



**Econ3378A 570**  
**Advanced Econometrics**  
**Fall 2025**

Instructor: Dr. Renfang Tian  
Email: [rtian2@uwo.ca](mailto:rtian2@uwo.ca)

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**Course Information**

**Mode of Instruction:** In Person

**Calendar Description:**

This course discusses the inference for classical linear regression models and their extensions, using basic matrix algebra, statistical theory, and numerical methods. Estimators, including least squares and maximum likelihood, are introduced. Additional topics may be included at the instructor's discretion.

**Pre-requisite(s):** Economics 2223A/B.

**Anti-requisite(s):** Economics 3313E, Economics 3388A/B.

**Extra Information:** 3 lecture hours.

**Course Weight:** 0.50

**Breadth:** CATEGORY A

**Subject Code:** ECONOMIC

Notice: Unless you have either the requisites for this course (fulfilment of pre-requisites, no anti-requisite conflicts), or special permission from your Dean to enrol in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

**Economics 3378A (570)**  
**Advanced Econometrics**  
**Fall 2025**

**Course information:**

**Instructor:** Renfang Tian

**Email:** rtian2@uwo.ca (Please use uwo email address when emailing the instructor, so it can be verified and does not end up in spam.)

**Office hours:** 12noon to 1:00pm on Monday – Thursday

**Course description:**

The objective of this course is to equip students with a comprehensive understanding of econometric models and techniques that are widely used in modern empirical research. The course covers various methods for conducting research in applied economics, focusing on the following topics:

- A review of fundamental mathematics and statistics
- An introduction to basic asymptotic theory
- Classical linear regression model and the extensions
  - Matrix representation
  - Heteroskedasticity and robust standard errors
  - Serial correlation and robust standard errors
  - Endogeneity and instrumental variables
- Generalized least squares and applications (if time allows)
- Maximum likelihood estimation
  - Implementation and properties
  - MLE for limited dependent variable models

**Course learning outcomes:**

By the end of the course, students will reinforce their econometric thinking, have a solid understanding of basic and certain extended econometric models and analytical techniques, understand how to conduct empirical research using suitable econometric tools, while acknowledging their advantages and limitations in various circumstances.

**Mode of instruction, course materials, and technical requirements**

The course is in person. No textbook will be required for this course. All course materials can be found on the OWL course website powered by Brightspace. Students are expected to be aware of information and make use of materials posted on the course web site.

- Referred Textbooks (not required):
  - *Introduction to Econometrics*, by James H. Stock and Mark W. Watson, 3<sup>rd</sup> edition;
  - *Introductory Econometrics: A modern approach*, by Jeffrey M. Wooldridge, 4<sup>th</sup> edition;
  - *Statistics for Business and Economics*, by P Newbold et al, 8<sup>th</sup> Edition.
- Software:
  - R (You will need to have access to a laptop or desktop computer. Access to the software is free and will be provided at the beginning of the course)

## Evaluation

The overall grade will be based on either Method 1 or Method 2 listed below; whichever one produces the higher course grade based on the student's performance in each assessment.

- Method 1:
  - Participation/Attendance (10%): in-class
  - Five assignments ( $5 * 8\% = 40\%$ ): due on Fridays Sep. 26, Oct. 10, Oct. 24, Nov. 21, and Dec. 5 (will accept up until the coming Mondays without penalty)
  - Midterm test (20%): in class on Oct. 29
  - Final exam (30%): time and location TBA
- Method 2:
  - Participation/Attendance (10%): in-class
  - Five assignments ( $5 * 8\% = 40\%$ ): due on Fridays Sep. 26, Oct. 10, Oct. 24, Nov. 21, and Dec. 5 (will accept up until the coming Mondays without penalty)
  - Midterm test (0%): in class on Oct. 29
  - Final exam (50%): time and location TBA

**NOTE: students must write the final exam to pass this course. If you do not write the final exam, your maximum grade in this course will be 49%, and you will not receive course credit.**

## Course Assessments

### 1. Participation/Attendance

The lectures will be interactive, and students are expected to attend and participate regularly. The grade component will be calculated as follows:

- If a student participates in 80% or more of the in-class exercises, they will receive full marks.
- If a student answers less than 80% of the in-class exercises, the mark will be  $12.5y$ , where  $y$  is the proportion of all questions the student answered. For example, if you answer 70% of the questions, your participation/attendance mark will be  $12.5 * 70\% = 8.75$  out of 10.

