Teaching Guide				
Identifying Data				2019/20
Subject (*)	Technical Projects II		Code	670G01027
Study programme	Grao en Arquitectura Técnica			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	Third	Obligatory	6
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	Expresión Gráfica Arquitectónica			
Coordinador	Fernández Álvarez, Ángel José	E-mail	angel.fernandez.alvarez@udc.es	
Lecturers	Fernández Álvarez, Ángel José Mantiñan Campos, Carlos	E-mail	angel.fernandez.alvarez@udc.es carlos.mantinan@udc.es	
Web	euat.udc.es			
General description	The subject Technical Project II develops concepts related to the graphic language of the project and related professional activities as Technical Architect: drafting, analysis, audit, control, management... In this course, basic conceptual notions about the design process and methodologies needed to address the design of construction projects are acquired. This includes adaptation and rehabilitation of both old and new construction as well as the ability to design, analyze, control, manage and develop technical projects in the field of building. The student is introduced into the study of design planning and the acquisition of knowledge about data collection and pre-project planning. The methodological process for the project and the knowledge of the basic elements of design, its shape and its importance in physical space are defined. It is intended that the student obtains the ability to make technical projects, taking into account their formal and functional aspect as well as their implementation.			

Study programme competences / results	
Code	Study programme competences / results
A15	Redactar proxectos técnicos no ámbito da edificación.
A27	Desenvolver auditorías de proxectos e de execución de obras.
A29	Elaborar estudos, certificados, ditames, documentos e informes técnicos.
A31	Redactar, analizar, controlar, xestionar e desenvolver proxectos técnicos.
B1	Capacidade de análise e síntese.
B2	Capacidade de organización e planificación.
B7	Capacidade de traballo en equipo.
B13	Compromiso ético.
B15	Adaptación a novas situacións.
B16	Capacidade de aplicar os coñecementos na práctica.
B19	Capacidade de liderado, diálogo e negociación.
B23	Orientación a resultados.
B24	Orientación ao cliente.
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	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.

C9	Ability to manage times and resources: developing plans, prioritizing activities, identifying critical points, establishing goals and accomplishing them.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Ability to draft technical project of construction work, which do not require architectural project.	A15 A29 A31	B1 B2 B15 B16 B23 B24	C1 C3 C6 C8 C9
Acquiring knowledge about the organization of professional work and studies, offices and professional societies, the regulation and legislation related to the functions carried out by the Technical Architect and the accountability framework associated with the activity.	A27 A29	B7 B13 B16 B19 B24	C1 C2 C3 C4 C5 C7
Analyzing, auditing, controlling project execution and execution of the works.	A27	B2 B7 B16 B19 B24	C1 C4 C5 C6 C9
Drafting documents that are part of implementation projects elaborated in a multidisciplinary way.	A15 A29	B1 B2 B16 B19	C1 C2 C3 C7 C8
Applying the technical regulations of the building process, and generate technical documents of the procedures and methods of building construction.	A29 A31	B2 B13 B16 B19 B24	C1 C2 C4 C6
Analyzing, designing and implementing solutions that facilitate universal accessibility in buildings and their surroundings.	A31	B1 B13 B16 B24	C4 C6
Determining the graphic content of a technical project with the technical capacity to face technological and constructive questions needed to achieve the completion of the work.	A15 A31	B1 B15 B16 B23	C3 C6 C8
Ability to apply advanced tools necessary for the resolution of the parts that involve technical and project management.	A15 A27 A29 A31	B1 B2 B15 B16 B23	C3 C5 C6 C8

Identifying, distinguishing and interpreting graphic codes of representation of the elements involved in an architectural project while applying the regulations and design criteria appropriate to each case.	A15 A31	B1 B2 B16 B23 B24	C1 C3 C4 C6 C8

