

STAT 3490
Time Series Analysis
Winter 2021

Time Mon, Wed & Fri 8:30 a.m. – 9:20 a.m.
CRN 50095

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Web Pages UM Learn: <http://umanitoba.ca/umlearn>
Statistics: <http://umanitoba.ca/statistics>

Office Hours Mondays 10:00 a.m. – 11:00 a.m.
Thursdays 9:30 a.m. – 10:30 a.m.

(or by appointment)

Office hours will be conducted over Zoom at the following link:

<https://zoom.us/j/94742685466?pwd=L3dwc2Mwa1BCT1VQR0VzNH1CVldWZz09>

You do not need an appointment to talk to me during my office hours; just join the Zoom meeting. If the above times are not convenient for you, please contact me to arrange an alternate time to meet. I will do my best to return all email or telephone messages within 24 hours.

Calendar Description

Analysis of time series data and related methodologies: autoregressive and moving-average models and their generalizations, trend and seasonal components, exponential smoothing, the Box-Jenkins Methodology. Prerequisite: one of STAT 3450, the former STAT 3120, or the former STAT 3470.

Textbook

Time Series Analysis: Univariate and Multivariate Methods (2nd ed.) by William W. S. Wei, Addison Wesley (2006). (Electronic access available through UofM Libraries)

Software

We will be using SAS in this course. You can install a free copy of SAS University Edition on your personal computer from https://www.sas.com/en_us/software/university-edition.html.

Evaluation

Assignments (3)	20%
Term Tests (2)	40%
Final Examination	40%

Marks will be posted on UM Learn (see the web link above).

The following are the minimum percentage grades required to receive each of the various letter grades: A⁺ (90%), A (80%), B⁺ (75%), B (70%), C⁺ (65%), C (60%), D (50%).

Exam Information

The term tests will be held on **Friday February 12, 2021** and **Friday March 19, 2021**, in-class. There will be no make-up tests. Students missing a term test for a valid reason will have the weight of the test shifted to a future term test and/or the final exam.

The final exam will be 3 hours in duration and will be scheduled by the Registrar's Office. It will cover the entire course.

During online assessments (the two term tests and the final exam), you are permitted to use the course notes, a calculator, any course material I have provided, and any of your personal notes. However, during these assessments, you are not permitted to access the internet (other than to access our course materials), communicate with any classmates, tutoring websites or any other person, nor use notes prepared by anyone else besides me or you. Students failing to abide by these regulations will be subject to penalties as laid out in the university's academic dishonesty policy. (See the section in this course outline on Academic Integrity.)

Assignments

There will be three assignments, equally weighted, worth a total of 20% toward your final grade. Assignments may include data analysis using SAS. Assignments are due by the designated time; late assignments will not be accepted. You are encouraged to discuss assignments with your classmates and me, but final submission must be written independently.

Voluntary Withdrawal

The voluntary withdrawal date is **March 31, 2021**.

Academic Integrity

It is important that you understand what constitutes academic dishonesty and that you are familiar with the very serious consequences. The following link describes various types of

academic dishonesty (including plagiarism, cheating, inappropriate collaboration and examination impersonation), and offers several resources to help students understand and avoid academic dishonesty:

<http://umanitoba.ca/student-supports/academic-supports/academic-integrity>

The Student Discipline Bylaw, which describes the potential consequences of academic dishonesty, can be found at the following link:

http://umanitoba.ca/admin/governance/media/Student_Discipline_Bylaw_-_2018-09-01.pdf

An academic integrity and student conduct tutorial can be found at the following link. For this course, it is recommended in particular that you view the parts on Tests & Exams and Inappropriate Collaboration.

http://umanitoba.ca/student/resource/accessibility/files/AI-Student-Conduct-Tutorial/story_html5.html

Copyrighted Material

All course notes, assignments, and exams are the intellectual property of your instructor or the Department of Statistics. Reproduction or distribution of these materials is strictly forbidden without their consent.

Class Communication

The University requires all students to activate an official University email account. Please note that all communication between your instructor and you as a student must comply with the Electronic Communication with Students Policy. Please see

http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html

You are required to obtain and use your U of M email account for all communication between yourself and the university.

Student Accessibility Services

If you are a student with a disability, please contact SAS for academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

<http://umanitoba.ca/student-supports/accessibility>

ROASS Schedule A

Schedule A of the Responsibilities of Academic Staff with regards to Students (ROASS) policies of the University of Manitoba lists resources and policies for students. It is important that you familiarize yourself with these resources and policies. Schedule A will be posted on your instructor's UM Learn page.

Tentative List of Topics

- Review of standard regression theory
- Fundamental Concepts
- Stationary and nonstationary time series models
- Forecasting, model identification, and parameter estimation
- Seasonal time series models
- Time series regression and GARCH models