

Course Title

AP/ADMS4375M 3.0 N Winter Applied Time Series Analysis for Management

Course Information

Course Instructor: Yvonne Xu
E-mail: yawenxu@yorku.ca
Office Hours & Location: by
Appointment @Zoom

Course Time: Wednesdays 7-10 pm
Class Location: DB 2118 (Lab)
Course eClass site: eClass Port

Land Acknowledgment

York University recognizes that many Indigenous Nations have longstanding relationships with the territories upon which York University campuses are located that precede the establishment of York University. York University acknowledges its presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been care taken by the Anishinabek Nation, the Haudenosaunee Confederacy, and the Huron-Wendat. It is now home to many First Nation, Inuit, and Métis communities. We acknowledge the current treaty holders, the Mississaugas of the Credit First Nation. This territory is subject of the Dish with One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lakes region ([LA&PS Land Acknowledgement](#)).

Course Description

This course examines the basic time series concepts and modeling techniques and applies the techniques on real-life data. This course concentrates on univariate time series and covers some multivariate time series concepts and techniques.

Prerequisites: AP/ADMS 2320 3.00 or AP/ECON 3210 3.00 or AP/ECON 3480 3.00 or SC/MATH 3330 3.00.

Course Learning Objectives

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

- Define time series components;
- Evaluate stationary in time series;
- Construct a Stationary time series models; and
- Use R or SAS to construct time series models and conduct analysis.

Course Format and Organization

- The course integrates lectures and labs. **Please ensure you bring your own laptop to the class.**
- The weekly schedule is listed in the Course Schedule section below.

Technical Requirements

- Please ensure your account is active and R/SAS is accessible.
- Please ensure your eClass account is active and accessible.
- If you need technical assistance, please consult the [University Information Technology \(UIT\) Student Services](#) web page. For more specific assistance, please write to askit@yorku.ca.

Course Communication Plan and Office Hours

- No TA is assigned for this course.
- The office hour is by appointment and through Zoom. You may email yawenxu@yorku.ca to make appointments. The Zoom ID will be posted on the eClass.

Course Evaluation

Assessment	Due Date	Weight %
Lab Exercise 1	Feb 1	10%
Quiz 1	Feb 8	10%
Mid-term	Mar 1	20%
Lab Exercise 2	Mar 22	10%
Quiz 2	Mar 29	10%
Final Presentation	Apr 5	15%
Final Report	Apr 12	25%
		100%

Submitting Assignments

- All submissions are through eClass.
- Test coverage will be announced during the lecture 1 week prior to the test.

Late Work Policy

- Late Lab Exercises and the Final Project are **NOT** acceptable.

Missed Tests and Exams

- **NO** make-up quizzes and mid-term exam
- Mid-term/quizzes weight can be transferred to the final project with a valid “Attending Physician’s Statement”

Grading

The grading scheme for this course conforms to the 9-point system used in undergraduate programs at York University. For a full description of the York grading system, visit the York University [Academic Calendar](#).

GRADE	GRADE POINT	PERCENT RANGE	DESCRIPTION
A+	9	90-100	Exceptional
A	8	80-89	Excellent
B+	7	75-79	Very Good
B	6	70-74	Good
C+	5	65-69	Competent
C	4	60-64	Fairly Competent
D+	3	55-59	Passing
D	2	50-54	Marginally Passing
E	1	(marginally below 50%)	Marginally Failing
F	0	(below 50%)	Failing

Course Schedule: Weekly Readings and Activities

Required Course Materials

NO REQUIRED TEXT

Optional Materials

1. Cyber, D.C., and Chan, K (2008). ***Time Series Analysis with Application in R***, 2nd Edition, Springer.
2. Shumway R.H., Stoffer, D.S. (2012). ***Time Series Analysis and Its Applications with R Examples***, 4th Edition, Springer. ISBN-978-3-319-52451-1
3. Ruey S. Tsay (2010). ***Analysis of Financial Times Series***, 3rd Edition, Wiley.
4. Box, G.E.P., Jenkins, G.M. & Reinsel, G.C. (2008) ***Time Series Analysis: Forecasting and Control***, Hoboken, N.J. Wiley.
5. Keller, G., ***Statistics for Management and Economics***.
6. (Online Source) UCLA R Learning:
<https://stats.idre.ucla.edu/other/annotatedoutput/>
7. (Online Source) <https://online.stat.psu.edu/stat510/>
8. (Online Source) UCLA SAS Learning Module <https://stats.idre.ucla.edu/sas/>

