Dear students in Civil Engineering,

Also for the current academic year, we are announcing the course *Essentials of Scientific Computing* to review the fundamentals of scientific programming. The course will start on September 13, before the beginning of the fall semester.

Motivation

Through this course, we wish to provide some support to the students attending "tough" first-year courses of the Master degree, in particular those courses heavily based on scientific computing (such as Structural Mechanics, Computational Mechanics) or planning and design courses (such as Structures in reinforced concrete, Foundations).

Goals

Besides reviewing basic concepts and classical algorithms of numerical analysis (such as solving a linear system of equations, finding eigenvalues and eigenvectors of a matrix, solving an ordinary differential equation with a Runge-Kutta method), the goal of this course is to strengthen the analytical and algorithmic thinking of a student to solve a scientific/engineering problem more effectively.

The instructor will engage students in writing algorithms to get familiar with MATLAB, the most common computational framework used in engineering. The University of Pavia offers free access to MATLAB to students, instructors, and researchers. Having the chance to master MATLAB is another reason for taking this course.

Enrollment

Interested students can enroll either by looking for the course website on KIRO and registering from there or by emailing the instructor Daniele Prada at the following address: daniele.prada@unipv.it. In the email, you must indicate:

1. first name
2. family name
3. matriculation number
4. how you want to attend the course: on university premises or online.

The course will be broadcast using a video-conferencing tool. Classes will be recorded and made available to the interested enrolled students.

Assessment

This course is not mandatory, and there will not be an exam. However, the instructor will present an optional project to students. This project will also count as an optional exercise of the course *Elements of Computational Mechanics*. Therefore, a project positively evaluated by the instructor of *Essentials of Scientific Computing* will contribute to the final grade of *Elements of Computational Mechanics*.

Classroom and calendar

The course will take place in the G2 laboratory (G floor of the Engineering Faculty building). Class schedule:
- 09/13, h 2:00 pm - 6:00 pm
- 09/17, h 2:00 pm - 6:00 pm
- 09/21, h 2:00 pm - 6:00 pm
- 09/24, h 2:00 pm - 6:00 pm
- 09/28, h 2:00 pm - 6:00 pm