

# ECO374H1: Forecasting and Time Series Econometrics

Winter 2025, L0101

Department of Economics, University of Toronto

**Lectures:** Thursday 10 am – 12 pm, in GB220  
**Instructor:** Prof. Martin Burda  
**Contact:** [martin.burda@utoronto.ca](mailto:martin.burda@utoronto.ca)  
**Office hours:** Thursday 4:30 pm – 6:30 pm, online, Zoom link on Quercus

**Tutorials:** Friday, 11 am – 12 pm, in GB220  
**TA:** Antoine Herlinghaus  
**Contact:** [antoine.herlinghaus@mail.utoronto.ca](mailto:antoine.herlinghaus@mail.utoronto.ca)  
**Office hours:** Monday 3 pm – 5 pm in GE213

## Course Description

The primary objective of the course is to provide students with a solid theoretical and practical foundation for forecasting and time series analysis. The course is built around the statistical foundations and economic application of modeling stochastic processes. Key examples will be drawn from business and financial economics. Students will gain practical hands-on experience working with economic and financial data using R or Python, popular open-source software environments in data science.

## Previous Training

*Prerequisites:* ECO200Y1/ ECO204Y1/ ECO206Y1; ECO220Y1(70%)/ ECO227Y1/ (STA237H1(70%), STA238H1(70%))/ (STA247H1(70%), STA248H1(70%))/ (STA257H1, STA261H1)

*Corequisites:* None

*Exclusions:* None

*Recommended:* MAT221H1/ MAT223H1/ MAT240H1

The prerequisites are checked by the administration of the Department of Economics and students will be removed from the course list if the prerequisites are not met.

## Reference

- González-Rivera, G. (2016) *Forecasting for Economics and Business*, Pearson (rental options are available at [Amazon](#) and [Routledge](#))
- Hyndman, R.J., and Athanasopoulos, G. (2018) *Forecasting: Principles and Practice*, 2<sup>nd</sup> ed ([link](#))
- James, G., Witten, D., Hastie, T., and Tibshirani, R. (2021) *An Introduction to Statistical Learning*, 2<sup>nd</sup> ed, Springer Texts in Statistics ([link](#))
- Zivot, E. (2021) *Introduction to Computational Finance and Financial Econometrics with R* ([link](#))

Specific sections of the texts are given in the course schedule and at the end of each slide set.

## Software

We will use R within RStudio with Markdown and Python within Jupyter Lab (students can choose either one of these software environments for coursework). No prior knowledge is necessary. We will introduce the relevant software components during the course.

## Marking Scheme

The final grade is based on the following:

Task	Weight	Due date
Midterm Exam	30 %	February 28, 2025 (in tutorial time)
Problem Set 1	5 %	March 7, 2025
Problem Set 2	5 %	March 21, 2025
Problem Set 3	5 %	April 4, 2025
Final Exam	55 %	Final Exam Period

The **midterm exam** (50 minutes) will contain short-answer questions. Students who miss the midterm exam and wish to request a make-up midterm must complete either the Absence Declaration on Acorn (can only be used once per semester for up to 7 days) or UofT Verification of Illness or Injury Form (VOI), and must email the instructor with their request within 24 hours of the missed midterm. Consistent with university policy, a grade of zero will be applied if the make-up exam is requested but missed. If students wish to appeal a midterm grade, they must provide a written explanation of why they believe their grade is mistaken and email it to the instructor within one week of the exam being returned to the class. The **final exam** (2 hours) will have a short answer format. The applicable rules and regulations of the Faculty of Arts and Science govern its conduct.

**Problem Sets** will give students the opportunity to work on graded computer-based tasks using R or Python. They will be assigned about one week before the due date. There is 10% grade penalty for each new day of late submission.

## Religious Accommodations

As a student at the University of Toronto, you are part of a diverse community that welcomes and includes students and faculty from a wide range of cultural and religious traditions. For my part, I will make every reasonable effort to avoid scheduling tests, examinations, or other compulsory activities on religious holy days not captured by statutory holidays. Further to University Policy, if you anticipate being absent from class or missing a major course activity (such as a test or in-class assignment) due to a religious observance, please let me know as early in the course as possible, and with sufficient notice (at least two to three weeks), so that we can work together to make alternate arrangements.