Course Schedule

Week/Module Dates	Readings and Activities	Assessment Dates
Week 1 Jan 11	Introduction to Time Series and R/SAS	
Week 2 Jan 18	Exploratory Data Analysis (Statistical Measures in Times Series)	
Week 3 Jan 25	Smoothing and decomposition methods (I)	Lab 1 (Due on Feb 1)
Week 4 Feb 1	Smoothing and decomposition methods (II)	
Week 5 Feb 8	Autoregressive Models and Moving Average Models	Quiz 1

Week/Module Dates	Readings and Activities	Assessment Dates
Week 6 Feb 15	Autoregressive Moving Average Model	
Week 7 Mar 1	Autoregressive Integrated Moving Average Models (I)	Mid-term
Week 8 Mar 8	Autoregressive Integrated Moving Average Models (II)	
Week 9 Mar 15	Case Study (SARIMA Model)	Lab 2 (Due on Mar 22)
Week 10 Mar 22	Linear Regression Model with Time Series Errors	
Week 11 Mar 29	Conditional Heteroscedastic Models (ARCH Model)	Quiz 2
Week 12 Apr 5	Presentation	

Course Policies

All students are expected to familiarize themselves with the following information:

- [Student Rights & Responsibilities](#)
- [Academic Accommodation for Students with Disabilities](#)

Please also review the following course policies:

Academic Integrity

In this course, we strive to maintain academic honesty to the highest extent possible. Please familiarize yourself with the meaning of academic integrity by completing [SPARK's Academic Integrity module](#) at the beginning of the course. Breaches of academic honesty range from cheating to plagiarism (i.e., the improper crediting of another's work, the representation of another's ideas as your own, etc.). All instances of academic dishonesty in this course will be reported to the appropriate University authorities and can be punishable according to the [Senate Policy on Academic Honesty](#).

Accessibility

While all individuals are expected to satisfy the requirements of their program of study and to aspire to achieve excellence, the University recognizes that persons with disabilities may require reasonable accommodation to enable them to perform at their best. The University encourages students with disabilities to register with [Student Accessibility Services](#) to discuss their accommodation needs as early as possible in the term to establish the recommended academic accommodations that will be communicated to Course Directors through their Letter of Accommodation (LOA).

Please let your instructor know as early as possible in the term if you anticipate requiring academic accommodation so that we can discuss how to consider your accommodation needs within the context of this course. Sufficient notice is needed so that reasonable steps for accommodation can be discussed. Accommodations for tests/exams normally require three (3) weeks (or 21 days) before the scheduled test/exam to arrange.

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community, and making reasonable and appropriate [accommodations to adherents for observances of special significance](#). Should any of the dates specified in this syllabus for course examinations, tests, or deadlines conflict with a date of religious significance, please contact the instructor within the first three (3) weeks of class. If the date falls within the formal examination periods, you must complete and submit a [Religious Accommodation for Examination Form](#) at least three (3) weeks before the start of the exam period.

Intellectual Property

Course materials are designed for use as part of this particular course at York University and are the intellectual property of the instructor unless otherwise stated. Third-party copyrighted materials (such as book chapters, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian copyright law. Students may not publish, post on an Internet site, sell, or otherwise distribute any course materials or work without the instructor's express permission. Course materials should only be used by students enrolled in this course.

Copying this material for distribution (e.g., uploading material to a commercial third-party website) may lead to a charge of misconduct according to York's [Code of Student Rights and Responsibilities](#), the [Senate Policy on Academic Honesty](#), and/or legal consequences for copyright violations.

Student Conduct in the Learning Environment

York University is committed to fostering teaching and learning environments that are free of disruptive and/or harassing behaviour, are physically safe, and conducive to effective teaching and learning. Students and instructors are expected to maintain a professional relationship characterized by courtesy, civility, and mutual respect and to refrain from actions disruptive to such a relationship. Individuals who fail to adhere to such standards and who violate University or public law may be subject to disciplinary action by the University.

For more information, see the policies on [Disruptive and/or Harassing Behaviour in Academic Situations](#), the [Student Conduct and Responsibilities](#), and the [Code of Student Rights & Responsibilities](#).

Netiquette for eClass and Online Learning

Students and instructors have a joint responsibility to create and maintain a welcoming and inclusive learning environment. All students are expected to conduct themselves in accordance with the [Code of Student Rights and Responsibilities](#). Please review and familiarize yourself with behaviours that support “netiquette” in virtual classrooms by consulting the [Guide to Netiquette](#) and [Student Guide to eLearning](#).

Student Notice of Recording for Online Teaching and Learning

Activities for this course involve recording, in partial fulfillment of the course learning outcomes. Images, audio, text/chat messaging that have been recorded may be used and/or made available by the University to students enrolled in the course and those supporting the course for the purpose of materials review, for assessment, etc. Recordings will be managed according to the University’s Common Record Schedule and will be securely destroyed when no longer needed by the University. Your personal information is protected in accordance with York University’s [Guidelines on Access of Information and Protection of Privacy](#) and the [Freedom of Information and Protection of Privacy Act](#). Access to online materials, including recordings or live meetings, is subject to York University’s [Senate Policy on Computing and Information Technology Facilities](#).