Contents	
Topic	**Sub-topic**
INTRODUCTION	Introduction to technical project building. Definition and object. Types of projects. Development phases of the project. Normative.
PROJECT METHODOLOGY	The context and means of the project. Methodological process: analysis, synthesis, evaluation. Adequacy and consistency between proposal and objectives.
REPRESENTATION, COMUNICATION AND DOCUMENTATION OF THE PROJECT.	Memory: descriptive and constructive. Analysis of the project's graphic documents.
ZONING AND DISTRIBUTION OF SPACES.	Distributions related to its function and use. Creating spaces and environments. Studying paths and circulations. Lighting and furniture as distribution elements. Link between public and private spaces. Link between space and compatibility among them. Connection between served and service spaces.
COMMERCIAL SPACES. WORK SPACES. CASE STUDY.	Analysis, development and planning of a retail or work space.
DOMESTIC SPACE: THE HOUSE. CASE STUDY	Analysis, development and planning of a housing area.

Planning				
Methodologies / tests	**Competencies / Results**	**Teaching hours (in-person & virtual)**	**Student?s personal work hours**	**Total hours**
Guest lecture / keynote speech	A29 A31 B1 B13 B16 B23 C1 C4 C7	25	25	50
Workshop	A15 A27 A29 A31 B1 B2 B7 B13 B16 B19 B23 C1 C4 C6	25	25	50
Supervised projects	A15 A27 A31 B1 B2 B13 B15 B16 B19 B24 C1 C3 C6 C9	0	30	30
Student portfolio	A15 B2 B7 B15 B19 B23 C1 C4 C7 C8	2	6	8
Document analysis	A27 B1 B2 B7 B13 B16 B23 C2 C3 C4 C5 C6	0	10	10
Personalized attention		2	0	2
(*)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	The lecture format consits in the oral exposition modality as well as the use of audivisual means and the introduction of proposed questions to students in order to transfer knowledge and facilitate learning.
Workshop	Workshops are organized according to students autonomous learning, teaching modality oriented to the use of the acquired knowledge in class. In these workshops several methodologies/tests (expositions, simulations, deabtes, problem solving, guided practics, etc) are combined, where the students develop practical tasks about a specific topics with professor support and supervision.
Supervised projects	With this methodology student autonomous learning is promoted under professor supervision in academic as well as professional scenarios. Here the student assume a part of his/her training.

Student portfolio	It consists in data gathering from the theorical classes (lecturers) and student personal reflexions related to the proposed technical project: graphic data, images, drawings, bibliographical references, technical documentation and notes related to the development of the proposed exercises.
Document analysis	For the project realization, it will be proceeded an analysis of the documentary sources related to the proposed topic through using audiovisual and bibliographical documents, documentaries, graphic panls, photographies, models, articles, informative texts, applicable regulation, etc. Individually or in workshop groups, the available documentation is analyzed and it is extended by elaborating a synthesis of the different documental sources.

Personalized attention	
Methodologies	**Description**
Student portfolio Supervised projects Workshop	The professor combines the group monitoring with individual attention to each student to ensure proper development of the individual design process. The needs and queries related to the study of the students as well as the issues related to the course will be addressed by providing guidance, support and motivation in the process of teaching and learning.

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
Student portfolio	A15 B2 B7 B15 B19 B23 C1 C4 C7 C8	Neste apartado considérase o seguimento da recompilación de datos e a xestión de información elaborada polo alumno con relación aos traballos desenvolvidos así como a participación activa e o aproveitamento do alumnado nas prácticas e actividades que se realicen sobre os contidos da materia.	10
Supervised projects	A15 A27 A31 B1 B2 B13 B15 B16 B19 B24 C1 C3 C6 C9	Propoñerase a elaboración de traballos prácticos relacionados cos contidos da materia. Ao comezo do cuadrimestre comunicarase aos alumnos o número de traballos, as súas características e as datas de entrega correspondentes.	90

