



DEGREE CURRICULUM
BUILDING SERVICES 1

Coordination: PIQUE PALACIN, JOSE

Academic year 2023-24

Subject's general information

Subject name	BUILDING SERVICES 1			
Code	101406			
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Architectural Technology and Building Construction	1	COMMON/CORE	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRAULA	TEORIA	
	Number of credits	3	3	
	Number of groups	1	1	
Coordination	PIQUE PALACIN, JOSE			
Department	INDUSTRIAL AND BUILDING ENGINEERING			
Teaching load distribution between lectures and independent student work	40% face-to-face, 60% autonomous work. See the section "Development plan for the subject"			
Important information on data processing	Consult this link for more information.			
Language	Catalan			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
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Subject's extra information

Subject of practical nature that requires continuous work throughout the semester. It advises to work the concepts and amplitude of thought. Develop the regulatory scope and calculation of facilities.

Start the basic facilities of a building that are complemented in the second year, in this course works the water supply, sanitation, electricity and telecommunications.

The information of the subject is posted in the Virtual Campus space.

Subject that is taken in the 2nd semester of the 1st year of teaching. It belongs to the module "Compulsory Basic Training Materials".

SAFETY AND HEALTH RULES FOR VISITS

It is **COMPULSORY** that the students bring the following elements of individual protection (EPI) in the work visit .

- **Security helmet.** Acquire in ÚDELS, shop of the UdL, C / Jaume II, 67 bajos. Center of Cultures and Cross-Border Cooperation. <https://www.publicacions.udl.cat/en/product-category/udels-udl-products/>
- **Reflective vest.** Acquire in ÚDELS, shop of the UdL, C / Jaume II, 67 bajos. Center of Cultures and Cross-Border Cooperation. <https://www.publicacions.udl.cat/en/product-category/udels-udl-products/>
- **Safety footwear.** Acquire in any supplier of personal protective equipment, and must meet the requirements S1 + P (tip and anti-perforation template) in accordance with the provisions of EN ISO 20345.

Not bringing the EPI's described or not fulfilling the norms of general security that are detailed below imply that the student can not access the work or have to leave the same. The no realisation of the practices for this reason imply the **consequences in the evaluation** of the subject that are described in this course guide.

GENERAL NORMS OF SECURITY IN THE EXIT TO WORK

- Keep the visiting place clean and orderly.
- In the visit you can not go with shorts or short skirts.
- Wear safety shoes.
- Do not eat or drink inside the work.
- Smoking is prohibited inside the work.
- Wash your hands whenever you have contact with a chemical and before leaving the work.
- Follow the instructions of the teacher and the technicians of the work and consult any doubt about safety.

For further information, you can check the following document of the *Servei de Prevenció de Riscos Laborals de la UdL*: <http://www.prevencio.udl.cat/export/sites/Sprl/ca/.galleries/Integracio-a-la-Docencia/manual-acollida-alumnes-udl.pdf>

SPECIFIC SAFETY RULES ON THE EXIT TO WORK

- Previously, the responsible professor will contact the Safety Coordinator of the work, who will establish the specific conditions of the visit. These instructions, which will inform the teacher before the visit, must be assumed and fulfilled by all attendees.
- The visit will be made at all times accompanied by the technicians of the work and the teacher and in no time the established route will be abandoned.
- Always look where you walk. In case of stop at any point of the work, take into account the passage of trucks, trucks, cranes ...
- Pay attention to preventive signage

Learning objectives

- Be able to imagine the installation and its distribution, make sketches and their corresponding plans
- Apply the regulations in the facilities and the different verification processes before they are put into service
- Know the distribution and elements that make up the different facilities
- Describe the general parameters of the affected facilities.
- Relate the facilities of first and second year of teaching.
- Calculate facilities in a basic way.
- Analyze the results obtained and their magnitudes. Logical and coherent results.
- Promote group work (as in a professional office) and communication.
- Discover pros and cons in the design of the facilities.
- Know the field work of different professionals (technical architects ...) in the visit of a construction site.

