

## Time Series (STEM-EAP17)

Master's in Applied Econometrics and Forecasting

1st Semester 2020/2021

Wednesdays 18:00-21:00, F2-103

- Instructor: **Prof. Nuno Crato**, 105 Quelhas 4, 21 392 5846 (x. 3846)  
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- Textbook: **W.S. Wei**, *Time Series Analysis: Univariate and Multivariate Methods*, 2<sup>nd</sup> Edition, Addison-Wesley, 2005.
- Software: PEST/ITSM, EVIEWS, R, or any other software with time series analysis and forecasting capability
- Goals: This is a first graduate course on univariate time series analysis and forecasting. It deals with linear models, autocorrelation analysis, and basic spectral methods. It intends to introduce the fundamental time series theoretical tools as well as to initiate students' training in the practical analysis of economic and financial time series.
- Evaluation: Two tests (2 x 15%), group project work (35%) and final exam (35%).

Classes	Topics	Textbook
16 Sep	Stationary stochastic processes and time series	2.1 – 4
23 Sep	ACF, PACF, MA( $\infty$ ) e AR( $\infty$ )	2.5 – 6
30 Sep	Autoregressive and moving average processes	3.1 – 3
14 Oct	ARMA models	3.4
21 Oct	Nonstationary processes – <b>TEST 1</b>	4.1 – 3
28 Oct	Forecasting	5.1 – 7
04 Oct	Seasonality and model identification	6.1 – 2, 8.1 – 3
11 Nov	Model fitting and model selection	7.1 – 7, 8.4
18 Nov	<b>Group project preparation – TESTE 2</b>	
25 Nov	Unit root tests	9.1 – 4
02 Dec	Fourier analysis, the spectrum and the periodogram	11.1 – 2, 12.1 – 3
09 Dec	Periodogram, spectral estimation	13.1-13.3
16 Dec	<b>Group projects presentation and discussion</b>	