

MATH ECON 1
EC2141B-001
Department of Economics
Western University

January 2022

General Information:

Instructor: Mohammad Iftekher Hossain
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E-mail: mhossa87@uwo.ca
Office hours: M, W 11:30 a.m. – 12.30 p.m. (ET), In-Person
Lectures: **In Person***
T 10:30 - 11:30, TH 9:30 - 11:30, HSB 236

Course website: <https://owl.uwo.ca/portal>

Undergraduate inquiries: 519-661-3507 or SSC Room 4075 or econugrd@uwo.ca

* Until in-person classes resume, online synchronous classes will continue following the class schedule.

Course delivery with respect to the COVID-19 pandemic

Although the intent is for this course to be delivered in person, the changing COVID-19 landscape may necessitate some or all of the course to be delivered online, either synchronously (i.e., at times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will not change. Any assessments affected will be conducted online as determined by the course instructor.

When deemed necessary, tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide personal information (including some biometric data), and the session will be recorded. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: <https://remoteproctoring.uwo.ca>.

Registration:

You are responsible for ensuring you are registered in the correct courses. If you are not registered in this course, the Department will not release any of your marks until your registration is corrected. You may check your timetable by using the Login on the Student Services website at <https://student.uwo.ca>. If you notice a problem, please contact your home Faculty Academic Counsellor immediately.

Prerequisite Note:

Antirequisite(s): Economics 2210A/B.

Prerequisite(s): Economics 1021A/B and Economics 1022A/B, or Economics 2001A/B, and 0.5 course from: Mathematics 1225A/B, Calculus 1000A/B, Calculus 1500A/B; plus 0.5 course from Calculus 1301A/B, Calculus 1501A/B, Mathematics 1229A/B, Mathematics 1600A/B. *Prerequisite(s) for your course can be found in the Western Calendar at:*

<http://westerncalendar.uwo.ca/Courses.cfm?Subject=ECONOMIC&SelectedCalendar=Live&ArchiveID>

You are responsible for ensuring that you have completed all course prerequisites and that you have not taken any anti-requisite courses. Lack of prerequisites may not be used as a basis for appeal. If you are found to be ineligible for a course, you may be removed from it at any time, and you will receive no adjustment to your fees. This decision cannot be appealed.

If you find that you do not have the course prerequisites, it is in your best interest to drop the course well before the end of the add/drop period. Your prompt attention to this matter will not only help protect your academic record but will ensure that spaces become available for students who require the course in question for graduation.

Course Objectives:

This course introduces some frequently used mathematical tools in economics and business economics and discusses various examples of how these mathematical tools are relevant in economic analysis in everyday life. The course covers calculus and matrix algebra, unconstrained optimization, and constrained optimization techniques with equality and inequality constraints, and applications of these tools in economic theories such as consumer and producer theories, equilibrium in competitive and non-competitive markets, comparative statics, and national income accounting, etc.

Course Learning Outcomes:

After successful completion of the course, students can:

- Present several economic functions using graphs, including linear and non-linear, rational, exponential, logarithmic functions.
- Solve simultaneous linear equation systems in economics using matrix inversion and Cramer's rule.
- Set up optimal timing problems and solve them using the appropriate techniques
- Formulate optimization problems in microeconomics, macroeconomics, and business economics.
- Formulate constrained optimization problems with equality constraints, inequality constraints, and several constraints.
- Interpret the second-order sufficient conditions for optimization techniques using the Hessian and Bordered-Hessian.
- Generate comparative statics from optimization problems using various techniques.

Recommended Books

Simon, Carl P., and Blume, Lawrence. 1994. Mathematics for Economists. Norton & Company
Edward T. Dowling, Introduction to Mathematical Economics, Third Edition, McGraw-Hill, 2001
Teresa Bradley, Essential Mathematics for Economics and Business, Fourth Edition, Wiley, 2013

Web Materials:

https://economics.uwo.ca/undergraduate/undergraduate_resources/math_resources_for_ec_2100_required_courses_.html

For the textbook and the recommended books, please visit the Book Store link:

https://bookstore.uwo.ca/textbook-search?campus=UWO&term=W2021B&courses%5B0%5D=001_UW/ECO2141B

Essential Resources

Lecture notes: All pdf notes will be available through OWL before the commencement of the semester.

VoiceThreads (VTs): It is a tool available at OWL. I will upload some prerecorded videos at VTs explaining the key concepts with the progression of the course.

Online resources:

https://economics.uwo.ca/undergraduate/undergraduate_resources/math_resources_for_ec_2100_required_courses.html

All parts of these online resources are necessary for this course.

Resources (OWL): This tool at OWL contains all lecture notes, sample questions, and other related materials.

