



## Teaching Guide

Identifying Data					2019/20
Subject (*)	Geometry of Illustrations	Code	670G01018		
Study programme	Grao en Arquitectura Técnica				
Descriptors					
Cycle	Period	Year	Type	Credits	
Graduate	2nd four-month period	Second	Obligatory	6	
Language					
Teaching method	Face-to-face				
Prerequisites					
Department	Expresión Gráfica Arquitectónica				
Coordinador	Diaz Alonso, Jose Antonio	E-mail	jose.diaza@udc.es		
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General description	<p>The Geometry of the Representation like continuation of the temario of the asignatura of Descriptive Geometry has like aim the geometrical rationalisation of the space subjects. In the academic field contributes the basic device on which support graphic disciplines more specialised like Architectural Graphic Expression, Topography and Technical Projects, as well as the employment of the Computer-aided Design and the Graphic Computing. It converts like this in the GRAMMAR of the graphic language, being necessary his knowledge to be able to express with correction and efficiency.</p> <p>It contributes to the configuration and rationalisation of a mental model of the reality, what commonly designates SEE IN THE SPACE, although it would be more exact the expression IMAGINE in the space.</p> <p>In the professional field the reading and interpretation of planes is one of the necessary tasks to the hour to execute a project of edificación, having to extract of the graphic documents all the necessary information for the correct execution of the work.</p> <p>In the field of the editorial of technical projects the Geometry of the Representation contributes the training of the necessary space vision for the origin of the final solution that will be three-dimensional and inside the communicative function of the graphic language through planes and croquis, contributes the sustrato theoretical basic of the distinct Systems of Representation perspectivos: axonometría orthogonal, axonometría oblicua and conical perspective.</p>				

## Study programme competences / results

Code	Study programme competences / results
A2	Adquirir os coñecementos fundamentais sobre os sistemas e aplicacións informáticas específicos e xerais utilizados no ámbito da edificación.
A6	Coñecer e aplicar os distintos sistemas de representación así como as técnicas e procedementos de expresión gráfica aplicados á edificación e ás construcións arquitectónicas.
B1	Capacidade de análise e síntese.
B3	Capacidade para a procura, análise, selección, utilización e xestión da información.
B4	Coñecementos de informática relativos ao ámbito de estudo.
B5	Capacidade para a resolución de problemas.
B7	Capacidade de traballo en equipo.
B8	Capacidade para traballar nun equipo de carácter interdisciplinario.
B12	Razoamento crítico.
B14	Aprendizaxe autónomo.
B16	Capacidade de aplicar os coñecementos na práctica.
B17	Creatividade e innovación.
B27	Capacidade de comunicación a través da palabra e da imaxe.
C1	Adequate oral and written expression in the official languages.



C3	Using ICT in working contexts and lifelong learning.
C4	Acting as a respectful citizen according to democratic cultures and human rights and with a gender perspective.
C5	Understanding the importance of entrepreneurial culture and the useful means for enterprising people.
C6	Acquiring skills for healthy lifestyles, and healthy habits and routines.
C7	Developing the ability to work in interdisciplinary or transdisciplinary teams in order to offer proposals that can contribute to a sustainable environmental, economic, political and social development.
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 / results		
Develop the capacity of "spatial imagination", so much so that the student can think"space" (three dimensions) an object represented in the plane (two-dimensional), such as to be represented in the drawing the previously imagined in space.	A2 A6	B1 B3 B4 B5 B7 B8 B12 B14 B16 B17 B27	C1 C3 C4 C5 C6 C7 C8
Identify and understand the relations space and the connection between the space sensitive real and the space geometrically represented.	A2 A6	B1 B4 B7 B8 B12 B14 B27	C1 C3 C4 C5 C6 C7 C8
Know the main bodies and surfaces geometric of application constructive and architectural, both at the level of concept mathematical as of analysis and representation graphics in them main systems of representation perspective.	A2 A6	B1 B3 B4 B5 B7 B8 B12 B14 B16 B27	C1 C3 C4 C5 C6 C7 C8
Know the main organs and geometric surfaces of constructive and architectural implementation both at the level of mathematical concept based on analysis and graphical representation on major systems from the perspective of representation.	A2 A6	B1 B4 B7 B8 B12 B14 B27	C1 C3 C4 C5 C6 C7 C8



