	<b>SUBJECT DESCRIPTION</b>	MODELO PED.013.02
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Course	<b>Master in Civil Constructions</b>			Academic year	2021/2022		
Subject	<b>Masonry and Timber Constructions</b>			ECTS	6,0		
Type of course	<b>Compulsory</b>						
Year	<b>2nd</b>	Semester	<b>1st</b>	Student Workload:			
Professor	<b>PhD José Carlos Costa de Almeida</b>			Total	168	Contact	52,5
Area Coordinator	<b>PhD José Carlos Costa de Almeida</b>						

### Planned

## 1. LEARNING OBJECTIVES


- Recognizing the potential of using wood and masonry as structural materials;
- Developing skills for the structural analysis and design of masonry and wood;
- Develop capacity at the level of understanding of the behaviour of the structures in order to overcome the difficulties of the work context;
- Implement the new European standards (Eurocodes 5 and 6);
- Develop the ability to interpret the results associated with the design process.

## 2. PROGRAMME

1. *General concepts of wood and masonry buildings;*
2. *The current situation, and future prospects, of masonry in Portugal;*
3. *Construction with structural masonry;*
4. *Technological and constructive aspects;*
5. *Design of masonry structures according to Eurocode 6;*
6. *Methodologies of design of building with structural masonry;*
7. *Wood as structural material. Properties and performances;*
8. *Visual and mechanical classification of wood;*
9. *Design of timber structures according to Eurocode 5. Verifications for the ultimate and serviceability limit state;*
10. *Connections;*
11. *Durability and preservation notions;*
12. *The fire action.*

## 3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

The proposed syllabus allows the student to develop skills in at the level off understanding the behaviour of masonry and wood structures regarding the new European regulations. The various chapters presented allow the student the understanding of the behaviour and design of components subjected to different kinds of efforts, enabling thereby the realization and understanding of projects, whether of timber structures, whether of masonry structures.

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#### 4. MAIN BIBLIOGRAPHY

NP EN 1991-1-1 “Eurocódigo 1 – Acções em estruturas – Parte 1-1: Acções gerais – Pesos volúmicos, pesos próprios, sobrecargas em edifícios”, IPQ, 2009.

EN 1995-1-1 “Eurocode 5 – Design of timber structures – Part 1-1: General – Common rules and rules for buildings”, CEN, Bruxelas, Bélgica, 2004.

EN 1996-1-1 “Eurocode 6 – Design of masonry structures – Part 1-1: General rules for reinforced and unreinforced masonry structures”, CEN, Bruxelas, Bélgica, 2005.

Natterer J. “Construction en bois – Matériaux, technologie et dimensionnement”, Traité de Génie Civil Vol (13), Presses Polytechniques et Universitaires Romandes, Lausanne, Suíça, 2004, 540 p.

Alvarez R.A. e Martitegui F.A. “Estructuras de madera – diseño y calculo”, Ed. Rústica , Asociación de Investigación Técnica de las Industrias de la Madera y el Corcho, Madrid, Espanha, 2000, 695 p.

Drysdale R.G., Hamid A.A. e Baker L.R. “Masonry structures: behavior and design”, The Masonry Society, Colorado, EUA, 1999, 888 p.

#### 5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

The teaching methodology will focus on student learning. It will be taught all the concepts and techniques in a theoretical way, based on practical cases, tha allows the acquisition of the necessary knowledge to practical application. Realization of practical exercises for applying and developing the taught techniques. The proposed practical exercises will be solved in the practical classes.

The evaluation of this course will be continuous through the practical work throughout the semester. This assessment will be completed at the end of the semester with a written exam that covers the theoretical and practical aspects of the taught subjects. The final result of the weighted sum of partial assessments. The weight of the assessment in relation to work is 30% while the remaining 70% are related to the assessment by a written examination.

#### 13. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES


The adopted teaching methodology of the course has a special focus on the concept of learning by doing. This methodology allows the student to apply the theoretical concepts taught in eminently practical exercises. The practical work allows students to apply, gradually, all the taught concepts.

#### 14. ATTENDANCE

NA

#### 15. CONTACTS AND OFFICE HOURS

Contacts:

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Office hours:

## 16. OTHERS

Date: [Clique aqui para introduzir uma data.](#)

Signature:

Signature:

Area Coordinator

Professor name