

## GENERAL DESCRIPTION

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Time Series data is today available for a wide range of several phenomena in Business, Finance, Economics, Public Health, the Political and Social Sciences. The aim of our Times Series Modelling and Forecasting Course is therefore to provide researchers and professionals with the standard tool kit required for the analysis of time series data in Stata. As such the program has been developed to offers an overview of the most commonly used methods for analysing, modelling and forecasting the dynamic behaviour of time series data, offering practical examples of empirical modelling using real-world data. Module 1 provides an introduction to Stata's basic commands before moving to the analysis of time series features and to univariate time series models. Module 2 covers multivariate time series models for stationary and non-stationary series.

In common with TStat's training philosophy, throughout the course theory and methods are illustrated in an intuitive way and are complemented by practical exercises with Stata. In this manner, the course leader is able to bridge the "often difficult" gap between theory and practice of time series modelling and forecasting. At the end of the course, participants are expected to be able to autonomously implement the methods discussed in the course.

## TARGET AUDIENCE

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Researchers and professionals working in financial institutions, policy institutions, research departments of utilities, governments, corporations, Ph.D and Master students in biostatistics, economics, finance, engineering, psychology, social and political sciences needing to implement time series data analysis methods.

## PREREQUISITE

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Participants should have a knowledge of the inferential statistics and introductory econometric methods illustrated in Wooldridge, J. M (2019).

Participants are not required to be familiar with the statistical software Stata.

## PROGRAM

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### SESSION I: WORKING WITH TIME SERIES IN STATA

1. A quick introduction to Stata for time series data:
  - Importing datasets
  - Creating and formatting date variables using date and time functions and declaring datasets to be time-series
  - Using time-series operators to create lags
  - Differences
  - Leads
2. Graphical analysis of time series:
  - Line plot
  - Correlogram
  - Histogram
3. Testing for autocorrelation and testing for unit root
4. Univariate time series models: theoretical elements and practical applications of modelling real-world macroeconomic time series with the **arima** command
5. Modelling volatility: univariate ARCH/GARCH models. Theoretical elements and practical applications of modelling real-world financial time series with the **arch** command
6. Forecasting with AR(I)MA-ARCH models

## SESSIONS II: MULTIVARIATE TIME SERIES MODELS

1. Stationary Vector Autoregression (VAR) modelling: theoretical elements and practical applications of modelling real-world macroeconomic time series with the `var` command
2. Checking correct specification of VAR models: diagnostic tests and plots
3. Granger causality and impulse response function analysis
4. Non-stationary time series: an introduction to cointegration
5. Vector error-correction models: theoretical elements and practical applications of modelling real-world macroeconomic time series with the `vecm` command

## COURSE LEADER

Dr Elisabetta Pellini, Centre for Econometric Analysis, Bayes Business School, City, University of London (UK).

## SUGGESTED READING (PRE - AND POST-COURSE)

[Introduction to Time Series Using Stata](#). Stata Press Publication, S. Becketti (2020).

[Financial Econometrics Using Stata](#). Stata Press Publication, S. Boffelli and G. Urga (2016).

## DATES AND LOCATION

Due to the ongoing Public Health situation, the **2022 edition** of this training course will be offered ONLINE on a part-time basis. The course program has therefore been restructured into two modules which will be offered on the **20th-21st of January** from 10:00 am to 1:30 pm Central European Time (CET).

## REGISTRATION FEES

Students\*: € 355.00  
Ph.D Students: € 455.00  
University: € 505.00  
Commercial: € 675.00

\*To be eligible for student prices, participants must provide proof of their **full-time** student status for the current academic year. Our standard policy is to provide all **full-time students**, be they Undergraduates or Masters students, access to student participation rates. Part-time master and doctoral students who are also currently employed will however, be allocated academic status.

Fees are subject to VAT (applied at the current Italian rate of 22%). Under current EU fiscal regulations, VAT will not however applied to companies, Institutions or Universities providing a valid tax registration number.

The number of participants is limited to 8. Places, will be allocated on a first come, first serve basis. The course will be officially confirmed, when at least 5 individuals are enrolled.

Course fees cover: course materials (handouts, Stata *do files* and datasets to be used during the course), a temporary licence of Stata valid for 30 days from the beginning of the course.

Individuals interested in attending the training course should contact TStat Training to ask for a registration form. The completed application must then be returned to TStat by the **10th of January 2022**.

Further details regarding our registration procedures, including our commercial terms and conditions, can be found at <https://www.tstattraining.eu/training/time-series-modelling-forecasting-stata-ol/>.

## CONTACT INFORMATION:

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The logo for TStat Training, featuring the word "TStat" in a stylized, handwritten font. The "T" is red and the "Stat" is black. The logo is set against a grey circular background with a white outline.