Competences

Transversal competences EPS

- EPS5: Capacity of abstraction and of critical, logical and mathematical thinking.

Specific competences according to ORDER ECI/3855/2007:

- GEE5: Knowledge of the theoretical basics and basic principles applied to construction, to fluid mechanics, to hydraulics, to electricity and electromagnetism, calorimetry and hygrothermia, and to acoustics.

Subject contents

Chapter 1: Water supply and distribution

- Water connection
- General installation
- Inner installation
- Materials
- Design and assembly
- Domestic hot water installation

Chapter 2: Sanitation

- Facilities evacuation tents
- Facilities structure
- Installation of inner drainage systems
- Materials
- Design and assembly of facilities
- Tests and regulatory compliance

Chapter 3: Electricity

- Introduction
- Connection installation
- Link installations
- Indoor installations
- Installation systems
- Protections

Chapter 4: Common infrastructures of telecommunication

- Vocabulary – elements
- Need of the CITs and field of application
- CITs elements
- Needs of the installation
- Diagrams of canalisations
- Regulation

Methodology

The methodological axes of the subject are developed as follows:

- **Master classes P1.** Explanations and presentations in Power Point, carried out in face-to-face teaching format.
- **Master classes P2.** Explanations and presentations in Power Point, carried out in face-to-face teaching format.
- **Problems Q1.** Exercises will be solved in class during these practical sessions.
- **Problems Q2.** Exercises will be solved in class during these practical sessions.

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- **Team work.** During the course of the subject, students will have to carry out group work, which will be directed by the teacher so that the minimum content levels are achieved. The defense of the work will be carried out.
- **Test.** Two written tests are carried out, theory (test type) and practice (exercise resolution/s), during the semester. There is also a final recovery test.

Development plan

Week	Feat	Face-to-face hours	Hours work autonomous
1	Presentation subject	2	-
2	T1. Drinkable water supply (theory)	2	3
2	T1. Drinkable water supply (theory-exercises)	2	3
3	T1. Drinkable water supply (theory)	2	3
3	T1. Drinkable water supply (exercises)	2	3
4	T1. Drinkable water supply (theory)	2	3
4	T1. Drinkable water supply (exercises)	2	3
5	T1. Drinkable water supply (theory)	2	3
5	T1. Drinkable water supply (exercises)	2	3
6	T2. Sanitation (Theory)	2	3
6	T2. Sanitation (Theory - exercises)	2	3
7	T2. Sanitation (Theory)	2	3
7	T2. Sanitation (Exercises)	2	3
8	Presentations works in class: water supply and sanitation.	4	12
9	First evaluation	3	
10	T3. Electricity (theory)	2	3
10	T3. Electricity (theory - exercises)	2	3
11	T3. Electricity (theory)	2	3
11	T3. Electricity (exercises)	2	3
12	It visits Installations	4	6
13	T3. Electricity (theory)	2	3
13	T3. Electricity (exercises)	2	3
14	T4. ICT (Theory)	4	6
15	Presentations works in class: electricity and ICT.	4	12
16-17	Second evaluation	3	
19	Recoveries	3	

Evaluation

CONTINUOUS assessment

Evaluation blocks	%	Activities	%	Observations
Proof of Theory 1 - PT1	15%	PrProof of Theory 1 - PT1	15%	To take PT1 into account and consider the average, a minimum score of 4 (out of 10)
Proof of exercises - EX1	20%	Proof of exercises - EX1	20%	To take EX1 into account and consider the average, a minimum score of 4 (out of 10)
Proof of Theory 2 - PT2	15%	Proof of Theory 2 - PT2	15%	To take PT2 into account and consider the average, a minimum score of 4 (out of 10)
Proof of exercises - EX2	20%	Proof of exercises - EX2	20%	To take EX2 into account and consider the average, a minimum score of 4 (out of 10))
Work-T Site visit-V	30%	Work-T Site visit-V	25% 5%	Minimum note of the blog a 5 (out of 10) Each of the four sections of work (water, sanitation, electricity and telecommunications) has a 5% weight. The presentation weighs 2.5% and the answers to questions from their classmates another 2.5%. The visit tea weighs 5%

