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Description

Mata is a matrix programming language that can be used by those who want to perform matrix calculations interactively and by those who want to add new features to Stata.

The *Mata Reference Manual* is comprehensive. If it seems overly comprehensive and too short on explanation as to why things work the way they do and how they could be used, we have a suggestion. See [The Mata Book](#) by William Gould (428 pages) or [An Introduction to Stata Programming](#) by Christopher Baum (412 pages). Baum’s book assumes that you are familiar with Stata but new to programming. Gould’s book assumes that you have some familiarity with programming and goes on from there. The books go well together.

Remarks and examples

This manual is divided into six sections. Each section is organized alphabetically, but there is an introduction in front that will help you get around.

If you are new to Mata, here is a helpful reading list. Start by reading

[M-1] First	Introduction and first session
[M-1] Interactive	Using Mata interactively
[M-1] How	How Mata works

You may find other things in section [M-1] that interest you. For a table of contents, see

[M-1] Intro	Introduction and advice
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Whenever you see a term that you are unfamiliar with, see

[M-6] Glossary	Mata glossary of common terms
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Now that you know the basics, if you are interested, you can look deeper into Mata’s programming features:

[M-2] Syntax	Mata language grammar and syntax
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[M-2] [Syntax](#) is pretty dense reading, but it summarizes nearly everything. The other entries in [M-2] repeat what is said there but with more explanation; see

[M-2] Intro	Language definition
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because other entries in [M-2] will interest you. If you are interested in object-oriented programming, be sure to see [M-2] [class](#).

Along the way, you will eventually be guided to sections [M-4] and [M-5]. [M-5] documents Mata’s functions; the alphabetical order makes it easy to find a function if you know its name but makes learning what functions there are hopeless. That is the purpose of [M-4]—to present the functions in logical order. See

[M-4] Intro	Categorical guide to Mata functions
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Mathematical

[M-4] Matrix	Matrix functions
[M-4] Solvers	Matrix solvers and inverters
[M-4] Scalar	Scalar functions
[M-4] Statistical	Statistical functions
[M-4] Mathematical	Other important functions

Utility and manipulation

[M-4] Standard	Functions to create standard matrices
[M-4] Utility	Matrix utility functions
[M-4] Manipulation	Matrix manipulation functions

Stata interface

[M-4] Stata	Stata interface functions
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Date and time

[M-4] Dates	Date and time functions
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String, I/O, and programming

[M-4] String	String manipulation functions
[M-4] IO	I/O functions
[M-4] Programming	Programming functions

References

- Baum, C. F. 2016. *An Introduction to Stata Programming*. 2nd ed. College Station, TX: Stata Press.
- Gould, W. W. 2018. *The Mata Book: A Book for Serious Programmers and Those Who Want to Be*. College Station, TX: Stata Press.

Also see

[M-1] [First](#) — Introduction and first session

[M-6] [Glossary](#)

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