

Academic Year: ( 2019 / 2020 )

Review date: 21/04/2020 18:32:36

Department assigned to the subject:

Coordinating teacher: HERNANDEZ GUTIERREZ, JOSE ALBERTO

Type: Electives ECTS Credits : 3.0

Year : 1 Semester :

**REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)**

The students of this course should have a previous knowledge about optical communications, switching fundamentals and Ethernet-based local area networks (LAN)

**OBJECTIVES**

The competences acquired by the students of this course will be:

- To know which are the most important optical communication technologies in access, metro and core networks.
- To understand which are the current challenges of the different research areas studied by the course.
- To be able to review and analyze papers from the different fields studied by the course.

**DESCRIPTION OF CONTENTS: PROGRAMME**

1. Optical Networks:
  - 1.1. Switching in optical networks (WDM, Optical devices, OWS/OBS/OPS)
  - 1.2. Optical access networks (FTTx, PON, WDM-PON)
  - 1.3. Optical metro networks (TT-FR/FT-TR optical rings)
  - 1.4. Optical transport networks (SONET/SDH, OTN)
2. Transport Networks
  - 2.1. MPLS-TP & GMPLS (OAM)
  - 2.2. Protection Mechanisms
  - 2.3. Virtual Private Networks (L3VPN, L2VPN, VPLS, L1VPN)
3. Evolution of Ethernet Networks:
  - 3.1. Metro Ethernet networks (ME, PB, PBB-TE)
  - 3.2. Energy Efficient Ethernet (EEE)

**LEARNING ACTIVITIES AND METHODOLOGY**

The teaching of this course is based on two kinds of presential classes:

- Lecture sessions: Summary presentation of the most important aspects and detailed explanation of the main concepts.
- Demonstration session: Critical review of the proposed research papers and answering of doubts from the self-learning process.

Additionally, the student must widen the knowledge acquired in lecture sessions and analyse the research papers proposed for critical review.

**ASSESSMENT SYSTEM**

<b>% end-of-term-examination/test:</b>	40
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	60

The evaluation of this course will be performed in a continuous way. Also there is a final exam that covers all the topics studied during the course. The final mark will be computed as:

- Participation in classes, and review of research papers (10%).

<b>% end-of-term-examination/test:</b>	40
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	60
- Assignment and presentation to the class (60%)	
- Final exam (40%).	

#### BASIC BIBLIOGRAPHY

- B. Davie, Y. Rekhter MPLS: Multiprotocol Label Switching Technology and Applications, Morgan Kaufmann, 2000
- B. Mukherjee Optical WDM networks, Springer, 2006

#### ADDITIONAL BIBLIOGRAPHY

- M. Maier Optical switching networks, Cambridge University Press, 2008
- P. Tomsu, G. Wieser MPLS-based VPNs, Prentice Hall, 2002