Logistics:

Instructor	Diego Vilán
Lectures	Mondays 6:00pm – 8:45pm
Office Hours	Immediately after class, or by appointment
Email	dvilan1@jhu.edu
Course website	www.diegovilan.net/metrics.html

Course Description:

This graduate level course provides a selected overview of modern time series econometrics. The course covers both theoretical time-series analysis, as well as applied econometrics, and we will aim to strike a balance between theory, intuition, and empirical applications. Some of the topics covered include autoregressive-moving average processes, non-stationary time series models, unit root tests, vector autoregression models, and cointegration analysis. The course is self-contained and designed towards practicing economists and applied researchers.

Prerequisites:

The prerequisites for this course are 440.602 (Macroeconometric Theory and Policy) and 440.606 (Econometrics). Students are expected to have taken at least one course in statistics and one course in introductory econometrics, preferably within the past two years. Specifically, I will assume that the students have an understanding of basic probability (expectations, variances, probability distributions, etc.) and econometric concepts (linear regression, hypothesis testing, etc.). Prior experience with matrix/linear algebra will also be very helpful although a brief overview of matrix algebra will be provided.

Furthermore, to successfully complete this course, students are expected to learn to use at least one statistical software (Stata, SAS, Eviews, R, etc.). Being a language that shows great promise, the course will be based on R. I will assume no prior knowledge of R and will be providing all the necessary tools from the ground up. You are free to use the software of your choice, but I will not be able to offer much help if you use a software other than R. Finally, the R program is free to download and install, and can also be used via Hopkins My Cloud. Useful resources to learn R can be found in the links below:

https://cran.r-project.org/doc/manuals/R-intro.html

https://cran.r-project.org/doc/contrib/Lemon-kickstart/

Learning objectives:

Upon completing this course, a successful student will (1) have a solid understanding of basic and some advanced time series econometric concepts, (2) understand the pros and cons of various methods and make sound methodological judgment, and (3) be able to carry out empirical analyses using econometrics software and critically interpret empirical results.

Assignments and Grading:

The course is structured around five problem sets, a replication project, a midterm and a final exam. The final exam will be cumulative. Assignments contain both theoretical and applied questions, and are meant to improve the students' understanding of the subject matter, as well as to familiarize them with what to expect in both the midterm and final exams. All assignments are thorough and meant to be challenging, so plan your time accordingly.

Solutions to each assignment will be made available one week after each assignment is posted online. Assignments are not to be handed in, but each student should compare his or her own responses with the answer key. If something is still not clear after reviewing the solutions, the student is encouraged to consult other classmates or make use of the office hours.

Students will also work on replicating a published academic paper, and will present the results on the last class prior to the final exam. Work will be done in groups, with students being randomly assigned to a group, and each group receiving one study. The objective is to replicate the paper's main results.

The weights of each component in the final grade will be as follows:

Replication Project	20%
Midterm exam	35%
Final exam	45%

The course will be graded on a curve. I will assign letter grades based on each student's final overall score and my professional judgment.

Make-up exams and Extra Credit:

There is no make-up exam.

If the response rate to the course evaluations exceeds 85%, then there will be an extra question in the final exam worth 5 points to be added directly on your final grade. You will be notified in a timely fashion whether or not the extra credit opportunity will be available.

Textbooks:

We will be using Applied Econometric Time Series, by Walter Enders, from John Wiley and Sons Inc, 3rd Edition as the main reference for the class. I will not cover the entire book, and will also introduce topics not discussed in the textbook from my own lecture notes.

An extremely helpful textbook, not required for this course, is Introduction to Econometrics by James Stock and Mark Watson. It is an undergraduate textbook focusing on empirical examples and intuition. Our coverage in this course will be much more technical and quantitative.

Another textbook with comparable coverage and depth to this course is Applied Time Series Econometrics (2004) edited by Lutkepohl and Kratzig. More advanced texts include Time Series Analysis (1994) by Hamilton and New Introduction to Multiple Time Series Analysis (2005) by Lutkepohl.

Class Schedule:

Class #	Date	Day	Topic	Chapters	Note
1	Jan 28	Mon	Introduction to Time Series & Preliminaries	Enders 1	
2	Feb 4	Mon	Stationary univariate models	Enders 2	Pset 1
3	Feb 11	Mon	Stationary univariate models		
4	Feb 18	Mon	Stationary univariate models		Pset 2
5	Feb 25	Mon	Stationary multivariate models	Enders 5	
6	Mar 4	Mon	Stationary multivariate models		Pset 3
7	Mar 11	Mon	Principles of forecasting		
	Mar 18	Mon	Spring Break - No Class		
8	Mar 25	Mon	Midterm Exam		
9	April 1	Mon	Non-stationary models	Enders 4	
10	April 8	Mon	Non-stationary models		Pset 4
11	April 15	Mon	Cointegration analysis	Enders 6	
12	April 22	Mon	Models of volatility	Enders 3	Pset 5
13	April 29	Mon	Replication papers		
14	May 6	Mon	Final Exam		

Academic Integrity

Cheating is not tolerated and will result in an automatic failing grade for the course. Students are expected to behave as professionals and adhere to the University's Academic and Ethical Code of Conduct: <http://advanced.jhu.edu/wp-content/uploads/2013/01/AAP1101_CodeofConduct.pdf>.

University Policies

General
This course adheres to all University policies described in the academic catalog. Please pay close attention to the following policies:

Students with Disabilities
Johns Hopkins University is committed to providing reasonable and appropriate accommodations to students with disabilities. Students with documented disabilities should contact the coordinator listed on the Disability Accommodations page. Further information and a link to the Student Request for Accommodation form can also be found on the Disability Accommodations page (available on Blackboard).

Ethics and Plagiarism
JHU Ethics Statement: The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, and improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and fasciation, lying, facilitating academic dishonesty, and unfair competition. Report any violations you witness to the instructor. Read and adhere to JHU's Notice on Plagiarism (available on Blackboard).

Dropping the Course
Students are responsible for understanding the university's policies and procedures regarding withdrawing from courses found in the current catalog. Students should be aware of the current deadlines according to the Academic Calendar (available on Blackboard).

Getting Help
Students have a variety of methods to get help on Blackboard. Please consult the resource listed in the \Blackboard Help" link for important information. If students encounter technical difficulty in completing or submitting any online assessment, please immediately contact the designated help desk listed on the AAP online support page. Also, contact the instructor at the email address listed in the syllabus.