

**APPLIED ECONOMETRICS I**  
**ECONOMICS EC3388A-001**  
**Department of Economics**  
**Western University**

**September 2024**

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**Office hours:** *Tuesdays from 12:00 to 13:00 and Wednesdays from 10:00 to 11:00*  
**Delivery mode:** *In-person*  
**Meeting time(s):** *Mondays from 9:30 to 11:30 and Wednesdays from 11:30 to 12:30*  
**Classroom:** *Mondays in SSC-3014, Wednesdays TBA*  
**Course website:** <https://westernu.brightspace.com/>  
**Undergraduate inquiries:** 519-661-3507 or SSC Room 4078 or [econugrd@uwo.ca](mailto:econugrd@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/Antirequisite Note:**

The prerequisite(s) for this course is Economics 2223A/B.

You are responsible for ensuring that you have successfully 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.

## Tentative Course Outline:

Week	Topics	Laboratory	Project
09/09 – 09/11	Review	Introduction to R	—
09/16 – 09/18	Ordinary Least Squares	Stature and status	Form teams
09/23 – 09/25	Maximum Likelihood	Children and Lady First	Choose field
09/30 – 10/02	—	Simulated Biases	Find data
10/07 – 10/09	Method of Moments	Demand Estimation	Choose topic
10/14 – 10/16	—	—	—
10/21 – 10/23	Causation	<i>First Quiz</i>	Clean data
10/28 – 10/30	Instrumental Variables	Housing First	Graph data
11/04 – 11/06	Differences in Differences	Minimum Wage	Regression
11/11 – 11/08	Fixed Effects	Drinking & Driving	Literature review
11/18 – 11/19	Regression Discontinuity	Alcohol and mortality	Main result
11/25 – 11/27	Weiting and presenting	<i>Second Quiz</i>	—
12/01 – 12/07	<i>Presentations</i>	<i>Presentations</i>	<i>Final reportt due</i>

## Course Objectives:

This course aims to give Economics Honours Students a practical understanding of modern econometrics tools for estimating causal relations between economic variables. The theoretical part of the course covers (1) which econometric methods can help with specific questions or data sets and (2) how to interpret the estimates and confidence intervals resulting from econometric analysis. The practical part of the course will help you develop the necessary skills to (1) implement econometric techniques to real-life data and (2) use tables, diagrams, and graphs to represent your findings effectively. Some econometric tools discussed include regression models, robust and clustered standard errors, fixed and random effects, regression discontinuity design, instrumental variables, maximum likelihood, simultaneous equations, and non-linear binary response models.

## Course Learning Outcomes:

Students who successfully complete the course will learn how to:

- Evaluate the validity of causal claims from studies, articles, and technical reports
- Identify which econometric models can help answer some common economic questions
- Interpret the estimates, standard errors, and tests from different econometric models
- Estimate causal relations using appropriate datasets
- Understand some of the most commonly used econometric techniques
- Apply such techniques to real-life data using R or another statistics package

## Textbook(s) and Course Materials:

There are two recommended textbooks, but none of them are required. Additional reading materials will be assigned in class.

The main text is Wooldridge (2015) *Introductory Econometrics: A Modern Approach*, 7th edition, South-Western. For our purposes, the 5th and 6th editions of this textbook are virtually identical, as are earlier ones. Several copies of this textbook are available at Weldon. I will use this book's notation, examples, and datasets in most lectures. You might be able to follow the lectures better if you read before class.

A few selected topics will be based on Cunningham (2021) *Causal Inference: The Mixtape*, Yale University Press. Some of the contents of the book are available at <https://mixtape.scunning.com/>

## Assessments and Grading:

The grade for this course will be determined as follows:

- 30% from a written report of the term project due **December 06**
- 20% from an oral presentation of the term project during the last week of the term
- 10% from the term paper weekly milestones
- 40% from weekly laboratory activities, including two quizzes to be held on **October 23** and **November 27**

The main component of the course grade is the term project, which is to be completed individually or in a small team. You must find a real-life dataset and identify a related Economic question. You must try to answer the initial question based on the empirical findings resulting from the statistical analysis of the data. The analysis must involve at least one multiple regression and at least one hypothesis test. The selection of the model(s) and hypotheses must be justified by economic theory.

