



Econ3386B 570
Time Series Analysis and Forecasting
Winter 2026

Instructor: Dr. Renfang Tian
Email: rtian2@uwo.ca

Course Information

Mode of Instruction: In Person

Calendar Description:

This course presents econometrics models and techniques that are widely used in modern time series econometrics. Topics will include uni-route test, integration, co-integration, and forecasting.

Pre-requisite(s): Economics 2223A/B or Economics 2123A/B.

Anti-requisite(s): Statistical Sciences 4861A/B.

Extra Information: 3 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 3386B (570)
Time Series Analysis and Forecast
Winter 2026

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Email: rtian2@uwo.ca

(Please use UWO email address when emailing the instructor, so it does not end up in spam.)

Course Description

This course presents econometrics models and techniques that are widely used in modern time series econometrics. Topics will include unit root test, integration, co-integration, and forecasting.

Mode of Instruction, Course Materials, and Technical Requirements

The course is in person. No textbook is required for this course. All course materials can be found on the OWL course website powered by Brightspace.

- Software:
R (Students are expected to bring a reliable fully charged laptop that meets the system requirements for R to lectures). This course uses R base < <https://www.r-project.org/> > and RStudio < <https://posit.co/download/rstudio-desktop/> >.
- Referred Textbooks (not required):
 - *Introduction to Econometrics*, by James H. Stock and Mark W. Watson, 3rd edition;
 - *Introductory Econometrics: A modern approach*, by Jeffrey M. Wooldridge, 4th edition;
 - *Time series models*, by Harvey, A. C. (Andrew C.), 2nd edition.
 - *Multiple time series models*, by Brandt, P. T., & Williams, J. T. (2007).

Learning Outcomes

By the end of the course, successful students will be able to:

- Understand foundational concepts of time series.
- Apply time series modeling techniques to analyze times series data and forecast future values.
- Conduct diagnostic checks and model evaluation to assess the adequacy and performance of models.
- Use statistical software packages to implement time series analysis.

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
 - Three assignments (3* 10% = 30%): tentatively due at 11:59pm on Jan 30, Feb 27, Mar 27; submissions are accepted until 11:59pm the following Monday without penalty
 - Midterm test (25%): in-class on February 11th
 - Final exam (35%): time and location TBA
- Method 2:
 - Participation/Attendance (10%): in-class

- Three assignments (3* 10% = 30%): tentatively due at 11:59pm on Jan 30, Feb 27, Mar 27; submissions are accepted until 11:59pm the following Monday without penalty
- Midterm test (0%): in-class on February 11th
- Final exam (60%): 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.

1. Participation/Attendance

The lectures will be interactive, and students are expected to attend and participate regularly. The grade will be calculated as 12.5y, where y is the proportion of all in-class exercise 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. **There are no make-ups or exceptions for missed participation/attendance for any reason.**

2. Three assignments

There will be 3 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). **There are no make-ups or exceptions for missed assignment(s) for any reason.**

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. Non-programmable scientific calculators and cheat sheets 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:
http://www.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.

Tentative Class Schedule (Subjective to Changes)

Topic 1: Review on fundamental math, statistics, and econometrics (1.5 weeks)

Topic 2: Introduction to time series data and key concepts (2.5 weeks)

Topic 3: Single-variable model for mean analysis (4.5 weeks)

Topic 4: Multiple-variable model for mean analysis (2 weeks)

Topic 5: Single-variable model for volatility analysis (2.5 weeks)

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.

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

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/

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 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

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

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>.

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.