**NOTE: there are no make-ups or other exceptions for missed participation/attendance, as it is already taken into consideration in the marking scheme.**

### 2. Five assignments

There will be 5 assignments to be submitted to OWL. If a student misses one assignment, the weight of the missed assignment will be automatically redistributed to the final exam. If a student misses more than one assignment, a mark of 0 will be automatically applied to the second and any subsequent missed assignment(s). **NOTE: there are no make-ups or other exceptions for missed assignment(s), as it is already taken into consideration in the marking scheme.**

### 3. Midterm test

The in-class midterm test will be a 75-minute closed-book assessment. Formular sheets will be provided. Non-programmable scientific calculators are allowed. More details will be provided on OWL. **NOTE: there is no makeup midterm. If a student misses the midterm, the weight of the midterm will be transferred to the final exam (i.e., Method 2 applies).**

### 4. Final Exam

The final exam is cumulative and will be scheduled by the Registrar's Office. Formular sheets will be provided. Non-programmable scientific calculators are allowed. More details will be provided on OWL.

**Student Expectations:**

- Regular attendance at classes.
- Completion of assigned work.
- Assumption of complete responsibility to follow-up regarding any assessments which are missed.
- Awareness of items and use of materials posted on the course OWL web site.
- It is up to the student to seek out help when needed.

**Academic Integrity:**

- It is expected that all the work you submit will be your own.
- Academic integrity policies at Western require that instructors forward to their department chair or director any evidence of academic offenses.
- Cheating is taken seriously to protect the integrity of our measures of your learning.
- Students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:  
[https://uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](https://uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf)
- Instructors reserve the right to seek additional clarification about any submitted work (e.g. explain a solution) as part of any assessment.

King's is committed to fostering a culture of professionalism, honesty, and academic integrity, and all members of our community—faculty, staff, and students—have a role to play in promoting an ethical learning environment. Furthermore, through the work they submit for academic evaluation, students develop important habits of critical thinking, independent inquiry, and creativity. Thus, it is expected that students will submit work that is truly their own, completed without external assistance (human or artificial) except as explicitly permitted by the course instructor.

**Intellectual Property Statement**

Course content created by a faculty member is considered the faculty member's intellectual property; it should not be distributed, shared in any public domain, or sold by a student or other third party without prior written consent of the faculty member. Sharing, posting, selling or distributing this material outside your personal use in this course is considered to be an infringement of intellectual property rights.

# KING'S UNIVERSITY COLLEGE

## GENERAL COURSE POLICIES

### 2025-2026

#### **1. Academic Accommodations, Consideration for Absences**

##### **Academic Accommodation (Accessibility)**

Accessibility Services works to ensure that academic programs are accessible to all students, and supports students who may have a condition related to, but not limited to, vision, hearing, mobility, different ways of learning, mental health, chronic illnesses, chronic pain, autism spectrum disorder, ADD/ADHD, and temporary conditions (beyond short-term academic consideration). Accessibility Services provides recommendations for accommodation based on medical documentation or psychological and cognitive assessment. The accommodation policy can be found here [Academic Accommodation for Students with Disabilities](#). Information on Accessibility Services at King's can be found [here](#).

##### **Academic Consideration for Student Absence**

If a student is unable to meet a course requirement due to substantial but temporary extenuating circumstances (medical or compassionate), they should follow the procedures below.

In some cases, where instructors have built flexibility into their assessments, this flexibility will already address consideration needs.

Requests for academic consideration should be directed to the Academic Advising Office of your faculty/college of registration. Requests must be made as soon as possible and no later than 48 hours after the missed assessment.

As a rule, documentation is required for academic consideration. For academic consideration requests on medical grounds, the Student Medical Certificate is available at [https://www.kings.uwo.ca/kings/assets/File/currentStudents/courses\\_enrollment/exams\\_and\\_tests/SMC-Feb-2025.pdf](https://www.kings.uwo.ca/kings/assets/File/currentStudents/courses_enrollment/exams_and_tests/SMC-Feb-2025.pdf).

Students are permitted one academic consideration request without supporting documentation per term per course.

Instructors may designate one assessment per half-course weight as requiring formal supporting documentation. Please refer to the course outline for each course.

For further information, please see:

[https://uwo.ca/univsec/pdf/academic\\_policies/appeals/academic\\_consideration\\_Sep24.pdf](https://uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf)

##### **Absences from Final Examinations**

If you miss the Final Exam, contact the Academic Advising Office of your faculty/college of registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (e.g., more than 2 exams in 23-hour period, or more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under [Special Examinations](#)).

## Religious Accommodation

Students should consult the University's list of recognized religious holidays, and should give notice in writing to the instructor and Academic Advising Office if a course requirement will be affected by a religious holiday/observance. Notice must be given as early as possible, and no later than two weeks prior to an examination, and one week prior to a midterm test date. It is the responsibility of such students to inform themselves concerning the work done in classes from which they are absent and to take appropriate action.

