ABIZ 4120 A01 (3 CH)
Intermediate Econometrics
Winter 2023
344 J.H. Ellis Building, Mon/Wed/Fri: 11:30 AM – 12:20 PM.

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INSTRUCTOR

Name: Farhan Islam (he/him)
Office: 357 Drake Centre
Phone: TBA
Email: Farhan.Islam@umanitoba.ca

E-mails should include your full name, student number, and course number. Expect a reply within 48 hours Monday to Thursday. E-mails sent on Friday will be answered by the following Monday if there are no internet issues.

Office hours: Fri (9:30 am – 11:00 am) – via Zoom by appointment only (email me to arrange a time)

COURSE DESCRIPTION

A course in applied econometrics that explores the regression model and how it may be applied. Special emphasis is placed on violations to the assumptions of least squares, specification error, and applying the model to production, marketing, forecasting and other applications. Students are expected to have a working knowledge of one of the major econometric software packages (e.g., SAS, Stata, MATLAB, R, GRETL, Python, Excel).

Prerequisites: Written consent of instructor; this course assumes students have had a sound background in economic theory (e.g., micro and macro), as well as single variable calculus, linear algebra, and basic statistics. ABIZ 3080 or ECON 3180 is highly recommended.
Note that some topics will be covered in much greater depth than others. Depending on time constraints, some topics may not be covered.

COURSE OBJECTIVES

Successful completion of this course should enable students to:

- Know and understand the k-variable regression model.
- Be proficient in standard model applications and testing.
- Understand various forms of endogeneity including omitted variables, simultaneity, and measurement error.
- Know, understand and be able to prove the Gauss-Markov theorem.
- Understand various concepts of Machine Learning.
- Know and understand Monte-Carlo Simulation in Econometrics.
- Be able to identify and correct violations to identification and hypothesis testing.
- Know and understand standard panel data models allowing for fixed effects.
- Understand the differences between fixed and random effects panel data models, as well as other panel data estimators.
- Understand various time series models (e.g., AR, MA, ARMA, ARIMA, SARIMA, VAR, VARMA, SES, ARCH, GARCH, TARCH).
- Understand way a randomized experiment allows for a casual interpretation of empirical results.
- Know and understand how non-experimental techniques allow for a casual interpretation of empirical results.
- Know and understand the use of instrumental variables, difference in differences, matching estimators, and discontinuity in identification.
- Know and understand the maximum likelihood estimators used in non-linear estimation.
- Be proficient in application of prediction, cross validation, and classification models.
- Be proficient in reporting, interpreting, and drawing policy implications from econometric results.

COURSE FORMAT AND HEALTH & SAFETY PROTOCOLS

This course will be taught in-person, unless there’s a directive from the university that requires us to move to remote delivery. We will observe the health-related safety protocol mandated by the university. Please check the COVID-19 Updates webpage of the university and the COVID-19 health and safety protocols to know what is expected of you. The university’s policy is also provided later in this course outline.

The class will involve lectures, case discussions, quantitative exercises, and breakout activities in small groups. To ensure that you and your classmates get as much value out of this course as possible, I expect everyone to complete all readings, practice questions or other assigned preparation in advance of the class session and show up ready to discuss this material.
COURSE MATERIALS

Required Textbooks:


Supplementary Reading

- Baum. An Introduction to Modern Econometrics using STATA.

There will be several additional readings/journals for the course. They will be available online or through the U of M library. Details will be provided as needed throughout the term.

ASSESSMENT OF LEARNING

There are four graded components in this course:

<table>
<thead>
<tr>
<th>Course deliverable</th>
<th>Weight on Final Grade</th>
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<tbody>
<tr>
<td>Quiz 1 (In-class)</td>
<td>30 %</td>
</tr>
<tr>
<td>Quiz 2 (In-class)</td>
<td>25 %</td>
</tr>
<tr>
<td>Research Project Proposal</td>
<td>5 %</td>
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<tr>
<td>Research Paper</td>
<td>20 %</td>
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<tr>
<td>Research Paper Presentation</td>
<td>10 %</td>
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<tr>
<td>In Class Exercise/Participation</td>
<td>10 %</td>
</tr>
<tr>
<td>Total</td>
<td>100 %</td>
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</tbody>
</table>

Final grades are based on the student’s weighted mark. In the event of a skewed distribution of grades, the course marks for the class may be curved up or down as necessary (the weighting of each component will remain unchanged). The following are the tentative grade cut-offs.

