UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Geometry

Academic Year 2024/2025

1. Organic Unit

Faculty of Architecture and Arts

2. Course

DESIGN

3. Cycle

1st

4. Course Unit

Geometry (L5004)

5. Scientific Area

6. Curricular Year

1st

7. Type of Curricular Unit / Semester

1st 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

3,00

10. Scientific Area Coordinator

11. Regent

Profª Doutora Arqtª MARIA LUISA ALVES DE PAIVA MENESES DE SEQUEIRA

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

The curricular unit of geometry, lasting 1 semester, is taught in 4 hours per week. Its main objectives are to provide students with theoretical knowledge to support their practical action through geometry, objectives that are obtained through the resolution of practical exercises that, in addition to enabling the application of acquired knowledge, allow consolidating the rigor of geometric action.

15. Specific Objectives

To give the student the ability to represent through drawing and the domain of the appropriate codes of cylindrical projection (both with regard to dihedral orthogonal projection, as well as axonometric projections - orthogonal or oblique), the study of solids and surfaces, providing him with an adequate geometric lexicon.
Develop the ability to understand and visualize objects in space and knowledge of the elements of Euclidean and Cartesian geometry.

16. Skills to be acquired

Creation/composition of imagined objects and the awareness of the analysis of the mental process of creation;
Abstract and rigorous representation of the object itself and not its sensible appearance;
Autonomy in the ability to resolve all types of representations involving the problem of geometry;
Use of a work methodology according to the needs of the problem;
Domain of the basic concepts of geometric representation.

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17. Teaching Methodology

In the theoretical/practical scope of the discipline, communication of the matter will be made through oral exposition and monitoring of the drawing, having as support the whiteboard, as well as the existing multimedia technology available to the teaching staff.

18. Course Unit Program

1. Geometry
a. Form and Space: its measurements: rigor and flexibility;
b. Projection systems.
2. Geometric Operations and Transformations:
a. Theory of Symmetry: process of invariance of two or three-dimensional shapes: translation, rotation, reflection;
b. Theory of Proportion: process of dimensional transformation maintaining the internal dimensional relations of the object: homothety;
c. Homology and affinity process of geometric transformation with deformation of objects: loss of proportion in one or more directions.
3. Orthogonal projections from mono to multi planes:
a. General principles of the system: articulation of projections;
b. Norms and codes of representation;
c. Applications / exercises;
d. Flat sections;
e. Intersection of surfaces.
4. Axonometrics
a. System fundamentals;
b. Subsystems: oblique and orthogonal axonometrics;
c. Reduction coefficients;
d. Reflection of coordinate planes;
e. Applications / exercises;
f. Flat sections;
g. Surface intersections.

19. Assessment Methods

In the theoretical/practical scope, continuous assessment will focus on: the presence and participation of students in the classroom; the evaluation of the practical work carried out in class (individual or in groups) [exercices to be disclosed at the end of the semester]; two mid-term assessment tests; as well as all additional data obtained and considered valid during the continuous evaluation. There is also an end of attendance test for the curricular unit, at the end of the semester.

20. Didactic Resources

Supplementary bibliography available
- Other recommended authors

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21. Sustainability Objectives

This UC aims to contribute to sustainability in the following areas:
1. Ensure equal access to quality technical, professional 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. Guarantee equal opportunities in university education, including for people in vulnerable situations.

22. Keywords

Geometry
Representation
Point
Straight
Flat
Surface
Plant
Elevation
Section
Axonometry

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23. Main Bibliography

Author(s):	IZQUIERDO ASENSI, F.		
Title:	Geometría Descriptiva I e II		
Edition:	27.ª ed.	Year:	2013
Local:	Madrid		
Publisher:	IZQUIERDO EDITORES		

Author(s):	RICCA, Guilherme		
Title:	Geometria Descritiva - Método de Monge		
Edition:	5.ª ed.	Year:	2011
Local:	Lisboa		
Publisher:	Fundação Calouste Gulbenkian		

Author(s):	CHING, Francis		
Title:	Design Drawing		
Edition:	2.ª ed.	Year:	2010
Local:	New Jersey		
Publisher:	John Willey & Sons		

24. Complementary Bibliography

Author(s):	CHING, Francis; et. al.		
Title:	Representação gráfica para desenho e projecto		
Edition:	3.ª ed.	Year:	2007
Local:	Barcelona		
Publisher:	Gustavo Gili		

Author(s):	NANNONI, Dante		
Title:	Il mondo delle proiezioni		
Edition:	2.ª ed.	Year:	1981
Local:	Bolonha		
Publisher:	Cappelli Editore		

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Ficha técnica MIP / MIP Datasheet	
Título / Title	Course Unit Program 'GEOMETRIA': Academic Year 2024/2025
Autor / Author	Profª Doutora Arqtª MARIA LUISA ALVES DE PAIVA MENESES DE SEQUEIRA
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Descritores / Descriptors	-
Colaborador(es) / Colaborator(s)	-
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