

UNIVERSITY OF MANITOBA  
FACULTY OF ARTS  
DEPARTMENT OF ECONOMICS

**ECON 2050. ECONOMIC ANALYTICS USING COMPUTER-BASED METHODS**  
FALL 2019

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**Course Details**

**Number of Credit Hours:** 3

**Class times:** This course is delivered online via UMLearn. There are no formal lectures and students must monitor their university assigned email and the course program on UMLearn for all course notices.

**Location for in-class exams:** Labs number 108, 111, 113 and 115, Machray Hall

**Pre-Requisites:** A grade of "C" or better in six credit hours of 1000 level Economics. Students may not hold credit for both ECON 2050 and the former ECON 2610 when titled "Measurement and Computation in Economics".

**Instructor Contact Information**

**Instructor:** Elisabet Rodriguez Llorian ([elisabet.rodriguezllorian@myumanitoba.ca](mailto:elisabet.rodriguezllorian@myumanitoba.ca))

**Office Location:** 551 Fletcher Argue Building

**Office Hours:** Mondays 1:00 – 3:00 pm

**COURSE DESCRIPTION**

This computer-based course will introduce basic economic analytics such as index numbers, cost-revenue-profit relationships, demand/supply dynamics, decision-making using probability models, investment decisions, time-value of money, seasonal adjustment of data, forecasting, measures of poverty/inequality, and optimization methods such as linear programming. Students will also gain proficiency in numerical computation conducted in Excel, an important analytical tool used in business, government, and academic research for managing and analyzing data.

**COURSE OBJECTIVES**

By taking this course you will:

- Learn how to apply economic and business analytics to a wide range of common challenges faced by researchers as used in academia, industry, and government research;
- Understand how Excel can support the development of economic and business models/metrics to support performance measurement, forecasting, and simulation;
- Gain confidence in teaching yourself more advanced excel techniques to manage complex data and to develop solutions to unique problems.

## WHAT DO YOU NEED TO START?

**You do not need Excel to take this course. You should know your way around a computer, either a PC or a Mac.**

You will need access to the internet at a reasonable speed (not dial-up). You can use the [common area computer labs](#) around campus. Most of you will have your own PC or Mac. This will make learning more convenient, but it is not necessary; you can use the labs on campus. Also, you will need to install Office on your computer, which you may purchase on-line from [Computers on Campus](#) for less than \$20 or use Office 365.

Caution: The Mac implementation of Office (and therefore Excel) is good but not perfect. Since you will write all tests using computers in the common lab areas, those using Mac to complete this course should gain some practice on a PC in one of the common areas. Mac users may need to download and install [VLC Media Player](#) to properly see the videos posted by the instructor.

This course requires you to have the physical ability to use a standard PC or Mac (notebook or desktop), which means the ability to "keyboard", visualize detailed information on screen, navigate to web sites, and input complex alphanumeric information within specified time constraints of the tests. If believe you may have trouble doing this, please consult with [Student Accessibility Services](#) to determine whether accommodations are possible.

## HOW IS THIS COURSE DIFFERENT FROM A CONVENTIONAL COURSE?

- There are no formal lectures and no time the entire class meets in one place except for the tests shown in the learning schedule (which you can find below). This is part of the training needed to become an independent learner and maintain your own learning schedule.
- You can decide to learn everything at once but...
- Most of you will find it better to follow the learning schedule (below).

This course runs through [UMLearn](#). Once you register for this course, and have a valid University of Manitoba email account, you will be able to access course materials and tests. After you are logged into UMLearn, click on the course (ECON 2050) icon to find the course modules which will include voice over PowerPoint, videos, examples, exercises and answers.

Students must know the procedures and processes used by UMLearn. You may learn this system using the [Instructional videos](#). (You must have a valid account at the University of Manitoba to access this material. Contact [Information Services and Technology](#) for assistance).

**It is your responsibility to learn how to use UMLearn and to check UMLearn for course announcements, handouts, and the like.**

## HOW WILL WE COMMUNICATE?

My job is to help you learn, even though we do not meet in a lecture. Here are the ways you can meet me and discuss any aspect of this course.

- E-mail. Please use [elisabet.rodriiguezllorian@umanitoba.ca](mailto:elisabet.rodriiguezllorian@umanitoba.ca). I will only communicate with you using the university approved e-mail system. Do not contact me using your personal e-mail, I will ignore these messages.
- The course site also has a discussion board where you can post questions.
- My office hours are 1:00 – 3:00 on Mondays. Please visit me if you are having any problems or concerns about the course.
- I will usually email you at the beginning of the week for reminders and general announcements. The content of my emails will also be posted on the Announcements Board in UMLearn.

