

Cloud Computing

Computer Engineering (CE)

Artificial Intelligence and Data Engineering (AIDE)

A.A. 2020/2021

Who am I?

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What do I do?

Research Interests:

- Internet of Things (you might find me again....)
- Edge/Fog Computing (you'll know soon what that means)
- Wireless Communication Technologies

Roles:

- Coordinator of the Crosslab in 'Cloud Computing, Big Data and Cybersecurity'

What's this?

Cloud Computing

Mandatory class for AIDE

Optional class for CE

Duration 90 Hours (9 CFU)

Two different Modules (60+30 Hours):

- Module I: Cloud Infrastructure and Technologies
- Module II: Cloud Programming Models

Instructors:

- **Carlo Vallati (Module I - 60 Hours - 6 CFU)**
- Nicola Tonellotto (Module II - 30 Hours - 3 CFU)

What do we do?

Course Layout:

1. Module I

1. General Intro and Foundations Concepts (8 Hours)
2. Virtualization Technologies (12 Hours)
3. Cloud Applications (12 Hours)
4. Cloud Platforms (18 Hours)
5. Cloud Infrastructure and Mechanisms (10 Hours)

2. Module II

1. Cloud Programming Models (30 Hours)

How do we do that?

- *Mix of theoretical classes (the majority, I'm sorry) plus hands-on laboratories*

Final exam:

- Project
- Oral Examination

Bibliography:

- [cam-san] "Cloud Computing" by Sandeep Bhowmik. Cambridge University Press; 1 edition (July 4, 2017). ISBN-13: 978-1316638101
- Material provided by instructor (slides, papers, etc)

Final Goals

- Get overall knowledge on *Cloud Computing Technologies and Applications*
- Get a general insight on how a *Cloud Computing infrastructure* is designed and managed
- General introduction to *Cloud Programming Models for Big Data Analysis*
- *Get your hands dirty with some practical labs*
- In summary, get an answer (at least from a high level) to those questions:
 - How does Google handle 63000 searches per second?
 - How does Google manage an infrastructure of approximately 1 million servers?
 - How does Facebook support 2,41 BILLION monthly active users?

Seminars

Two seminars delivering direct experience from industry at the end of semester (to be confirmed):

- IoN Trading – the point of view of the user/programmer: how cloud technologies are exploited to manage software lifecycle
- Aruba s.p.a. – the point of view of the cloud provider

Pointers

- Course website:

<http://www.iet.unipi.it/c.vallati/cloud>

- Meeting hours:

Tuesday 10.30 – 12.30 (send an email in advance for confirmation!)

Schedule

	Mon	Tue	Wed	Thu	Fri
8:30/9:30		SI5			A22
9:30/10:30		SI5			A22
10:30/11:30					A22
11:30/12:30					
12:30/13:30					
13:30/14:30					
14:30/15:30					
15:30/16:30		A21			
16:30/17:30		A21			
17:30/18:30		A21			

Lab

Additional Lab
Hours, when
needed. **Bring your
laptop charged!**

Material

- Material will be made available on the MS Team channel of the course
- https://teams.microsoft.com/_#/school/files/unknown?groupId=54914da3-be9e-4d95-b929-800682d42e86&threadId=19%3Acaa6d4bbedaa47278986ca26d44c9723%40thread.tacv2&ctx=channel&context=Course%2520Material&rootfolder=%252Fsites%252Fa__td_48212%252FShared%2520Documents%252FGeneral%252FCourse%2520Material

Register

- Register to the class to get a VM created for remote labs
- <https://forms.office.com/Pages/ResponsePage.aspx?id=MWtFxyCi9Ue-Ukc4KGcKoXu0ehvJUBhBi8JGYavg9n1UQzBXTTczRkw2NVBHVEk2WDJJWTIXNVY0Sy4u>

Are you ready?