Nature of the Course:

This course is designed as an introduction to time series analysis and its applications in economics. Main econometric methods to analyze time-series and panel data will be covered, though the focus will be on stationary and non-stationary time series. The exposition will be formal in some parts. Students are expected to have taken or be taking concurrently ECON 5027 or an equivalent course in econometrics.

Note: Students are advised to check cuLearn regularly [every day] for course material and latest announcements.

Plagiarism:

Please be aware that plagiarism is serious offence at Carleton and should be recognized and avoided. For further information on how to do so, please see “Pammett on Plagiarism and Paraphrasing” at http://www.carleton.ca/economics/courses/writing-preliminaries/.

Requests for Academic Accommodations:

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<tr>
<th>For Religious Obligations</th>
<th>To be worked out on individual basis with instructor. Consult Equity Services Website or an Equity Advisor (ext. 5622) for Policy and list of Holy Days (<a href="http://www.carleton.ca/equity">www.carleton.ca/equity</a>)</th>
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<tr>
<td>For Pregnancy</td>
<td>Contact Equity Services (ext. 5622) to obtain letters of accommodations</td>
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</tbody>
</table>

For Students with Disabilities:

Students with disabilities needing academic accommodations are required to contact a coordinator at the Paul Menton Centre to complete the necessary letters of accommodation. The student must then make an appointment to discuss their needs with
the instructor at least two weeks prior to the mid-term examination. He/she must also
check with the PMC for accommodations for formally scheduled final examinations.

Texts and References:

(Supplementary text). HB139.E55 2004

(Supplementary text). HB139 .K45 2003

good introductory text for somebody who is curious about how a time series method
works). QA280 .H345

University Press, 2015. (Please click the blue text to access the e-book.)

There are several good books and references that you may wish to consult.

HB139.V465


P. J. Brockwell and R. A. Davis, *Introduction to Time Series and Forecasting*, New

R.F. Engle and D.L. McFadden (eds.), *Handbook of Econometrics*, V. 4, Amsterdam:
North- Holland, 1994 - referred to as HE below. HB139.H36 v.4


G.S. Maddala and I.M. Kim, *Unit Roots, Cointegration and Structural Change*,

Hamilton is a thorough and advanced treatment of time series analysis in econometrics
and the Box-Jenkins-Reinsel volume is the latest revision of a classic in time-series
analysis by Box and Jenkins. The Maddala-Kim volume provides a comprehensive
review of developments in unit roots, co-integration, and related issues. The Kennedy
book provides a good introduction of the econometric tools used for time series analysis.

Notes on Course Assessment:
1. There will be one final exam (to be scheduled by the Registrar's office) weighted at 50%, and two big assignments weighted at 24% after the 4th lecture. The rest 26% weight is awarded for in-class presentations.

2. For your assignments, you may use EViews or Stata on the computer network. First, you will need to download Stata/SE 14.0 for Windows/Mac from the following link:

http://carleton.ca/ccs/all-services/computers/site-licensed-software/

Another GPL package, GRETl, can also be used. You can download it to your personal computer from

http://gretl.sourceforge.net/win32/

3. It is very important to keep in mind that assignments will be due approximately TWO WEEKS after they are made available online. An assignment must be submitted within 15 minutes since the beginning of the class on the due date. No late or deferred assignment will be accepted. If you fail to submit your assignment on time, a zero weight (out of ‘12%’) will be assigned to your final grade.

4. In-class presentations will be scheduled on around the third/fourth week of February. I will provide a list of papers in various topics so that students are welcome to choose any topic that they are interested in. Students are expected to let me know the papers to be chosen for their presentations by the end of January - please note this deadline. If the class size is big (say, more than 20), then each group of two or three students may work on a presentation.

5. Failure to write the final examination will result in a grade of F. In order to write a deferred final exam, students must contact the Registrar’s Office as soon as possible after the missed exam.

Reading Assignments:

Readings in theory/applied work will be assigned as the course progresses.

1. Univariate Time Series Models
   a. Stationary time series process
   b. ARMA models
   c. Integrated processes and ARIMA models

Lecture Notes, Ch. 1
Kennedy, pp. 319-324
Verbeek, pp. 255-265
Enders, pp. 48-68, 156-170
Hamilton, Ch. 3
2. Building Univariate Time Series Models

   a. Estimation
   b. Identification
   c. Diagnostic checking
   d. Unit root tests
   e. Forecasting

   Lecture Notes, Chs. 1-2
   Enders, pp. 69-100, 170-230
   Kennedy, pp. 325-326, 358-363
   Verbeek, pp. 266-293
   Hamilton, Chs. 4 and 5
   Hamilton, Ch. 17
   J.H. Stock, “Unit roots, structural breaks and trends,” Ch. 46 in HE
   P.C.B. Phillips and Z. Xiao, “A Primer on Unit Root Testing,“


   a. Stationarity of multiple time series
   b. Autoregressive distributed lag models

   Enders, pp. 239-264
   Hamilton, Ch. 10
   A.C. Harvey, Ch. 8

4. Multivariate Time Series: II

   a. VAR modeling
   b. Causality and exogeneity
   c. Models with nonstationary variables
   d. Cointegration
   e. Dynamic panel data models

   Lecture Notes, Chs. 3-4
   Enders, pp. 265-311, Ch. 6
   Kennedy, pp. 326-328
   Verbeek, Ch. 9
   Hamilton, Chs. 11, 18 , 19 and 20
   Pesaran, Chs. 26-28 (providing a very good review of panel data models)
   M. Watson, “Vector autoregression and cointegration,” downloadable from
   http://www.eco.uc3m.es/jgonzalo/teaching/PhDT imeSeries/varmwatson.pdf


5. ARCH Models (if time permits)
   a. ARCH models
   b. GARCH and other models

   Enders, Ch. 3
   Verbeek, pp. 297-303
   Hamilton, Ch. 21
   T. Bollerslev, R.F. Engle, and D.B. Nelson, “ARCH models,” Ch. 48 in *HE*

**Notes:**

Student or professor materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).

*Thank you! If you have any further question/concern, please feel free to ask me for help.*