Late assignments or term project will have 10% deducted per day late.

Conversions:

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

Letter grade	Percent	Points
A+	90 - 100	12
A	85 - 89	11
A-	80 - 84	10
B+	75 - 79	9
B	70 - 74	8
B-	60 - 69	7
F	00 - 59	0

Course Textbook:

Econometric Analysis, by William H. Greene, seventh edition, Prentice Hall

The text is available at the campus bookstore for purchase, online as a hardcover and ebook. A pdf of the book is on Avenue as well. Problem sets and examples of computer code will be posted on the class website.

Computer Assignments:

Students will complete computer assignments using R (or equivalent, Ox, Gauss, Matlab etc) econometric package. A personal version of R can be obtained free of charge from http://cran.r-project.org/. See the course website for links to R including downloading and documentation. Rstudio is an R interface that can be used to program and run R jobs from. It can be downloaded at https://www.rstudio.com/. Computer programming applications will be discussed extensively in class along with theory. Students can work together on the computer programming and model estimation but the *final write-up of an assignment should be done independently*. If plagiarism is detected University rules will be enforced. **Assignments must have a detailed write-up of results and be separate from computer output.**

Term Project:

Students are required to complete an applied econometric project based on a finance topic of their choice. Please feel free to discuss the suitability of your topic with me. In selecting a topic it may be helpful to look at current and past periodicals on econometrics in the library or online through the library web page. Some suggested sources are:

1. *Journal of Financial Econometrics*

2. *Journal of Business and Economic Statistics*

3. *Journal of Empirical Finance*

4. *Review of Economics and Statistics*

5. *Journal of Applied Econometrics*

Your paper can be completely original or you can base it on existing work using a different dataset and changing and/or expanding the analysis.

The term paper should consist of an Introduction, Model Description, Results, and Conclusion with References included. **The main text should be 10 pages or less.** All mathematical equations should be written properly in the text. As an example, consider the AR(1) model,

$$y_t = \mu + \phi y_{t-1} + \epsilon_t, \ \epsilon_t \sim N(0, \sigma^2),$$

where μ, ϕ, and σ^2, are parameters to be estimated.

Data sources should be included, along with footnotes, and correct citations. Using someone's idea or writings without a citation is plagiarism and University rules will be enforced. Your paper should be self contained. Finally, you should hand in a copy of your paper, and a disk with your computer code, the dataset and a file of your printout.

Topics to be covered:

1. Review of some statistical concepts: common distributions, change of variables formula, sampling distribution, unbiasedness, consistency, law of large numbers, central limit theorem. Appendix C an D.

2. Linear regression model: ch 2,3,4

3. Hypothesis tests: ch 5

4. Dummy variables, time trends and structural change: ch 6

5. Testing for autocorrelation and heteroskedasticity: ch 9.5, 20.7

6. Generalized least squares: ch 9, 20.8,20.9

7. Multivariate models: SUR model and panel data models: ch 10.2,11

8. Maximum likelihood estimation: ch 14

9. Time-series models and nonstationary data: ch 20,21

10. Dicrete choice models

11. Two-stage least squares: ch 8.1-8.5

Chapters refer to the textbook. Students should be familiar with most of the matrix results in Appendix A of the textbook.

Communication and Feedback:

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.

Requesting Relief for Missed Academic Work:

In the event of an absence for medical or other reasons, students should review and follow the Missed Term Work regulations that our outlined on the Master of Finance website;
    https://mfin.degroote.mcmaster.ca/current-students/missed-term-work/

Academic Integrity:

It is the student's responsibility to understand what constitutes academic dishonesty. Please refer to the University Senate Academic Integrity Policy at the following URL:

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

This policy describes the responsibilities, procedures, and guidelines for students and faculty should a case of academic dishonesty arise. Academic dishonesty is defined as to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. Please refer to the policy for a list of examples. The policy also provides faculty with procedures to follow in cases of academic dishonesty as well as general guidelines for penalties. For further information related to the policy, please refer to the Office of Academic Integrity at:

http://www.mcmaster.ca/academicintegrity

Authenticity/Plagiarism Detection:

Some portions of the course may require 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.

Conduct Expectations:

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.

Academic Accommodation of Students with Disabilities:

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

Academic Accommodation For Religious, Indigenous or Spiritual Observances (RISO):

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.

Missed Academic Work

Late assignments will not be accepted. No extensions are available except under extraordinary circumstances. Please discuss any extenuating situation with your instructor at the earliest possible opportunity.

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.

Copyright and Recording

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.

The 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.

Extreme Circumstances

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.

Acknowledgement of Course Policies

Your enrolment in Finance 701 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.