

**Name of the course:** ADVANCED PROGRAMMING IN MATLAB AND SIMULINK

**Teachers:** Alberto Oliveri; e-mail: [alberto.oliveri@unige.it](mailto:alberto.oliveri@unige.it)

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**Duration of the course:** 20 hours

**Language:** Italian; if requested by foreign students, the course will be held in English.

**Aims of the course:** the course provides elements of advanced programming in MATLAB and Simulink environment, for typical engineering applications such as regression, simulation of dynamical systems, optimization. A part of the course will be devoted to the realization of plots suitable to be included in scientific papers.

**Teaching programme:**

1. Object-oriented programming
2. Debug and profiling
3. Solution of ordinary differential equations and simulation of dynamical systems
4. Local and global optimization
5. Regression
6. Speed up the computation with MEX files
7. Graphics in MATLAB
8. Simulink simulation of custom models with S-functions
9. Manage the communication between MATLAB and Simulink

**Exam modality:**

Presentation of a MATLAB/Simulink project

**Bibliography:**

Notes by the teacher (in English), Mathworks documentation <https://it.mathworks.com/help/>

**Timetable:**

- 12/12/2023 (14-17)
- 13/12/2023 (14-16)
- 19/12/2023 (14-17)
- 20/12/2023 (14-16)
- 09/01/2024 (14-17)
- 10/01/2024 (14-16)
- 16/01/2024 (14-17)
- 17/01/2024 (14-16)

**Room**

D3, DITEN, Via Opera Pia 11a.

The course can also be attended through Microsoft Teams: "Advanced Programming in MATLAB and Simulink", code "0ws66wk".

**Registration**

Please, contact the teachers to register for the course.