The University will use reasonable means to protect the security and confidentiality of the recorded information, but cannot provide a guarantee of such due to factors beyond the University’s control, such as recordings being forwarded, copied, intercepted, circulated, disclosed, or stored without the University’s knowledge or permission, or the introduction of malware into computer system which could potentially damage or disrupt the computer, networks, and security settings. The University is not responsible for connectivity/technical difficulties or loss of data associated with your hardware, software, or Internet connection.

By engaging in course activities that involve recording, you are consenting to the use of your appearance, image, text/chat messaging, and voice and/or likeness in the manner and under the conditions specified herein. In the case of a live stream recording, if you choose not to have your image or audio recorded, you may disable the audio and video functionality. If you choose to participate using a pseudonym instead of your real name, you must disclose the pseudonym to your instructor in advance to facilitate class participation.

You are not permitted to disclose the link to/URL of an event or an event session recording or copies of recording to anyone, for any reason. Recordings are available only to authorized individuals who have been directly provided the above instructions/link for their use. Recordings for personal use, required to facilitate your learning and preparation of personal course/lecture notes, may not be shared with others without the permission of the instructor or event coordinator, and may not be published, posted, linked to, or otherwise made available online, including on social media feeds, even if those feeds are private.

Health and Safety

All York students and instructors share responsibility for the safety and well-being of the community while on York's campuses. Please continue to check [YUBetter Together](#) for the latest information on health and safety.

Hyflex Course Policy

Hyflex sessions are digitally transmitted and may be recorded to support teaching and learning in the classroom. As a result, York University may collect your image, voice, name, personal views and opinions, and coursework under the authority of The York University Act, 1965, and for use in related educational purposes.

Note: Students who participate in a Hyflex session are consenting to have their video or image transmitted and/or recorded. If you have concerns with such transmission or recording, sit in the designated seating area which is outside of the camera range. In addition, students who participate orally are consenting to have their voices, personal views, and opinions transmitted and/or recorded. If you do not consent to the transmission or recording of your voice, please use the text-based chat function to communicate during class.

Students are not permitted to use any third-party software or application to record a transmitted Hyflex session. Additionally, instructors, TA(s), and students may not post, share, or otherwise publish recorded materials outside of the Hyflex course. To do so may result in disclosure of the personal information and intellectual property of

students and instructors to others. If you have any questions about the collection or use of your personal information, please contact your instructor or the Privacy Office at info.privacy@yorku.ca.

Recordings of Hyflex course sessions will be retained along with other posted courses materials in accordance with York's Common Record Schedule. Student access will be removed following the end of each term. Recordings that include student images or audio will not be used for a subsequent offering of the course.

Student Support and Resources

To help you succeed academically, York University offers a wide range of resources and services. Everything from writing workshops and peer mentorship to wellness support and career guidance is available to fulfill our LA&PS students' needs. Explore the links below to access these on-campus resources:

- [Academic Advising](#) is available to provide students support and guidance in making academic decisions and goals.
- [Student Accessibility Services](#) are available for support and accessibility accommodation when required.
- [Student Counselling, Health & Wellbeing](#) offers workshops, resources, and counselling to support your academic success.
- [Peer-Assisted Study Sessions \(PASS\) Program](#) provides student study sessions for students to collaborate and enhance their understanding of course content in certain courses.
- [Student Numeracy Assistance Centre at Keele \(SNACK\)](#) supports students in courses involving math, stats, and Excel.
- [The Writing Centre](#) provides multiple avenues of writing-based support including drop-in sessions, one-to-one appointments, a Multilingual Studio, and an Accessibility Specialist.
- [ESL Open Learning Centre \(OLC\)](#) supports students with building proficiency in reading, writing, and speaking English.
- [Learning Skills Services](#) provides tips for time management, effective study and learning habits, keeping up with coursework, and other learning-related supports.
- [Learning Commons](#) provides links to supports for time management, writing, study skills, preparing for exams, and other learning-related resources.
- [Roadmap to Student Success](#) provides students with timely and targeted resources to help them achieve academic, personal, and professional success.
- [Office of Student Community Relations \(OSCR\)](#) is responsible for administering the [Code of Student Rights & Responsibilities](#) and provides critical incident support.

- [goSAFE](#) is staffed by York students and can accompany York community members to and from any on-campus location, such as the Village Shuttle pick-up hub, parking lots, bus stops, or residences.

For a full list of academic, wellness, and campus resources visit [Student Support & Resources](#).