

SS4861B/9861B Course Outline 2026

1. Course Information

Course Information

Course Name:	Time Series
Course Number:	SS4861B/SS9861B
Academic Term:	Winter 2026
Lecture Hours:	Tuesday 12:30-2:30 pm and Thursday 1:30 – 2:30 pm.
Lecture Room:	WSC 240

List of Prerequisites

A minimum mark of 60% in both Statistical Sciences 3858A/B and Statistical Sciences 2864A/B.

Unless you have either the prerequisites for this course or written special permission from the Department of Statistical and Actuarial Sciences to enroll in it, you may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on your academic record. This decision may not be appealed.

University Accreditation Program – Canadian Institute of Actuaries (CIA)

Honours Specialization in Actuarial Science

If you graduate from Western with an HSP in Actuarial Science, this course will be one of the courses that you will take in your program that will allow you to be exempt from the preliminary exams of the Society of Actuaries (SOA). If your plan is to become a fully qualified actuary working in Canada, then all you would need to do is graduate from your HSP in actuarial science and you would then be eligible for the CIA Capstone Exam. Taking and passing this exam, along with completing two online modules and a practice education course, would make you eligible to become an ACIA (Associate of the Canadian Institute of Actuaries).

Major in Actuarial Science

If you graduate from Western with a major in Actuarial Science, the CIA accreditation program will not apply to you. If your plan is to become a fully qualified actuary, then you will need to continue to write and pass the preliminary exams of the SOA.

Please see the following link for full details:

<https://www.cia-ica.ca/starting-your-journey/actuarial-education-in-canada/>

In addition to the university's internal policies on conduct, including academic misconduct, candidates pursuing credits for writing professional examinations shall also be subject to the Code of Conduct and Ethics for Candidates in the CIA Education System.

<https://www.cia-ica.ca/publications/223159e/>

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Hao Yu	hyu@uwo.ca	WSC 217	519-661-3622	TBA
TA info:				

Students must use their Western (@uwo.ca) email addresses when contacting their instructors or TAs. Please include the course code SS4861 into the subject line of your email so that would know which class you belong to (I am teaching other classes too).

3. Course Syllabus, Schedule, Delivery Mode

This course is an introduction to ARIMA models, seasonality, dynamic regression, model building, forecasting, intervention analysis, control, applications in econometrics, business, and other areas. The focus is on linear time series ARIMA models with nonseasonality and seasonality. R will be used to apply the techniques of this course to analyze and model time series data sets.

If time allows, we will also discuss

- Testing for a Unit Root
- Time Series Regression and GARCH Models.

Learning Outcomes

Upon successful completion of this course, students will be able to:

- Use time series models (AR, MA, ARMA, ARIMA, SARIMA)
- Deal with seasonality and dynamic regression
- Do parameter estimation
- Conduct model fitting and diagnostic checking
- Do forecasting
- Carry out applications

Classes begin: January 5, 2026

Spring Reading Week: February 14 – 22, 2026

Classes end: April 9, 2026

Exam period: April 12 – 30, 2026

4. Course Materials

Textbook:

Introduction to Time Series and Forecasting (3rd edition) by Peter J. Brockwell and Richard A. Davis.

The campus bookstore link is

https://bookstore.uwo.ca/textbook-search?campus=UWO&term=W2025B&courses%5B0%5D=001_UW/STA4861B

and the book price is \$148.90 CAD.

Students are welcome to purchase second-hand or 2nd edition of this textbook (the 1st edition is not sufficient).

Equipment and Software needed: A personal computer/laptop that has R and RStudio installed (Windows, Mac, Linux) is highly recommended since they are required to complete some computation in assignments.

All course material will be posted to OWL: <https://westernu.brightspace.com/>

Students are responsible for checking the course OWL site (<https://westernu.brightspace.com/>) regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class.

If students need assistance with the course OWL site, they can seek support on the [OWL Brightspace Help](#) page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

5. Methods of Evaluation

Grading Scheme and Assessment Dates

The overall course grade will be calculated as listed below:

- Assignments 10% (= 4 x 2.5%)
- Test 1 20%
- Test 2 30%
- Final Exam 40%

Assignments: There are about 4 assignments, given out roughly every three weeks. All assignments must be done electronically, i.e., all assignments must be knitted or produced from RStudio Markdown/Notebook/Quarto as pdf files and be submitted to brightspace before deadline.

For graduate students, per SPGS requirements, there is **an extra question** to work on in each assignment.

Each student has two coupons that can be used for handling assignments after the submission deadline has passed. Each coupon allows an extension of up to 24 hours past the submission deadline. For example, if an assignment is due on Feb 25, 11:59 pm, you can hand in your assignment before Feb 26, 11:59 pm with one coupon used. You can stack two coupons together so that you can hand in your assignment before Feb 27, 11:59 pm.

Late Submissions if two coupons are already used up.

- Assignments that are submitted late will be subject to a 20% penalty per day or portion thereof, including weekends and holidays.

- Assignments that are submitted 5 or more days later will not be graded.

