



Teaching Guide

Identifying Data					2015/16
Subject (*)	Descriptive Geometry	Code	630G01003		
Study programme	Grao en Arquitectura				
Descriptors					
Cycle	Period	Year	Type	Credits	
Graduate	1st four-month period	First	FB	6	
Language	GalicianEnglish				
Teaching method	Face-to-face				
Prerequisites					
Department	Representación e Teoría Arquitectónica				
Coordinador	Perez Naya, Antonia María	E-mail	antonia.perez.naya@udc.es		
Lecturers	Perez Naya, Antonia María Tarrío Carrodeguas, Santiago Zas Gomez, Evaristo	E-mail	antonia.perez.naya@udc.es santiago.tarrío@udc.es evaristo.zas@udc.es		
Web					
General description	Descriptive geometry is conceived as a graphic language support, enabling the use of drawing as an expression and representation of architectural space, providing geometric rigor to the representation and analysis of architecture and develops the ability to read and imagine spatially.				

Study programme competences / results

Code	Study programme competences / results
A10	REPRESENTACIÓN ESPACIAL: aptitude ou capacidade para aplicar, tanto manual como informaticamente, os sistemas de representación gráfica, dominando os procedementos de proxección e corte, os aspectos cuantitativos e selectivos da escala e a relación entre o plano e a profundidade.
A38	SISTEMAS DE REPRESENTACIÓN: comprensión ou coñecemento dos sistemas de representación espacial e a súa relación cos procedementos de ideación gráfica e de expresión visual das distintas fases do deseño arquitectónico e urbanístico.
A40	XEOMETRÍA: comprensión ou coñecemento da xeometría métrica e proxectiva como fundamentos do trazado, deseño e composición arquitectónicos da comprensión dos sistemas de representación espacial.
A50	MORFOLOXÍA E REPRESENTACIÓN DO TERREO: comprensión ou coñecemento das bases de topografía, hipsometría e cartografía e das técnicas de modificación do terreo precisas para realizar estudos e proxectos de carácter territorial, urbanístico e paisaxístico e para practicar deslindes e parcelacións.
B1	Learn how to learn
B2	Resolver problemas de forma efectiva.
B3	Aplicar un pensamento crítico, lóxico e creativo.
B4	Traballar de forma autónoma con iniciativa.
B5	Traballar de forma colaborativa.
B7	Comunicarse de maneira efectiva nun entorno de traballo.
B8	Visión espacial.
B9	Creatividade.
B10	Sensibilidade estética.
B11	Capacidade de análise e síntese.
B12	Toma de decisións.
B13	Imaxinación.
B14	Habilidade gráfica xeral.
B17	Cultura histórica.
B18	Razoamento crítico.
B24	Coñecementos de informática relativos ao ámbito de estudo.
B28	Comprensión numérica.



C3	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C5	Entender a importancia da cultura emprendedora e coñecer os medios ao alcance das persoas emprendedoras.
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C7	Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Providing geometrical rigour to the representation and analysis of the architectural space, without forgetting that the creative process of the architect is fundamentally based on his rational capacity for the perception of the space.	A10	B1 B2 B3 B4 B5 B8 B9 B11 B13 B14 B18 B24 B28	C3 C7
Development of the capacity for imagining and reading spatially, so that the student can imagine in the space an object represented in the plane, and he can represent in the plane what he previously imagined in the space, that is to say, stimulate the spatial apprehension or "see in the space".	A10 A38 A40 A50	B1 B2 B3 B4 B5 B7 B8 B9 B10 B11 B12 B13 B14 B17 B18 B24 B28	C3 C5 C6 C7
Study of different systems of graphic representation of application in the architectural field, from its theoretical foundations, with a differentiated approach according to their efficiency and accuracy, based on the selection of the correct system in each case.	A10 A38 A40	B1 B5 B11 B12 B13 B14 B24 B28	C3



Development of expression through intentional projections, perspectives and tracing shadows, useful in other areas of architectural training.	A10 A38 A40	B1 B2 B4 B8 B11 B24	C3
Development of the concept of architectural survey as the first form of the knowledge of the heritage architecture, its metric dimensional characteristics, its historic complexity, its structural, constructive, formal and functional characteristics.	A10 A38 A40 A50	B8 B10 B11 B12 B14 B17 B24	C7

