UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Structural Dimensioning

Academic Year 2026/2027

1. Organic Unit

Faculty of Architecture and Arts

2. Course

Architecture

3. Cycle

2nd

4. Course Unit

Structural Dimensioning (01338)

5. Scientific Area

6. Curricular Year

4th

7. Type of Curricular Unit / Semester

2nd Semester

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8. Class type and workload (work time)

Theoretical classes:	
Practical classes:	
Theoretical-Practical Classes	60,00
Tutorial Guidance:	

9. ECTS Credits

3,50

10. Scientific Area Coordinator

Prof. Doutor ANTÓNIO JOSÉ DÂMASO SANTOS MATOS VILHENA

11. Regent

12. Assistants

Prof. Doutora ANA ISABEL MERA MARQUES

13. Teaching Language

Portuguese

14. General Objectives

To provide students with the basic concepts of the characteristics and behavior of structures made of various materials, namely metal, composite, solid or laminated wood, masonry, and prestressed concrete structures.

15. Specific Objectives

To develop students' abilities to choose the appropriate structural material/type of structural solution, suited to the architecture of the building.
Transmit the knowledge needed to pre-dimension structural elements in different types of structures.
To provide students with the skills needed for structural rehabilitation interventions in identifying anomalies and choosing solutions.

16. Skills to be acquired

Ability to define the material / structural solution.
Ability to summarise the various elements of a structure.
Ability to analyze anomalies in pre-existing structural elements and define repair solutions.

17. Teaching Methodology

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The classes given throughout the year are made up of Theoretical Classes and Theoretical-Practical Classes, which constitute the theoretical and practical paths.
The goal is also for the student to be fully involved in the subject, with a proactive attitude, which will be achieved through the need for research and investigation during the semester.
Whenever possible, visits will be made to visualize what has been taught in class with the actual application on site.

18. Course Unit Program

1. - Reinforced and prestressed concrete structures
1.1 - Framework
1.2 - Resistant characteristics
1.3 - Structural behaviour
1.4 - Pre-dimensioning column sections
1.5 - Prestressing

2. - Stone masonry structures
2.1 - Framework
2.2 - Resistant characteristics
2.3 - Structural behaviour

3. - Metal structures
3.1 - Framework
3.2 - Resistant characteristics
3.3 - Structural behaviour
3.4 - Types of connections

4. - Steel/concrete composite structures
4.1 - Framework
4.2 - Resistant characteristics
4.3 - Structural behaviour
4.4 - Types of connections

5. - Timber and glued laminate structures
5.1 - Framework
5.2 - Resistant characteristics
5.3 - Structural behaviour
5.4 - Types of connections

6. - Solutions for rehabilitating building structures
6.1 - Framework
6.2 - Types of intervention
6.3 - Anomalies in structural elements
6.4 - Intervention solutions for structural elements

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19. Assessment Methods

The aim is to motivate student attendance and participation in class, as well as critical thinking, factors that will contribute to each student's final assessment.
Students' attendance at classes will be monitored in order to enforce the assessment regulations in force at Universidade Lusíada, requiring a minimum attendance of 60 percent of classes to be considered for continuous assessment.
There will be two tests that contribute to the continuous assessment, in accordance with the regulatio

20. Didactic Resources

Various audiovisual media are used, such as multimedia presentations and film screenings.
Whenever possible, real cases will be presented for analysis and discussion.
Whenever possible, visits will be made to visualize structural solutions in situ.

21. Sustainability Objectives

1 - Ensure equal access to quality technical, vocational, and cultural education.
2 - Substantially increase the number of young people and adults with relevant qualifications, including technical and professional skills, for employment, decent work, and entrepreneurship.
3 - Ensure equal opportunities in university education, including for people in vulnerable situations.
4 - Promote the dematerialization of the teaching/learning process in a gradual way.

22. Keywords

Structural materials
Structural solutions
Pre-dimensioning
Rehabilitation
Detailing

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23. Main Bibliography

Author(s): -
Title: NP EN 1990:2009 - Eurocódigo - Bases para projeto de estruturas
Edition: Year: 2009
Local: Lisboa
Publisher: Instituto Português da Qualidade
ISBN Code:

Author(s): -
Title: NP EN 1991-1-1:2009 - Eurocódigo 1 - Ações em estruturas. Parte 1-1: Acções gerais. Pesos volúmicos,
Edition: Year: 2009
Local: Lisboa
Publisher: Instituto Português da Qualidade
ISBN Code:

Author(s): AA. VV.
Title: Guia Técnico de Reabilitação Habitacional
Edition: 1.ª Year: 2007
Local: Lisboa
Publisher: LNEC/INH
ISBN Code:

24. Complementary Bibliography

Author(s): Pinho, F.
Title: Paredes de edifícios antigos em Portugal. Coleção Edifícios CED 8
Edition: 2.ª Year: 2008
Local: Lisboa
Publisher: LNEC
ISBN Code:

Author(s): -
Title: NP EN 1992 1-1 - Eurocódigo 2 - Projecto de estruturas de betão. Parte 1-1: Regras gerais e regras p
Edition: Year: 2004
Local: Lisboa
Publisher: Instituto Português da Qualidade

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ISBN Code:

Ficha técnica MIP / MIP Datasheet	
Título / Title	Course Unit Program 'DIMENSIONAMENTO ESTRUTURAL': Academic Year 2026/2027
Autor / Author	Prof. Doutor ANTÓNIO JOSÉ DÂMASO SANTOS MATOS VILHENA
Classificação / Classification	-
Descritores / Descriptors	-
Colaborador(es) / Colaborator(s	-
Data Hora / Date Time	
Formato de dados / Data Format	Texto / Text, PDF
Estatuto de utilização / Usage	Acesso público / Public Access
Relação / Relation	Version 1,0

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