Tests & Quizzes/ Assignment (OWL): I will use these two tools for the assignments.

In-Person Classes: [Online synchronous classes will continue following the class schedule until in-person classes resume.](#) In the in-person classes/ synchronous online classes, I will discuss some important topics and examples. I will not record in-person classes/ synchronous online classes, and there are no perfect substitutes for in-person classes/ synchronous online classes.

Assessments and Grading:

Your grade point is the total points (out of 100) that you will earn in this course when the semester ends.

Please see the weight below.

<i>Exam</i>	Date and Time* (Tentative)	Covers (Tentative)	Weight
Midterm Exam (IN-PERSON)	Thursday, 17-Feb, 9:30 AM	One variable calculus	33%
3 Assignments (ONLINE)	08-Feb, 10:30 AM-11:15 AM	One variable calculus	5%
	15-Mar, 10:30 AM-11:15 AM	Multivariable calculus	6%
	05-Apr, 10:30 AM-11:15 AM	Linear Algebra	6%
Final Exam (IN-PERSON)	TBA	Cumulative	50%

The weight of the missed assignments will be allocated to the Final Exam.

* When Registrar's office confirms the Date and time for the tests/ exams, we will notify you earliest. The duration of the Midterm Exam is **90 minutes**, and the duration of the Final Exam is 2 hours. I will post the Questions of each Assignment three days before the schedule of that Assignment. Students will require to submit the answers to the Assignment using the OWL Tests & Quizzes tool at OWL during the given time,

Midterm and Final Exams are in-person, closed-book exams. Students should keep this schedule and workload in mind, given their other courses and commitments. Students should plan to ensure that they can complete the tests on these dates. [Assignments are open-book exams through OWL Tests & Quizzes.](#)

Policy Regarding Missed Exams:

Students with approved absence (SRA or approval from the Academic Counselor) from a Midterm exam/ Assignment will have the weight of the missed Exam/ Assignment reallocated to the Final Exam. Please remember that the Final Exam is cumulative.

Students who have an approved absence from the Final Exam will be required to write a makeup exam. The exam format in the makeup exam will be different from the regular Final Exam.

Students who miss any assessment must follow Western University's procedures to approve their absence to receive accommodation.

Course Schedule (Tentative):

Please see the tentative course schedule below.

Week 1, Review

Week 2, One variable calculus: foundations

Week 3, One variable calculus: applications

Week 4, One variable calculus: applications in economics

Week 5, Exponents and Logarithms

08-Feb, 10:30 AM-11:15 AM Assignment 1: One variable calculus

Week 6, Calculus of exponential and logarithmic functions

Midterm Exam (**IN-PERSON**), Thursday, 17-Feb, 9:30 AM, One variable calculus

Week 7, Functions of several variables: foundations

Week 8, Functions of several variables: applications

Week 9, Unconstrained optimization of multivariable functions

15-Mar, 10:30 AM-11:15 AM, Multivariable calculus

Week 10, Constrained optimization: equality constraints

Week 11, Linear algebra

Week 12, Constrained optimization: inequality constraints

05-Apr, 10:30 AM-11:15 AM, Linear Algebra

Week 13, Economic applications, Review

TBA: Final Exam Cumulative

Professionalism, Privacy, and Copyright:

- Students are expected to follow the [Student Code of Conduct](#).
- All lectures and course materials, including slides, presentations, outlines, and similar materials, are protected by copyright. Students may take notes and make copies of course materials for their own educational purposes only.
- Students may not record lectures, reproduce (or allow others to reproduce), post or distribute lecture notes, assessments, or any other course materials publicly and/or for commercial purposes without written consent.
- Recordings (audio or video) are not permitted without explicit, written permission. Permitted recordings may not be distributed or shared.

Please Note
Department & University Policies for Winter 2022

The University expects all students to take responsibility for their own Academic Programs. Students should also check their registration to ensure they are enrolled in the correct courses.

1. **Guidelines, policies, and your academic rights and responsibilities** are posted online in the current Western Academic Calendar at: <http://westerncalendar.uwo.ca>. Claiming that “you didn’t know what to do” is not an acceptable excuse for not following the stated policies and procedures.
2. Students must familiarize themselves with the “**Rules of Conduct for Examinations**” http://www.uwo.ca/univsec/pdf/academic_policies/exam/administration.pdf.
3. **Cheating as an academic offence:** Students are responsible for understanding what it means to “cheat.” The Department of Economics treats cheating incidents very seriously and will investigate any suspect behavior. Students found guilty will incur penalties that could include a failing grade or being barred from future registration in other Economics courses or programs. The University may impose further penalties such as suspension or expulsion.
4. **Plagiarism:** Students must write their essays and assignments in their own words. When taking an idea/passage from another author, it must be acknowledged with quotation marks where appropriate and referenced with footnotes or citations. Plagiarism is an academic offence (see Scholastic Discipline for Undergraduate Students in the Western Calendar at http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_20).

