

[Home](#) > [Training](#) > [Schools 2014](#)

23rd Summer School on Parallel Computing

Course Organizer: G. Erbacci

High Performance Computing (HPC) is widely used in many areas of science, engineering and industry to tackle problems that are very compute or data-intensive. HPC techniques are essential for any scientist who must solve computational problems and for any software developer who wants to take full advantage of modern multicore processors and parallel architectures. The same HPC techniques can be used to program powerful supercomputers with hundreds of thousands of processors, or to exploit the full potential of a multi-core laptop.

The **Summer School on Parallel Computing** is an intense, 10 day, graduate level course in HPC, with the objective of providing the participants with the skills to program and exploit modern parallel computing systems to solve computational problems. The school covers key topics focusing on HPC lexicon, parallel architectures, parallel programming models and methods, software engineering, profilers and debuggers.

Topics:

- Introduction to HPC and computational sciences
- HPC architectures
- Parallelization techniques
- The HPC system at CINECA
- Message passing paradigm: MPI & MPI2
- Shared memory paradigm: OpenMP
- Introduction to hybrid programming MPI+OpenMP
- Parallel algorithms
- Introduction to scalable numerical libraries: SCALAPACK, FFT, PETSc
- Software engineering for scientific computing
- Code optimization techniques
- Tools for debugging and profiling



23rd Summer School on PARALLEL COMPUTING

19 - 30 May, 2014 - BOLOGNA

14 - 25 July, 2014 - ROME

8 - 19 September, 2014 - MILAN

Target audience:

The school is aimed at final year master students, PhD students, and young researchers in computational sciences and engineering, with different backgrounds, interested in applying the emerging technologies on high performance computing to their research activity.

The number of participants for each edition is limited to 24 students. Applicants will be selected according to their experience, qualifications and scientific interest.

Pre-requisites:

Some programming experience with a high level programming language (C/C++ or FORTRAN) is required and a basic knowledge of computer architectures and Linux is recommended.

Attendance is free. A grant of 500 EUR (for students working abroad) and 250 EUR (for students working in Italy) will be available for participants not funded by their Institution and not working in the Bologna, Milan or Rome area, respectively. Documentation will be required. Lunch will be provided by CINECA. Each student will be given a two month access to the CINECA's supercomputing resources.

Three editions are scheduled for 2014:

1. **19 - 30 May, Bologna** - This edition will be held in **English** - **AGENDA** - **SLIDES**
2. **14 - 25 July, Rome** - **Italian** - **AGENDA** - **ADMITTED STUDENTS**
3. **8 - 19 September, Milan** - **Italian** - **AGENDA** - **ADMITTED STUDENTS**

Click on the date **to register**.

Application deadline:

First Edition: April 11, 2014

Second Edition: June 6, 2014

Third Edition: August 1, 2014

Email: corsi@cineca.it

Where schools are held:

Cineca - BOLOGNA, Via Magnanelli 6/3, 40033 Casalecchio di Reno, Bologna ph. + 39 051 6171411

Cineca - ROME, Via dei Tizii, 6 - 00185 Rome ph. +39 06 444861

Cineca - MILAN, Via R. Sanzio 4, 20090 Segrate, Milan ph. +39 02 269951

Acknowledgement:

The support of **CINI** for the software engineering module is gratefully acknowledged.

© Copyright 2012 SCAI - SuperComputing Applications and Innovation - CINECA