## Students with Disabilities or Accommodation Requirements

Students with diverse learning styles and needs are welcome in this course. If you have an acute or ongoing disability issue or accommodation need, you should register with Accessibility Services (AS) at the beginning of the academic year by visiting

<https://studentlife.utoronto.ca/departments/accessibility-services> . Without registration, you will not be able to verify your situation with your instructors, and instructors will not be advised about your accommodation needs. AS will assess your situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. Remember that the process of accommodation is private: AS will not share details of your needs or condition with any instructor, and your instructors will not reveal that you are registered with AS.

### **Academic Integrity**

All suspected cases of academic dishonesty will be investigated following procedures outlined in the [Code of Behaviour on Academic Matters](#). If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, please reach out to me. Note that you are expected to seek out additional information on academic integrity from me or from other institutional resources. For example, to learn more about how to cite and use source material appropriately and for other writing support, see the U of T writing support website at <http://www.writing.utoronto.ca>. Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and expectations. For more information, please see [A&S Student Academic Integrity](#) and the [University of Toronto Website on Academic Integrity](#).

### **Specific Medical Circumstances**

If you become ill and it affects your ability to do your academic work, consult me right away. Normally, I will ask you for documentation in support of your specific medical circumstances. This documentation can be an Absence Declaration (via ACORN) or the University's Verification of Student Illness or Injury (VOI) form. The VOI indicates the impact and severity of the illness, while protecting your privacy about the details of the nature of the illness. If you cannot submit a VOI due to limits on terms of use, you can submit a different form (like a letter from a doctor), as long as it is an original document, and it contains the same information as the VOI (including dates, academic impact, practitioner's signature, phone and registration number). For more information on the VOI, please see <http://www.illnessverification.utoronto.ca>. For information on Absence Declaration Tool for A&S students, please see <https://www.artsci.utoronto.ca/absence>. If you get a concussion, break your hand, or suffer some other acute injury, you should register with Accessibility Services as soon as possible.

### **Accommodation for Personal Reasons**

There may be times when you are unable to complete course work on time due to non-medical reasons. If you have concerns, speak to me or to an advisor in your College Registrar's office; they can help you to decide if you want to request an extension or other forms of academic consideration. They may be able to email your instructors directly to provide a College Registrar's letter of support and connect you with other helpful resources on campus.

### **Quercus Info**

This Course uses the University's learning management system, Quercus, to post information about the course. This includes posting readings and other materials required to complete class activities and course assignments, as well as sharing important announcements and updates. New information and

resources will be posted regularly as we move through the term. To access the course website, go to the U of T Quercus log-in page at <https://q.utoronto.ca>. SPECIAL NOTE ABOUT GRADES POSTED ONLINE: Please also note that any grades posted are for your information only, so you can view and track your progress through the course. No grades are considered official, including any posted in Quercus at any point in the term, until they have been formally approved and posted on ACORN at the end of the course. Please contact me as soon as possible if you think there is an error in any grade posted on Quercus.

### **Course Materials, Including Lecture Notes**

Course materials are provided for the exclusive use of enrolled students. These materials should not be reposted, shared, put in the public domain, or otherwise distributed without the explicit permission of the instructor. These materials belong to your instructor, the University, and/or other sources depending on the specific facts of each situation and are protected by copyright. **Video recording of the lectures by the students is prohibited** (see <http://teaching.utoronto.ca/ed-tech/audio-video/>). Students violating these policies will be subject to disciplinary actions under the Code of Student Conduct.

### **Mental Health and Well-Being**

Your mental health is important. Throughout university life, there are many experiences that can impact your mental health and well-being. As a University of Toronto student, you can access free mental health and wellbeing services at Health & Wellness (<https://studentlife.utoronto.ca/department/health-wellness/>) such as same day counselling, brief counselling, medical care, skill-building workshops, and drop-in peer support. You can also meet with a Wellness Navigation Advisor who can connect you with other campus and community services and support. Call the mental health clinic at 416-978-8030 ext. 5 to book an appointment or visit <https://uoft.me/mentalhealthcare> to learn about the services available to you. You can also visit your College Registrar to learn about the resources and supports available: <https://www.artsci.utoronto.ca/current/academic-advising-and-support/college-registrars-offices>. If you're in distress, you can access immediate support: <https://uoft.me/feelingdistressed>.

### **Equity, Diversity and Inclusion**

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

### **Generative AI Policy**

Students may not copy or paraphrase from any generative artificial intelligence applications, including ChatGPT and other AI writing and coding assistants, for the purpose of completing the Problem Sets in this course.