The term project will be graded based on a written report, a fifteen-minute presentation, and weekly milestone requirements to ensure you don't fall behind and have enough time to complete a satisfactory project. In order to receive a passing grade, you must satisfactorily complete the term project. Those of you taking 4400 can use the same project for both courses.

The laboratory activities will usually involve using the statistical package R to replicate results from an economics paper and then answering short questions about interpreting the results. On October 23 and November 27, the laboratory activities will be short open-book quizzes. In total, there will be ten laboratory activities. I will drop the two lowest grades so that each remaining activity will count 5% towards your final grade. Self-attestation cannot be used for laboratory activities because of the flexible grading policy.

### **Use of generative AI:**

You are encouraged to use generative AI to improve the text of your project with the following considerations.

1. Generative AI is currently not a credible source for academic purposes. You may not justify a factual claim on the basis that “Chat GPT says so.” Every factual claim needs to have proper, credible references such as primary sources or data, reports from credible institutions, published books, or peer-reviewed papers.
2. If you use generative AI, you must attribute proper credit. At the end of your project, write a short text explaining exactly how you used it. The explanation must specify the AI engine and the main prompts that you employed. Using generative AI without attributing credit constitutes a serious form of plagiarism and will be treated as such following the department & university policies.
3. Current generative AI software can help with the form of the text but not so much with the content. The content of the text generated by generative AI often has mistakes and fallacious reasoning, especially when dealing with technical topics. You are responsible for ensuring that the text you include in your project is correct.
4. You must understand all the text in your project. During your presentation, I may ask you questions about anything written in the project, and I will deduct points from your grade if you are unable to answer them correctly.

### **Technical Requirements:**

This is a practical course on statistical data analysis. During our laboratory practices, you will have access to computers with all the necessary software. It is strongly recommended that you secure access outside the classroom to a computer (not a tablet nor a Chromebook) with the minimal requirements to install R (<https://www.r-project.org/>) and R-studio (<https://posit.co/products/open-source/rstudio/>).

**PLEASE NOTE**  
**DEPARTMENT & UNIVERSITY POLICIES FOR FALL 2024**

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. A [new academic consideration and flexibility in assessment](#) policy is in effect starting September 2024. Students can miss one assessment per course per term without medical documentation. Faculty can designate one assessment per course for which students *cannot* self-attest.
3. Students must familiarize themselves with the “**Rules of Conduct for Examinations**” [http://www.uwo.ca/univsec/pdf/academic\\_policies/exam/administration.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/exam/administration.pdf).
4. **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.
5. **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](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 4.

6. It is a Department of Economics policy that **NO** assignments be dated, stamped or accepted by staff. Students must submit assignments to the instructor.
7. **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](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](mailto:econugrd@uwo.ca). Please follow the instructions and use the appeal form shown in the above link.

8. **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.

9. **ADD AND DROP DEADLINES:**

- Deadline to **ADD** first term full or half course: **Fri, Sept 13, 2024**
- Deadline to **DROP/WITHDRAW** first term full or half course: **Mon, Dec 2, 2024**

**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**

- Academic accommodation will not be granted automatically on request. Students must demonstrate by documentation that there are compelling medical or compassionate grounds before academic accommodation will be considered. The Faculty of Social Science's policies on academic accommodation are found at [https://counselling.ssc.uwo.ca/procedures/academic\\_consideration.html](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](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. Students must also book travel arrangements AFTER final exam dates have been posted as they

must not conflict with test or final exams.

- Unless medically incapable of doing so, students must notify their instructor prior to the test date or at least within **48 hours** when requesting a makeup exam. Failure to follow this procedure may result in denial of academic accommodation and a grade of zero. Students should also set up an appointment as soon as possible to meet with their instructor. If the instructor is not available, send an email message to the instructor, copying the Undergraduate Coordinator at [econugrd@uwo.ca](mailto:econugrd@uwo.ca). **Notifying instructors of a missed exam does not automatically entitle students to a makeup.**
- For medical illnesses, students may consult Student Health Services and request a Student Medical Certificate from the physician. If assessed by an off-campus doctor, students must obtain a certificate from his/her office at the time of the visit/assessment. Student Medical Certificate (SMC) is available here:  
[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf)
- **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.
- **Western University policy on Consideration for Student Absence** is available here:  
[https://counselling.ssc.uwo.ca/procedures/probation\\_rtw/appeals.html](https://counselling.ssc.uwo.ca/procedures/probation_rtw/appeals.html)
- **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 [http://uwo.ca/health/mental\\_wellbeing/](http://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 unit 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.

