

## Parallel Computing

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**ECTS:** 3 ECTS

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**COORDINATOR:** José A. Alvarez Dios ([joseantonio.alvarez.dios@usc.es](mailto:joseantonio.alvarez.dios@usc.es))

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**UNIVERSITY WHERE THE COORDINATOR IS:** USC

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**HAVE YOU GIVEN PERMISSION TO RECORD YOUR CLASSES?** No

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**LECTURER 1:** Carlos Fernández Sánchez ([carlosf@cesga.es](mailto:carlosf@cesga.es))

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**UNIVERSITY WHERE THE LECTURER 1 IS:** USC

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**HAVE YOU GIVEN PERMISSION TO RECORD YOUR CLASSES?** No

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### SUBJECT CONTENTS

Programming parallel computers using MPI and OpenMP under languages C and Fortran.

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### METHODOLOGY

Once the theoretical part is learnt, the students will try to understand program examples to be able to build their own software.

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**LANGUAGE USED IN CLASS:** Spanish

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**IS IT COMPULSORY TO ATTEND CLASS?** Students can attend via conference system, In the university where the teacher is.

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## BIBLIOGRAPHY

Parallel Programming in C with MPI and OpenMP. Michael J. Quinn [McGraw-Hill Science/Engineering/Math, 2003].

Introduction to Parallel Computing, Second Edition, by Ananth Grama, Anshul Gupta, George Karypis, and Vipin Kumar [Addison -Wesley, 2003].

Parallel Programming with MPI, by Peter Pacheco [Morgan Kauffman Publishers, 1997].

Parallel Programming, by Barry Wilkinson and Michael Allen [Prentice Hall, 1999].

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## SKILLS

### Basic:

CG1: To have knowledge that provide a basis or opportunity for originality in developing and / or applying ideas, often within a research context, knowing how to translate industrial needs in terms of R & D in the field of mathematics Industrial.

CG3: To be able to integrate knowledge in order to state opinions using information that even incomplete or limited, include reflecting on social and ethical responsibilities linked to the application of their knowledge.

### Specific:

CE4: To be able to select a set of numerical techniques, languages and tools, appropriate to solve a mathematical model.

CE5: To be able to validate and interpret the results, comparing them with visualizations, experimental measurements and functional requirements of the physical engineering system.

### Numerical simulation specialization:

CS2: To adapt, modify and implement software tools for numerical simulation.

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**WILL YOU BE USING A VIRTUAL PLATFORM?** No.

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**WILL YOU BE USING ANY SPECIFIC SOFTWARE?** Yes. MPI, OpenMP, Fortran and C compilers

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## CRITERIA FOR THE 1ST ASSESSMENT OPPORTUNITY

Assignments and an exam.

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## CRITERIA FOR THE 2ND ASSESSMENT OPPORTUNITY

The same as in the 1<sup>a</sup> assessment opportunity.

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