UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Informatica Generale - 1

2021-2-E1802M033-T1

Learning objectives

The course presents the basic concepts of modern computer science, the structure and evolution of the automation systems.
Aspects of information technology applied on financial and economic field will be illustrated.

Contents

Introduction to computer science, information, hardware and software, computer networks, computer programming.

Detailed program

Introduction to Computer Science: historical development of the modern (or present kind of) computer and its predecessors (or the old type). Definition of computer science and the concept of information. Computer architecture.

Information and the digital representation: Numerical systems: decimal, binary, octal and hexadecimal. Bit and Bytes. Representation of integer numbers. Conversions between numerical systems. Representation of signed integer numbers. Complement. Binary arithmetic. Floating-point representation. IEEE standard. ASCII code. Boolean algebra: logical functions and expressions.

Hardware: functional analysis of the structure of a computer. The Von Neumann machine: Central Processing Unit

(CPU), the input/output system, the bus, computer data storage, input and output devices. Analog and digital. RAM and ROM memories. Peripherals communication. Moore's law. I/O devices: keyboard, pointing devices, text and graphical input. Pixels and screen resolution. Secondary memories: optical, magnetic, and optical-magnetic.

Software: the fundamental software (operating system, drivers, utilities) and the application software (personal productivity and more…). Databases. Elements of database.

Computer networks: local area networks, wide area networks, client-server and peer to peer models. Protocols of networks, an application protocol: the HTTP. The World Wide Web, some elements of HTML. Network applications. The Internet. TCP/IP protocol. Synchronous and asynchronous communication. Broadcast, multicast and point-to-point communication. Client-server architecture. The concept of domain. DNS. The web. Elements of HTML. Internet of Things (IoT). Cloud computing.

Algorithms and Programming: how to define an algorithm, structured programming. Elements of the Phyton language.

Information systems: the information system as a collection of technologies used in an organizational context. How information is relevant for a company. How an information system can enforce this importance.

Information security: basic concept of information security.

Prerequisites

Metodi quantitativi per l'amministrazione delle imprese

Teaching methods

Lecture.

During the Covid-19 emergency the lectures will take place asynchronously by remote connection.

Assessment methods

Learning assessment includes a written exam and possibly an oral exam. The written exam will take place in the teaching laboratories with multiple choice questions and essay questions. Students can take the oral exam only with a minimum vote of 18 in the written exam.

It is possible to pass the exam even with the single vote of the written exam.

During the Covid-19 emergency the written exam will be held entirely from a remote connection. The oral exam will take place on the WebEx platform and a public link will be available on the elearning web page in order to access the exam.

Textbooks and Reading Materials

· S. Ceri, D. Mandrioli, L. Sbattella. **Informatica arte e mestiere**. McGraw Hill, 1999;

· J. Glenn Brookshear Informatica: **Una panoramica generale** XI ed. Pearson eds

· Texts and papers provided by the teacher.

Semester

Second semester

Teaching language

Italian