Course offered for the PhD program
in Civil, Chemical and Environmental Engineering
Curriculum in Structural and Geotechnical Engineering, Mechanics and Materials
Curriculum in Wind Science and Engineering
A.Y. 2019/2020 (XXXV cycle)

(possibility of participation for students in other PhD cycles or other PhD courses)

1. Title

eScience: new information technologies for research

2. Course description

Information technology has become an essential ingredient in most of research fields. The variety and amount of data to acquire, process and understand in fact has significantly increased, and the typical desktop is no longer sufficient. Even more, large collaborations are necessary to carry out research, involving complex logistics for handling distributed data collection, analysis and management. It is therefore clear that new approaches (computer architectures, software and methodologies) are needed to enhance the scientific research.

eScience studies, enacts, and improves the ongoing process of innovation in computationally-intensive or data-intensive research methods; typically, this is carried out collaboratively, often using distributed infrastructure. eScience encompasses all fields of research and addresses all stages of the research lifecycle, from formulation of the research questions, through large scale simulations and data analytics, scientific discovery, up to long-term sharing, reusing, and reapplying of the results, data as well as the relevant tools, processes and knowledge.

3. Course Organization

The course consists of lectures and tutorials, in which the active involvements of the participants will be required, on a subset of the following topics:

- Basic concepts of research infrastructures and eScience;
- Introduction to distributed computing (grids, clouds, clusters);
- Introduction to parallel computing;
- Introduction to relational databases.

4. Teachers

Daniele D'Agostino.

5. Duration and credits

12 hours (2.5 CFU).

6. Activation mode and teaching period

The course will be held between 25^{h} May – 26th June 2010.

7. Deadline for registration

The deadline for applications is 28th February 2020.
Please, send also an e-mail confirmation to Daniele D'Agostino, dagostino@ge.imati.cnr.it.

8. Final exam

Discussion of an individual project.

9. Recommended references

All the material will be provided via Aulaweb.