## **Guidelines for Essay Courses**

### **Essay Courses<sup>1</sup>**

An essay course is a course in which the cumulative amount of written work, excluding written work in examinations, is at least 2,500 words (for a half course).

To pass an essay course, students must exhibit a minimal level of competence in essay writing in addition to comprehension of the course content.

### **English Language Proficiency for Assignment of Grades<sup>2</sup>**

Written work that demonstrates a lack of English proficiency will be failed or, at the discretion of the instructor, returned to the student for revision to an acceptable level.

To foster competence in the English language, *all instructors will take English proficiency into account when marking*. This policy applies to all courses, not only essay courses.

### **Recycling of Assignments**

Students are prohibited from handing in the same paper for two different courses. Doing so is considered a scholastic offence and will be subjected to academic penalties.

### **Plagiarism**

Plagiarism is defined as “the act or an instance of copying or stealing another’s words or ideas and attributing them as one’s own.”<sup>3</sup>

Plagiarism applies to ALL assignments including essays, reports, diagrams, statistical tables, and computer projects. Examples of plagiarism include:<sup>4</sup>

- Submitting someone else’s work as your own
- Buying a paper from a mill, website or other source and submitting it as your own
- Copying sentences, phrases, paragraphs, or ideas from someone else’s work, published or unpublished, without citing them

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<sup>1</sup>From the UWO Academic Handbook. See [http://www.uwo.ca/univsec/pdf/academic\\_policies/registration\\_progression\\_grad/course\\_numbering.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/registration_progression_grad/course_numbering.pdf)

<sup>2</sup> From the UWO Academic Handbook. See [http://www.uwo.ca/univsec/pdf/academic\\_policies/exam/english.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/exam/english.pdf)

<sup>3</sup>Excerpted from HC Black, *Black’s Law Dictionary*, West Publishing Co., 1999, 7th ed., p. 1170.

<sup>4</sup> Adapted from the San José State University Plagiarism Tutorial <https://libguides.sjsu.edu/plagiarism>



- Replacing selected words from a passage from someone else's work and using it as your own without citing them
- Copying multimedia (graphics, audio, video, internet streams), computer programs, music compositions, graphs, or charts from someone else's work without citing them
- Piecing together phrases and ideas from a variety of sources without citing them
- Building on someone else's ideas or phrases without citing them

Plagiarism is a serious scholastic offence. Possible consequences of plagiarism include a mark of 0% on the assignment, a mark of 0% for the course, and expulsion from the university.

Instructors may require students to submit written work electronically to <http://www.turnitin.com>. This is a service that assists instructors in detecting plagiarism.

Students seeking further guidance on avoiding plagiarism should consult their instructor. *Claiming ignorance is not an acceptable excuse.*

The key to avoiding plagiarism is to correctly cite reference sources.

## Referencing and Citation Guidelines

The Economics Department has adopted the citation guidelines used in *The Chicago Manual of Style*, 16<sup>th</sup> edition. Chicago: University of Chicago Press, 2010. You can find an online version on the Western Libraries website. Go to <https://www.lib.uwo.ca/essayhelp/index.html> and click on 'style guides'. For off-campus access, use the *OffCampus Access* sign-in on the Library's homepage.

Economics papers often use the in-text **author-date** style of citations and references. Details and examples of this style are shown in chapter 15 of the *Chicago Manual of Style Online*. See also the handy "Chicago-Style Citation Quick Guide" under Tools on the homepage.

In the body of an essay, in-text citations list the last names of the authors of the piece that are referenced, the year of publication, and, where relevant, page numbers. In-text citations refer the reader to a complete list of bibliographic references at the end of the essay. Papers that cite multiple works by the same author(s) with the same publication year should add a lower case letter after the date in both the in-text citation and References (e.g., 1993a and 1993b). In doing so, the in-text citation points the reader to the relevant work.

Examples of in-text citations:

Diamond (1981, 1982) and Mortensen (1982a, 1982b) find these externalities can cause an inefficient level of search activity...

The “new view of unemployment” which emerged during the 1970s emphasized the importance of turnover in the labour force and the brief duration of many employments spells (Hall 1970, 1972; Perry 1972; Marston 1976).

