# Cloud Computing Technologies

## Prof. Federico Accetta

### COURSE AIMS AND INTENDED LEARNING OUTCOMES

This course presents an overview of cloud computing paradigms with the aim at developing applications that take advantage of cloud technologies. The main topics include cloud architectures, distributed/parallel computing in the cloud, distributed storage systems, virtualization and cloud services.

During the course the students will get familiar with an overview of cloud computing technologies and emerging trends, and the most popular frameworks adopted for developing cloud-based solutions.

At the end of the course students will be able to devise solutions based on cloud computing for classes of problems and to take advantage of modern cloud offering to identify optimal resource provisioning for their solutions.

### COURSE CONTENT

Cloud Computing Technologies (6 CFU)

* Review of the basics: computer architecture, computer networks
* Introduction to Cloud Computing
* Service models on Cloud: IaaS, PaaS and SaaS
* Cloud services: Storage, Infrastructure, Computing, Data, etc.
* Virtualization: VMs and containers
* Parallel/distributed computing. Distributed storage systems
* Microservices and serverless computing
* Cloud native development
* Containers and orchestration (Kubernetes)
* Development lifecycle: continuous integration and continuous deployment, working with git
* NoSQL databases
* Security on the cloud

### READING LIST

During the course instructors will provide link to public available online material and textbook references.

### TEACHING METHOD

The course will include lectures and class exercises based on traditional teaching and teach by example principles. It is strongly advised to attend lectures for working on case studies and examples, and for revising materials.

The course also involves hands-on activities with a cloud based integrated environment.

### ASSESSMENT METHOD AND CRITERIA

The exam of Module consists of a series of written open questions on the topics of the course.

### NOTES AND PREREQUISITES

***Prerequisites:*** Knowledge of the basic principles of computer operation and of the Internet is required. Basic programming skills and a mid-level knowledge of Python programming language is useful for the hands-on laboratories.

***Day and reception hours:*** Students can contact the instructor by e-mail to arrange for day and reception hours.