

# Introduction to Data Science

## Starter Guide

### Need help?

If you encounter any difficulties with installation or course materials, remember that support is available. You can always ask questions and receive help from your classmates and the professor via the GitHub Issues page described later in this guide.

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# 1 MATLAB license and installation

First of all, to install MATLAB you will need to have a valid MATLAB license; if you already have the University email, you don't need to worry about this, and can skip to the section titled “Installation” below.

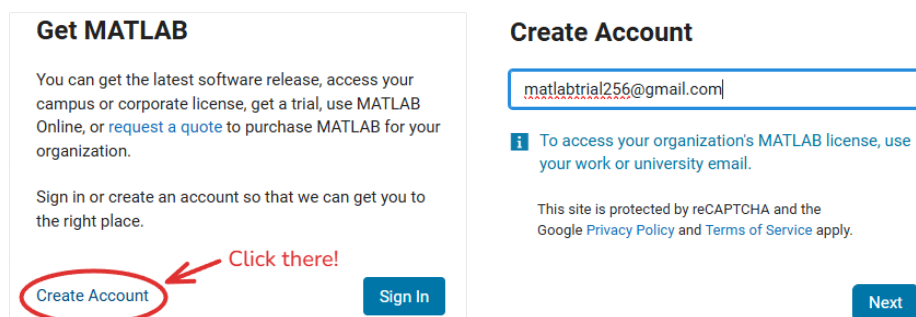
## 1.1 Creating a MATLAB account

Since you don't have your university email yet. You will need to create a MathWorks account with your personal email, to exercise on MATLAB, while you wait to receive the University email.

1. Go on <https://www.mathworks.com/> and click on “Get MATLAB” banner at the top of the page.



2. Click on **Create account**, and insert your personal email. Sometimes you will be asked to make sure that this is your organization's email, ignore that and select “continue anyway”

A screenshot of the MathWorks account creation process. On the left, the 'Get MATLAB' section contains text about software releases and a 'Sign In' button. On the right, the 'Create Account' section shows an email input field with 'matlabtrial256@gmail.com', an information icon, and a 'Next' button. Below the email field, there is a note about using work or university email. At the bottom of the 'Get MATLAB' section, the 'Create Account' button is circled in red, with a red arrow pointing to it and the text 'Click there!'.

3. Create a password for your account
4. You will now be asked to verify your email. An email containing a verification code will be sent to the email address you used to create the account. Just copy the code inside the email and paste it in the box as required. If you are not getting the email, check in the spam folder.

5. Next, you will need to insert some personal information to complete your account. You will also be asked if you are a student and which department are you from. This is how i suggest to fill those boxes:
  - Which best describes you? → Student
  - Department → Business, Economics and Finance
  - Which best describes your role? → Student (Graduate-level)
6. Congratulations, your account should be all set!  
Proceed to the next part of the guide to get your MATLAB trial license!

## 1.2 Getting a MATLAB license

If you are still waiting to receive your University email, then you will have to ask for a trial version of 30 days to be able to exercise while you wait. In this section we will cover how to get a Free 30 day trial version of MATLAB.

1. First things first, to get your 30 days trial, you need to visit the official MathWorks website, at [www.mathworks.com](http://www.mathworks.com) and scroll down until you see the free trial banner.

### Get a Trial of MATLAB and Simulink Products

30 days of exploration at your fingertips

Start now

← Click here!!!



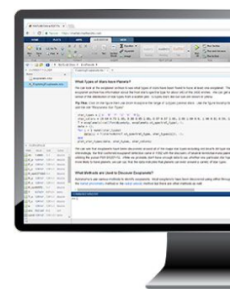
2. After clicking the “Start now” box, you will be brought to a page that looks like this:

### Try MATLAB, Simulink, and More

Join the millions of engineers and scientists who use MATLAB, Simulink, and add-on products to solve complex design challenges.

Try for free

← Click here!



3. You will now be asked to fill some personal details, here is some guidance on how to fill some of the fields:
  - **“Is this request on behalf of a faculty member or research advisor?”** → Check “No”
  - **“How will you use your trial?”** → MATLAB Essentials
4. Your license should be activated! Proceed to the [installation](#) section

### 1.3 Installation

Now that you have a MATLAB License, you are ready to install.

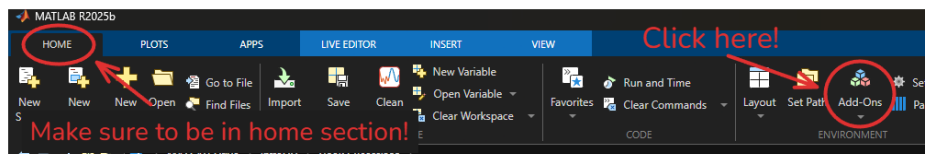
1. Head to [mathworks.com/downloads](https://mathworks.com/downloads), and select the version you want to download, download the latest one unless you have specific needs. An installer will be downloaded on your PC.
2. Now find the installer (usually located inside your downloads folder), and run it. This will start the guided installation process.
3. You will be asked to select a license (you probably won’t have more than one)
4. Select a folder for the installation, if you are unsure, just leave the default one.
5. Select what products do you want to install; for this course you will need to install the following:
  - MATLAB
  - Datafeed Toolbox
  - Econometrics Toolbox
  - Financial Toolbox
  - Image Processing Toolbox
  - Mapping Toolbox
  - Optimization Toolbox
  - Parallel Computing Toolbox
  - Risk Management Toolbox
  - Statistics and Machine Learning Toolbox

6. Select additional options as you please, and begin the installation. After installing MATLAB proceed to the next section to install FSDA Toolbox.

