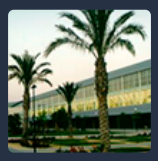

BASIC BUILDING SYSTEMS

Universitat d'Alacant
Universidad de Alicante

35526 - BASIC BUILDING SYSTEMS (2024-25)

General

Code: 35526
Lecturer responsible:
SAURA GOMEZ, PASCUAL

Credits ECTS:	**6,00**
Theoretical credits:	0,00
Practical credits:	2,40
Distance-base hours:	3,60

Departments involved

- **Dept:** ARCHITECTURAL CONSTRUCTIONS
  Area: ARCHITECTURAL CONSTRUCTIONS
  Theoretical credits: 0
  Practical credits: 2,4
  This Dept. is responsible for the course.
  This Dept. is responsible for the final mark record.

Study programmes where this course is taught

- DEGREE IN FUNDAMENTALS OF ARCHITECTURE
  Course type: COMPULSORY (Year: 3)

Competencies and objectives

Course context for academic year 2024-25

Basic Constructive Systems develops the constructive knowledge already taught at the subjects ICT (Introduction to the Technology) and MCT (Constructive Materials for the Building Systems). The students will be able to manage the knowledge and the abilities needed for solving more difficult constructive solutions. These knowledge and abilities will be widened at the subject Advanced Constructive Systems and Singular Constructive System for completing the overall contents about construction in the study plan of Architecture.

The Basic Constructive Systems suppose a level more in the knowledge of the Technology Introduction that is imparted in First Course with the purpose of acquiring and continued form, in the different courses, the necessary skills to incorporate the constructive systems, in this case, in a basic way, in the Construction of the Architectural Project.

Course content (verified by ANECA in official undergraduate and Master's degrees) for academic year {0}

General Competences (CG)

- **CG.4 :** Comprendre els problemes de la concepció estructural, de construcció i d'enginyeria vinculats als projectes d'edificis, a més de les tècniques de resolució d'aquests.
- **CG.5 :** Conèixer els problemes físics, les diverses tecnologies i la funció dels edificis, per tal de dotar-los de condicions internes de comoditat i protecció dels factors climàtics.
- **CG.6 :** Conèixer les indústries, organitzacions, normatives i procediments per a plasmar els projectes en edificis i integrar els plànols en la planificació.
- **CG.7 :** Comprendre les relacions entre les persones i els edificis i entre aquests i l'entorn, a més de la necessitat de relacionar els edificis i els espais situats entre aquests en funció de les necessitats i de l'escala humanes.

Skills/Skills

- **CB 1 :** Que els estudiants hagen demostrat posseir i comprendre coneixements en una àrea d'estudi que parteix de la base de l'educació secundària general i se sol trobar a un nivell que, si bé es basa en llibres de text avançats, inclou també alguns aspectes que impliquen coneixements procedents de l'avantguarda del seu camp d'estudi.
- **CB 2 :** Que els estudiants sàpien aplicar els coneixements al seu treball o vocació d'una forma professional i posseïsquen les competències que solen demostrar-se per mitjà de l'elaboració i defensa d'arguments i la resolució de problemes dins de la seua àrea d'estudi.
- **CB 3 :** Que els estudiants tinguen la capacitat de reunir i interpretar dades rellevants (normalment dins de la seua àrea d'estudi) per a emetre judicis que incloguen una reflexió sobre temes rellevants d'índole social, científica o ètica.
- **CB 4 :** Que els estudiants puguen transmetre informació, idees, problemes i solucions a un públic especialitzat o no especialitzat.
- **CB 5 :** Que els estudiants hagen desenvolupat les habilitats d'aprenentatge necessàries per a emprendre estudis posteriors amb un alt grau d'autonomia.

Inherent transversal competences:>>Cognitive Instrumental

- **CT.10 :** Habilitat per a l'anàlisi i la síntesi. Habilitat per a separar les parts d'un procés d'indagació i habilitat per a recompondre el tot a partir d'unes parts.
- **CT.11 :** Habilitat per a aplicar els coneixements a la pràctica. Habilitat de tecnificar, en processos aplicables a la realitat, qualsevol tipus de discurs conceptual.

