This course is aimed at UPV doctoral students who need to carry out large-scale mathematical calculations using computers. It will describe techniques and environments designed to facilitate programming and delivery of results, and will describe different techniques to achieve implementation of our codes. It will be divided into two parts, one oriented to integrated environments for numerical calculation (Matlab/Octave type) and the other oriented to traditional structured programming languages.

### 5. Course Outline
This course is aimed at UPV doctoral students who need to carry out large-scale mathematical calculations using computers. It will describe techniques and environments designed to facilitate programming and delivery of results, and will describe different techniques to achieve implementation of our codes. It will be divided into two parts, one oriented to integrated environments for numerical calculation (Matlab/Octave type) and the other oriented to traditional structured programming languages.

### 6. Recommended Prior Knowledge
It is NECESSARY for the student to have previous knowledge of Matlab programming, and knowledge of programming in some structured language (some experience in C language is recommended, especially with regard to pointers).

### 7. Student Outcomes
**Specific Student Outcomes**
- CA06(G) Criticism and intellectual defense of solutions.

**UPV-Generic Student Outcomes**
- (02) Application and practical thinking
- (03) Analyzing and solving problems

### 8. Syllabus
1. Matlab environment: Basic optimizations
2. Environment Matlab: .mex files
3. Matlab environment: Parallel Computing Toolbox
4. Matlab environment: Parallel Computing + GPUs
5. Introduction to Fortran 90/95
6. Arrays in Fortran 90/95
7. Tools for debugging and optimization

### 9. Teaching and Learning Methodologies

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### 10. Assessment

(*)This page is an automatically translated version of the original language version, which has been approved by the UPV for official purposes.
### 9. Teaching and Learning Methodologies

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### 10. Assessment

**Outline**

- (02) Open-answer written test

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