Contents	
Topic	Sub-topic
I.- INTRODUCTION. LESSON 1.- DESCRIPTIVE GEOMETRY. CONCEPT.	1.1 -. Objectives of Descriptive Geometry. 1.2 -. Concept of projection. Classification and properties. 1.3 -. Concept of biunivocity. Representation systems. Classification 1.4 -. Geometric elements in space. 1.5 -. Denominations.
II. - MAIN SYSTEMS OF REPRESENTATION. PARALLEL PROJECTION. LESSON 2.- MULTIVIEW ORTHOGRAPHIC PROJECTION. OVERVIEW	2.1 -. Concept. 2.2 -. European projection. American projection. 2.3 -. Primary auxiliary views. - Plans, elevations and sections.
LESSON 3.- MULTIVIEW ORTHOGRAPHIC PROJECTION. AUXILIARY VIEWS	3.1.- Primary auxiliary views: view projected from the top view. 3.2.- Primary auxiliary views: view projected from the front view. 3.3.- Secondary auxiliary views: Succesive auxiliary views.
LESSON 4.- TOPOGRAPHIC SYSTEM. TERRAIN REPRESENTATION	4.1.- Concept. 4.2.- Topographic surfaces. Contour lines. 4.3.- Profiles and panoramas. 4.4.- Analysis and interpretation of topographic surfaces.
LESSON 5.- AXONOMETRIC PROJECTION. OVERVIEW	5.1.- Concept. 5.2.- Orthogonal axonometry. 5.3.- Oblique axonometry. 5.4.- Main axonometric projections.
III.- JOINT DEVELOPMENT OF THE PARALLEL PROJECTION SYSTEMS. LESSON 6.- FUNDAMENTAL GEOMETRIC ELEMENTS	6.1.- Representation of straight lines and planes. -Different positions. 6.2.- Main plane straight lines. -Horizontal line. -Maximum slope line. 6.3.- Relationships between line and plane: intersection and parallelism. 6.4.- Relationship between two planes: intersection and parallelism. 6.5.- Perpendicularity condition.
LESSON 7.- ROOF DESIGN	7.1.- Planes with the same slopes. 7.2.- Planes with different slopes. 7.3.- Elevations.



LESSON 8. - TRUE SIZE AND PLANE FIGURES	<p>8.1.- True size and shape:</p> <ul style="list-style-type: none"> - Auxiliary plans. - Rotation and revolution. - Combined method. <p>8.2.- Representation of plane figures</p>
<p>IV.- LINEAR PERSPECTIVE.</p> <p>LESSON 9.- LINEAR PERSPECTIVE. OVERVIEW</p>	<p>9.1.- Concept.</p> <p>9.2.- Representation of a straight line. Vanishing point.</p> <p>9.3.- Representation of the plane.</p> <p>9.4.- Types of linear perspectives.</p> <ul style="list-style-type: none"> - According to the picture plane. - According to the station point.
<p>LESSON 10. - CLASSIC METHODS OF PERSPECTIVE.</p> <p>VISUAL RAY METHOD</p>	<p>10.1.- One-point perspective.</p> <p>10.2.- Two-point perspective.</p> <p>10.3.- Visual perception and representation.</p> <p>10.4.- Distortion diagrams.</p> <p>10.5.- Relative position of the elements in linear perspective.</p> <ul style="list-style-type: none"> - Influence of the location of the station point. - Influence of the location of the picture plane.
<p>LESSON 11.- DIRECT MEASUREMENT IN PERSPECTIVE.</p> <p>MEASURING POINT METHOD</p>	<p>11.1.- Concept.</p> <p>11.2.- One-point perspective.</p> <p>11.3.- Two-point perspective.</p>
<p>V.- INTRODUCTION TO SHADES AND SHADOWS</p> <p>LESSON 12. - THEORY OF SHADOWS. ELEMENTS</p>	<p>12.1.- Solar geometry.</p> <p>12.2.- Shadow of points and vertical lines.</p> <p>12.3.- Shadow of other lines.</p> <p>12.4.- Counter-projection.</p> <p>12.5.- Shadows of curve lines.</p>
LESSON 13.- SHADOWS IN LINEAR PERSPECTIVE	<p>13.1.- Sunlight parallel to the picture plane.</p> <p>13.2.- Sunlight oblique to the picture plane.</p> <ul style="list-style-type: none"> - Sun behind the viewer. - Sun in front of the viewer.