A+ 94-100
A 87-93.9
B+ 84-86.9
B 78-83.9
C+ 73-76.9
C 65-72.9
D 51-64.9
F 0-50.9
These tentative cut-offs are subject to adjustment up or down depending on the relative performance of the current class compared to prior classes that have taken the course with the same instructor.

1) Quizzes (55 % total)

Each quiz will be a CLOSED BOOK Quiz. It will be a 50-minute quiz and will be based on material covered in readings and lectures. The details of the format will be discussed closer to the first quiz date. Quizzes are not cumulative. Quiz dates are as follows:

- Quiz 1 – February 15 (Time: 11:30 AM – 12:20 PM)
- Quiz 2 – March 24 (Time: 11:30 AM – 12:20 PM)

2) In Class Exercises/Participation (10 %)

In-class participation marks are assigned based on a combination of items which may include, but are not limited to, attendances, in-class quizzes, short presentations of assigned readings, paper replication, and overall contributions to classroom discussions. All in-class quizzes are closed book. There will be no make-up marks for in-class participation. At least half of the in-class participation marks will be assigned prior to the voluntary withdrawal date.

3) Research Project and Presentation (35 %)

The research project component is designed to replicate a research project at an academic conference. The research project and project presentation will be discussed in detail in-class. Deadlines for the research paper component are strict and failure to abide will result in a mark of zero. If a student has a documented medical or compassionate reason for not meeting the deadline, they must obtain permission from the instructor prior to the deadline. The mark for the research proposal will be returned prior to the voluntary withdrawal date.

**MISSED EXAM AND LATE SUBMISSION POLICY**

If you miss quizzes for a valid reason (medical, compassionate or other as specified in University Policy on Accommodations for Missed Undergraduate Term Examinations), please notify me **within 48 hours** to schedule a makeup exam. We can adjust the weight of the quiz to other quizzes or if possible, arrange for a make up quiz.

Do not make travel plans during the quiz days. I cannot let you take the quiz earlier/later because you made bookings for an earlier date.

**ATTENDANCE POLICY**

For the sake of your own learning and the learning of your classmates, regular attendance and participation in the course is expected. If you are experiencing a personal matter (health or otherwise) that you expect will cause you to miss multiple classes, please reach out to me so we can figure out a plan to make sure you are able to keep up with course material.
**ELECTRONIC DEVICE POLICY**

For in-person classes, you may use a laptop or tablet for notetaking. If you are using a laptop, please sit towards the back of the class if feasible for you to avoid distracting those sitting behind you.

You are NOT allowed to use smart phones or any other phones and cannot audio/video record any lectures.

We will observe the protocols that would be expected during in-person classes. Avoid making or taking calls on your cellphone while class is in progress. No frivolous posting of messages in the Chat area during class. Please do not video/audio record class lectures or take pictures of the screen without permission.

**OUT-OF-CLASS COMMUNICATION**

I will communicate with you primarily through the Announcement feature on UM Learn. Check UM Learn frequently and read all communication thoroughly. PowerPoint slides, project guidelines and other helpful materials will also be posted on UM Learn.

I am also accessible via email, but I try to limit time spent answering emails outside of my work hours. Unless otherwise noted, I will respond to emails within 24 – 48 hours.

**Whenever you email me, you should include your full name, student number, and course number. Expect a reply within 48 hours Monday to Thursday. E-mails sent on Friday will be answered by the following Monday if there are no internet issues.**

**CLASS SCHEDULE**

My intention is to cover the following topics. This is a tentative outline subject to change if I find it necessary. This course covers the following topics (as time permits):

- Econometric Research Methods
- Review of Linear Regression Techniques
- Endogeneity, Instrumental Variables, and Generalized Method of Moments (GMM)
- Maximum Likelihood Estimation and Specification Tests
- Univariate Time Series Models
- Multivariate Time Series Models
- Models with Limited Dependent Variables
- Models based on Panel Data
- Monte Carlo Simulation
- Machine Learning

**Note:** Every week Friday class will be online starting from January 20, 2023, on Zoom meeting to go over the programming (such as R, R Studio, STATA, Excel, SAS, SPSS, MATLAB, E-views).
IMPORTANT DATES

- Revision Period – January 2 – January 23
- Drop Date (with Refund) – January 20
- Quiz 1 – February 15
- Quiz 2 – March 24
- Winter Break (No Classes) – February 20 – 24
- Voluntary Withdrawal Date – March 22
- Project Paper Proposal Due Date – February 12
- Final Project Paper Due Date – April 4
- Project Paper Presentation Days – April 5, 7, 10, and 12
- No Classes on the following days – Jan 13, Feb 17, Feb 27, March 1 (recording of the lectures will be available later in the course)
ACADEMIC INTEGRITY POLICY

Academic integrity is critical to the reputation of the Asper School of Business and for the degrees we award. As the Faculty that helps create business and government leaders, we have a special obligation to ensure that our ethical standards are beyond reproach. Therefore, the Asper School takes academic misconduct very seriously and does what it takes to uphold the highest academic integrity standards. You can find information on what constitutes academic misconduct on the University of Manitoba’s Academic Integrity webpage. It is your responsibility to educate yourself on what’s acceptable and what’s not. Ignorance is no excuse. When in doubt, talk to your instructor.