## 1.4 Installing FSDA Toolbox

Almost there! You just need to install one last toolbox!

1. In MATLAB look at the top bar, find the **Add-Ons** button and click on it



2. The add-on explorer will open up. Look for **FSDA** in the search bar. The first result is the one you want, click on it!
3. Click on add, the toolbox will begin installation.
4. The FSDA toolbox is a very active project and gets updated often, so every once in a while, remember to use the `tuna` function to ensure that you have the latest release of the toolbox installed.

To use the function, just write `tuna` in the command window.

## 2 Recordings of lessons

All the recordings of the course lessons will be published on Youtube, at the following link: [youtube.com/@marcorianiIntroDS](https://youtube.com/@marcorianiIntroDS)

The laboratory exercises will not be recorded.

## 3 Accessing the Textbook

The textbook for this course is *Data Science with MATLAB*, published by Giappichelli Editore. It is available **only in ebook format** on the publisher's website.

Before purchasing, you need to create a Giappichelli account to access the book after purchase; it will be stored in your personal library on the Giappichelli MyHome platform.

To get the book, follow these steps:

1. Visit the Giappichelli website, at [www.giappichelli.it](http://www.giappichelli.it) and register an account.
2. Search for “Data Science with MATLAB”. **Be careful: two very similar books appear!**
3. Make sure to buy the one titled “Data Science *with* MATLAB” as this is the English edition required for the course.
4. **Do NOT** buy “Data Science *con* MATLAB” as that is the Italian edition.
5. After purchase, you can now access your ebook from your personal library at [myhome.giappichelli.it/dashboard](http://myhome.giappichelli.it/dashboard).



Make sure you select the correct book!

## 4 GitHub and additional supporting material

If you ever have difficulties with course material, MATLAB setup, or using the textbook resources, don't hesitate to ask for help! You can post questions and get support from your fellow students and the professor directly in the repository via the “Issues” section. Everyone is encouraged to participate and support each other.

## 4.1 GitHub

GitHub has become over the years the main platform where programmers share their projects, collaborate and communicate with each other.

It not only acts as a place where find and download software, but also discuss, and collaborate on those projects together.

A lot of the material of the book will be available at the following repository: [UniprJRC/DsWithMATLAB](https://github.com/UniprJRC/DsWithMATLAB). Here you will be able to ask questions, interact with other students and the professor through the GitHub repository “Issues” section, take part in challenges posted by the professor, and report mistakes or typos in the book.

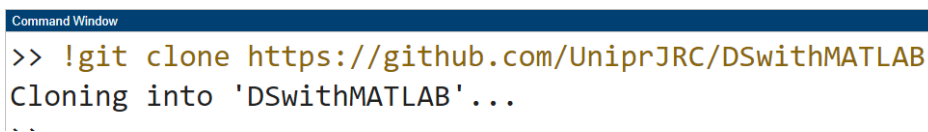
It is highly advised that you create a GitHub account, so that you will be able to participate in discussions.

## 4.2 Downloading textbook resources

All the files that you need are in the GitHub repository, we will now see how to clone them into your local MATLAB folder. This process will copy all the files present on GitHub in a folder on your PC.

1. First of all you will need to install Git to be able to type Git commands into the MATLAB command window.
2. Go to [git-scm.com/install](https://git-scm.com/install), download the version corresponding to your OS, and follow the instructions.
3. Once you have installed Git, you will need to open MATLAB and type in the command window:

```
!git clone https://github.com/UniprJRC/DsWithMATLAB
```



```
Command Window
>> !git clone https://github.com/UniprJRC/DsWithMATLAB
Cloning into 'DSwithMATLAB'...
..
```

If executing this command produces the following error:

```
fatal: could not create work tree dir 'DSwithMATLAB':
permission denied
```

It means that you are trying to clone the repository into a folder where you don't have writing permissions. Simply change the root folder and execute the command again.

Another possible cause of the cloning process failing, might be that you are cloning it into a folder that is automatically synchronized with the cloud (for example by using Google Drive or OneDrive), it is not advised to clone into such folders because this might interfere with the cloning process.

4. Now you will see that a folder called `DsWithMATLAB` has been created in the root of your MATLAB folder, inside it you will be able to find all the contents of the textbook repository.

### 4.3 Keeping the Project “Alive”

Software has a lifecycle, and without ongoing maintenance and use, interest fades. We therefore encourage readers to report errors and suggest improvements via the book’s GitHub page: [UniprJRC/DsWithMATLAB](https://github.com/UniprJRC/DsWithMATLAB)

Please file bug reports or patch proposals in the “Issues” section. We will respond promptly and, if need be, open a direct communication channel with the contributor. We thank the more than 1,000 users who have interacted via the Issues in the first two editions of the Italian version of the book.