



Teaching Guide

Teaching Guide				
Identifying Data				2023/24
Subject (*)	Architectural Form Geometry		Code	630G02014
Study programme	Grao en Estudos de Arquitectura			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	First	Basic training	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Expresión Gráfica Arquitectónica			
Coordinador	Hermida Gonzalez, Luis		E-mail	luis.hermida@udc.es
Lecturers	Costa Bujan, Pablo		E-mail	pablo.costa@udc.es
	Hermida Gonzalez, Luis			luis.hermida@udc.es
	Pernas Alonso, Maria Ines			ines.alonso@udc.es
Web	http://www.ryta-udc.es/			
General description	Aportar ao alumnado os contidos e ferramentas gráficas necesarios para adquirir aptitudes e competencias que lles permitan analizar, imaxinar e representar o espazo arquitectónico.			

Study programme competences

Code	Study programme competences
A1	"Ability to apply graphical procedures to the representation of spaces and objects (T) "
A2	Ability to conceive and represent the visual attributes of objects and master proportion and drawing techniques, including digital ones (T)
A3	Knowledge of spatial representation systems and projections adapted and applied to architecture
A4	Knowledge of the analysis and the theory of form and the laws of visual perception adapted and applied to architecture and urbanism
A5	"Knowledge of the metric and projective geometry adapted and applied to architecture and urbanism "
A6	"Knowledge of graphic surveying techniques at all stages, from the drawing sketches to scientific restitution, adapted and applied to architecture and urbanism "
A10	"Knowledge of basic topography, hypsometry, mapping and earthmoving techniques adapted and applied to architecture and urbanism "
A63	Development, presentation and public review before a university jury of an original academic work individually elaborated and linked to any of the subjects previously studied
B1	Students have demonstrated knowledge and understanding in a field of study that is based on the general secondary education, and is usually at a level which, although it is supported by advanced textbooks, includes some aspects that imply knowledge of the forefront of their field of study
B2	Students can apply their knowledge to their work or vocation in a professional way and have competences that can be displayed by means of elaborating and sustaining arguments and solving problems in their field of study
B4	Students can communicate information, ideas, problems and solutions to both specialist and non-specialist public
B5	Students have developed those learning skills necessary to undertake further studies with a high level of autonomy
B12	Understanding the relationship between people and buildings and between these and their environment, and the need to relate buildings and the spaces between them according to the needs and human scale
C1	Adequate oral and written expression in the official languages.
C2	Mastering oral and written expression in a foreign language.
C3	Using ICT in working contexts and lifelong learning.
C4	Exercising an open, educated, critical, committed, democratic and caring citizenship, being able to analyse facts, diagnose problems, formulate and implement solutions based on knowledge and solutions for the common good
C5	Understanding the importance of entrepreneurial culture and the useful means for enterprising people.
C6	Critically evaluate the knowledge, technology and information available to solve the problems they must face
C7	Assuming as professionals and citizens the importance of learning throughout life
C8	Valuing the importance of research, innovation and technological development for the socioeconomic and cultural progress of society.



Learning outcomes			
Learning outcomes	Study programme competences		
Achegar rigor xeométrico á representación e análise do espazo arquitectónico, sen esquecer que o proceso creativo do/o arquitecto/a baséase fundamentalmente na súa capacidade racional de percepción do espazo.	A1 A2 A3 A4 A5 A63	B1 B12	C4 C5 C6 C7
Potenciar o desenvolvemento da capacidade de imaxinación e lectura espacial. Estimular a apreensión espacial, é dicir "ver no espazo". Favorecer a interacción gráfica entre o imaxinado e o representado no plano.	A1 A2 A3 A4 A5	B2 B4 B5 B12	C1 C2 C7
Estudar os principais corpos e superficies de aplicación arquitectónica, a través da súa análise e representación gráfica nos sistemas diédrico e axonométrico.	A1 A2 A3 A4 A5	B4 B5	C7 C8
Coñecer as nocións básicas de topografía e saber aplicalas á representación e actuación sobre os terreos.	A1 A5 A6 A10	B2 B4 B5	C7 C8
Coñecer e saber aplicar os elementos básicos de teoría de claroscuro.	A1 A2 A3 A4 A5	B1 B2 B4 B5	C7
Completar a formación do alumno na representación da arquitectura mediante a utilización de programas informáticos de base CAD 3D como ferramenta para a comprensión, xeración e transformación das diversas superficies de aplicación arquitectónica.	A1 A2 A3 A4 A5	B4 B5 B12	C3 C6 C7 C8