Assessment comments

This section considers the monitoring of data collection and management of information elaborated by the student related to the carried out work. Also, it is included the active participation and as active participation and the utilization of the knowledge about the contents acquired in practical tasks and activities.
The making of two technical projects throughout the semester is proposed:
First due date (march): analysis, development and planning of a commercial or work space.
Second due date (may): analysis, development and planning of a house area.
For the evaluation of the course, regular attendance is required for both lectures as interactive. The minimum percentage of attendance for each one is 80%.
The teaching of the course Technical Projects II is based on a Project Based Learning (PBL) methodology, following a continuous assessment system. Each project will be individually graded and a minimum of score of 5 out of 10 will be considered as a PASS. To pass the course, it is necessary the successful completion of all proposed work proposed as well as their adequate monitoring during workshops and teacher hours.
In addition to attendance, participation and conducting proposed projects, tests may be done in order to properly assess the degree of assimilation of the conceptual and procedural contents from the course.
To pass the course, the student has to complete and obtain a PASSING GRADE in all the projects while meeting each deadline, which will be announced at the beginning of the course.
Students who fail the course during the academic year must submit the corresponding projects on the deadline for the First Opportunity Assessment (JUNE) or, where applicable, on the deadline for Second Chance (JULY). In these cases, the student should follow the relevant instructions of the teacher responsible for the course.
IMPORTANT: The students that will meet the following criteria will be graded as FAILED:
- The student has not meet the required assistance minimum.
- The student has not turned in any of the proposed tasks.
Completion or modification of the projects after the deadline will not be accepted.

Sources of information

Basic	- GIEDION, Sigfried (2009). ESPACIO, TIEMPO Y ARQUITECTURA.. Editorial Reverte - WON, Wucius (1995). FUNDAMENTOS DEL DISEÑO BIDIMENSIONAL Y TRIDIMENSIONAL.. Editorial Gustavo Gili - MUNARI, Bruno (2016). ¿CÓMO NACEN LOS OBJETOS?: APUNTES PARA UNA METODOLOGÍA PROYECTUAL. Editorial Gustavo Gili - CHRISTOPHER JONES, John (1982). MÉTODOS DE DISEÑO.. Editorial Gustavo Gili - BENEVOLO, Leonardo (1981). DISEÑO DE LA CIUDAD - 1. La descripción del ambiente. Editorial Gustavo Gili - QUARONI, Ludovico (1980). PROYECTAR UN EDIFICIO: OCHO LECCIONES DE ARQUITECTURA. Xarait Ediciones - ALLEN, Gerard; OLIVER, Richard (1982). ARTE Y PROCESO DEL DIBUJO ARQUITECTÓNICO. Editorial Gustavo Gili - BOUDON; Philippe / POUSIN (1993). EL DIBUJO EN LA CONCEPCIÓN ARQUITECTÓNICA. Limusa Noriega editores - SAINZ, Jorge (2017). EL DIBUJO DE ARQUITECTURA. Editorial Reverte - PRENZEL, Rudolf (1982). DISEÑO Y TÉCNICA DE LA REPRESENTACIÓN EN ARQUITECTURA. Editorial Gustavo Gili - CHING, Francis D. K. (2016). MANUAL DE DIBUJO ARQUITECTÓNICO. Editorial Gustavo Gili - CHING, Francis D. K. (2010). ARQUITECTURA: FORMA, ESPACIO Y ORDEN. Editorial Gustavo Gili - CHING, Francis D. K.; JUROSZEK, Steven P. (1999). DIBUJO Y PROYECTO. Editorial Gustavo Gili - ZEVI, Bruno (2010). SABER VER LA ARQUITECTURA. Editorial Apostrofe - NEUFERT; Ernst (2013). ARTE DE PROYECTAR EN ARQUITECTURA. Editorial Gustavo Gili - SCHMITT; Heinrich; HEENE, Andreas (2009). TRATADO DE CONSTRUCCIÓN. Editorial Gustavo Gili - ALCALDE PECERO, francisco (2002). BANCO DE DETALLES ARQUITECTÓNICOS. Edición del autor - DE GRACIA, Francisco (1992). CONSTRUIR EN LO CONSTRUIDO: LA ARQUITECTURA COMO MODIFICACIÓN. Editorial Nerea - E. J. MCCORMIK (1980). ERGONOMÍA. FACTORES HUMANOS EN INGENIERÍA Y DISEÑO. Editorial Gustavo Gili - PRAT, Jaime (1988). ERGONOMÍA Y MUEBLE. Instituto Biomecánica de Valencia - PANERO, Julius; ZELNIK, Martin (2014). LAS DIMENSIONES HUMANAS EN LOS ESPACIOS INTERIORES. Editorial Gustavo Gili - MUÑOZ COSME, Alfonso (2008). EL PROYECTO DE ARQUITECTURA: CONCEPTO, PROCESO Y REPRESENTACIÓN. Editorial Reverte - NEUFERT, Peter; NEFF, Ludwig (2013). CASA, VIVIENDA, JARDÍN. Editorial Gustavo Gili - GARCÍA ERVITI, Federico (2016). COMPENDIO DE ARQUITECTURA LEGAL. DERECHO PROFESIONAL Y VALORACIONES INMOBILIARIAS. Editorial Reverté - ALLEN, Edward (1982). CÓMO FUNCIONA UN EDIFICIO. PRINCIPIOS ELEMENTALES. Editorial Gustavo Gili - VALDERRAMA, Fernando (2010). MEDICIONES Y PRESUPUESTOS. Editorial Reverté - TUNSTALL, Gavin (2009). LA GESTIÓN DEL PROCESO DE EDIFICACIÓN. DEL CROQUIS A LA EJECUCIÓN. Editorial Reverté

