STAT 3490 Section A01
Time Series Analysis
Winter 2019

Time	MWF 8:30 a.m. – 9:20 a.m.
Location	EITC E2 Rm 110
CRN	50095

Instructor	Dr A. Thavaneswaran 326 Machray Hall Telephone: 204-474-8984 Email: thavane@umanitoba.ca

Web Pages	UM Learn: `http://umanitoba.ca/umlearn` Risk Forecasting : `http://www.modelsandrisk.org/forecast/` Rscripts and Data: `https://people.orie.cornell.edu/davidr/SDAFE2/index.html` R Download: `https://cran.r-project.org/mirrors.html` R Code: `http://www.financialriskforecasting.com/book-code/`
Office Hours:	Monday 9:30 a.m. – 10:20 a.m. Wednesday 9:30 a.m. – 10:20 a.m. Friday 9:30 a.m. – 10:20 a.m.

If the above times are not convenient for you, please call, email or speak to me before or after class to arrange an alternate time to meet. I will do my best to return all email or telephone messages within 24 hours. In the event that office hours need to be cancelled please consult our course *UmLearn* page for the most up-to-date information.

Topics

This course will cover some topics in time series analysis. After briefly reviewing the standard regression theory, the theory and application of time series techniques will be studied. Topics will be selected from the following list (and with luck, will include them all):

- Fundamental Concepts
- Stationary and nonstationary time series models, autocorrelations, partial autocorrelations, model identification (Chapter 5)
- Forecasting, estimation, real data examples (Chapter 12 of Statistics and Data Analysis for Financial Engineering with R examples) `https://people.orie.cornell.edu/davidr/SDAFE2/index.html`
- Exponential smoothing (Chapter 3)

- Seasonal time series models (Chapter 6)
- Financial Risk Forecasting and Applications.

Text

Statistical Methods for Forecasting, by Abraham, B. and Ledolter, J. (1983). Published by John Wiley (not required).

Supplementary Resources

The following books are highly recommended for reading and extra practice.

Statistics and Data Analysis for Financial Engineering with R examples (Second Edition) by Ruppert , D. and Matteson, D. (2015). Springer.

Jon Danielsson (2011). Financial Risk Forecasting. Wiley Finance. (PPT slides, Ch1,Ch2,Ch4,Ch5,Ch6).

Calendar Description

(Formerly 005.349) Trend and seasonal components, exponential smoothing by the multiple regression method, the Box-Jenkins Methodology, analysis of seasonal data. Prerequisite: a grade of "C" or better in one of: STAT 3470 (005.347), STAT 3000 or the former STAT 3120 (005.312).

Software

To aid in the practicality of the tools taught in this course it is suggested that you download and install the statistical software package, R. It is a free program available at the URL at the top of the course outline. Throughout the lectures and through additional handouts you will be taught how to use some time series packages.

Evaluation

Term Tests (each)	20%
Assignments	10%
Final Examination	50%

The two term tests will be held during class time and will be 50 mins in duration. The tentative dates of the term tests are **February 4, 2019** and **March 11, 2019**. Should one of these dates change, you will be informed in advance.

Should you miss one test, you will be assigned a grade of zero unless you provide valid documentation. The other test and final exam would then be worth 20% and 70%, respectively.

Should you miss both tests, you be assigned a grade of zero unless you provide valid documentation. The final exam would then be worth 90%.

There will be two assignments (including questions based on R) and some problems will be marked.

There are no make up tests.

Students who miss both tests, with or without valid documentation, will be reported to the Dean's office as having completed no term work. This will have repercussions on their ability to write a deferred exam for the course, should such a deferral be requested.

Grades

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%).

Voluntary Withdrawal

The voluntary withdrawal date is **March 20** (by which time you will have received your marks for two term tests).

Academic Dishonesty

It is important that you understand what constitutes academic dishonesty and that you are familiar with the very serious consequences. Links to resources that describe academic dishonesty (including plagiarism, cheating, inappropriate collaboration and examination impersonation, as well as typical penalties) can be found at:

`http://umanitoba.ca/science/undergrad/resources/webdisciplinedocuments.html`

Copyrighted Material

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

Recording of Class Lectures

Your instructor and the University of Manitoba hold copyright over the course materials, presentations and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission from your instructor.

Use of Electronics in the Classroom

It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. A student may use technology in the classroom setting only for educational purposes approved by the instructor and/or the University of Manitoba Accessibility Services. Students should not engage in electronic messaging/posting activities (e-mail, texting, video or voice chat, social networking (e.g. Facebook)) or electronic gaming during scheduled class time.

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/saa/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 UMLearn page.