Western University uses software to check for plagiarism and students may be required to electronically submit their work. Those found guilty will be penalized as noted in point 3.

5. It is a Department of Economics policy that **NO** assignments be dated, stamped or accepted by staff. Students must submit assignments to the instructor.
6. **Appeals:** University policies and procedures for appealing a mark can be found in the Student Academic Appeals section in the current Western Academic Calendar at: http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_14. **Please note the relevant deadlines.**

Department of Economics procedures for appealing a mark can be found here: https://economics.uwo.ca/undergraduate/program_counselling/responsibilities_policies.html#appeals. The Department will not consider an appeal unless an attempt has been made to settle the matter with the instructor first. Students who remain dissatisfied with the outcome may proceed to submit an appeal to econugrd@uwo.ca. Please follow the instructions and use the appeal form shown in the above link.

7. **Systematic adjustments of a class grade distribution** (either up or down) can occur in Economics courses. The fact that grades have been adjusted is **not** grounds for an appeal.
8. Note the following **add and drop deadlines**:

Deadline to add a second term half course:

Tuesday January 18, 2022

Deadline to drop a second term half course:

Monday March 14, 2022

Policy Regarding Makeup Tests and Final Examinations

Faculty of Social Science policy states that oversleeping or misreading an exam schedule is NOT grounds for a makeup. This rule applies to midterm and final exams in the Department of Economics.

Policies Regarding Academic Accommodation

- The Faculty of Social Science's policies on academic accommodation are found at https://counselling.ssc.uwo.ca/procedures/academic_consideration.html
- **Accommodation for Students with Disabilities:** Students with disabilities or accessibility challenges should work with Accessible Education (formerly SSD, see http://academicsupport.uwo.ca/accessible_education/index.html), which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The accommodation policy can be found here: [Academic Accommodation for Students with Disabilities](#).
- **Rewriting Exams and Retroactive Reweighting are NOT Permitted:** Students who proceed to write a test or examination must be prepared to accept the mark. Rewriting tests or examinations, or retroactive reweighting of marks, is **not** permitted. Self-Reported Absences cannot be used once a student has proceeded to start to write a test or exam.
- **Self-Reported Absences:** Students will have two opportunities during the fall and winter terms to receive academic consideration if they self-report a missed assessment using the online self-reported absence portal, provided the following conditions are met: the assessment is missed due to an absence of no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student's final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted otherwise on the syllabus. Students are not able to use the self-reporting option in the following circumstances:
 - for exams scheduled by the Office of the Registrar (e.g., final exams)
 - absence of a duration greater than 48 hours
 - assessments worth more than 30% of the student's final grade
 - if the student has opened or started the test or exam
 - if a student has already used the self-reporting portal twice during the fall/winter terms

If the conditions for a Self-Reported Absence are *not* met, students will need to provide a Student Medical Certificate (SMC) if the absence is medical or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office for more information about the relevant documentation. It is strongly recommended that students notify the instructor as soon as possible, ideally before the assessment, when they become aware of an absence. University policy is that students must communicate with their instructors no later than 24 hours after the end of the period covered by the SMC or immediately upon their return from their documented absence. Failure to follow University policy and procedures may result in denial of academic accommodation and a grade of zero.

- **Documentation for Accommodation:** Individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds or for other reasons. **All required documentation for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**
- **Western University policy on Consideration for Student Absence** is available here: [Policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs.](#)
- **Student Medical Certificate (SMC):** This form is available here: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf
- **Religious Accommodation:** Students should consult the University's list of recognized religious holidays and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the [Western Multicultural Calendar.](#)

Policy Regarding Class Attendance and Engagement: If the instructor deems a student's attendance or engagement in the class to be unsatisfactory, that student may be prohibited from writing the final examination. Examples of unsatisfactory class engagement include frequent absences from an in-person or synchronous online class, lack of assignment submissions, and inadequate use of online course materials. Instructors who intend to make use of this policy will notify the student in advance.

Statement on Mental Health and Support Services: Students under emotional/mental distress should visit https://uwo.ca/health/mental_wellbeing/ for more information and a complete list of resources on how to obtain help.

Statement on Remote Proctoring: While Western intends to hold most classes, mid-terms and finals in-person, the London-Middlesex Health unity may require western to teach in a remote format. If this occurs, all assessments will be done remotely and may involve the use of remote proctoring software (i.e., Proctorio, ProctorTrack). Instructors will provide information on the details should the need arise.