## ADDITIONAL RESOURCES

You should consider purchasing an advanced Excel manual such as: *Excel 2016: the missing manual*, Matthew MacDonald, O'Reilley Press. This will be a handy reference for several years.

There are many YouTube videos on Excel, some good, others not so much. Use at your discretion.

## ABOUT TESTS

All tests and the final exam occur exactly at the date and time specified in the learning schedule (see below) and in a designated lab. Just before the first term test you will be assigned to a lab, which will remain the same for all term tests and the final exam.

Once in the lab, exams/tests are opened and downloaded from UMLearn. You will be able to bring any notes and books to class, consult all the material for this course under UMLearn and use any internet resource to answer questions on the tests and exam.

Detailed answers keys as well rubrics will be made available right after the end of the in-class exam. These will be posted in UMLearn under the “Tests” folder.

Also notice:

- The test is available only on the specified date and within the time.
- The tests and final exam are downloaded from the UMLearn Dropbox. You must learn how to do this – a video explains how to do this.
- The tests can only be completed at the assigned terminals in the common area labs on the Fort Garry campus. You will be assigned to a specific room and seat number prior to each term test and the final. This will be your place for all tests and the final exam.

- Plan to arrive at your assigned terminal 10 – 15 minutes early to make sure it is working properly. This includes verifying that Excel works, it has the add-ins needed, and that you can download and upload the practice test.
- You cannot use your own computer to complete and submit a test or final exam.
- You cannot consult (talk, text, or e-mail) with anyone during the test – this will result in a score of 0.
- You cannot use your phone during the test or final exam for any reason – this will result in an immediate score of 0.
- I will allow only conventional calculators so you can check your work
- Make sure you understand the [University policy on cheating and plagiarism](#).

Under no conditions will I accept a test or final exam outside the test/exam period or outside the Dropbox/Assignment process in UMLearn.

**If you fail to upload your exam within the set time, you will get 0. I will not accept the test by email. Save and upload at several times during the exam.**

## ACADEMIC INTEGRITY

Each student must read and understand university regulations regarding academic integrity as described in the General Calendar ([Plagiarism and Cheating](#) (Section 8.1) and [Personation at an examination](#) (Section 5.2.9)). **Claims that these regulations were not understood will not be accepted.**

**During the term tests and final exam, you must not communicate with anyone by any means or share your test. We have security processes to detect such cheating.**

## ASSESSING YOUR PERFORMANCE

The final mark will be based on 60 minute in-class term tests (best 3 out of 5), and a final examination.

Component	Marks
<b>Term Tests (Best 3 out of 5)</b>	50
<b>Final exam (2 hours) (In formal exam period)</b>	50
<b>Total</b>	100
Numerical grade conversion: A+ (>90), A (>80), B+ (>75), B (>70), C+ (>65), C (>60), D (>50), F(<50)	

I use the table above to determine the final grade. But to give you the best chance of getting a good mark, I also use the following rule:

Provided you submit three term tests, if the mark on the final is higher than the cumulative score on the term tests, I will only use the final exam to create the letter grade. If the final exam has a

lower score than your cumulative score on the tests, I will combine the term tests and final exam using the above mark allocation to obtain the final numerical grade.

You must take and submit at least three term tests to benefit from this offer.

*Example: Student X only wrote 2 term tests with scores of 27/50 and 41/50. Her final exam was 31/50. Her term tests totaled  $(0/50+27/50+41/50)/3 = 22/50$ . Add this to the final of 31, and the numerical total is 53/100 which is a D. Her failure to complete at least three term tests degraded her final mark.*

## **POLICY ON MISSED TERM TESTS AND FINAL EXAM**

You cannot repeat a missed term test, therefore only 3 of 5 term tests count toward the final mark. Please do not ask for an exception for any reason. It will not be granted.

If you miss the final exam, you must apply to the Dean's office for permission to write a deferred exam.

## **HOW TO SUCCEED IN THIS COURSE**

The term tests anchor the course, the first of which occurs after two weeks. The material is cumulative and you will not be able to master the material the night before.

