



# Introduction to Matlab @ LUISS LOFT

## **Aim of the course:**

The aim of the course is to give a general introduction to Matlab. The course starts from a beginner level understanding how to build vectors and matrices and making operations with these objects. We will learn how to write a script file from scratch using for and while loops and functions. We will then move to more sophisticated concepts like Financial/Macro time series and Data analysis.

We will use two textbooks, Kevin Sheppard Matlab Notes (KSMN) and MATLAB® Primer by Mathworks (MPM).

You can find the books at the following webpages:

## **KSMN**

[https://www.kevinsheppard.com/images/6/69/MATLAB\\_Notes\\_2016.pdf](https://www.kevinsheppard.com/images/6/69/MATLAB_Notes_2016.pdf)

## **MPM:**

[http://www.mathworks.com/help/pdf\\_doc/matlab/getstart.pdf](http://www.mathworks.com/help/pdf_doc/matlab/getstart.pdf)

## **TOPICS**

### **Lecture 1 MATLAB Introduction (KSMN Chapter 1,2,3; MPM Chapter 1)**

- The MATLAB environment
- Matrix and linear algebra review
- Vectors and matrices
- Matrix operations

### **Lecture 2 MATLAB at work (MPM Chapter 1, KSMN Chapter 18)**

- Matlab as a calculator
- Special matrices
- Basic operations with vectors and matrices in Matlab
- Plots

### **Lecture 3 MATLAB at work (MPM Chapter 1, KSMN Chapter 18)**

- Conditional statements (**If**)
- Loops (**for** and **while** loops)
- Writing a Matlab script

#### **Lecture 4 MATLAB at work (MPM Chapter 1, KSMN Chapter 18)**

- Random number generator
- Exercises on random number generator
- Writing a Matlab function

#### **Lecture 5 MATLAB Introduction to Data analysis (KSMN Chapter 14, MPM Chapter 3)**

- Importing data
- Data description
- Different plots of data
- Statistical tests

#### **Lecture 6 MATLAB Introduction to Economic time series (In class development)**

- Financial and Macroeconomic time series
- Returns analysis
- Stylized fact and tests on returns
- Important matrices in Financial Econometrics