ESIROI
ÉCOLE D'INGÉNIEURS
UNIVERSITÉ DE LA RÉUNION

DEPARTMENT : *IT*
SEMESTER : *S5*

IDENTIFICATION

Course code : SR501
ECTS : 1

DURATION

Lectures :	4
Tutorial classes :	12
Labs :	8
Total :	24

Project :
Personnal work :

ASSESSMENT

Continuous assessments and practical evaluations.

TEACHING MATERIALS

Slides and practical work sheets.

LANGUAGE

English

CONTACT

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UE : UE5-SYSRES

COURSE : Computer Networks : Fundamental Concepts

SCOPE OF THE COURSE

OBJECTIVES

The objective of this course is to provide an overview of all the elements and concepts constituting computer networks. Upon completion of this course, students should be able to configure workstations, identify configuration issues, propose a structuring of network entities, and select the appropriate protocols for a given application context.

COMPETENCE AND SKILLS

Set up, from design to production deployment, the computer network of a company while integrating QoS and security issues.

PROGRAM

- Introduction : objectives of a communication network, network architecture, OSI model.
- Overview : Data transmission (analog, digital), bit rate and modulation speed, digital multiplexing, switching, routing, addressing, routing, and congestion control.
- Reliability of exchanges : error control, error-detecting codes, flow control.
- Internet structure. Standardization actors in Internet technology.
- Network applications : remote connection, TELNET protocol, NVT representation, rlogin, ssh. File transfer, FTP and TFTP protocols, rcp, scp. Messaging architecture, message structure, MIME format, SMTP, POP, and IMAP protocols. Directory, Internet naming hierarchy, DNS protocol. Administration, MIB, SMI, SNMP protocol, RMON probe. Peer-to-peer applications
- The Transport layer : Introduction to transport layer services. Port concept. End-to-end control mechanisms (error control, timers, retransmission policies, flow and congestion control). Connectionless transport : UDP. Connection-oriented transport : TCP and its different versions
- The Network layer : Review of the network layer. IPv4 protocol, classful and classless addressing (CIDR), subnetting. Address resolution (ARP), ICMP protocol. Translation (NAT) and address filtering (Firewall). Auto-configuration (DHCP) and tunneling

BIBLIOGRAPHY

James F. KUROSE and Keith W. ROSS - Computer Networking - Pearson Editions

REQUIREMENTS

No prerequisites in networking.