UA Basic Transversal Competences

- **CT.4 :** Capacitat de treball en grup. Capacitat d'èxit en treballs col·lectius i de grup, repartint treball i assumint rols.
- **CT.7 :** Capacitat d'adaptar-se a nous models tecnològics professionals. Capacitat d'assimilar i adaptar-se a l'evolució contínua de la tecnologia en l'àmbit de desenvolupament professional.

Inherent transversal competences:>>Methodological Instrumental

- **CT.18 :** Habilitat per a prendre decisions. Capacitat per a entendre la complexitat dels contextos en què produïm transformacions i prendre-hi decisions creatives de manera responsable.
- **CT.20 :** Habilitat per a integrar els diversos sabers i disciplines. Capacitat d'entendre la dimensió múltiple dels problemes en què s'intervé i habilitat per a seleccionar i incorporar els arguments més eficaços.

Inherent transversal Competences:>>Social Interpersonal	▪ **CT.28 :** Habilitat per a dissenyar i gestionar propostes que incorporen responsabilitat social i mediambiental. Capacitat per a entendre el compromís amb l'entorn social i físic que impliquen els processos de transformació d'aquest.
Specific Competences:>>Technical Block	▪ **CE.12T :** Aptitud per a concebre, calcular, dissenyar, integrar en edificis i conjunts urbans i executar solucions de fonamentació. ▪ **CE.13 :** Aptitud per a aplicar les normes tècniques i constructives. ▪ **CE.15 :** Aptitud per a conservar l'obra acabada. ▪ **CE.17T :** Capacitat per a concebre, calcular, dissenyar, integrar en edificis i conjunts urbans i executar estructures d'edificació. ▪ **CE.18T :** Capacitat per a concebre, calcular, dissenyar, integrar en edificis i conjunts urbans i executar sistemes de divisió interior, fusteria, escales i altra obra acabada. ▪ **CE.19T :** Capacitat per a concebre, calcular, dissenyar, integrar en edificis i conjunts urbans i executar sistemes de tancament, coberta i altra obra gruixuda. ▪ **CE.21 :** Capacitat per a conservar l'obra gruixuda. ▪ **CE.25 :** Coneixement adequat dels sistemes constructius convencionals i la seua patologia.
Specific Competences:>>Project Block	▪ **CE.35T :** Aptitud per a resoldre el condicionament ambiental passiu, incloent-hi l'aïllament tèrmic i acústic, el control climàtic, el rendiment energètic i la il·luminació natural. ▪ **CE.38T :** Capacitat per a concebre, practicar i desenvolupar projectes urbans.

Exclusive skill taught in this course

No data

Learning outcomes (Training objectives)

No data

Specific objectives stated by the academic staff for academic year 2024-25

The objectives of the Basic Constructive Systems in the Degree of Fundamentals of Architecture are the DESIGN and DEFINITION of constructive solutions including the CALCULATION, CONCEPTION, INTEGRATION, PRACTICE AND DEVELOPMENT OF THE EXECUTION PROJECT in everything related to the Basic Constructive Systems with the purpose of mastering those technological aspects of construction (which will be completed with the other subjects of the Construction Area) to materialize the idea of the Architectural Project.

- The student must identify the constructive invariants needed for developing constructive solutions with a basic complexity level and connecting the knowledge of the different techniques, industries and systems with the definition of the constructive solution that develops the process.
- Identify the common singular sections for the different constructive techniques considered from the basic construction. The student must acquire the constructive knowledge proposed by the subject incorporating the human scale, and be able to master the dimensions, proportions, idea ... of the constructive element designed and its influence on the space definition.
- Develop constructive solutions by using the current building regulations.
- Definition and use of the different constructive materials with their advantages and disadvantages with a basic complexity level. The student has to detect and solve errors in basic constructive proposals, in such a way that the student acquires a criterion and knowledge in the diagnosis and therapeutics of possible damages in the constructive systems and that should be implemented with advanced and singular systems.
- Define and show constructive solutions with enough graphical level. That it develops the necessary skill to interpret and graphically communicate the constructive proposals, in addition to relating them to each other and to the general idea of ¿¿the architectural project, as an indispensable tool for its development.
- The student is able to use the technical vocabulary related to architectural construction and transmit appropriately to the other agents involved in the construction process.

