SUBJECT TEACHING GUIDE

G847 - Technologies and Access Networks

Degree in Telecommunication Technologies Engineering
First Degree in Telecommunication Technologies Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Telecommunication Technologies Engineering First Degree in Telecommunication Technologies Engineering			Type and Year	Optional. Year 3 Optional. Year 3
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Communications Network Architecture				
Course unit title and code	G847 - Technologies and Access Networks				
Number of ECTS credits allocated	6	Term		Semester based (2)	
Web	https://www.tlmat.unican.es/				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA DE COMUNICACIONES
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Other lecturers	ROBERTO SANZ GIL

3.1 LEARNING OUTCOMES
- Concept of a network architecture, access subnet and transport subnet.
- To learn about the most relevant technologies to accessing analogue and digital telephony networks.
- To understand the protocol architecture for a signaling network.
- To learn about the network access technologies for carriers offering triple-play services.

4. OBJECTIVES

To acquire and understand the theoretical and technological basis on which the most relevant voice and data access networks are laid down. Also, the student will learn about the protocols involved on the trnasport subnetwork as well as on the signaling subnetwork.

6. SUBJECT PROGRAM

CONTENTS	
1	Part 1. Introduction
2	Part 2. Data transmission through analogue lines
3	Part 3. Integrated Service Digital Network (ISDN)
4	Part 4. Digital Subscriber Loop (xDSL)
5	Part 5. Hybrid Fiber and Cable (HFC) networks
6	Part 6. FTTx access technoogies
7	Ordinary final exam

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
First individual evaluation the initial set of parts.	Written exam	No	Yes	37,50
Second individual evaluation covering the rest of the parts.	Written exam	No	Yes	37,50
Lab assignment evaluation.	Laboratory evaluation	Yes	No	25,00
TOTAL				100,00

Observations

The final grade for the course is obtained by applying the following formula, where TEOR represents the theory grade and PRAC represents the practical grade:

GRADE = TEOR * 0.75 + PRAC * 0.25

-TEOR
It will be the arithmetic mean of the marks obtained in the partial tests if all of them have been completed and a mark of at least 4.5 has been obtained in each of them.
If any of the partial tests have not been completed or if any of them have a grade mark lower than 4.5, the student will have the opportunity to make up for it in the regular or extraordinary exam by achieving a grade higher than 4.5, which will then be considered in the calculation of TEOR.
Additionally, since continuous evaluation is not compulsory, the student can choose to take a final exam, which will include multiple-choice questions and questions related to all the topics covered in the course. In this case, TEOR will be the grade obtained in that exam, and it must be greater than or equal to 4.5 to be included in the calculation of GRADE.

-PRAC
Attendance to the practical sessions is mandatory.
It will be the arithmetic mean of all the marks obtained in the tests carried out in the laboratory.

In any case, with TEOR being greater than or equal to 4.5, in order to pass the course, the final grade GRADE must be equal to or higher than 5.0. Otherwise, the final grade will be calculated as follows:

GRADE = minimum {GRADE, 4.9}

In the event that a new health alert makes it impossible to carry out the assessment in person, remote evaluation of assignments, practical laboratory exercises, and written tests is foreseen.
All forms of evaluation can be conducted remotely using online methods. In any case, the professor may organize individual sessions for students to defend their performance in these assessments.

Observations for part-time students

The participation in lab assignments is compulsory. Several groups are established in order to favor the attendance of all students. The individual (per-lesson) evaluation is optional; the qualification of the theoretical part of the course (TEOR) would be that of the final exam for those students not taking the individual tests.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

W. Stallings, "ISDN and B-ISDN", 3ª edición, McMillan Publ. New York, 1995.
M. Alvarez, J. Berrocal, "Tecnologías de banda ancha y convergencia de redes", Ministerio de Industria, Turismo y Comercio, 2009.
Oliver C. Ibe, "Converged Network Architectures", Wiley, 2002.