GORDON S. LANG SCHOOL of BUSINESS AND ECONOMICS

FIN*6800 Special Topics in Finance
Winter 2025
0.5 Credits

General Course Information

Instructor: Hong Li

Email lihong@uoguelph.ca
Office Location *MCKN 735*
Office Hours Appointment by email
Department/School Department of Economics and Finance

Class Schedule: M/W 8:30 AM - 9:50 AM

Pre-requisites: None

Restrictions: None

Course Description

This course covers various topics in applying machine learning techniques for financial data analysis with Python.

Course Learning Outcomes

Upon successfully completing this course, you will develop the following skills:

1) Written Communication

Students in this course are frequently required to interpret and articulate answers to questions in both lectures and assignments, emphasizing economic reasoning. This provides them with substantial experience in crafting clear, logical explanations of financial and mathematical models, as well as analyzing their results.

2) Analytical Problem Solving

In addition to practical skills, this course delves into the theoretical perspectives of financial data analysis. Students will explore the foundational principles behind techniques such as time-series analysis, factor models, and Monte Carlo simulations. This theoretical understanding equips students to critically analyze and interpret complex financial problems in a structured, logical manner.

3) Numerical Problem Solving

This course emphasizes the practical application of financial data analysis using Python. Through lectures and assignments, students gain extensive hands-on experience in solving real-world financial data problems, enhancing their analytical and problem-solving skills.

Knowledge and Understanding:

This course provides a comprehensive exploration of both the theoretical foundations and practical applications of widely used financial data analysis techniques. Topics include data visualization, time-series modeling, factor models, volatility modeling, and Monte Carlo simulation.

Discipline/Professional and Transferable Skills:

Students will develop proficiency in financial data analysis techniques and their implementation in Python. The course emphasizes not only understanding the underlying theories but also applying them to solve real-world financial problems.

Attitudes and Values

The course fosters a deep understanding of both theoretical concepts and programming approaches, enabling students to effectively analyze financial data and address real-life financial challenges.

Summary of Course Content and Materials

COURSE CONTENT

1. Data Acquisition, Processing, and Visualization
2. Time-series Analysis and Forecasting
3. Factor Models
4. Stochastic Volatility Modeling
5. Monte Carlo Simulation in Finance

These topics can be found on Chapters 1 to 10 on Python for Finance Cookbook (Second Edition, 2022), by Eryk Lewinson, Packt Publishing. ISBN-13 978-1803243191

Course Assessment

			Associated Learning Outcomes	Due Date/ location
Assessment 1:	50%	Midterm project	LO 1 - 3	*Week 6*
Assessment 2:	50%	Final project	LO 4 - 5	*Week 12*

Total **100%**

Teaching and Learning Practices

Lectures Lectures in this course complement the material in the textbook. To understand the material well enough to pass this course, it is essential that you understand both the theoretical parts and the codes in the slides. I will spend my time in lectures discussing the more challenging aspects of the course, leaving the more straightforward material for you to learn after class.

Course Resources

Required Text: Lecture Notes

Recommended Text:

Python for Finance Cookbook (Second Edition, 2022), by Eryk Lewinson, Packt Publishing. ISBN-13 978-1803243191

The cost of the textbook is $63.399 for paperback version and $50.99 for Kindle edition from Amazon. There is no restriction that would prevent a student from using a second-hand copy of the textbook.

Other Resources: Lecture slides and supplementary codes/examples.

Course Policies

Grading Policies

Unless you have discussed an extension well ahead of the due date with the instructor, late penalties of 5% of the total grade earned per day (including weekends) will be assigned to any assessment (i.e. deducted from the total mark). Extensions will only be granted on the basis of valid medical or personal reasons, and need to be requested via email to the instructor as soon as possible. Late assignments will not be accepted once graded assignments have been returned officially to the class at large, unless circumstances permit and alternative arrangements have been made.

Students who find themselves unable to meet course requirements by the deadlines or the criteria expected because of medical or personal reasons, should review the regulations on academic consideration in the Academic Calendar and discuss their situation with the instructor, program counselor or other academic counselor as appropriate.

Missed Assignments:

A grade of zero will be assigned if you fail to submit an assignment, unless you are ill or have other compassionate reasons. Please read your Undergraduate Calendar for the regulations regarding illness and

compassionate grounds. Please note, vacation travel, moving house, or outside work commitments will not be accepted as valid reasons for missing deadlines.

If you have religious observances which conflict with the course schedule or if you are registered with Student Accessibility Services, please contact the course instructor in order to make arrangements for your assessment if appropriate.

University Policies

Academic Consideration

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for Academic Consideration:

https://www.uoguelph.ca/registrar/calendars/graduate/current/

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Graduate Calendar:

https://calendar.uoguelph.ca/graduate-calendar/general-regulations/academic-misconduct/

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email sas@uoguelph.ca or see the website: https://wellness.uoguelph.ca/accessibility/

Course Evaluation Information

Please refer to the Blue by Explorance system.

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Drop date

The last date to drop one-semester courses, without academic penalty, is **Friday, April 4, 2025** For regulations and procedures for Dropping Courses, see the Academic Calendar:

https://calendar.uoguelph.ca/graduate-calendar/general-regulations/