

# Eco 5316: Time Series Econometrics

Texas Tech University  
Spring 2016

## Syllabus

Lectures: TR 9.30am - 10.50am, 0033 Holden Hall

Instructor: Jan Duras

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Please check emails daily for important announcements; when sending an email start subject with 'Eco 5316'.

### Textbook

Tsay, R. S. [Analysis of Financial Time Series](#), Third Edition, Wiley, 2010.

Enders, W. [Applied Econometric Time Series](#), Fourth Edition, Wiley, 2014.

### Prerequisites

Eco 5314 or instructor consent. Knowledge of R is an advantage but is not required.

### Course Description

The objective of this course is to provide an introduction to time series methods. We will cover relevant theory but the main goal is to learn how to apply these methods to univariate and multivariate time series models in macroeconomics and finance. Consequently students should expect to spend considerable amount of time outside of class working on assignments in R.

### Homeworks

Each assignment is worth one tenth of the total grade. Assignments submitted after the deadline will be penalized by five percent for each day it is late, unless a bailout is requested and granted. Each student is allowed to use the bailout on any number of homeworks, but the total amount for the whole semester is limited to three days.

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HW0	N/A
HW1	Tuesday, January 26
HW2	Tuesday, February 9
HW3	Tuesday, February 23
HW4	Tuesday, March 8
HW5	Tuesday, March 22
HW6	Tuesday, April 5
HW7	Tuesday, April 19
HW8	Tuesday, April 28
HW9	Tuesday, May 17

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Students are encouraged to work in study groups, but each student is responsible for writing up own solution and needs to acknowledge people he/she worked with on the assignment. For identical or essentially identical assignments the score will be split, e.g. if there are 3 identical ones, each will receive at most 33%.

## Course Outline

This is a tentative outline for the course - details and timing are subject to change.

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Week 1	<b>Introduction</b> -
Week 2	<b>Autoregressive (AR) and Moving Average (MA) models</b> T: chapter 2, E: chapter 2
Week 3	<b>Autoregressive Moving-Average (ARMA) models, Seasonal Models</b> T: chapter 2, E: chapter 2
Week 4	<b>Nonstationarity, Unit Root Tests (ADF, KPSS)</b> T: chapter 2, E: chapter 4
Week 5	<b>Conditional Heteroscedastic Models (ARCH)</b> T: chapter 3, E: chapter 3
Week 6	<b>Conditional Heteroscedastic Models (GARCH, SV)</b> T: chapter 3, E: chapter 3
Week 7	<b>Extreme Values, Quantiles, Value at Risk</b> T: chapter 7
Week 8	<b>Structural Change</b> E: chapter 4
Week 9	<b>Spring Break</b> -
Week 10	<b>Vector Autoregressive Models (VAR)</b> T: chapter 8, E: chapter 5
Week 11	<b>Structural VAR Models</b> T: chapter 8, E: chapter 5
Week 12	<b>Cointegration, Vector Error Correction Models (VECM)</b> T: chapter 8, E: chapter 6
Week 13	<b>Factor Models</b> T: chapter 9
Week 14	<b>State Space Models</b> T: chapter 11
Week 15	<b>Kalman Filter</b> T: chapter 11
Week 16	<b>Markov Chain Monte Carlo Methods (MCMC)</b> T: chapter 12
Week 17	<b>Markov Chain Monte Carlo Methods (MCMC)</b> T: chapter 12

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