ECO374H1S: Forecasting and Time Series Econometrics

Summer 2024, L0101

Department of Economics, University of Toronto

Lectures:	Monday, Wednesday 10 am – 12 pm, online synchronously, Zoom link on Quercus
Tutorials:	Friday 10 am – 12 pm, online synchronously, Zoom link on Quercus
Instructor:	Prof. Martin Burda
Contact:	martin.burda@utoronto.ca
Office hours:	Monday 1:00 pm – 3:00 pm, online, Zoom link on Quercus

TA:	Bingyao Liu
Contact:	bingyaoyao.liu@mail.utoronto.ca
Office hours:	TBA, online, Zoom link on Quercus

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

*Prerequisite*s: 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*, 2nd ed (link)
- James, G., Witten, D., Hastie, T., and Tibshirani, R. (2021) *An Introduction to Statistical Learning*, 2nd ed, Springer Texts in Statistics (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 (online)	30 %	May 31, 2024
Graded Problem Set 1	5 %	June 3, 2024
Graded Problem Set 2	5 %	June 10, 2024
Graded Problem Set 3	5 %	June 17, 2024
Final Exam (in person)	55 %	Final Exam Period

The **midterm exam** (50 minutes, during tutorial time) 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 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.

Graded 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.

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 problem sets in this course.

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/department/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 (https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019)](https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019). 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 (https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity)](https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity) and the [University of Toronto Website on Academic Integrity (https://www.academicintegrity.utoronto.ca)](https://www.academicintegrity.utoronto.ca).

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. Students violating these policies will be subject to disciplinary actions under the Code of Student Conduct.