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Politecnico di Torino

Academic Year 2008/09 (first time established in A.Y.2007/08)

01LSWJA

Introduction to Communication Networks

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

Teacher	Status	SSD	Les	Ex	Lab	Years Stability

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

Objectives of the course

The course describes the main technologies to transport information in telecommunication networks, with particolar focus on packet-switched networks. Paticular attention will be devoted to local area networks and to packet transport techniques in wide area networks.

Expected skills

The course will provide knowledge on internal mechanisms of modern telecommunication networks, with specific reference to the Internet and to local area networks (LANs). Topics related to wireless networks are covered in other courses.

Prerequisites

The course was devised as a second course on telecommunication networks. The previous course should cover higher protocol layers, hence students are supposed to be familiar with basic notions and terminology of telecommunication networks, and with main Internet application protocols.

Syllabus

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: X.25, HDLC, PPP, LLC, Frame relay, ATM.
Local area networks (LANs): Ethernet and its evolutions, Token ring, FDDI, slotted access protocols.
LAN interconnection.
Routine 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, 1987.

Revisions / Exam

Oral discussion.

Programma definitivo per l'A.A.2008/09

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