Here is how to succeed:

- Work through the lectures and watch the videos according to learning schedule
- Review and repeat
- Try the exercises before looking at the answers. This is how you can know whether you understand the material
- Make sure you read and understand the detailed answer key provided after the end of each in-class exam.
- Form a study group with colleagues in the class

## **ADDITIONAL INFORMATION**

- Students appealing any term work, whether it be an informal or formal appeal, must appeal their term work within 10 working days off receiving their mark.
- Please refer to Schedule "A" provided below for information on academic support, mental health support, copyright, and other supplemental information.

## LEARNING SCHEDULE

Use the dates in the course schedule to manage your learning. Set aside a fixed time each week to work on this course, just as if you were taking lectures. For some this may be challenging. With the flexibility of an on-line course, comes the need for self-discipline.

<b>Module Outline</b>		
<b>Progress</b> Use these dates to check your progress	<b>Content.</b> Below is the content of each Module and examples of some of the Excel tools you will learn. Each Module will contain presentations, videos, exercises and detailed answer keys	
<b><i>Part 1 Basics - The first four modules contain a lot of material that will become second nature with practice</i></b>		
Module 0	Sept 6	<b>Pre-requisites – Students should become familiar with the basics of excel. Watch the videos and try to replicate basic operations.</b>
Module 1	Sept 9	<b>Module Content: Accessing, managing and displaying data.</b> <i>Downloading public use data, formatting cells, creating graphs, copying/pasting data, and using basic formulas/functions.</i> Excel: Basic formulas and functions, graphs
Module 2	Sept 16	<b>Module Content: Measuring change.</b> <i>Percent change, log percent change, per capita measures, index numbers.</i> Excel: Formulas and functions (e.g. SUMPRODUCT, LN, LOG, IF, MAX, MIN)
<b>Test 1 (Mod 1 – 2)</b>	<b>Sept 18</b>	<b>6:00 pm - 7:00 pm, Room: Machray Hall</b>
Module 3	Sept 23	<b>Module Content: Introduction to Quantitative Methods.</b> <i>Measures of central tendency, variation, and unusual observations. Summary statistics.</i> Excel: Formulas and functions (e.g. AVERAGE, MEDIAN, RANGE, VAR.P, STDEV, COUNT, RAND), histograms
Module 4	Sep 30	<b>Module Content: Basic probability distributions.</b> Excel: Formulas for probability distributions including BINOMIAL.DIST, NORMAL.DIST, LOGNORMAL.DIST, POISSON.DIST
<b>Test 2 (Mod 1 – 4)</b>	<b>Oct 2</b>	<b>6:00 pm - 7:00 pm, Room: Machray Hall</b>
<b><i>Part 2 Statistical Modelling and Forecasting – Most students will find the pace slows down a little for the rest of the course. You have the basics of Excel and will rapidly appreciate how it can apply to a wide range of economics and business problems.</i></b>		
Module 5	Oct 7	<b>Module Content: Regression 1.</b> <i>Introduction to correlation. Estimating and interpreting simple regression models.</i> Excel: Data analysis - regression models, CORREL
Module 6	Oct 14	<b>Module Content: Regression 2.</b> <i>Extending the regression model: dummy variables, non-linear regressions, and elasticities. Assessing regression quality. Seasonal adjustment and trends.</i>

<b>Module Outline</b>		
<b>Progress</b> Use these dates to check your progress	<b>Content.</b> Below is the content of each Module and examples of some of the Excel tools you will learn. Each Module will contain presentations, videos, exercises and detailed answer keys	
		Excel: Formulas and functions (e.g. FORECAST, TREND, SLOPE, INTERCEPT), Moving averages and Array functions
<b>Test 3 (Mod 1 – 6)</b>	<b>Oct 16</b>	<b>6:00 pm - 7:00 pm, Room: Machray Hall</b>
<b><i>Part 3 Economic and business decisions</i></b>		
Module 7	Oct 21	<b><i>Module Content: Time Value of Money.</i></b> Present/future values, loans, mortgages. Excel: Financial formulas (e.g. PV, FV, PMT, PPMT)
Module 8	Oct 28	<b><i>Module Content: Economic decisions.</i></b> Capital budgeting, internal rate of return, depreciation, and cost-benefit analysis. Excel: IRR, NPV, cost-benefit ratios, and scroll bars
<b>Test 4 (Mod 1 – 8)</b>	<b>Oct 30</b>	<b>6:00 pm - 7:00 pm, Room: Machray Hall</b>
Module 9	Nov 4	<b><i>Module Content: Introduction to economic models.</i></b> Demand and Supply Excel: SOLVER
Module 10	Nov 11	<b><i>Module Content: Poverty and Measurement of Inequality.</i></b> Excel: Plotting Lorenz curves and calculating the GINI
Reading week		
November 18, 2019: Voluntary Withdrawal Deadline		
<b>Test 5 (Mod 1 – 9)</b>	<b>Nov 20</b>	<b>6:00 pm - 7:00 pm, Room: Machray Hall</b>
Module 11	Nov 25	<b><i>Module Content: Taxation</i></b> Excel: Nested IF functions, VLOOKUP to compute taxation tables
Module 12	Dec 2	<b><i>Module Content: Linear Programming</i></b> as the foundation of operations research. Translating common economic and business problems into the LP format Excel: SOLVER
<b>The Registrar will schedule the Final Exam during the normal exam period (Dec. 9 to 20, 2019). The Final Exam will test your understanding of <i>all</i> Modules.</b>		