Tests: There are two term tests, cumulative and closed book, both during lecture times in WSC 240 if it has enough exam seats. Otherwise, will book big rooms through university.

- Test 1: 12:30 pm – 2:20 pm, Tuesday, February 10, 2026
- Test 2: 12:30 pm – 2:20 pm, Tuesday, March 10, 2026

Final exam: There will be a three-hour closed-book cumulative examination to be scheduled by the Registrar Office during the April examination period (April 12-30, 2026).

Test 1 and Test 2, as well as the Final Exam will be closed book. Simple or non-programmable hand-held calculators will be allowed.

Use of Generative AI Tools: The use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is permitted for initial works only (like getting basic ideas). It is not permitted in the completion of any course assessments, including but not limited to: assignments. Using such tools for content generation, code writing, problem solving, translation, or summarization will be treated as a scholastic offence.

General information about missed coursework

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs*, posted on the Academic Calendar:

https://uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf,

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](#).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage:

https://registrar.uwo.ca/academics/academic_considerations/

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this and, therefore, always require formal supporting documentation:

- Test 2 and final exam

When a student *mistakenly* submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

Evaluation Scheme for Missed Assessments

Assignments: Further accommodation beyond late coupons and late penalty must be approved via the Dean's Office/ Academic Counseling unit of your Home Faculty. Students who obtain appropriate accommodation will have the weight of the missed assignment distributed to further assessments.

Tests: There will be no **make-up** tests. If you miss a test, then the weight of that test will be moved to the final exam. Namely, the following rules will apply:

- If you miss Test 1 and write Test 2, then the Final Exam will be worth 60% of your final grade.
- If you write Test 1 but miss Test 2, then the Final Exam will be worth 70% of your final grade.
- If you miss both Test 1 and Test 2, then the Final Exam will be worth 90% of your final grade.

When a student misses the Final Exam and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under [Special Examinations](#)), especially for those who miss multiple final exams within one examination period.

6. Additional Statements

6.1 Religious Accommodation

When a recognized religious holiday or observance conflicts with an examination, test, or other scheduled academic obligation, students must request accommodation via the University's Student Absence Portal (SAP). This request should identify the conflict and specify which course component(s) (e.g. test, midterm, exam) are affected.

Students are encouraged to submit the SAP request as early as possible, but no later than two weeks before any examination, or one week before any mid-term test or quiz, to allow sufficient time for adjustment.

The SAP request serves as official notification to both the course instructor and the Academic Advising Office, in accordance with University policy:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

The Faculty of Science considers religious accommodations as scheduling conflicts. Instructors should provide either a make-up exam or an earlier sitting of the same exam to accommodate the student.

For more information on recognized religious holidays, please visit the Diversity Calendar posted on the Equity, Diversity & Inclusion website - <https://www.edi.uwo.ca>

6.2 Academic Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf.

6.3 General Academic Policies

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

Use of @uwo.ca email: In accordance with policy, https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf, the centrally administered e-mail account provided to students will be considered the individual's official university email address. It is the responsibility of the account holder to ensure that emails received from the University at their official university address are attended to in a timely manner.

Requests for Relief (formally known as “appeals”)

Policy on Request for Relief from Academic Decision:

https://uwo.ca/univsec/pdf/academic_policies/appeals/requests_for_relief_from_academic_decisions.pdf

Procedures on Request for Relief from Academic Decision (Undergraduate):

https://uwo.ca/univsec/pdf/academic_policies/appeals/undergrad_requests_for_relief_procedure.pdf

Procedures on Request for Relief from Academic Decision (Graduate):

https://uwo.ca/univsec/pdf/academic_policies/appeals/graduate_requests_for_relief_procedure.pdf

6.4 Scholastic Offences

Policy on Scholastic Offences:

https://uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_offences.pdf

Procedures on Scholastic Offences (Undergraduate):

https://uwo.ca/univsec/pdf/academic_policies/appeals/undergrad_scholastic_offence_procedure.pdf

Procedures on Scholastic Offences (Graduate):

https://uwo.ca/univsec/pdf/academic_policies/appeals/graduate_scholastic_offence_procedure.pdf

Use of Electronic Devices During Assessments

In courses offered by the Faculty of Science, the possession of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, and wireless earbuds or headphones.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at your desk, on your person, or within reach during an assessment will be treated as a *scholastic offence*, even if the device is not in use.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is your responsibility to review and comply with these expectations.

Use of Generative AI Tools

Unless otherwise stated, the use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is **not permitted** in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a **scholastic offence**.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is your responsibility to seek clarification before using any AI tools in academic work.

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. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

6.5 Support Services

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, requests for relief, exam conflicts, and many other academic-related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence (GBSV) and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced GBSV (either recently or in the past), you will find information about support services for survivors, including emergency contacts, at:

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. If you have any questions regarding accommodations, you may also wish to contact Accessible Education at

http://academicsupport.uwo.ca/accessible_education/index.html

Learning-skills counsellors at Learning Development and Success (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.