Content and bibliography

Content for academic year 2024-25

INTRODUCTION.- THE MATERIALIZATION OF THE IDEA. CONSTRUCTION SYSTEMS.

The project idea. The materialization. Construction
Water and air (HS) - Thermal energy (HE) - Acoustic energy (HR) - Movements and structure (SE) - Fire (SI) - Utilization, accessibility, use (SUA).

ROOFING

Qb1.1.- ROOFING (I). Overview. Basic requirements: the CTE. Waterproof Materials. Functional and typological roof analysis: ventilated and non-ventilated. Walkable and non-walkable. Traditional and Inverted. Construction of the different layers.
Qb1.2.- ROOFING (II). Components. The waterproof layer: bituminous. PVC. EPDM.

Qb2.1.- FLAT ROOFS. Singular points. Ridges and valleys. Dilatation joints. Parapets. Drains and gutters. Doors. Anchors. Pathologies.

Qb3.- SLOPPED ROOFS. Types of roofs. Ceramic tiles roofs. Materials. Finishes. Construction of the different layers. Singular points: ridge-pole. Ridges and valleys. Eaves and gutters. Pathologies.

FAÇADES

Fa1.1.- The vertical closures. Analysis of types and its functions: structural, hygrothermal and external execution. STRUCTURAL FUNCTION: bearing wall and non-bearing wall. Materials: Ceramic, reinforced ceramic, clinker, concrete, translucent glass and others. HYGRO-THERMAL: cavity: ventilated and non-ventilated. STRUCTURAL LAYOUT: supported, semi-supported and free. WEIGHT: light and heavy. Pathologies.
Fa1.2.- The construction of the vertical closure. Basic requirements: the CTE. Description of the CTE: the DB's HE1, HS 1 and 3, HR, SUA. Conceptual definitions: Transmittance and thermal resistance, thermal and acoustic bridges. Condensations. Waterproofing. Study and development of the degree of waterproofing. Analysis of the thermal bridges. Limits on the use and accessibility.

Fa2.- Constructive Analysis of the multi-layer components: Ceramic main layer, intermediate layer and interior layer. Materials and execution conditions. Supporting conditions. Metal anchors. Constructive solutions. Pathologies.
Other ceramic fabrics: Free exterior layer. Advantages and disadvantages. Supporting conditions. Metal anchors. The reinforced ceramic fabric. Components. The ceramic block. Analysis of singular points. Constructive solutions.

Fa3.- Exterior window frame: Wood frames. Aluminium frames. Slats and brise-soleil. Glazing and shades. Basic requirements: classification and European regulations. Installation and anchors.

Fa4.1.- THE VOID (I). Overview. Parts of the void. Sill and jambs. Materials. Construction. Constructive solutions. Pathologies.
FA4.2.- THE VOID (II). Overview. Parts of the void. Lintel: Definition. Typologies: supports and hangings. Loads analysis. Materials. Construction. Constructive solutions.
Shading systems: The shade registration point [RgP]. Components. Thermal and acoustic analyses. Construction. Constructive solutions. Other systems: Slats and brise-soleil.

PARTITIONS

Prt. PATITIONS. - Function and typologies of walls. General characteristics. Ceramic walls. Interior frames. Functional and constructive requirements: doors and wardrobes. Gypsum false ceilings [FT]: constructive process. Advantages and disadvantages.

FINISHES

Rv1 HORIZONTAL FINISHES – Overview. CTE basic requirements. The DB-HR.
Rv1.1.- CONTINUOUS HORIZONTAL FINISHES. Rigids and flexibles. Exteriors and interiors: slabs, resins, concrete, cork, wood and carpets. Constructive requirements. Building layout.
Rv1.2.- DISCONTINUOS HORIZONTAL FINISHES. Interior floors. Typologies: ceramic floors, natural and artificial stone. Construction of interior floors .