Contents	
Topic	Sub-topic
Concepto de superficie	Concepto y clasificación de superficies Contorno aparente
Superficies poliedrales	Superficies poliedrales elementales Poliedros regulares Poliedros semirregulares
Aplicaciones arquitectónicas de las superficies poliedrales	Plegaduras Sistemas plegables Estructuras reticuladas planas Estructuras reticuladas espaciales. Cúpulas geodésicas
Superficies curvas: cuádricas elementales	Conceptos generales. Puntos sobre la superficie Superficies cilíndricas. Desarrollo Superficies cónicas. Desarrollo Intersecciones. Bóvedas y lunetos



Superficies curvas: cuádricas elípticas, aplicaciones arquitectónicas	Cuádricas elípticas de revolución Cuádricas elípticas escalenas Intersecciones. Bóvedas vaídas
Otras superficies curvas de aplicación arquitectónica	Superficies tóricas. Bóvedas tóricas Superficies de traslación. Bóvedas por aristas
Superficies regladas alabeadas	Concepto y clasificación Cuádricas regladas. Hiperboloide reglado. Paraboloide hiperbólico Conoides Cilindroides. Capialzados
Superficies topográficas	Generalidades Intersecciones con planos y superficies cónicas Explanaciones. Taludes de desmonte y terraplén Trazado de alineaciones
Ampliación de teoría de sombras	Sombras sobre superficies curvas. Sombras autoarrojadas Elementos de teoría de claroscuro

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A4 A5 B12 C6 C7	15	9	24
Workshop	A1 A2 A3 A4 A5 A6 A10 B1 B5 C7	45	9	54
Supervised projects	A1 A2 A3 A4 A5 A63 B2 B4 B5 B12 C1 C2 C3 C4 C5 C6 C7 C8	0	30	30
Objective test	A1 A2 B1 B2	6	26	32
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
Guest lecture / keynote speech	Oral exhibition of the theoretical contents specified using in each one of them explanatory drawings in the blackboard and/or projections on screen. The lesson magistral has by object contribute the basic concepts to provide the necessary tools with which the student can develop the knowledges of the Geometry of the Architectural Form. His exhibition poses from a perspective in which the architecture finds always present.
Workshop	It develops with the purpose that the student participate actively in the process of learning, confronting to the need to value, answer and experience the exposed knowledges in the sessions magistrales through graphic practices. They choose for the realisation of these practical architectural examples real or elements that consider adapted. The formalisation of said projects looks for adapted to the level of the course in which it finds the student and contributes to his familiarización with the architectural fact.
Supervised projects	This type of works pose to promote the autonomous learning of the student, under the supervision of the/to professor/to tutor/to. The thematic of the work will be in correspondence with the theoretical concepts exposed in the sessions magistrales. His development will be able to pose of individual form or in groups. It includes in this methodology the employment of the suitable computer tools for the formalisation and final presentation of the works. The follow-up will make in the hours of tutorias planned for such effect.
Objective test	It defines like "objective proof" to the special practices that pose along the course and that serve to check in level reached in the process of learning of the student. The development and character of said proofs will be defined by each professor/to manager of the group.



Personalized attention

Methodologies	Description
Workshop Supervised projects	The subject conceives fundamentally like experimental-practical since the process of learning of the student bases in the realization of graphic practices in the that takes part actively, in a continuous relation with the teaching staff. This personalised attention will be individual or in small groups and will be related with the practices and the work of the course.

