UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Applied Ergonomics

Academic Year 2026/2027

1. Organic Unit

Faculty of Architecture and Arts

2. Course

Architecture

3. Cycle

1st

4. Course Unit

Applied Ergonomics (01320)

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	30,00
Tutorial Guidance:	

9. ECTS Credits

2,00

10. Scientific Area Coordinator

Profª Doutora Arqtª MARIA DE JESUS MENDES CARVALHO

11. Regent

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

Integrated into the natural environment and surrounding ecosystem, human beings have access to architectural space as a function of shelter and protection from the natural elements. This reality assumes complex interconnected consequences, from which we need to understand the physical factors that condition the well-being of the user and the effectiveness of adapting the spaces to the functions of use. The aim is to concretize and analyze the relationships between man and the physical environ.

15. Specific Objectives

The objective of the course is to understand the notion of comfort and the importance of this factor in living in urban, residential, public, and private spaces. The aim is to provide the student with adequate knowledge of physical, environmental, and technological problems for the good qualification of the spaces created, in order to provide them with all the elements of well-being for the user, promoting interior comfort and climate protection.

16. Skills to be acquired

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It is understood that at the end of the semester, the student will be in a position to perceive how man relates to the built environment:
Lighting, thermal, and acoustic comfort
Perception of the physical and psychological effects resulting from the characteristics of outdoor, indoor, public, and private environments. The acquisition of knowledge through research and constant analysis of the surrounding reality, the definition of strategies for interpretation, understanding, and subsequent act

17. Teaching Methodology

Classes will address different examples, motivating the capacity for analysis and subsequent debate of the issues presented.
Analysis of project solutions and theoretical development presented by research centers specialized in these themes.
Development of practical exercises to allow the knowledge of the relationship between theory and practice with comfort and well-being as the main theme.

18. Course Unit Program

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Physical factors of sound/acoustics.
Sound Types
Pure/Musicals and Noise
Sound Emitter
Sound quality
Height/loudness and timbre
Direct and Indirect sound
Absorption / Reflection
Ambiance
Reverb/Echo and Resonance
Sound Evaluation
Sound absorption capacity allowed by materials
Definition and control process of acoustic conditions.
Physical thermal/ventilation factors.
Thermal comfort, temperature, and humidity.
Means of control, constructive processes, and assets.
Physical factors of light/lighting.
Natural light
Sunlight/moonlight
Variations throughout the day
Climatic variations
Artificial light
The Symbolism of Light
the candle
The light bulb
Direct and indirect lighting
Types of lamps - Definitions and Applications
Light intensity
Luminous efficacy
The color of light
Control, characterization, and definition of regulatory processes.

19. Assessment Methods

The evaluation will be based on the interaction of the classes that are given online, on the tests that are done in the space of this interaction at a distance, and on the works thus presented and delivered in the Moodle system of the University. The follow-up of the student will be done in the classroom and whenever requested.
The requested assignments, an integral part of the written theoretical tests, according to the nature of the course, are the object of their own statement and schedule d

20. Didactic Resources

Referenced bibliographical elements.
Databases available in the Media Library.
Computer equipment, HW(PC), and SW (powerpoint) for the presentation of classes and student work.

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21. Sustainability Objectives

Good health and well-being
Quality education
Decent work and economic growth
Reduced inequality
Sustainable cities and communities
Climate action
Partnerships to achieve the goal

22. Keywords

Acoustics
Thermal
Ventilation
Lighting
Comfort
Health

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23. Main Bibliography

Author(s): PALLASMAA, Juhani
Title: The Eyes of the Skin: Architecture and the Senses
Edition: 3ª ed. Year: 2012
Local: New York
Publisher: Wiley
ISBN Code:

Author(s): SALVENDY, G.
Title: Handbook of Human Factors and Ergonomics
Edition: 5ª ed. Year: 2012
Local: London
Publisher: Wiley
ISBN Code:

Author(s): WINCHIP, S. M.
Title: Fundamentals of Lighting
Edition: 2ª Year: 2011
Local: NY
Publisher: Fairchild Pubns
ISBN Code:

24. Complementary Bibliography

Author(s): NICOL, F. & HUMPHREYS, M. & ROAF, S.
Title: Adaptive Thermal Comfort: Principles and Practice
Edition: Year: 2012
Local: NY
Publisher: Routledge
ISBN Code:

Author(s): LONG, Marshall
Title: Architectural Acoustics
Edition: 2ª Ed. Year: 2014
Local: Florida
Publisher: Academic Press
ISBN Code:

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Ficha técnica MIP / MIP Datasheet	
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Autor / Author	Profª Doutora Arqtª MARIA DE JESUS MENDES CARVALHO
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Descritores / Descriptors	-
Colaborador(es) / Colaborator(s	-
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