Planning

Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Objective test	A10 A38 A40 A50 B17 B14 B13 B28 B24 B18 B12 B11 B10 B9 B8 B7 B5 B4 B3 B2 B1 C3 C5 C6 C7	4	136	140
Personalized attention		10	0	10

(*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

Methodologies	Description
Objective test	A final test will be done to all those students who in spite of attending the course did not pass the subject. It may consist of theoretical and practical content.

Personalized attention

Methodologies	Description
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Objective test	<p>The subject is conceived eminently experimental and practical as the student's learning process is based on the realization of graphic exercises that enable the student to participate in a more personalized relationship with the teacher.</p> <p>Exercises will be developed individually or in small groups and will be related to course work.</p> <p>In order to achieve the objectives set, tutorial attendance scheduled by the tutor is considered essential.</p>
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Assessment			
Methodologies	Competencies / Results	Description	Qualification
Objective test	A10 A38 A40 A50 B17 B14 B13 B28 B24 B18 B12 B11 B10 B9 B8 B7 B5 B4 B3 B2 B1 C3 C5 C6 C7	<p>It may consist of practical and theoretical contents.</p> <p>FIRST OPPORTUNITY (JANUARY)</p> <p>Applying to students either scoring below 5 or with average special exercises below 5 and observing the following conditions:</p> <ul style="list-style-type: none"> - 80% attendance and submission of all weekly exercises - Delivery of the supervised projects <p>SECOND CHANCE (JULY)</p> <p>The same conditions as the first opportunity. The score of the objective test to pass the subject will be of 5. That score will stand for 30% of the final grade.</p>	100

Assessment comments
<p>In order to pass the subject on the 1st and/or 2nd opportunity it is a compulsory requirement that students have completed all course work and exercises. STUDENTS WITH REGISTRATION AFTER THE START OF THE ACADEMIC YEAR (September): Taking the first opportunity will be allowed. 80% of attendance shall be counted from the date of enrollment, and previous works required for the final evaluation will be rescheduled.</p>

Sources of information	
Basic	<p>-FRANCO TABOADA, J. A., Geometría Descriptiva para la Representación Arquitectónica. Vol. 1. Fundamentos, Andavira, 2011.-FRANCO TABOADA, J. A., Geometría Descriptiva para la Representación Arquitectónica. Vol. 2. Geometría de la Forma Arquitectónica, Andavira, 2012.-BARTSCHI, W., El estudio de las sombras en perspectiva, Barcelona, Gustavo Gili, 1980, Libro,-GHEORGHU Y DRAGOMIR., ?Geometry Of Estructural Forms ?, London : Applied Science Publishers, cop. , 1978, Libro, -SANCHEZ GALLEGU, J. A., Geometría Descriptiva. Sistemas de Proyección Cilíndrica, Barcelona, Ediciones U.P.C., 1993, Libro, -SCHAARWACHTER,G., Perspectiva para arquitectos, México, Gustavo Gili, 1983, Libro, -SIMONE de, L., Spazio prospettico, Roma, Bonacci, 1976, Libro, -VILLANUEVA BARTRINA, L., Perspectiva lineal. Su relación con la fotografía, Barcelona, Ediciones U.P.C., 1996, Libro,</p>
Complementary	<p>-FORSETH, K., Gráficos para arquitectos, Barcelona, Gustavo Gili, 1981, Libro.-FRANCO TABOADA, J. A., El dibujo, forma esencial del pensamiento arquitectónico, A Coruña, Universidade, 1990, Libro.-VERO, R., El modo de entender la perspectiva. Barcelona, Gustavo Gili. 1981, libro.-WAY, M., La perspectiva en el dibujo, Barcelona, Omega, 1991, libro.</p>

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously



Architectural Projects 1/630G01001

Architectural Drawing/630G01002

Subjects that continue the syllabus

Analysis on Architectural Form/630G01007

Análise Arquitectónico 1/630G01012

Xeometría da Forma Arquitectónica/630G01014

Xeometrías complexas en Arquitectura/630G01052

Other comments

It is considered essential for the understanding of the subject that students have a good background in Technical Drawing.

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.