Complementary	- URBAN BROTONS, Pascual (2016). CONSTRUCCIÓN DE ESTRUCTURAS DE HORMIGÓN ARMADO ADAPTADO A LAS INSTRUCCIONES EHE-08, NCSE-02 Y CTE. Editorial Club Universitario - URBAN BROTONS, Pascual (2008). CONSTRUCCION DE ESTRUCTURAS HORMIGON ARMADO: DETALLES CONSTRUCTIVOS Y PERSPECTIVAS. Editorial Club Universitario - URBAN BROTONS, Pascual (2012). CONSTRUCCIÓN DE ESTRUCTURAS DE MADERA. Editorial Club Universitario - URBAN BROTONS, Pascual (2009). CONSTRUCCIÓN DE ESTRUCTURAS METÁLICAS. Editorial Club Universitario - LÓPEZ CAÑERO, Juan (2016). REDES DE EVACUACIÓN. Editorial paraninfo - LÓPEZ CAÑERO, Juan (2016). FONTANERÍA Y CALEFACCIÓN BÁSICA. Editorial paraninfo - VV.AA. (2015). INSTALACIONES HIDRÁULICAS EN EL DISEÑO DE EDIFICIOS. Ediciones Asimétricas - VV.AA. (2016). INSTALACIONES ELÉCTRICAS EN EL DISEÑO DE EDIFICIOS. Ediciones Asimétricas - VV.AA. (2016). SEGURIDAD EN CASO DE INCENDIO PARA DISEÑADORES DE EDIFICIOS. Ediciones Asimétricas - VV.AA. (2017). INSTALACIONES DE ILUMINACIÓN EN EL DISEÑO DE EDIFICIOS. Ediciones Asimétricas - VV.AA. (2017). Instalaciones de climatización y ventilación en el diseño de edificios. Ediciones Asimétricas - VV.AA. (2018). Ahorro de energía en el diseño de edificios. Ediciones Asimétricas

Recommendations
Subjects that it is recommended to have taken before
Descriptive Geometry/670G01004 Architectural Graphic Expression I/670G01008 Construction I/670G01009 Construction II/670G01011 Architectural Graphic Expression II/670G01013 Facilities I/670G01014 Construction III/670G01017 Geometry of Illustrations/670G01018 Structures I/670G01019 Topography/670G01020 Technical Projects I/670G01023 Facilities II/670G01024 Structures II/670G01025
Subjects that are recommended to be taken simultaneously
Construction IV/670G01022 Measurements, Budgets and Economic Control/670G01030
Subjects that continue the syllabus
Final Dissertation/670G01036
Other comments
NOTE: It is recommended the knowledge of Computer Aided Design programs (AutoCAD, ArchiCAD, Revit, SketchUp, etc.) as well as office automation software like word processing, spreadsheets, PDFs management, imaging treatment, presentations, etc..Also, the use of a laptop with Internet access during workshops can be useful to the student.