## 2. Support Services

Accessibility, Counselling and Student Development at King’s University College:

<https://www.kings.uwo.ca/current-students/student-services/>

Students experiencing emotional or mental health distress can access services at King’s University College:

<http://www.kings.uwo.ca/current-students/campus-services/student-support-services/personal-counselling/>

Good2talk is a good online and phone 24/7 resource for students and is available in English, Mandarin, and French: <https://good2talk.ca>, 1-866-925-5454

MentalHealth@Western provides a complete list of options about how to obtain help:

[https://www.uwo.ca/health/mental\\_wellbeing/](https://www.uwo.ca/health/mental_wellbeing/)

Academic Support Services at King’s University College:

<https://www.kings.uwo.ca/current-students/academic-resources/>

## GBSV Support:

King’s is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at: <https://www.kings.uwo.ca/about-kings/safe-campus/gender-and-sexual-violence/>

You can reach someone supports at Kings by emailing [Care@kings.uwo.ca](mailto:Care@kings.uwo.ca) or calling 519-930-4640 to reach a social worker who can offer help.

You can also reach Western’s Gender-Based Violence & Survivor Support Case Manager by [email](#) or by calling 519-661-3568.

Further supports can be found on this website: <https://www.kings.uwo.ca/about-kings/safe-campus/gender-and-sexual-violence/>

See also [https://www.uwo.ca/health/student\\_support/survivor\\_support/get-help.html](https://www.uwo.ca/health/student_support/survivor_support/get-help.html)

University Students' Council offers many valuable support services for students, including the health insurance plan: <http://westernusc.ca/services/>

### 3. Statement on Use of Electronic Devices

**Use of Electronic Devices:** Unless explicitly stated otherwise, you are not allowed to have a cell phone, or any other electronic device, with you during tests or examinations. Unauthorized possession of such a device during a test or examination constitutes an academic offence.

**Use of Laptops, Tablets, and Smartphones in the Classroom:** King's University College at Western University acknowledges the integration of new technologies and learning methods into the curriculum. The use of electronic devices such as laptop computers, tablets, or smartphones can contribute to student engagement and effective learning. At the same time, King's recognizes that instructors and students share jointly the responsibility to establish and maintain a respectful classroom environment conducive to learning.

The use of electronic devices by students during lectures, seminars, labs, etc., shall be for matters related to the course at hand only. Students found to be using electronic devices for purposes not directly related to the class may be subject to sanctions under the Student Code of Conduct; see <https://www.kings.uwo.ca/current-students/student-affairs/code-of-student-conduct1/>

Inappropriate use of electronics (e.g., laptops, tablets, smartphones) during lectures, seminars, labs, etc., creates a significant disruption. As a consequence, instructors may choose to limit the use of electronic devices in these settings. In addition, in order to provide a safe classroom environment, students attending in-person class sessions are strongly advised to operate laptops with batteries rather than power cords.

### 4. Statement on Academic Offences

King's is committed to academic integrity. Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, is posted at [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf)

It is expected that students will submit work that is truly their own, completed without external assistance (human or artificial) except as explicitly permitted by the course instructor. Check with your instructor on what tools, including generative AI (ChatGPT, translation tools, grammar-checking tools) are permitted in the course. Because a tool is permitted in one course, that does not mean it is permitted in other courses.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system; see [https://elearningtoolkit.uwo.ca/tools/Originality\\_Reports\\_-\\_TurnItIn.html](https://elearningtoolkit.uwo.ca/tools/Originality_Reports_-_TurnItIn.html).

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

### 5. Copyright of Course Material

Lectures and course materials, including PowerPoint presentations, tests, outlines, and similar materials are protected by copyright. Faculty members are the exclusive owner of copyright in those materials they create. Students may take notes and make copies for their own use. Students may not allow others to reproduce or distribute lecture notes and course materials publicly (whether or not a fee is charged) without the express written consent of a faculty member. Unauthorized sharing of class content is subject to academic discipline.

Similarly, students own copyright in their own original papers and exam essays. If a faculty member wishes to post a student's answers or papers on the course website, they should ask for the student's written permission.

## **6. Use of Recordings**

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation and/or the participant has the prior written permission of the instructor. Unauthorized recording and/or sharing of class content is subject to academic discipline.

## **7. Policy on Attendance**

Any student who, in the opinion of the instructor, is absent too frequently from class or laboratory periods in any course, will be reported to the Dean of the Faculty offering the course, after due warning has been given. On the recommendation of the department concerned, and with the permission of the Dean of that Faculty, the student will be debarred from taking the regular examination in the course.