Notes:

- Not reaching the minimum grade of 4 in any of the four blocks PT1 - EX1 - PT2 - EX2 and not reaching the minimum grade of 5 in blocks T and V implies failing the subject.
- In the rest of the situations, the final mark for the subject comes from the note with its percentage assessment of each of the blocks and this overall, it is necessary, to pass the subject, that it be higher than 5.
 - The particular case that the average of the grades is greater than 5, with any of the blocks without the minimum grade, implies a grade of 4.9 (suspended).
 - In the event that the average of the grades is not greater than 5, with any of the blocks without the minimum grade, the grade will be the lowest of the grade of the blocks.
- All activities are recoverable.

ALTERNATIVE Assessment

- Written test of Theory and Exercises, similar to those of continuous evaluation with a weight of 70% (with minimum marks of 4 in each one of the blocks) of the final mark and work of the 4 sections with 30% of the final mark (with a minimum grade of 5).
 - The above notes apply.

Bibliography

Recommended bibliography

- Reglamento Electrotécnico de Baja Tensión e Instrucciones técnicas complementarias. Real Decreto 842/2002, de 18 de Septiembre y guías técnicas de aplicación.
 - Descarga libre (<https://industria.gob.es/Calidad-Industrial/seguridadindustrial/instalacionesindustriales/baja-tension/Paginas/reglamento-2002.aspx>)
- El Código Técnico de la Edificación (CTE) es el marco normativo que establece las exigencias que deben cumplir los edificios en relación con los requisitos básicos de seguridad y habitabilidad establecidos en la Ley 38/1999 de 5 de noviembre, de Ordenación de la Edificación (LOE). REAL DECRETO 314/2006, de 17 de marzo, por el que se aprueba el Código Técnico de la Edificación.
 - CTE-DB-HS tiene por objeto establecer reglas y procedimientos que permiten cumplir las exigencias básicas de salubridad.
 - CTE-DB-HS4 Suministro de agua (fontanería)
 - CTE-DB-HS5 Evacuación de aguas (saneamiento)
 - Descarga libre (<https://www.codigotecnico.org/index.php/menu-salubridad.html>)
- Reglamento regulador de las infraestructuras comunes de telecomunicaciones para el acceso a los servicios de telecomunicación en el interior de las edificaciones. Real Decreto 346/2011 de 11 de Marzo y Orden que desarrolla el Reglamento Orden ITC/1644/2011, de 10 de junio.
 - Descarga libre (<https://avancedigital.gob.es/Infraestructuras/Paginas/normativa-sentencias.aspx>)
- **ICT** de Jose Manuel Huidobro Moya (Autor) y Pedro Pastor Lozano (Autor). Editorial: Creaciones Copyright. Idioma: Castellano. ISBN: 9788415270393. Año de edición: 2017
- Cuaderno de diseño de instalaciones [Notebook of the Design of Building Services]. César Martín Gómez (Autor), Patricia Lizaso Pimentel (Autor) y Liemi Virto Donazar (Autor). Colección: Apuntes. Materia: Arquitectura. Idioma: Castellano. EAN 9788431334246. ISBN 978-84-313-3424-6. Depósito legal NA 2352-2019. Fecha publicación 03-10-2019
- Instalaciones hidráulicas en el diseño de edificios - VV. AA. [Edición Bilingüe]. Roberto Alonso Gonzalez Lezcano (Autor), Juan Bautista Echeverría Trueba (Autor) y Caludia Morollón Ronda (Autor). Editor: Ediciones Asimétricas. