Politecnico di Torino

Academic Year 2010/11 (first time established in A.Y.2007/08)

01MPUJA

Introduction to telecommunication networks

1st degree and Bachelor-level of the Bologna process in Electronic And Computer Engineering - Vercelli (III FACOLTA' DI INGEGNERIA)

Teacher	Status	SSD	Les	Ex	Lab	Years Stability
Neri Fabio	PO	ING-INF/03	5	0	0	2

SSD	CFU	Activities	Area context
ING-INF/03	5	B - Caratterizzanti	Ingegneria delle telecomunicazioni

Esclusioni:
Electromagnetic waves II (02MBQ)

Objectives of the course

The course provides an introduction to telecommunication networks and describes the main technologies to transport information in telecommunication networks, with particular focus on wired packet-switched networks. Particular attention will be devoted to local area networks and to packet transport techniques in wide area networks (and in the Internet). Topics related to wireless networks are covered in other courses.

Expected skills

The course will provide knowledge on the internal mechanisms of modern telecommunication networks, with specific reference to the Internet and to local area networks (LANs).

Prerequisites

The course was devised as a first course on telecommunication networks, and as such requires little background information. Elementary knowledge of signal theory and communication theory will be useful.

Syllabus

Introduction to telecommunication networks: functions and services.
Layered protocol architectures: the OSI model and the Internet Protocol Suite
Multiplexing techniques.
Switching techniques and architectures
Physical-layer media and protocols.
Modem, cable-modem, ISDN, ADSL, optical access networks (PONs).
PDH and SDH.
Telephony networks and voice coding techniques.
Packet-based information transfer: HDLC, PPP, LLC, Frame relay, ATM.
Local area networks (LANs): Ethernet and its evolutions, Token ring, FDDI, slotted access protocols.
LAN interconnection.
Storage area networks.
Routing techniques. IP addressing.
Flow and congestion control.

Laboratories and/or exercises

The course will include some lab sessions, in which PCs and switching devices (switches and routers) will be used. Students will have the opportunity to analyze network traffic, to observe the behavior of Internet application protocols and of routing algorithms, and to experiment changes in routing tables.

Bibliography

Reference books:
J.F. Kurose, K.W. Ross, "Computer Networking: A Top-Down Approach Featuring the Internet", Addison-Wesley, 2000.
Bertsekas, R. Gallager, "Data networks", Prentice Hall, 2nd Edition, 1992.
F. Halsall, 'Computer Networking and the Internet', 5th Edition, Pearson Education, 2005

Revisions / Exam

Oral exam.

Programma definitivo per l'A.A.2010/11

BACK

m@il