

# TAKING YOUR STATA PROGRAMMING SKILLS TO THE NEXT LEVEL: DEVELOPING AND MODIFYING STATA ADO FILES

## GENERAL DESCRIPTION

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The objective of TStat Training's more advanced course is to provide participants with the programming commands and options required to autonomously develop and modify Stata ADO files. The opening session offers a quick overview of the fundamental concepts and commands (**macros, vectors, scalars, looping, branching, temporary objects, foreach, forvalues**) intrinsic to successful programming development. Session two moves on to illustrate the most effective way to develop a Stata ADO file, introducing participants to more specific programming concepts (such as arguments, local subroutines and the temporary storing of results) and Stata's programming commands **tokenize, macro shift, marksample** and **markout** "byable" and **sortpreserve**. In section three participants are introduced to Stata's inbuilt matrix capabilities, before moving on in the final session to developing their own programs for linear and maximum likelihood estimators.

In common with TStat's course philosophy, each session is composed of both a theoretical component (in which the programming techniques are fully explained via a series of course specific developed examples), and an applied (hands-on) segment, during which participants have the opportunity to implement the techniques under the watchful eye of the course tutor.

At the end of the course, it is expected that participants will be able to independently implement both the techniques learnt and personalize the ADO program templates specifically developed during the course in order to enhance the effectiveness of their research.

## TARGET AUDIENCE

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Researchers or professionals with a good knowledge of the introductory programming skills covered on our [A Little bit of Programming goes an Awfully Long Way..](#) wishing to take their programming skills to the next level in order to be able to program their own Stata ADO files for data analysis and data management and to develop Stata commands for least squares and maximum-likelihood estimators.

## PREREQUISITES

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It is assumed that participants have a sound working knowledge of Stata and are familiar with the concepts and Stata commands treated in our introductory Stata programming course: [A Little bit of Programming goes an Awfully Long Way..](#)

## PROGRAM

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### SESSION I: PROGRAMMING BASICS | A QUICK REVIEW

1. Macros
  - Global macros
  - Local macros
2. Scalars and matrices
3. Temporary objects
4. Looping
5. Branching

### SESSION II: WRITING STATA PROGRAMS

1. Programming in Stata
2. Do-files and ADO-files
3. Writing and modifying a Stata programs
4. Programs *without arguments*
5. Programs with *positional arguments*
6. Programs with *named positional arguments*
7. Storing and retrieving program results
8. Programs with arguments using the "syntax" construct
9. Using **tokenize** and **macro shift**
10. ADO-files
11. Implementing program options
12. The return statements
13. Sample restriction with **marksample** and **markout**
14. Making a command "byable"
15. The use of **sortpreserve**
16. Writing an **rclass** ADO-file
17. Implementing program options
18. Sample restrictions with **marksample**
19. The usefulness of **markout**

20. Make a program “byable”
21. The use of `sortpreserve`
22. Writing an `eclass` ADO-file
23. More on storing results in `e()`
24. A `eclass` program template
25. Temporarily destroying the data in memory
26. Local sub-routines

### SESSION III: STATA MATRIX CAPABILITIES

1. Stata matrix commands
2. Stata matrix **input** and **output**
3. Matrix input from Stata estimation results
4. Stata matrix subscripts and combining matrices
5. Matrix operators
6. Matrix functions
7. Defining a macro by a matrix function
8. Matrix accumulation commands

### SESSION IV: PROGRAMMING ESTIMATORS

1. Programming Linear Least Squares estimation
2. Programming Maximum Likelihood estimation
3. Some examples

## COURSE REFERENCES

- [An Introduction to Stata Programming](#), Christopher F. Baum, Second Edition, Stata Press 2016

## DATE AND LOCATION

The 2023 edition of this training course will be offered **ONLINE** on a part-time basis on the 22nd, 25th and 26th of September from 10.00 am to 1.30 pm Central European Summer Time (CEST).

## REGISTRATION FEES

Students\*: € 535.00  
Ph.D Students: € 685.00  
University: € 795.00  
Commercial: € 1070.00

\*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 **12th September 2023**.

Further details regarding our registration procedures, including our commercial terms and conditions, can be found at [www.tstattraining.eu/training/stata\\_programming\\_next\\_level-ol/](http://www.tstattraining.eu/training/stata_programming_next_level-ol/).

### CONTACT INFORMATION:

**Monica Gianni**

TStat S.r.l. | Via Rettangolo, 12-14  
I-67039 Sulmona (AQ)  
T. +39 0864 210101

TStat Training | Kleebergstraße, 8  
D-60322 Frankfurt am Main

