

# Information Systems



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## Syllabus

PROFESSORS	Gianluigi Me
COURSE CODE	T046
GENERAL DISCIPLINE (SSD)	INF/01
COURSE YEAR	2
SEMESTER	Primo Semestre
PARTITION OF STUDENTS	A
CREDITS	6
TOTAL WORKLOAD	150
TOTAL LESSON HOURS	48
TEACHING LANGUAGE	English

INSTRUCTIONAL GOALS	<p>The course is focused on the fundamental topics of the Information Systems and digital technologies, as Computer systems, Communications and Networks, Databases, and Information security. In particular, the course objectives are twofold:</p> <p>-Theoretical aspects, including the main components of communication networks, with specific drill down on Internet and its related services (e.g. Web, email, DNS etc) and business models (e.g. B2B, B2C etc), presenting relevant technology and market model of Google. Moreover, the course will investigate the use and role in organizations of databases, of the big data fusion and the drivers for cloud services adoption. Finally, the course will include essentials in computer and network security, in order to understand the threats in computer usage and Internet surfing.</p> <p>Practical capacity to use Databases through MySQL DB Management System.</p>
PREREQUISITES	<p>ECDL diploma or equivalent knowledge certified by Luiss.</p>
COURSE CONTENTS	<p>The course will be split in two main parts: Computer systems and networks as the theoretical part and MySQL training as Laboratory part. The former part will be focused on Computer systems, with Operating systems concepts and application software basics, databases, big data, cloud services, Internet applications business models, including Google as a success case. The network part will include communications and networks basics, focusing on Internet basic services offered by the Internet Protocol Stack. Finally, an introduction to computer and network security, to answer to common questions, such as "how to protect information/communication?", "What is a virus?And how can I protect myself from viruses and malware?", "Which are the most popular attacks to Internet users?How to be safe?".</p> <p>The latter part will deliver the basic concepts of Relational Databases and their practical implementation (e.g. how to create a DB, how retrieve information, how to import/export data, etc.), via lab classes.</p>
REFERENCE BOOKS	<p>Title:Information Systems fundamentals</p> <p>By: Gianluigi Me and Paolo Spagnoletti</p> <p>Publisher: McGraw Hill Create</p> <p>Pub. Date: July, 2011</p> <p>ISBN-13: 978-1121232853.</p> <p>Further readings will be available on the elearning platform of the course.</p>
TEACHING METHODS	<p>Traditional and Reverse teaching</p>
ASSESSMENT METHOD	<p>- Lab test:fail/pass</p> <p>- Theory exam (written):fail/pass</p>
THESIS ASSIGNMENT CRITERIA	<p>Top level mark in the course /good knowledge in some computer systems topics (although out of the scope of the course) constitute a prerequisite for final paper assignment.</p>

## EXTENDED PROGRAM AND REFERENCE READING MATERIAL

WEEK 1 / ON LINE AND ON CAMPUS LECTURES CONTENT

Introduction to the course (main information about the course such as: timetable, exam rules, grading, structure of the course).  
Information and communication technology: The basics: Understanding Your Own Computer and your network. (1)  
(Group A) This lesson requires to develop the ability to recognize and interact with a DB. The students will learn (always through MySQL DBMS):

- What is, and what I not, a Database.
- What is a Relational Database.
- What are the main components of a DBMS.
- What are the main objects involved (e.g. tables, relations, etc.).
- how to interact with a DBMS (intro to SQL).

(2)

WEEK 2 / ON LINE AND ON CAMPUS LECTURES CONTENT

Communications and Networks:

- From the Analog to the Digital Age
- Networks
- Wired Communications Media
- Wireless Communications Media

(1)  
(Group B) This lesson requires to develop the ability to recognize and interact with a DB. The students will learn (always through MySQL DBMS):

- What is, and what I not, a Database.
- What is a Relational Database.
- What are the main components of a DBMS.
- What are the main objects involved (e.g. tables, relations, etc.).
- how to interact with a DBMS (intro to SQL).

