Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus
Course description

Course title	**Cloud Computing**
Course code	46055
Scientific sector	INF/01
Degree	Advanced-Systems Engineering
Semester	2
Year	1
Academic year	2021-2022
Credits	3
Modular	No

Total lecturing hours	32
Attendance	Attendance is not compulsory, but non-attending students are suggested to contact the lecturer at the start of the course to agree on the modalities of the independent study.
Prerequisites	Basic IT knowledge, familiarity with general networking concepts, Working knowledge of distributed systems
Course page	https://ole.unibz.it/

Specific educational objectives	The Cloud Computing course focuses understanding, designing and implementing distributed and cloud systems to solve real life problems. The main educational objectives of the course are: • Understand the core concepts of distributed systems and cloud computing • Cloud infrastructure from the ground up • Analyze trade-offs between cloud deployment models and providers • Distributed systems and Blockchain • Performance, scalability, and availability measurements in the cloud • Security and privacy in cloud computing • Edge computing technologies • Address real-world problems using cloud computing

Learning outcomes	**Knowledge and understanding:** D1.3 To know in depth the scientific method of investigation applied to complex systems and innovative technologies that support information technology and its applications; D1.5 To know the fundamentals, techniques and methods of design, customization and implementation of software to support the automation of new generation information systems for industrial production and business; **Applying knowledge and understanding:** D2.4 To be able to define an innovative technical solution to an application problem that meets technical, functional and organisational constraints and requirements;

	Making judgments: D3.1 To be able to autonomously select documentation from a variety of sources, including technical books, digital libraries, technical scientific journals, web portals or open source software and hardware tools; D3.4 To be able to reconcile the objectives of the project that are in conflict, to trade-off cost, resources, time, knowledge or risk; **Communication skills:** D4.3 To be able to structure and draft scientific and technical documentation describing project activities; D4.5 To be able to prepare and conduct technical presentations in English; D4.6 To be able to interact and collaborate during the implementation of a project or research with peers and experts; **Learning skills:** D5.1 To be able to independently extend the knowledge acquired during the course of study by reading and understanding scientific and technical documentation in English; D5.3 In the context of a problem solving activity, to be able to extend knowledge, even if incomplete, taking into account the final objective of the project;

Assessment	The assessment of the course consists of a project presentation and evaluation
Assessment language	English
Evaluation criteria and criteria for awarding marks	The students are required to implement a distributed system or cloud based solution for specific problems (e.g., auto-scaling, security, performance, consensus). The project will focus on one or more topics covered during the lectures and labs. The output of the project are: • a written report describing (problem statement, proposed solution, system design and architecture, functionality, development problems/solutions) • a working demo of the application • a project presentation The goal of the project is to assess to which degree students have achieved the following learning outcomes: applying knowledge and understanding, making judgments, communication skills and ability to learn.

Required readings	
Supplementary readings	Online resources: • https://aws.amazon.com/getting-started/ • https://docs.microsoft.com/en-us/azure/ • https://ethereum.org/developers/