

# Cloud Computing

Computer Engineering (CE)

Artificial Intelligence and Data Engineering (AIDE)

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# 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](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?