Understand geometry as a graphic model able to establish spatial relationships that allow the understanding, description and control of constructive and architectural forms.	A2 A6	B1 B4 B7 B8 B12 B14 B27	C1 C3 C4 C5 C6 C7 C8
Know the terminology, fundamental concepts, conventions and the theoretical principles that define the elements of the systems of representation employed in building perspective.	A2 A6	B1 B4 B8 B27	C1 C3 C4 C5 C6 C7 C8
Know the foundations theoretical of the different systems of representation perspective of application in building and architecture	A2 A6	B1 B4 B8 B12 B14 B16 B27	C1 C3 C4 C5 C6 C7 C8
Know and apply the methods and paths of systems of representation perspective of application in building and architecture.	A2 A6	B1 B4 B8 B27	C1 C3 C4 C5 C6 C7 C8
Learn to evaluate through criteria logical, coherent and technical, the solution chosen in them paths and apply them methods and paths of each one of the systems of representation studied to it resolution of exercises practical.	A2 A6	B1 B4 B8 B27	C1 C3 C4 C5 C6 C7 C8
Represent the primary geometric forms in any position in space.	A2 A6	B1 B4 B8 B27	C1 C3 C4 C5 C6 C7 C8
Solve problems positional of intersections, parallelism, perpendicularity and problems metric of distances and determination of angles between those different elements geometric.	A2 A6	B1 B4 B8 B27	C1 C3 C4 C5 C6 C7 C8



Represent simple geometric bodies in different systems with special emphasis on the representation of elements and applications of architectural, constructive character or use in the building.	A2 A6	B1 B4 B8 B27	C1 C3 C4 C5 C6 C7 C8
Know them fundamentals General of the theory of shadows as rationalization geometric of the phenomenon luminous in the different systems of representation of application architectural.	A2 A6	B1 B4 B8 B27	C1 C3 C4 C5 C6 C7 C8
Ability to apply the systems of representation spatial perspective: axonometric orthogonal, axonometric oblique and perspective conical.	A2 A6	B1 B4 B8 B27	C1 C3 C4 C5 C6 C7 C8
Generate and interpret perspectives orthogonal axonometric and oblique under different conditions for the graphical definition of constructive elements.	A2 A6	B1 B4 B8 B27	C1 C3 C4 C5 C6 C7 C8
Use of the ways of putting into perspective for the representation of character building and architectural proposals	A2 A6	B1 B4 B8 B27	C1 C3 C4 C5 C6 C7 C8
Ability to analyze and learn about the variations of the different elements of the linear perspective, restitution of images perspectives and their generation conditions as well as the basic concepts of the theory of shadows in perspective.	A2 A6	B1 B4 B8 B27	C1 C3 C4 C5 C6 C7 C8

Contents	
Topic	Sub-topic
BLOCK I. ORTHOGONAL AXONOMETRIC. FUNDAMENTALS.	Theme 1. Orthogonal axonometric. Generalities. Kinds of axonometric. Trihedron trirrectangulo. Axis axonometricos. Theme 2. Scales axonometric. Theorem of Schlömilch-Waisbach. Theme 3. Representation of the elements geometric fundamental: point, straight and flat. Topic 4. Positional problems. Intersecciones. Tema 5. Parallelism and perpendicularity.



