

## TELECOMMUNICATIONS INFRASTRUCTURE IN BUILDINGS

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Code: 322052

Main Scientific Area: Automation, energy and cyber-physical systems

Lecturer: António Pedro Ferreira da Silva

Language of Instruction: Portuguese

Regime: S1

Contact Hours: 105h Total Workload: 175h

ECTS: 10,0

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### Objectives

Esta unidade curricular tem como objetivo dotar os alunos dos conhecimentos fundamentais para o planeamento e projeto de Infraestruturas de telecomunicações, partindo-se de uma abordagem dos principais conceitos gerais e transversais, para um estudo individualizado das diferentes metodologias aquando da projeção de uma instalação ITED4. Pretende-se que os alunos compreendam as principais normas, componentes e técnicas no desenvolvimento de esquemas ITED, e para cada um dos tipos que sejam capazes de descrever, analisar e otimizar os circuitos, para além de produzirem a respetiva documentação. Sempre que possível, o estudo assentará em casos práticos de aplicação real, orientado para a resolução de problemas nas vertentes de concepção, utilização, comissionamento e projeto ITED.

### Learning Outcomes

At the end of the course, students should be able to: 1. Analyze, size, and correctly design an ITED 4 project and its respective circuits. 2. Develop work tools using 2D and 3D design software (CAD). 3. Implement technical certification manual for an ited installation. 4. Understand the functioning of the fundamental components of ITED topologies. 5. Understand the operation and systems of ITED 4 7. Design cabled networks.

### Course Contents

1. Introduction to Infrastructures for Telecommunications in Buildings. 2. Legal and normative framework of ITED. 3. Parts of an ITED network - Materials, equipment (constitution and characteristics). 4. Copper pairs cables and their connectorization. 5. Coaxial cables And connectorization. Coaxial network devices. 6. FO cables and their connectorization. 7. Individual and collective network piping. 8. Environmental classifications - MICE rules. 9. Sizing of cable and pipeline networks. 10. Generic ITED project rules. 11. Collective and individual network Of copper pairs – dimensioning. 12. Collective network (CATV, MATV and SMATV) and individual coaxial cables – dimensioning. 13. Collective and individual network of FO (optical fiber) – dimensioning. 14. FWA systems. 15. Collective and individual network of Piping – dimensioning. 16. Connections to the public network. 17. Protections and earth connections. 18. Execution of bill of materials, work plan and budget. 19. Preparation and completion of technical documentation for ITED project and term of responsibility.

### Recommended Bibliography

ANACOM – Autoridade Nacional de Comunicações; Manual ITED 4ª edição - Prescrições e Especificações Técnicas das Infraestruturas de Telecomunicações em Edifícios, ICP-Autoridade Nacional de Comunicações, 2009. ISBN: 978-972-786-067-8.

### Learning and Teaching Methods

The area of project ITED has a strong component at the level of legislation, regulations and best practice work. As such, students are encouraged to consult and handle all regulatory documentation applicable to this matter, based on the manual ITED as well as other applicable legislation. The body of work that students will develop will aim to consolidate their respective expertise and practical applicability.

### Assessment Methods

Approval in this course unit is obtained with a grade equal to or higher than 10 (ten), in a scale of 0 to 20, resulting from the evaluation of the theoretical-practical component. The approval of the course happens when the student has a minimum grade (10) in practical assignments ITED 1, ITED 2, Ited 3, Ited 4 whose weight in the evaluation is 20%, 20%, 30 % e 30% respectively. If the student does not get the minimum grade, he / she can do it by exam of 3 hours (two practices and one theoretical).

Projeto:

Final Project Frequência

Interaction

Performance ITED4

Undervoltage

Ground circuit Auto\_cad Topologies diagrama Calculos

Technical files

location

classification Projeto Auto avaliação

Theoretical

classes

Practical Classes Video door PC CC Fo

Descriptive memory Documentation Avaliação Final Avaliação Continua Project Final

100% 5% 5% 5% 5% 5% 5% 10% 5% 5% 5% 10% 5% 10% 5% 5% 5% 5% 100% 20 55% 45% 20  
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