The primary objectives of the LMAS are “1. To provide measures of the dynamic...the Labour Force Survey” (Statistics Canada 1990, 5).

The list of references at the end of the essay should be titled References or Works Cited. It should provide complete bibliographic information about each source cited. In addition, students should also provide adequate referencing of any data sources. This can be done in a data appendix following the text of the paper and before the References.

Examples of the format and content of references can be found here:

<https://www.lib.uwo.ca/files/styleguides/ChicagoStyleAuthorDate.pdf>

### **Writing an Economics Essay: Starting Points**

To start a written assignment, review your professor’s instructions. Read published work written by economists, which will give you examples of the structure and content of economics writing. Examples are readings in the course outline, journals, working papers, etc.

Two helpful sources that give information about how to write for economics are:

McCloskey, Dierdre N. 2000. *Economical Writing*, 2<sup>nd</sup> edition. Prospect Heights, Illinois: Waveland Press.

Greenlaw, Steven A. 2006. *Doing Economics: A Guide to Understanding and Doing Economic Research*. New York: Houghton Mifflin Co.

### **Writing an Economics Essay: Resources**

The **Resources Link** on Western University’s Department of Economics website (<http://economics.uwo.ca/resources/index.html>) provides a link to a list of sources for published and unpublished economic papers, articles, books, theses, government publications, data, etc. Western Libraries has a very useful economics resource page <https://guides.lib.uwo.ca/economics>.

**DB Weldon Library** has a collection of bibliographies, indexes, handbooks, and periodicals in economics. Library holdings, the online library catalogue, and other resources are available electronically from the Western Libraries Homepage <http://www.lib.uwo.ca/>. These can be accessed off-campus with the OffCampus Proxy Server on the Library main page.

Students are encouraged to take a library orientation tour to learn about where sources of information are located both physically and online. Consult library staff for questions

***The New Palgrave Dictionary of Economics*** is the most comprehensive dictionary of economics in existence today. It is available online through the library catalogue, or in print in the Weldon's Reference section (call # HB 61.N49 2008 v. 1-8).

***EconLit*** (*Economic Literature*) is an electronic bibliography of literature from 1969 to the present. It covers journals, collected articles, books, book reviews, dissertations, and working papers. It also provides citations, selected abstracts, and links to Western's full-text resources. Students can also print records by downloading marked records to a text file, sending marked records by email, or exporting them to a citation manager such as *Zotaro*. For a list of citation software, see <https://www.lib.uwo.ca/essayhelp/citationmanagementsoftware.html>.

**CANSIM** (**Canadian Socio-economic Information Management System**) is Statistics Canada's database of time series data covering a variety of economic aspects of Canadian society. Access the database by a Title Search on the Western Library's Catalogue, or from the Library's list of Databases under "Research Tools" on the Library's homepage.

#### **Western Undergraduate Economics Review (WUER)**

The Department of Economics encourages students to consider submitting their essays to the *Western Undergraduate Economics Review*, a journal published annually by the Department that showcases student work in economics. For further information, please visit [http://economics.uwo.ca/undergraduate/undergraduate\\_economics\\_review.html](http://economics.uwo.ca/undergraduate/undergraduate_economics_review.html).

#### **Essay Prize in Economics**

Two prizes may be awarded at the end of the academic year. One prize is for a student registered in a 2100 level course, and one is for a student registered in a 2200 or higher level course. Each prize is valued at \$500.

Students can only win the Essay Prize in Economics once. Economics 4400E is not eligible for this prize as it has its own essay award.

Instructors will nominate student essays for the prize. The essay should be submitted to the Undergraduate Coordinator for consideration by the Essay Prize Committee, which will decide the winner. The Essay Prize Committee will consist of the Undergraduate Program Director, WUER Faculty Advisor and one other faculty member. The decision of the Committee is final and cannot be appeal.

Papers will be judged on content, originality, use of references, spelling, and grammar.

The grade given to the paper will not influence the decision of the Essay Prize Committee as all comments by the original marker will be removed.

The deadlines for instructor submissions are:

Fall courses: January 1<sup>st</sup>

Winter courses: May 1<sup>st</sup>

*The winner of the essay prize is encouraged to submit their paper to the Western Undergraduate Economics Review. Other appropriate papers may also be submitted.*