## Schedule “A”

**Section (a):** A list of academic supports available to Students, such as the Academic Learning Centre, Libraries, and other supports as may be appropriate:

### Writing and Learning Support

The Academic Learning Centre (ALC) offers services that may be helpful to you throughout your academic program. Through the ALC, you can meet with a learning specialist to discuss concerns such as time management, learning strategies, and test-taking strategies. The ALC also offers peer supported study groups called Supplemental Instruction (SI) for certain courses that students have typically found difficult. In these study groups, students have opportunities to ask questions, compare notes, discuss content, solve practice problems, and develop new study strategies in a group-learning format.

You can also meet one-to-one with a writing tutor who can give you feedback at any stage of the writing process, whether you are just beginning to work on a written assignment or already have a draft. If you are interested in meeting with a writing tutor, reserve your appointment two to three days in advance of the time you would like to meet. Also, plan to meet with a writing tutor a few days before your paper is due so that you have time to work with the tutor’s feedback.

These Academic Learning Centre services are free for U of M students. For more information, please visit the Academic Learning Centre website at: <http://umanitoba.ca/student/academiclearning/>

You can also contact the Academic Learning Centre by calling 204-480-1481 or by visiting 201 Tier Building.

### University of Manitoba Libraries (UML)

As the primary contact for all research needs, your liaison librarian can play a vital role when completing academic papers and assignments. Liaisons can answer questions about managing citations, or locating appropriate resources, and will address any other concerns you may have, regarding the research process. Liaisons can be contacted by email or phone, and are also available to meet with you in-person. A complete list of liaison librarians can be found by subject: <http://bit.ly/WcEbA1> or name: <http://bit.ly/1tJ0bB4>. In addition, general library assistance is provided in person at 19 University Libraries, located on both the Fort Garry and Bannatyne campuses, as well as in many Winnipeg hospitals. For a listing of all libraries, please consult the following: <http://bit.ly/1sXe6RA>. When working remotely, students can also receive help online, via the Ask-a-Librarian chat found on the Libraries’ homepage: [www.umanitoba.ca/libraries](http://www.umanitoba.ca/libraries).

**Section (b):** A statement regarding mental health that includes referral information:

**For 24/7 mental health support, contact the Mobile Crisis Service at 204-940-1781.**

### **Student Counselling Centre**

Contact SCC if you are concerned about any aspect of your mental health, including anxiety, stress, or depression, or for help with relationships or other life concerns. SCC offers crisis services as well as individual, couple, and group counselling. *Student Counselling Centre:* <http://umanitoba.ca/student/counselling/index.html>  
474 University Centre or S207 Medical Services  
(204) 474-8592

### **Student Support Case Management**

Contact the Student Support Case Management team if you are concerned about yourself or another student and don't know where to turn. SSCM helps connect students with on and off campus resources, provides safety planning, and offers other supports, including consultation, educational workshops, and referral to the STATIS threat assessment team. *Student Support Intake Assistant* <http://umanitoba.ca/student/case-manager/index.html>  
520 University Centre  
(204) 474-7423

### **University Health Service**

Contact UHS for any medical concerns, including mental health problems. UHS offers a full range of medical services to students, including psychiatric consultation. *University Health Service* <http://umanitoba.ca/student/health/>  
104 University Centre, Fort Garry Campus  
(204) 474-8411 (Business hours or after hours/urgent calls)

