UNIVERSITÀ DI PAVIA

Anno Accademico 2018/2019

COMPUTER NETWORKS	
Enrollment year	2016/2017
Academic year	2018/2019
Regulations	DM270
Academic discipline	ING-INF/05 (DATA PROCESSING SYSTEMS)
Department	DEPARTMENT OF ELECTRICAL,COMPUTER AND BIOMEDICAL ENGINEERING
Course	BIOENGINEERING
Curriculum	PERCORSO COMUNE
Year of study	3°
Period	1st semester (01/10/2018 - 18/01/2019)
ECTS	6
Lesson hours	54 lesson hours
Language	Italian
Activity type	WRITTEN AND ORAL TEST
Teacher	MASSARI LUISA (titolare) - 6 ECTS
Prerequisites	The course provides an introduction on computer networks, and it is attended by students with different backgrouds (electronics, computer science, bioengineering). Hence no particular knowledge in the field of computer networks or programming skills are required, but a basic knowledge of mathematical analysis and binary computing.
Learning outcomes	The aim of this course is to introduce key concepts and principles of computer networks; the objective is to give the student familiarity with the behaviour of modern data transmission technologies and the ability of analysing their performance. The Internet architecture and protocols will be used as the primary examples to illustrate the fundamental principles of computer networking. Lab activity will be on tools for network traffic monitoring and analysis. These activities will allow students to verify theory as well as to gain skills in analysis and configuration of computer networks.

Course contents	Introduction to computer networks: elements of a network, circuit switching and packet switching, access to the network and transmission media. Performance: delay and losses in computer networks Layered communication architectures, definition of protocol, Internet architecture Basics on application layer. Transport layer: services, UDP and TCP protocols. Flow control and congestion control. Performance problems: latency, throughput and utilization. Network layer: switching and forwarding, data plane and control plane. Routing algorithms. Internet protocol, IP addressing and routing in Internet. IPv6 Network monitoring: techniques and tools.
Teaching methods	Lectures (hours/year in lecture theatre): 38 Practical class (hours/year in lecture theatre): 14 Practicals / Workshops (hours/year in lecture theatre): 6 Lectures are followed by practical classes during which students apply and verify theory to practical examples of computer networks architectures.
Reccomended or required readings	J. Kurose, K. Ross. Reti di calcolatori ed Internet - Un approccio top-down. 7 ed. Pearson. 2017 (english version J. Kurose, K. Ross. Computer Networking - A Top-Down Approach, 7th ed. Addison Wesley, 2017). Lecture slides available on the course Web site.
Assessment methods	Final exam consists of a written test, containing questions and exercises.
Further information	Final exam consists of a written test, containing questions and exercises.
Sustainable development goals - Agenda 2030	$lbl_legenda_sviluppo_sostenibile