Rv2 VERTICAL FINISHES. - Overview. CTE Basic requirements. The DB-HR.
Rv2.1.- VERTICAL CONSTINUOUS FINISHES. Exterior and interior: gypsum plaster, projected gypsum, paints, cement mortars. Constructive requirements. Building layout.
Rv2.2.- VERTICAL DISCONTINUOUS FINISHES. Exterior and interior: ceramic tiles, Stone and Wood. Constructive requirements. Building layout.

THE BUILDING AND THE GROUND

SI1 THE BUILDING AND THE GROUND (I)
SL1- Basic requirements – CTE. CTE requirements CTE:DB-HS1. Degree of waterproof.
Slab and foundation slab. Basic requirements and performance. Constructive definition. The ventilated slab. Humidity and ventilation. Constructive definition. Open slab. The thermal closure. Constructive definition.

SI2 THE BUILDING AND THE GROUND (II)
SI2.1.-Containing walls. Overview. Protection against humidity. Waterproof and drainage. Flexorresistance wall, gravity wall and screen wall. Constructive definition.
SI2.2.- Hydrostatic and non-hydrostatic pressure. Constructive solutions. Analysis depending on the water position: no water, capillarity, perimetrical water, phreatic level. Meeting point wall – foundation.

EVALUABLE PRACTICES. Throughout the course four practices work will be developed according to the timetible that will be provided at the beginning of the course and which will be developed in a practical way the contents acquired in the different thematic units. The aim is to develop the constructive solution of a specific approach to a project proposed by the teacher: 1. COVERED; 2. FACADES AND PARTITIONS; 3. ENCOUNTER WITH THE GROUND; 4. TOTAL SECTION

The first three practices will be carried out individually and organizated in groups of 3 students and practice 4 will be individual in the simulation mode of the practical exercise of the exam.

COURSE WORK (TDC). A course work is individual and it has been developed in groups of 3 students, in this way, each of them will develop a building, wich would have chosen to share with the other members of the group. They must work out the knowledge acquired in the Basic Constructive Systems that defines a Building Project and its relationship with the urban environment (Urbanization). You must better define all the elements and constructive solutions according to a minimum that will be detailed by the teacher at the beginning of the course and the deliveries according to the schedule to be defined.

CONFERENCE / TALK about the subject topics, as part of the teaching program and notice in advance. It will be taught by the company SIKA or another and attendance will be mandatory.

WORK VISIT: It will also be part of the teaching programme. The date and place of the visit will be published in advance and agreement with the possibilities of the works available by the faculty. The attendance will be mandatory.

ERASMUS GROUP. The contents of the subject will be taught to the Erasmus group in accordance with the conditions of the students, carrying out a Course Work (TDC) that may have continuity with work developed in their University of origin, always ensuring the acquisition of the competences reflected in this teaching guide.

Related links

No data

Bibliography

Código técnico de la edificación : legislación y normas UNE	
Author(s):	Asociación Española de Normalización y Certificación
Issue:	Madrid : AENOR, 2012;
ISBN:	978-84-8143-777-5
Category:	Básico

Tecnología de la construcción básica	
Author(s):	Ferre de Merlo, Luis
Issue:	Alicante : Editorial Club Universitario, 2003;
ISBN:	84-8454-270-X
Category:	Básico

Tiempos de la arquitectura : pensar, sentir, documentar	
Author(s):	Allepuz Pedreño, Ángel
Issue:	Madrid : Munilla Lería, 2019;
ISBN:	978-84-949196-2-6
Category:	Complementario

La arquitectura como ciencia : principios de proyecto y tipos de edificio	
Author(s):	Araujo, Ramón
Issue:	Barcelona : Reverté, 2019;
ISBN:	978-84-291-3105-5
Category:	Básico

Tratado de construcción	
Author(s):	Schmitt, H
Issue:	- : Gustavo Gili, [2009];
ISBN:	9788425222580

Category:	Básico

Tectónica : monografías de arquitectura, tecnología y construcción.	
Author(s):	-
Issue:	Madrid : ATC, 0;
ISBN:	1136-0062
Category:	Complementario

Banco de detalles arquitectónicos	
Author(s):	ALCALDE PECERO, Francisco
Issue:	Sevilla : Marsay, 2003;
ISBN:	84-607-3860-4
Category:	Básico