### **Health and Wellness**

Contact our Health and Wellness Educator if you are interested in information on a broad range of health topics, including physical and mental health concerns, alcohol and substance use harms, and sexual assault. *Health and Wellness Educator* <http://umanitoba.ca/student/health-wellness/welcome.html>  
[Katie.Kutryk@umanitoba.ca](mailto:Katie.Kutryk@umanitoba.ca)  
469 University Centre  
(204) 295-9032

### **Live Well @ UofM**

For comprehensive information about the full range of health and wellness resources available on campus, visit the Live Well @ UofM site:  
<http://umanitoba.ca/student/livewell/index.html>

**Section (c):** A notice with respect to copyright:

All students are required to respect copyright as per Canada's *Copyright Act*. Staff and students play a key role in the University's copyright compliance as we balance user rights for educational purposes with the rights of content creators from around the world. The Copyright Office provides copyright resources and support for all members of the University of Manitoba community.

Visit <http://umanitoba.ca/copyright> for more information.

**Section (d):** A statement directing the student to University and Unit policies, procedures, and supplemental information available on-line:

### **Your rights and responsibilities**

As a student of the University of Manitoba you have rights and responsibilities. It is important for you to know what you can expect from the University as a student and to understand what the University expects from you. Become familiar with the policies and procedures of the University and the regulations that are specific to your faculty, college or school.

The [Academic Calendar](http://umanitoba.ca/student/records/academiccalendar.html) <http://umanitoba.ca/student/records/academiccalendar.html> is one important source of information. View the sections *University Policies and Procedures* and *General Academic Regulations*.

While all of the information contained in these two sections is important, the following information is highlighted.

- If you have questions about your grades, talk to your instructor. There is a process for term work and final **grade appeals**. Note that you have the right to access your final examination scripts. See the Registrar's Office website for more information including appeal deadline dates and the appeal form <http://umanitoba.ca/registrar/>
- You are expected to view the General Academic Regulation section within the Academic Calendar and specifically read the **Academic Integrity** regulation. Consult the course syllabus or ask your instructor for additional information about demonstrating academic integrity in your academic work. Visit the Academic Integrity Site for tools and support <http://umanitoba.ca/academicintegrity/> View the **Student Academic Misconduct** procedure for more information.
- The University is committed to a respectful work and learning environment. You have the right to be treated with respect and you are expected conduct yourself in an appropriate respectful manner. Policies governing behavior include the:

### **Respectful Work and Learning Environment**

[http://umanitoba.ca/admin/governance/governing\\_documents/community/230.html](http://umanitoba.ca/admin/governance/governing_documents/community/230.html)

### **Student Discipline**

[http://umanitoba.ca/admin/governance/governing\\_documents/students/student\\_discipline.html](http://umanitoba.ca/admin/governance/governing_documents/students/student_discipline.html) and,

### **Violent or Threatening Behaviour**

[http://umanitoba.ca/admin/governance/governing\\_documents/community/669.html](http://umanitoba.ca/admin/governance/governing_documents/community/669.html)

- If you experience **Sexual Assault** or know a member of the University community who has, it is important to know there is a policy that provides information about the supports available to those who disclose and outlines a process for reporting. The **Sexual Assault** policy may be found at:  
[http://umanitoba.ca/admin/governance/governing\\_documents/community/230.html](http://umanitoba.ca/admin/governance/governing_documents/community/230.html)  
More information and resources can be found by reviewing the Sexual Assault site  
<http://umanitoba.ca/student/sexual-assault/>
- For information about rights and responsibilities regarding **Intellectual Property** view the policy  
[http://umanitoba.ca/admin/governance/media/Intellectual\\_Property\\_Policy\\_-\\_2013\\_10\\_01.pdf](http://umanitoba.ca/admin/governance/media/Intellectual_Property_Policy_-_2013_10_01.pdf)

For information on regulations that are specific to your academic program, read the section in the Academic Calendar and on the respective faculty/college/school web site  
<http://umanitoba.ca/faculties/>

Contact an **Academic Advisor** within our faculty/college or school for questions about your academic program and regulations <http://umanitoba.ca/academic-advisors/>

### **Student Advocacy**

Contact Student Advocacy if you want to know more about your rights and responsibilities as a student, have questions about policies and procedures, and/or want support in dealing with academic or discipline concerns.

<http://umanitoba.ca/student/advocacy/>

520 University Centre

204 474 7423

[student\\_advocacy@umanitoba.ca](mailto:student_advocacy@umanitoba.ca)