# Programming for Economics

## University of Konstanz

## B.Sc. in Economics, Winter Semester 2023

**Instructor**

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Office hours: Mondays, 4pm–5pm, in F231 or send an e-mail to schedule a meeting.

**Lectures and Tutorials**

Lectures: Wednesdays, 1:30pm—3:00pm, room J213
Tutorials: Thursdays, 8:15am—9:45am, room J213
In the lectures, I will present the material. The tutorials will serve as an opportunity for students to solve exercises and ask questions.

**Description**

The goal of the course is to give students a basic understanding of programming in economics and provide them with computational tools that can be applied broadly throughout their studies. Applications will use MATLAB.

**Prerequisites**

None.

**Course material**

Lecture slides will be available on ILIAS. The course is based on material from different sources. The lectures will be self-contained and there are no required readings. The following references may be useful for further reading, albeit they also cover more advanced topics that go well beyond the scope of this course.

- Jesús Fernández-Villaverde. 2022. "Courses on Computation." https://www.sas.upenn.edu/~jesusfv/teaching.html

- Harry J. Paarsch and Konstantin Golyaev. 2016. *Gentle Introduction to Effective Computing in Quantitative Research: What Every Research Assistant Should Know.* MIT Press

- Arthur Turrell. 2022. "Coding for Economists." https://aeturrell.github.io/coding-for-economists/

Additional references will be mentioned in the lectures.

**Tentative Schedule**

1. Organization

2. Introduction

   2.1 What is programming and why use it in economics?

   2.2 Overview of programming languages

3. Getting Started with Coding and MATLAB

   3.1 Coding basics and MATLAB essentials

   3.2 Control flow and loops

   3.3 Functions

   3.4 Handling data

   3.5 Plotting and data visualization

4. Programming Projects

   4.1 Programming concepts and good practices

   4.2 Debugging

   4.3 Version control

5. Some Numerical Methods for Economics

   5.1 Sorting

   5.2 Root finding

   5.3 Optimization

   5.4 Random numbers

6. Additional Topics

**Grading**

Grading will be based on a final exam (100%). The exam will include questions that are to be answered with the help of a computer. Students will be allowed to access the code they have written during the course.