Atlas de detalles constructivos: rehabilitación	
Author(s):	BEINHAUER, Peter
Issue:	Barcelona : Gustavo Gili, 2013;
ISBN:	978-84-252-2470-6
Category:	Básico

Atlas de detalles constructivos: con más de 400 ejemplos	
Author(s):	BEINHAUER, Peter
Issue:	Barcelona : Gustavo Gili, 2012;
ISBN:	978-84-252-2472-0
Category:	Básico

Manual de detalles constructivos en obras de hormigón armado : edificación, obras públicas	
Author(s):	CALAVERA RUIZ, José
Issue:	[s.l.] : INTEMAC, 1993;
ISBN:	84-88764-00-6

Category:	Básico

Diccionario de arquitectura y construcción	
Author(s):	CAMINO OLEA, Mª Soledad
Issue:	Madrid : Munilla-Lería, 2001;
ISBN:	978-84-89150-44-7
Category:	Básico

Diccionario visual de arquitectura	
Author(s):	Ching, Francis D.K.
Issue:	Barcelona [etc.] : Gustavo Gili, 2005;
ISBN:	84-252-2020-3
Category:	Básico

Detalles constructivos de la arquitectura doméstica contemporánea	
Author(s):	McLEOD, Virginia
Issue:	Barcelona : Gustavo Gili, 2007;
ISBN:	978-84-252-2124-8
Category:	Básico

Tratado de construcción : sistemas	
Author(s):	MONJÓ CARRIÓ, Juan [et al.]
Issue:	Madrid : Munilla - Leria, 2001;
ISBN:	978-84-89150-45-4
Category:	Básico

El detalle constructivo en Arquitectura	
Author(s):	MONJO CARRIÓ, Juan; LACAMBRA MONTERO, Joaquín
Issue:	Madrid : Munilla-Lería, 2007;
ISBN:	978-84-89150-75-1

Category:	Básico

Arte de proyectar en arquitectura : generalidades, normas, directrices sobre disposición, construcción, diseño, superficies requeridas, relaciones ...

Author(s):	NEUFERT, Ernst ; KISTER, Johannes
Issue:	Barcelona : Gustavo Gili, 2013;
ISBN:	978-84-252-2474-4
Category:	Básico

Aprendiendo a construir la arquitectura

Author(s):	Palaia, Liliana
Issue:	Valencia : UPV, 2010;
ISBN:	978-84-8363-244-4
Category:	Básico

Vocabulario básico de construcción arquitectónica

Author(s):	PALAIA PÉREZ, Liliana (coord.); ÁLVAREZ GONZÁLEZ, M.A. ... [et al.]
Issue:	Valencia : Universidad Politécnica de Valencia, 2005;
ISBN:	48-9705-884-4
Category:	Básico

Vocabulario básico de arquitectura

Author(s):	PANIAGUA SOTO, José Ramón
Issue:	Madrid : Cátedra, 1993;
ISBN:	978-84-376-0134-2
Category:	Básico

Construcción de estructuras : hormigón armado : adaptado a las instrucciones EHE, EFHE y NCSE-02

Author(s):	Urbán Brotóns, Pascual
Issue:	San Vicente del Raspeig : Club Universitario, 2009;

ISBN:	84-8454-995-X
Category:	Básico

	Razón y ser de los tipos estructurales
Author(s):	TORROJA MIRET, Eduardo
Issue:	Madrid : Colegio de Ingenieros de Caminos, Canales y Puertos, 2007;
ISBN:	978-84-380-0370-1
Category:	Básico

Assessment

Assessment procedures and criteria 2024-25

In order to apply for a CONTINUOUS EVALUATION the student must accomplish with the following conditions:
1. It is needed a minimum of 80% of the assistance class. This condition is exclusive but not considered for final grade.
2. The student must deliver at least 80% of the practical exercises with enough level (there are four evaluable practices). The average mark of these evaluable exercises must be over 4 points. The practical exercises will be 20% of the subject grade. This content can be retrieved in the extraordinary call.

