Syllabus

Contents

Time Series Econometrics
W&M ECON 408/PUBP 616
Spring 2025, MWF 9:00-9:50am, Room: Chancellors 114
https://econ.pages.code.wm.edu/408/docs/

Contact Info

Professor Throckmorton
E-mail: nat@wm.edu
Office: Chancellors 433
Office Hours:

- Wednesday, 4:00-5:00pm (Chancellors 433)
- Thursday, 4:00-5:00pm (Remote)

- Appointment (please request at least one day in advance)

TA: Elise Mikailov
E-mail: ecmikailov@wm.edu
Office: TBD
Office Hours: TBD

Summary

Time Series Econometrics (ECON 408/PUBP 616) is an elective for

- [Economics](#)
- [Computational & Applied Mathematics & Statistics](#)
- [Master's in Public Policy](#)

This course is an introduction to the econometric analysis of time-series data. It builds on the statistical theory from ECON 307 (or its equivalents), the linear regression model from ECON 308, and linear algebra (to be reviewed at the beginning of the semester) to examine time series models, forecasting, analysis of nonstationary series, unit root tests, co-integration, and the principles of modeling.

Resources

Books

I will provide my own slides and notes for the class. The recommended book is free. The optional books are not free, but they also not that expensive.

Recommended

- [Die24]: F.X. Diebold. *Forecasting in Economics, Business, Finance and Beyond*. Department of Economics, University of Pennsylvania, 2024. https://www.sas.upenn.edu/~fdiebold/Teaching221/Forecasting.pdf
- [HP22]: Huang and Petukhina. *Applied time series analysis and forecasting with Python*. Springer, 2022. https://doi.org/10.1007/978-3-031-13584-2

Optional

- [Ham94]: James D Hamilton. *Time series analysis*. Princeton university press, 1994.

Software

All the software is free.

Required

- Course materials are available at https://econ.pages.code.wm.edu/408/docs/ (created with Jupyter Book)
- We will do examples and exercises in Python, e.g., Anaconda Navigator, within a Jupyter Notebook.
- Assignments will be submitted as a Jupyter Notebook, which is available via Anaconda Navigator (on any OS).
- Jupyter Notebooks may contain cells for both Python (or other languages) and Markdown, and you can run Python code and it will display the output.

Recommended

- EViews is an "econometric, statistics, and forecasting package…" that is widely used for time series econometrics (but only available for Windows and MacOS). The "Student Version Lite" is free.
- For everyday note taking, Obsidian is a nonlinear note taking app that displays markdown in real time. You can embed screenshots and math equations written in $\LaTeX$, just as in a Jupyter Notebook. You can include code snippets; however, they cannot run like in a Jupyter Notebook.

Grades

Component	Points	Percent
Exam 1	200	20%
Exam 2	200	20%
Exam 3 (Final)	300	30%
5 Problem Sets	250	25%
Replication Exercise	50	5%

Exams

- Exam 1: Date TBD
- Exam 2: Date TBD
- Exam 3 (Final): Thursday, May 8, 9-11am

Please note that anything discussed in class or any topic in the assigned reading from the textbook is ``fair game'' for the exams. There may be material presented in class that is not in your textbook, so **make sure that you have a full set of notes**.

Assignments

There are 5 problem sets (2 before each midterm) each worth 50 points (5%).

- All problem sets must be submitted as a Jupyter Notebook and all analysis must be done in Python.
- I encourage you to work together, and you may work in groups of 3 people or less.
- I will not assign groups nor will I police them; you may change groups throughout the semester.

There is a replication exercise worth 50 points (5%), which should take a similar amount of time as a problem set, and it will be due by the end of the semester. You may not work in a group for this exercise.

All assignments must be turned in by the due date and time. Late work will not be graded.

Note: On each assignment and exam, some questions will be optional for undergraduates but required for graduate students. If undergraduates answer the optional questions correctly, then those points will count as extra credit.

Final Grade

There are 1000 total points available in this class. Please note that it is possible to miss the next highest grade by only a few points. This may happen, so be aware of this possibility. If you want to appeal any grading, you must contact me no later than one week from the date I post your score. The following table indicate the minimum number of points needed to guarantee a certain grade.

Grade	Minimum Points	%		Grade	Minimum Points	%
A	940	94		C	740	74
A-	900	90		C-	700	70
B+	870	87		D+	670	67
B	840	84		D	640	64
B-	800	80		D-	600	60
C+	770	77		F	< 600	< 60

Important Dates

Date	Event
Jan 31	Last day to add/drop
Feb 1	Withdrawal period begins
Mar 3-23	Midterm grading period
Mar 8-16	Spring Break
Mar 24	Last day to withdraw from a full-term course
May 2	Last day of classes
May 8	Final Exam (9-11am)
May 20	Final grades due for all students by 9 a.m.

Attendance

I expect you to attend all classes and take all exams. If you are unable to attend class or take an exam, please let me know as soon as you can. (You do not need to explain why unless you want to.) If you are unable to attend class, I will send a link shortly before class and you may attend remotely if you are able. I will not record lectures. In some cases, I will upload slides or take pictures of anything I write on the whiteboard. In other cases, you will need to obtain notes from a classmate. If I am unable to attend, I will teach remotely. If I am unable to teach remotely, then class may be canceled. I will schedule a catch up and review day before each midterm for flexibility.

Student Accessibility Services

William & Mary accommodates students with disabilities in accordance with federal laws and university policy. Any student who feels they may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services staff at 757-221-2512 or at sas@wm.edu to determine if

accommodations are warranted and to obtain an official letter of accommodation. For more information, please see www.wm.edu/sas.

Honor Code

I expect everyone to follow the Honor Code. Please see your student handbook for details. "As a member of the William and Mary community, I pledge on my honor not to lie, cheat, or steal, either in my academic or personal life. I understand that such acts violate the Honor Code and undermine the community of trust, of which we are all stewards." Financial and economic crises are precipitated by breeches of trust, so you must understand this is not only very important to me but also to our entire society. I will not hesitate to punish violators of the Honor Code.

Artificial Intelligence

I expect that you will complete all assignments without the assistance of artificial intelligence tools unless otherwise specified in the assignment.

Mental and Physical Well-Being

I recognize that students juggle different responsibilities and can face challenges that make learning difficult. There are many resources available at W&M to help you navigate emotional/psychological, physical/medical, material/accessibility concerns, including

- The W&M Counseling Center, 757-221-3620 (services are free and confidential)
- The W&M Health Center, 757-221-4386
- For additional support, contact the Dean of Students, 757-221-2510
- For additional resources, visit https://www.wm.edu/offices/wellness/resources/.

Guidelines for Religious Accommodations

https://www.wm.edu/offices/ce/policies/audit-risk-and-compliance/religious-accommodations.php

Inclusive Academic Community

William & Mary is a community that fosters free expression of ideas. We work to create an educational environment that draws on diverse backgrounds and perspectives. Creating this kind of learning environment requires deliberation, and is a responsibility shared by faculty and students alike. One of our responsibilities is a shared commitment to treat all participants in this course with respect. Our conversations may at times be challenging and difficult: we are here to learn, and learning is not always comfortable. I welcome your authentic feedback as we engage with the ideas represented here. If you have any concerns or questions, please feel free to approach me; or if you prefer, you can report concerns at https://www.wm.edu/report/student/.