(1)

WEEK 3 / ON LINE AND ON CAMPUS LECTURES CONTENT

THE INTERNET

- Connecting to the Internet
- How Does the Internet Work?
- Protocols to communicate
- Web surfing analysis

(1)  
(GROUP A) The students will learn how to: • design a database in the first normal form • create a database (2)

WEEK 4 / ON LINE AND ON CAMPUS LECTURES CONTENT

How Internet applications work:

- Addressing and Delivering
- TCP/IP at work
- IP Packet
- Domain Name System (DNS)

o Enablers for Success of the Web  
o Main Components: URL  
o Main Components: HTML  
o Main Components: http  
o HTTP and HTML  
o The Request/Response Procedure

(1)  
(GROUP B) The students will learn how to: • design a database in the first normal form • create a database (2)

WEEK 5 / ON LINE AND ON CAMPUS LECTURES CONTENT

(Group A) The students will learn how to :

- insert tables and relations
- insert and delete rows in a database

(2)

WEEK 6 / ON  
LINE AND ON  
CAMPUS  
LECTURES  
CONTENT

Class 1.  
How Internet applications work:

- Addressing and Delivering
- TCP/IP at work
- IP Packet
- Domain Name System (DNS)

o Enablers for Success of the Web  
o Main Components: URL  
o Main Components: HTML  
o Main Components: http  
o HTTP and HTML  
o The Request/Response Procedure  
o Email & Other Ways of Communicating over the Net  
(1)

(Group B) The students will learn how to: • insert tables and relations • insert and delete rows in a database (2)

WEEK 7 / ON  
LINE AND ON  
CAMPUS  
LECTURES  
CONTENT

The cloud services

- Definition of Cloud Computing
- Why Cloud Computing?

o Cost Control  
o Business Agility  
o Stick to Our Business

- How Cloud Computing Works
- Economic evaluation of insource or outsource ICT cloud services (HD VS CLOUD and how to decide to buy or to lease long term assets).

(1)

(Group A) The students will learn how to :

- retrieve information from a single table.
- retrieve information from multiple tables.

(2)

WEEK 8 / ON  
LINE AND ON  
CAMPUS  
LECTURES  
CONTENT

Blockchain, cryptocurrencies and smartcontracts  
(2)  
(1)

(Group B) The students will learn how to :

- retrieve information from a single table.
- retrieve information from multiple tables.

WEEK 9 / ON  
LINE AND ON  
CAMPUS  
LECTURES  
CONTENT

Introduction to Software

- What is software?
- What is an algorithm?
- Programming languages, system software and application software

How Google works: from page rank to revenue model

- The web search
- The key of success: the PageRank
- The business model
- Cost per Click
- Search engine optimisation

(1)  
(Group A) The students will learn how to import/export data to/from a database.  
(2)

WEEK 10 / ON LINE AND ON CAMPUS LECTURES CONTENT	<p>Class 2. Internet applications:services and models. E-commerce and e-business:</p> <ul style="list-style-type: none"> <li>• The Enablers</li> <li>• Categorizing eCommerce Initiatives</li> <li>• Business-to-Consumer (B2C)</li> <li>• Business-to-Business (B2B)</li> <li>• Consumer-to-Consumer (C2C)</li> <li>• Consumer-to-Business (C2B)</li> <li>• eGovernment</li> <li>• Bricks and Mortar</li> <li>• Bricks and Clicks</li> <li>• Pure Play</li> <li>• Business Models</li> <li>• Revenue Models</li> <li>• Dominant Business Models</li> <li>• Online Retailing</li> <li>• Infomediaries</li> <li>• Content Providers</li> <li>• Online Communities</li> <li>• Exchanges</li> <li>• Infrastructure Providers</li> <li>• eCommerce Implications</li> </ul> <p>Virtualization and Cloud services, NIST definition. (1)</p> <p>(1) (Group B) The students will learn how to import/export data to/from a database.</p>
WEEK 11 / ON LINE AND ON CAMPUS LECTURES CONTENT	<p>How Google works:from page rank to revenue model</p> <ul style="list-style-type: none"> <li>• The web search</li> <li>• The key of success: the PageRank</li> <li>• The business model</li> <li>• Cost per Click</li> <li>• Search engine optimisation</li> </ul> <p>(1)</p>
WEEK 12 / ON LINE AND ON CAMPUS LECTURES CONTENT	<p>How Google works:from page rank to revenue model</p> <ul style="list-style-type: none"> <li>• The web search</li> <li>• The key of success: the PageRank</li> <li>• The business model</li> <li>• Cost per Click</li> <li>• Search engine optimisation</li> </ul> <p>(1)</p>