INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

DPT TELECOMMUNICATIONS SERVICES ET USAGES
TELECOMMUNICATIONS, SERVICES & USAGES
INSA Campus LyonTech - Bâtiment Hedy Lamarr
6 avenue des Arts - 69621 VILLEURBANNE
Phone 0472436060

Network

TCP/IP Protocol stack

IDENTIFICATION

CODE : TC-3-S1-EC-IP
ECTS : 3.0

HOURS

Lectures :	12.0 h
Seminars :	6.0 h
Laboratory :	12.0 h
Project :	0.0 h
Teacher-student contact :	30.0 h
Personal work :	17.0 h
Total :	47.0 h

ASSESSMENT METHOD

2 hours final exam, 2 lab reports.

TEACHING AIDS

All the resources are available on Moodle.

TEACHING LANGUAGE

French

CONTACT

M. VALOIS Fabrice
fabrice.valois@insa-lyon.fr

AIMS

The goal of this course is to provide a strong knowledge of TCP/IP in the context of local area networks. Theoretical lectures and practical labs will give you the opportunity to be able to build and to understand your LAN network using IP.

This EC is part of the teaching unit Network Essentials (TC-3-S1-RES) and contributes to the following skills:

C2 Specify, design and model communication networks and protocols
Capacity: Describe the role and functionality of the network layer.
Capacity: Describe the role and functionality of the transport layer
Knowledge: IPv4
Knowledge: IPv6
Knowledge: ICMP
Knowledge: TCP
Knowledge: UDP

A3 Implement an experimental approach
Capacity: Deploy and configure a local network
Capacity: Wire, manipulate a patch bay
Capacity: Use Wireshark software to collect and analyze traces
Capacity: Measure the performance of a local network

C6 Design, implement, develop, deploy networks and protocols
Capacity: Design an addressing plan for a local network
Knowledge: DHCP
Knowledge: DNS
Knowledge: NAT

CONTENT

1. Basic concepts of networking and IP
2. IP encapsulation, ARP/RARP protocols
3. Addressing scheme and (static) routing in IP networks
4. Transport layer and UDP
5. TCP and reliable/performance mechanisms
6. Some useful extension: NAT, filtering, DNS.

BIBLIOGRAPHY

Richard Stevens. TCP/IP Illustrated, Volume 1: The Protocols. Prentice Hall, 1994. ISBN 0-201-63346-9.*
James F. Kurose and Keith W. Ross. Computer Networking A Top-Down Approach Featuring the Internet. Addison Wesley Publishing Company, 2000. ISBN 0201477114.*
Richard Stevens. UNIX Network Programming. Prentice Hall, 1990. ISBN 0-13-949876-1.*

PRE-REQUISITE

Basic knowledge on probabilities, medium sharing, coding scheme.