BLOCK II. IMPLEMENTATION IN PRACTICE OF THE AXONOMETRIC ORTHOGONAL	Item 6. Abatimientos.Tema 7. Step system Diedrico.tema 8. Representation of figures flat and bodies geometric. Item 9. Theory of orthogonal axonometric shadows
BLOCK III. OBLIQUE AXONOMETRICS: PERSPECTIVE KNIGHT AND MILITARY. FUNDAMENTALS.	Issue 10. Oblique axonometric. Generalities. Theorem of Pohlke. Perspective Knight and military. Item 11. Direction of projection. Coefficients of reduction. Item 12. Representation of the basic geometriocs elements: point, line and plane. Item 13. Positional problems. Intersecciones.Tema 14. Parallelism and perpendicularity.
BLOCK IV. IMPLEMENTATION OF THE OBLIQUE AXONOMETRIC.	Issue 15. Abatimientos.Tema 16. Passage of the dihedral system perspective Knight and vice versa. Issue 17. Representation of figures flat and bodies geometric. Item 18. Theory of axonometric oblique shadows
BLOCK V. PERSPECTIVE CONICAL LINEAR	Issue 19. General information and agreements. Issue 20. Representation of the fundamental geometric elements: point, line and plane. Item 21. Positional problems. Relationships of belonging. Intersections. Paralelismo.Tema 22. Perpendicularidad.Tema 23. Leeways. Issue 24. Metric problems. Real magnitudes
BLOCK VI. IMPLEMENTATION OF LINEAR PERSPECTIVE.	Item 25. Visual perception and representation. Influence of the relative position of elements of linear perspective. Viewing angle. Theme 26. Classification of the perspectives linear according to the position of the point of view and from the flat of the Cuadro.Tema 27. Flat of picture vertically. Frontal and oblique perspectives. Issue 28. Plane of box horizontal. Item 29. Plane of table tilted. Item 30. Restitution theory of shadows and perspectives

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Problem solving	A2 A6 B1 B3 B4 B5 B7 B8 B16 B27 C1 C3 C4 C5 C6 C7 C8	27	44	71
Guest lecture / keynote speech	A2 A6 B1 B4 B8 B12 B14 B27 C1 C3 C4 C5 C6 C7 C8	27	43	70
Objective test	A2 A6 B1 B4 B5 B8 B12 B16 B17 B27 C1 C3 C4 C5 C6 C7 C8	6	0	6
Personalized attention		3	0	3

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

Methodologies	
Methodologies	Description
Problem solving	The students will face the resolution of a problematic situation, from the knowledge that have worked in the exhibition sessions and you can have more than one solution. Within this dynamic of action interactive, is held an attention personalized
Guest lecture / keynote speech	Oral and graphic exhibition in the classroom that is complemented with the optional use of media and ICT as well as the introduction of questions to students in order to transmit knowledge and facilitate learning
Objective test	Test chart used for the evaluation of learning, whose distinctive feature is the ability to determine whether or not the given answers are correct. It is a measure that allows you to assess knowledge, abilities, skills, performance, skills, attitudes, intelligence, etc. It is applicable both for diagnostic, formative summative evaluation.

Personalized attention	
Methodologies	Description



Problem solving	<p>The needs and questions of students related to study and/or subjects related to the matter, providing guidance, support and motivation in the learning process will be met.</p> <p>"Students with part-time dedication and academic waiver of exemption from attendance recognition", shall bring to the knowledge of the corresponding teacher this circumstance, in order to realize the development of this activity as deemed most appropriate.</p>
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Assessment			
Methodologies	Competencies / Results	Description	Qualification
Objective test	A2 A6 B1 B4 B5 B8 B12 B16 B17 B27 C1 C3 C4 C5 C6 C7 C8	<p>There will be two objective tests during the semester of the same characteristics as the exercises presented in interactive classes and which will serve to articulate a matter continuous evaluation process.</p> <p>The first test objective is build in them content corresponding to the blocks I, II, III e IV (themes of the 1 to the 18) Axonometrics orthogonal and oblique.</p> <p>The second test objective is build in them content corresponding to them blocks V and VINE (Themes 19 to the 30) perspective conical linear</p>	100