Examples of academic misconduct include, but are not limited to:

- using the exact words from a published or unpublished source without quotation marks and without referencing that source both in-text and in the Bibliography
- reproducing a table, graph, or diagram, in whole or in part, without referencing the source
- paraphrasing someone else’s words without referencing the source both in-text and in the Bibliography
- using a paper (or parts of it) that was submitted in one course for an assignment in another course, without discussion with both the instructors involved
- getting your assignment done by someone else, either for payment or otherwise
- using material available on file-sharing sites such as Course Hero, Chegg, etc. Uploading material to such sites also constitutes academic misconduct depending on what is shared.
- copying the answers of another student in any exam or assignment
- providing exam answers or assignments to other students via any medium or obtaining them from other students or websites
- taking any unauthorized materials into an examination (crib notes), regardless of whether those are used during the exam
- recording exam questions using any method, regardless of whether those are shared with others
- sharing exam questions with those who are yet to take the exam, including future students or attempting to sell exam questions
- impersonating another student or getting another person to impersonate you for the purpose of attendance, earning class participation marks, submitting academic work, or writing an exam
- changing any part of test answers after that test has been graded and returned

Group Projects and Group Work

Many courses in the Asper School require group projects. All group members should exercise special care to ensure that the group project is free from plagiarism. Should a violation occur, group members are jointly accountable unless the violation can be attributed to specific individuals.

Some courses, while not requiring group projects, encourage students to work together in groups before submitting individual assignments. If it’s unclear whether it is allowed, students are encouraged to seek clarification from the instructor to avoid violating the academic integrity policy.
# STUDENT SERVICES AND SUPPORTS

The University of Manitoba provides many different services that can enhance learning and provide support for a variety of academic and personal concerns. You are encouraged to visit the below websites to learn more about these services and supports.

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<th>For Information on…</th>
<th>…follow this link</th>
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<tr>
<td>Reporting discriminatory behavior by another university member</td>
<td>Speak Up</td>
</tr>
<tr>
<td>Tech-related issues with UM Learn or videoconferencing</td>
<td>Information Services &amp; Technology</td>
</tr>
<tr>
<td>Admission, Registration, Tuition Fees, Important Dates, Final Exams, Graduation, and Transcripts</td>
<td>Registrar’s Office</td>
</tr>
<tr>
<td>Academic policies &amp; procedures, regulations, Faculty-specific information, degree and major requirements</td>
<td>Academic Calendar</td>
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<tr>
<td>Help with research needs such as books, journals, sources of data, how to cite, and writing</td>
<td>Library Resources</td>
</tr>
<tr>
<td>Tutors, workshops, and resources to help you improve your learning, writing, time management, and test-taking skills</td>
<td>Writing and Learning Support</td>
</tr>
<tr>
<td>Support and advocacy for students with disabilities to help them in their academic work and progress</td>
<td>Student Accessibility Services</td>
</tr>
<tr>
<td>Copyright-related questions and resources to help you avoid plagiarism or intellectual property violations</td>
<td>Copyright Office</td>
</tr>
<tr>
<td>Student discipline bylaws, policies and procedures on academic integrity and misconduct, appeal procedures</td>
<td>Academic Integrity</td>
</tr>
<tr>
<td>Policies &amp; procedures with respect to student discipline or misconduct, including academic integrity violations</td>
<td>Student Discipline</td>
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<tr>
<td>Students’ rights &amp; responsibilities, policies &amp; procedures, and support services for academic or discipline concerns</td>
<td>Student Advocacy</td>
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<tr>
<td>Your rights and responsibilities as a student, in both academic and non-academic contexts</td>
<td>Your rights and responsibilities</td>
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<tr>
<td>Medical services for any physical or mental health issues</td>
<td>University Health Service</td>
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<tr>
<td>Information on health topics, including physical/mental health, alcohol/substance use harms, and sexual assault</td>
<td>Health and Wellness</td>
</tr>
<tr>
<td>Mental health, including anxiety, stress, depression, help with relationships or other life concerns, crisis services, and counselling.</td>
<td>Student Counselling Centre</td>
</tr>
<tr>
<td>Support services available for help regarding any aspect of student and campus life, especially safety issues</td>
<td>Student Support Case Management</td>
</tr>
<tr>
<td>Resources available on campus, for environmental, mental, physical, socio-cultural, and spiritual well-being</td>
<td>Live Well @ UofM</td>
</tr>
<tr>
<td>Help with any concerns of harassment, discrimination, or sexual assault</td>
<td>Respectful Work and Learning Environment</td>
</tr>
<tr>
<td>Concerns involving violence or threats, protocols for reporting, and how the university addresses them</td>
<td>Violent or Threatening Behaviour</td>
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UNIVERSITY OF MANITOBA COVID-19 HEALTH & SAFETY POLICY
April 8, 2022