This assessment instrumet allow the acquisition of the competences: Basic and General: CG4 / CG5 / CG6 / CG7 / CB1 / CB2 / CB3 / CB4 / CB5. Transversal: CT-10 CT-11 CT-4 CT-7 CT-18 CT-20 CT-28. Specific: CE-12T CE-13 CE-15 CE-17T CE-18T CE-19T CE-21 CE-25 CE-35T CE-38T.

3. The student must obtain at least 4 points in the course project (TDC). The TDC will be 30% of the final subject grade. The student must submit three partial deliveries and the final delivery at the end of the course,which will be graded. This content can be retrieved in the extraordinary call.

The Course work performance allows the competences: Basic and General: CG4 / CG5 / CG6 / CG7 / CB1 / CB2 / CB3 / CB4 / CB5. Transversal: CT-10 CT-11 CT-4 CT-7 CT-18 CT-20 CT-28. Specific: CE-12T CE-13 CE-15 CE-17T CE-18T CE-19T CE-21 CE-25 CE-35T CE-38T

4. The student must obtain at least 4 points at the final exam. The exam will be 50% of the final subject grade. The exam will have a theoretical part and a practical part. This content can be retrieved in the extraordinary call.

The sentences of the final exam allow the acquisition of the competences: Basic and General: CG4 / CG5 / CG6 / CG7 / CB1 / CB2 / CB3 / CB4 / CB5. Transversal: CT-10 CT-11 CT-4 CT-7 CT-18 CT-20 CT-28. Specific: CE-12T CE-13 CE-15 CE-17T CE-18T CE-19T CE-21 CE-25 CE-35T CE-38T

-If the students, according to the current regulations, are under one of the cases that allow a specific evaluation system (continous evaluation), it must be necessary to apply for this situation within the first 30 days of the course.

* If it is necessary or the health authorities require it, the Evaluable Practices and the Course Working must be delivered by UA-cloud, and the exam will be on a Virtual Class.

Description	Criteria	Type	Weighting system
Practical exercises	Related to the theoretical contents, there will be a practical exercise every week to be solved in class. Four of these practical exercises will be part of the grade. This content can be retrieved for the extraordinary call with an abstract evaluable practice.	ACTIVITIES OF EVALUATION DURING THE SEMESTER	20
Course project	It will consist in the develpment of a real case study. It will be done individual. Contents will be related to the contents of the subject. There will be four deliveries, one after roofing, another after facades, after coatings and one at the end of the course wich will be evaluated as a final grade work. This content can be retireved at the extraordinary call.	ACTIVITIES OF EVALUATION DURING THE SEMESTER	30
Final exam	It will consist on theoretical and practical questions. In order to pass the subject it is mandatory to do the exam and obtaining at least 4 points over 10. This content may be retrieved at the extraordinary call.	FINAL TEST	50

Official exam dates for academic year 2024-25

Exam session	Date	Time	Group - Classroom(s) allocated	Comments
(C2) Periodo ordinario para asignaturas de primer semestre	16/01/2025			Teoría
(C4) Pruebas extraordinarias para asignaturas de grado y máster	11/07/2025			Teoría

Academic staff

SAURA GOMEZ, PASCUAL
Lecturer responsible
TALLER: Groups: 1 , 2 , 3

PEREZ CARRAMIÑANA, CARLOS

TALLER: Groups: 2 , 3

Groups

TALLER

Group	Semester	Morning or afternoon session	Language	No. of enrolled students	
Gr. 1 (TALLER) : 1 (ARA)	1S	Morning	English	21	▪ Allowed DEGREE IN FUNDAMENTALS OF ARCHITECTURE
Gr. 2 (TALLER) : 2	1S	Morning	Spanish	36	
Gr. 3 (TALLER) : 3	1S	Afternoon	Spanish	36	

Timetables

TALLER

Group	Start date	End date	Day	Start time	End time	Lecture room
1	09/09/2024	20/12/2024	JUE	09:00	13:00	0039PB003
2	09/09/2024	20/12/2024	MAR	09:00	13:00	0039PS014
3	09/09/2024	20/12/2024	JUE	17:00	19:00	0039PB003
3	09/09/2024	20/12/2024	JUE	15:00	17:00	0039PB003