UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Applied Materials

Academic Year 2025/2026

1. Organic Unit

Faculty of Architecture and Arts

2. Course

Architecture

3. Cycle

1st

4. Course Unit

Applied Materials (01318)

5. Scientific Area

6. Curricular Year

2nd

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

Profª Doutora Arqtª MARIA DE FATIMA SILVA

11. Regent

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

Architecture is a process that transforms and models matter, producing volume and space. The organization of materials defines it. Introduction to the logic of construction materials and systems, understanding that the basis of architecture is the tectonic process of construction. Understand the close relationship with architectural languages as well as their representation. Learning is carried out from examples in the history of contemporary architecture, in singular cases and moments.

15. Specific Objectives

Understand the nature of each material and how they come together, and how functional and expressive benefits can be taken from these aggregations.
Know the parts that make up a building and master the construction techniques and systems that implement them.
Introduction to the Execution Project as a method for producing and organizing the designed elements of the different parts that make up a building, at different scales of detail.

16. Skills to be acquired

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Represent through sketches, detailed and technical drawings the situations studied and developed. Understand basic materials and systems through their characteristics and their ways of aggregation based on real situations. These aspects are consolidated through exercises where the student deconstructs a specific significant space from a case study, to then be able to develop and design his own space. The registration and development process will start from the construction detail.

17. Teaching Methodology

Learning and consolidating the subjects taught throughout the year is done continuously, through practice and theory. Theoretical classes frame the subjects and exercises and practical classes include observation and detailed project exercises. These will be studied and recorded through models and various types of drawings and scales appropriate to the situations, later compiled in a notebook in the form of a Portfolio.

18. Course Unit Program

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The program focuses on the introduction to materials applied in construction systems used in architecture, their properties and characteristics and the way in which they come together to produce building complexes. It also focuses on the way these are represented both in detail and at different scales through the drawing. The disciplinary content includes two main themes. The observation and representation of constructed architectural situations and the design of architectural situations of a selected space. This space will come from the exercise carried out in the Architecture discipline in the 1st semester of the academic year, here considered as a preliminary study to be developed for the execution phase .
In order to support the project, a set of references from the world of architecture are used, which students will study in practical exercises. These developments will be supported by theoretical classes where there will be an introduction to contemporary construction techniques that resolve the different elements that make up a building. The following topics will be covered in theoretical classes:

1. Introduction
Contemporary architecture, the revolution in construction systems. From the structure of Le Corbusier's DOMINO house to the spatial structures of Christian Kerez.
2- Drawing as an instrument for representing architecture. Brief approach to detail design project.
3-Architectural elements. Foundations.
Connection to ground. Typology of foundations of current buildings, materials and techniques used. Retaining walls and insulation.
4- Architectural elements. Structures.
Introduction to concrete, metal and wooden structures, pillar/beam systems and others.
5- Architectural elements. Exterior walls.
Walls, current systems and contemporary tectonic trends. Characteristics of the walls in terms of: Stability, Watertightness, and Architectural Expression. Single and double walls. ETICS systems (External thermal insulation composite system). Ventilated facades. Exterior coverings, plasters, hoods, cappings and punches.
6- Architectural elements. Interior walls.
Masonry walls and plasterboard walls. Walls and Ceilings. Coatings and Finishes
7- Architectural elements. Coverages.
Roofs, flat, landscaped and traditional tile roof systems. Thermal insulation and waterproofing. Support systems. Exterior coverings: Tile, Slate, Zinc Sheet, Cobblestone; accessed coverage. Trims, Platbands, Gutters, Downpipes, Flashings.
8- Architectural elements. Openings.
What is a port? What is a window? Doorways, windows and curtain walls [wood and metal]
9-Architectural elements.. Floors
Various floors, natural and synthetic. Raised floors, waterproofing and insulation.
10. Architectural elements. Stairs and Ramps.
Lexicon inherent to stairs and steps. Typologies. Structures. Coatings and materials.

The practical component must essentially be dedicated to what is called 'detailing' towards the

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"detail design project" and interconnect with the subjects taught in the theoretical component. It develops themes that relate to elements of the construction process, allowing the student to have contact with the materials applied, with design techniques, and to consolidate representation techniques. The exercise always starts from the details to the project. Drawing and model representation methods are used towards technical drawing, which in this 2nd semester will be mixed, carried out by hand in the first exercise and using a computer in the second. This last work should be based on the work developed in the Architecture II course.

19. Assessment Methods

Materials curricular unit is a semester-long subject, with two components, one practical and the other theoretical. The assessment of the curricular unit is carried out on a continuous basis, that is, the student is assessed based on the interest they demonstrate in the subjects taught, their participation in classes and respective attendance and through all the work and assessment instruments carried out throughout the year: Theoretical and practical outlines. Practical work.

20. Didactic Resources

PowerPoint Presentation
Moodle
Microsoft Teams
Bibliography
Study cases

21. Sustainability Objectives

Sustainability consists of building with the future in mind...in addition to its sustainability and intelligence, architecture must be a factory of emotions. Renzo Piano

22. Keywords

Matter
Materials
Observe
Build
Understanding
Join
Represent
Express
Detailing

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23. Main Bibliography

Author(s):	Andrea Desplazes		
Title:	Constructing Architecture: Materials, Processes, Structures; A Handbook		
Edition:	2ª	Year:	2008
Local:	Basileia		
Publisher:	Birkhäuser Architecture		
ISBN Code:			

Author(s):	Paulo Brito da Silva		
Title:	Desenho Técnico em arquitectura e design		
Edition:	1ª	Year:	2015
Local:	Lisboa		
Publisher:	Universidade Lusíada Editora		
ISBN Code:			

Author(s):	Peter Beinhauer		
Title:	Atlas de detalhes construtivos (versão portuguesa)		
Edition:		Year:	
Local:	Barcelona		
Publisher:	Gustavo Gili		
ISBN Code:			

24. Complementary Bibliography

Author(s):	Alberto Reaes Pinto		
Title:	Contribuições para a Construção Sustentável		
Edition:	1ª	Year:	2018
Local:	Lisboa		
Publisher:	Universidade Lusíada Editora		
ISBN Code:			

Author(s):	Luis Veiga da Cunha		
Title:	Desenho técnico		
Edition:	17ª	Year:	2017
Local:	Lisboa		
Publisher:	Fundação Calouste Gulbenkian		
ISBN Code:			

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Autor / Author	Profª Doutora Arqtª MARIA DE FATIMA SILVA
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