Assessment comments
<p>Assistance is considered mandatory how to the interactive exhibition classes for which students must meet minimum attendance requirements to be able to present to the objective evidence. This assistance minimum will be of the 80%.</p> <p>The two tests objective scoring are qualify on 10 points each a. The final overall rating of these tests is obtained adding the qualification of test systems Axonometricos to the qualification of the test system of linear perspective and dividing this sum by two. Is makes recorded that so is can make the half between them ratings of both tests, the qualification will be of 5 points as minimum in each an of them.</p> <p>In addition to the assistance, participation and realization of works protected is may make them tests that is consider necessary to rating properly the grade of assimilation of them contained conceptual and procedural of the matter.</p> <p>Students who achieve an average grade overall by 5 points or more by the sum of the two races will exceed the matter by course. Students who do not achieve the minimum overall rating of 5 points shall submit to the review official end of matter that will be held at the end of the corresponding quarter (first call) second schedule approved in school board. Approved the objective races but complete systems will be saved.</p> <p>This condition is considered to be linked to the corresponding academic year and therefore these approved will be saved for the first call for proposals (June) and second (July) but exclusively during the ongoing current and will keep this book for later courses.</p> <p>Correction of the exercises of the races and the final examinations as well as the subsequent revision of the same will be carried out by the teacher in charge of teaching of the subject in the group to which belong the student.</p> <p>Important note. So the student can have a rating of approved in final exams, required rate corresponding to the systems Axonometricos exercises and us tapered system. A rating of 0 in any of them would give place to the qualification of suspense in the matter.</p>

Sources of information



<p><b>Basic</b></p>	<ul style="list-style-type: none"> <li>- FERRER MUÑOZ (). Axonometrías. Sistema de representación axonométrico.</li> <li>- IZQUIERDO ASENSI, Fernando (). Ejercicios de Geometría Descriptiva Tomo II. Sistema Acotado y Axonométrico.</li> <li>- IZQUIERDO ASENSI, Fernando (). Ejercicios de Geometría descriptiva. Tomo IV. Sistema Cónico. .</li> <li>- IZQUIERDO ASENSI, Fernando (). Geometría Descriptiva.</li> <li>- BARDÉS FAURA; GIMÉNEZ RIBERA (). Geometría Descriptiva. Plans acotats i perspectives. Exercicis.</li> <li>- SÁNCHEZ GALLEGO (). Geometría descriptiva. Sistemas de Proyección Cilíndrica. .</li> <li>- PALANCAR PENELLA (). Geometría descriptiva. Sistemas de representación axonométrica. Caballera. Planos Acotados.</li> <li>- RODRIGUEZ DE ABAJO (). Geometría Descriptiva. Tomo III: Sistema de Perspectiva Caballera. .</li> <li>- RODRÍGUEZ DE ABAJO (). Geometría Descriptiva. Tomo V. Sistema Cónico. .</li> <li>- RODRÍGUEZ DE ABAJO (). Geometría Descriptiva. Tomo IV: Sistema Axonométrico. .</li> <li>- VILLANUEVA BARTRINA (). Perspectiva lineal. Su relación con la fotografía. .</li> <li>- BARTOLOMÉ RAMÍREZ (). Perspectiva: fundamentos y aplicaciones..</li> <li>- FRANCO TABOADA, José Antonio (2011). Geometría Descriptiva para la representación arquitectónica. Santiago de Compostela: Andavira Editora</li> <li>- Rodilla López, José Luis (2009). Perspectiva Lineal (parte I). A Coruña:El autor</li> <li>- (). .</li> </ul>
<p><b>Complementary</b></p>	<ul style="list-style-type: none"> <li>- IZQUIERDO ASENSI (). Construcciones Geométricas.</li> <li>- ÁLVAREZ BENGOA; RODRÍGUEZ DE ABAJO (). Curso de Dibujo Geométrico y Croquización. .</li> <li>- IZQUIERDO ASENSI (). Fórmulas y propiedades geométricas.</li> <li>- RENDÓN GÓMEZ (). Geometría paso a paso. Vol. I..</li> <li>- Rodilla López, José Luis (2006). Apuntes de Geometría Métrica, Homología y Afinidad. Aplicaciones. A Coruña:El autor</li> </ul>

### Recommendations

#### Subjects that it is recommended to have taken before

Descriptive Geometry/670G01004

Architectural Graphic Expression I/670G01008

#### Subjects that are recommended to be taken simultaneously

Architectural Graphic Expression II/670G01013

#### Subjects that continue the syllabus

#### Other comments

In order to approach the fundamentals of graphic representation, it is recommended to take the subject of Geometry of the Representation in a previous or simultaneous way to the rest of subjects of the Area of Expression Architectonic Graphic.PREREQUISITES. It is recommended to have taken the subject of Descriptive Geometry in First Course

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