COMMUNICATION NETWORKS AND PROTOCOLS

Code: 322093

Main Scientific Area: Computer networks and architecture

Lecturer: Paulo Alexandre dos Santos Pereira Gonçalves

Language of Instruction: Portuguese

Regime: S1

Contact Hours: 30h Total Workload: 54h

ECTS: 3,0

Objectives

The aim of this curricular unit is to present the basic concepts of data communication networks, namely the technologies and architectures used in the Internet and LANs. It is expected the students that end successfully this curricular unit have a global vision on the diverse elements of a communication system, its function and interrelationship; to know the diverse types of networks, with special focus on Ethernet networks; to know the main data communication systems; to understand the relationship between the models OSI and TCP/IP; to know the main technologies of local area networks; to explain the IP addressing and the IP forwarding; to understand the protocols of the transport layer; to understand a few typical protocols of application layer.

Learning Outcomes

Students who successfully complete this curricular unit should be able to observe a system from a communications perspective, identifying the main elements and their functions.
They should:
· be able to identify some technologies and protocols associated with the operation of the devices as well as their relationship;
· identify the elements of a local LAN and briefly explain its operation;
· Describe the importance of using protocols and standards in communications systems.

Course Contents

Parte I
i) Topologias de redes;
ii) Meios físicos de transmissão
iii) Classificação das redes pela abrangência
iv) Tipos de equipamentos
v) Normalização: Organismos e Standards
Parte I I
vi) Modelo OSI
vii) Modelo TCP/IP
viii) Endereçamento IPv4 e IPv6
ix) Routing
Parte I

Recommended Bibliography

Boavida, F., Monteiro, E. (2011). Engenharia de Redes Informáticas, 10ª Ed., FCA – Editora de Informática Lda.

Sá, R. (2016). Introdução às Redes de Telecomunicações, 3ª Ed., FCA – Editora de Informática Lda.

Learning and Teaching Methods

By acquiring the knowledge taught part one students will be able to gain an overview of the various elements of a communications system, its function and relationship. The knowledge acquired in part two should produce in students the ability to perceive how they work and organize the constituent elements of a telecommunications network.

Assessment Methods

The assessment will be based on a written test (TE) and two practical assignments (TP). The note final will be calculated by the following formula: 0.5*TE + 0.5*TP.