The University of Manitoba (the “UM”) is committed to maintaining a safe learning environment for all students, faculty, and staff. Should campus operations change because of health concerns related to the COVID-19 pandemic or other campus-wide emergency, it is possible that this course will move to a fully remote delivery format. Should the instructor be required to stay at home for an extended period and an alternate instructor not be available, the course may move temporarily to a remote delivery format.

Mask Wearing

In a face-to-face environment, our commitment to safety requires students to observe all Covid guidelines set by the University (https://umanitoba.ca/coronavirus)

While on campus and in class, you must wear masks as stipulated in current University policies, procedures, and guidelines. The University highly recommends the use of KN-95 masks; the minimum requirement is a ATSM Level 2 Medical mask. Both mask types are available at many locations on campus.

Students who fail to comply are subject to disciplinary action in accordance with the Student Discipline Bylaw and the Non-Academic Misconduct and Concerning Behaviour Procedure.

If you do not follow masking requirements, you will be asked to leave the learning space and may only return to the class already in progress when you have complied with this requirement. Repeated issues will result in disciplinary action as previously noted.

Students should not eat or drink during class time.

Illness

Remember: STAY HOME IF YOU HAVE SYMPTOMS OR ARE ILL. If you become ill we highly recommend that you self-isolate; you should notify your instructor by email so you can develop a plan to complete the course learning outcomes while you are absent.

What to do if you become ill while at UM:

1. Leave the classroom, lab, or workspace immediately. Continue to wear your mask while leaving the premises and/or while waiting for transportation.

2. Perform hand hygiene (soap and water or hand sanitizer) and avoid contact with others and minimize contact with the physical environment.

3. Once at home, complete the MB self-assessment and follow the directions that are provided.

4. Inform your instructor(s) or, if in residence, the appropriate individual.
5. Please remain off-campus and all UM facilities until cleared to return in accordance with self-assessment, testing results, and UM recommended isolation procedures.

**Recommended transportation options (in order):**

1. Drive yourself home.

2. Pick-up by family or friend – remember to keep your mask on and to distance as much as possible, and where possible, open a window to improve ventilation.

3. Pickup by taxi/Uber:
   - Remain masked and perform hand hygiene before entering the vehicle.
     - Avoid touching the inside of the vehicle
     - Keep your mask on for the duration of the ride
     - Where possible, open a window to improve ventilation.

4. Winnipeg Transit buses – We recommend that you do not use Winnipeg Transit in this situation.
ABOUT THE INSTRUCTOR

Farhan Islam, MA, BA, BSc. (Instructor)

Areas of Research Interest: Sustainability, Financial Derivative Modelling, Econometric Analysis, Statistical Modelling, Network Security, and Risk Management


Mr. Farhan Islam is one of the respected Instructor at Asper Business School with vast teaching experience and interests. He has extensive experience in green sustainability, risk analysis, lean systems, and economic development. He has also been involved in developing and launching start-up small companies as well as government projects.

Farhan has taught wide variety of courses in Agribusiness, Economics, Statistics, Mathematics, Marketing, Information Systems, and Management. Farhan also teaches at University of Winnipeg and Red River College Polytechnic. He is a business and Policy Consultant and runs an independent consultancy firm globally. He was a major researcher and was involved in policy consideration in University of Manitoba Transport Institute (UMTI) “GrEEEn Trucking Program” in 2011-2012 which become one of the major successful projects in UMTI.

Farhan is currently pursuing Chartered Financial Analyst (CFA), completing Project Management Professional (PMP), Actuarial designation (ASA), VMware Certification, and Lean Six Sigma Certification.

In his free time, Farhan enjoys travelling, cycling, playing soccer, cricket, tennis, basketball, badminton, singing, painting, and virtually any other outdoor activity.