Assessment

Methodologies	Competencies	Description	Qualification
Workshop	A1 A2 A3 A4 A5 A6 A10 B1 B5 C7	A avaliación dos obradoiros feitos nas aulas, será ao longo do cuatrimestre. En esta avaliación verase o traballo feito polo alumnado e os coñecementos adquiridos. Avaliarase de forma conxunta as prácticas presenciais e o traballo tutelado. A porcentaxe da nota final das prácticas presenciais será do 30% ao 45% en función da duración do traballo tutelado.	30
Supervised projects	A1 A2 A3 A4 A5 A63 B2 B4 B5 B12 C1 C2 C3 C4 C5 C6 C7 C8	A realización do traballo tutelado será unha decisión opcional do profesor encargado da materia. O traballo tutelado será avaliado seguindo o criterio de idoneidade do mesmo atendendo aos enfoques de análise, reflexión e presentación final. A realización do traballo tutelado precisa do seguimento por parte do profesorado ao longo do seu desenvolvemento. Avaliarase de forma conxunta as práctica presenciais e o traballo tutelado. A porcentaxe da nota final do traballo tutelado será do 0% ao 15% dependendo la duración do mesmo.	15
Objective test	A1 A2 B1 B2	Realizaranse dúas prácticas especiais ao longo do cuadrimestre, coincidindo a segunda práctica coa data fixada polo centro para o exame de 1ª oportunidade. Con estas prácticas avaliarase a transferencia dos coñecementos adquiridos polo estudantado nas diferentes partes da materia. A porcentaxe da nota final será do 55%. Para a aplicación desta porcentaxe será necesaria unha nota media de 5 puntos, entre as dúas prácticas especiais. Será preciso un mínimo de 4 puntos en cada unha das probas para facer a media.	55

Assessment comments

NOTA: A AVALIACIÓN É CONTINUA AO LONGO DO CUATRIMESTRE, A ASIGNATURA APRÓBASE POR CURSO, SEMPRE QUE SE TEÑAN SUPERADAS AS PARTES QUE FORMAN A CUALIFICACIÓN FINAL = [Prácticas clase e Traballo tutelado 45% + Prácticas especiais 55%] PARA OPTAR A UNHA SEGUNDA OPORTUNIDADE, O ALUMNADO DEBERÁ CUMPRIR OS CRITERIOS DE ENTREGAS E ASISTENCIA DA PRIMEIRA OPORTUNIDADE DURANTE O CURSO. QUEDANDO EXCLUIDO O ALUMNADO QUE NO CUMPRE ESAS CONDICIONS e que por tanto non teñan seguido o cuatrimestre.

Sources of information



Basic	- FRANCO TABOADA, J.A. (2011). Geometría Descriptiva para la Representación Arquitectónica. Vol. 1. Fundamentos. A Coruña:Andavira - FRANCO TABOADA, J.A. (2012). Geometría Descriptiva para la Representación Arquitectónica. Vol. 2. Geometría de la Forma Arquitectónica. A Coruña:Andavira - COSTA BUJAN, Pablo (2018). Geometrías Básicas y formas arquitectónicas. Representaciones y Modelos. A Coruña:Andavira Material audiovisual elaborado por el profesor Pablo Costa Buján: La mediateca de Sendai del arquitecto Toyo Ito. Análisis de las formas estructurales soporte, http://hdl.handle.net/2183/11785 Aplicaciones arquitectónicas de las superficies cilíndricas, http://hdl.handle.net/2183/12507 Superficies cónicas: Aplicación a la arquitectura y del diseño, http://hdl.handle.net/2183/12666 Argumentos gráficos en la construcción conceptual de las cúpulas geodésicas, afinidades y aplicaciones arquitectónicas, http://hdl.handle.net/2183/13791 Alineaciones y explicaciones de superficies topográficas, http://hdl.handle.net/2183/13802 e http://hdl.handle.net/2183/13791 Los paraboloides hiperbólicos y la obra del arquitecto Félix Candela, http://hdl.handle.net/2183/11781
Complementary	- FORSETH, K (1981). Gráficos para arquitectos. Barcelona:Gustavo Gili - ENGEL (2001). Sistemas de estructuras. Barcelona:Gustavo Gili

Recommendations
Subjects that it is recommended to have taken before
Descriptive Geometry/630G02003 Drawing in Architecture/630G02002
Subjects that are recommended to be taken simultaneously
Analysis of Architectural Forms/630G02007
Subjects that continue the syllabus
Other comments

(*)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.