UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Geometry

Academic Year 2025/2026

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

FUNDAÇÃO MINERVA CULTURA - ENSINO E INVESTIGAÇÃO CIENTÍFICA

Rua da Junqueira, 188 a 198 - 1349-001 LISBOA - Telefone 213 611 500 - Fax 213 638 307 - e-mail: info@lis.ulusiada.pt - https://www.lis.ulusiada.pt

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

Prof. Doutor PEDRO JOSÉ GENTIL- HOMEM CORREIA DA SILVA

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

The main goal of the curricular unit is to provide students with a foundational awareness and working knowledge of Geometry as a tool for project thinking in the design process.

15. Specific Objectives

To know the fundamental elements of geometry.
To operate rigorous and universal visual communication methods and processes.
To promote rigour on drawing representation for design.
To develop skils of normative and canonical representation systems: orthogonal and conical projection systems.
To recognise the importance of natural and artificial geometric structural analysis.
To Understand and master visual skills.

16. Skills to be acquired

To master fundamental geometric representation operations.
To be able to visualise two and three-dimensional mental recognition of objects in space. To recognise and operate the manipulation of models. Capacity for rigorous representation. To conceptualise natural/artificial geometries and their design application.

17. Teaching Methodology

Semester-long theoretical / practical curricular unit with hours per week. Participatory exposition, drawing and debate, practical exercises to apply the syllabus accompanied by the teacher.

FUNDAÇÃO MINERVA CULTURA - ENSINO E INVESTIGAÇÃO CIENTÍFICA

Rua da Junqueira, 188 a 198 - 1349-001 LISBOA - Telefone 213 611 500 - Fax 213 638 307 - e-mail: info@lis.ulusiada.pt - https://www.lis.ulusiada.pt

18. Course Unit Program

1 - Euclidean geometry
1.1 Primitive elements: point, line, plane
1.2 Formulae to calculate perimeters and areas of plane figures (triangle, circle, square, rectangle, rhombus and trapezoid)
2 - Formulae to calculate volumes (regular polyhedra: sphere, tetrahedron, hexahedron, octahedron, dodecahedron and icosahedron)
3 - Visual perception and spatial coordinates
3.1 Natural proportions
3.2 Notable rectangles
3.3 Bionics and biomimetics
4 - Proportions and anthropometric canons
4.1 Formula for calculating the proportion of segments
4.2 Norm, mean and median
4.3 Percentiles
5 - Physical understanding of two dimensions, three dimensions and time (4th dimension)
6 - Light source
6.1 Natural and artificial light
6.2 Self-shadow and projected shadow

19. Assessment Methods

Ongoing evalution.
Attendance, participation and debate in class.
Exercises carried out in class
Two written tests
Other work considered relevant
Final attendance test
Exam

20. Didactic Resources

Participatory lectures.
Slide projections.
Multimedia resources.
Internet.

21. Sustainability Objectives

The Geometry curricular unit aims to fulfil the following Sustainable Development Goals for 2030 listed by the United Nations:
Goal 4. Quality Education: providing programme content that ensures quality professional performance.
Goal 8: Decent Work and Economic Growth: contributing to the training of better professionals with a critical sense capable of recognising and implementing good work practices that lead to economic growth.

FUNDAÇÃO MINERVA CULTURA - ENSINO E INVESTIGAÇÃO CIENTÍFICA

Rua da Junqueira, 188 a 198 - 1349-001 LISBOA - Telefone 213 611 500 - Fax 213 638 307 - e-mail: info@lis.ulusiada.pt - https://www.lis.ulusiada.pt

22. Keywords

Geometry
Visual Perception
Spatiality
Two-dimensionality and three-dimensionality
Bionics and bi

23. Main Bibliography

Author(s): Elam, K.
Title: Geometria do Design: Estudos Sobre Proporção e Composição.
Edition: Year: 2010
Local: S. Paulo
Publisher: Cosac Naify

Author(s): Ricca, G.
Title: Geometria Descritiva - Método de Monge.
Edition: Year: 2011
Local: Lisboa
Publisher: Fundação Calouste Gulbenkian

Author(s): Massironi, M.
Title: Ver pelo Desenho.
Edition: Year: 1983
Local: Lisboa
Publisher: Edições 70

24. Complementary Bibliography

Author(s): Sausmarez, V.
Title: Desenho Básico.
Edition: Year: 1986
Local: Lisboa
Publisher: Edições 70

Author(s): Kandinsky, W.
Title: Ponto, Linha, Plano.
Edition: Year: 1987
Local: Lisboa
Publisher: Edições 70

FUNDAÇÃO MINERVA CULTURA - ENSINO E INVESTIGAÇÃO CIENTÍFICA

Rua da Junqueira, 188 a 198 - 1349-001 LISBOA - Telefone 213 611 500 - Fax 213 638 307 - e-mail: info@lis.ulusiada.pt - https://www.lis.ulusiada.pt

UNIVERSIDADE LUSÍADA
LISBOA

Ficha técnica MIP / MIP Datasheet	
Título / Title	Course Unit Program 'GEOMETRIA': Academic Year 2025/2026
Autor / Author	Prof. Doutor PEDRO JOSÉ GENTIL- HOMEM CORREIA DA SILVA
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

(c) Universidade Lusíada, 2025

FUNDAÇÃO MINERVA CULTURA - ENSINO E INVESTIGAÇÃO CIENTÍFICA

Rua da Junqueira, 188 a 198 - 1349-001 LISBOA - Telefone 213 611 500 - Fax 213 638 307 - e-mail: info@lis.ulusiada.pt - https://www.lis.ulusiada.pt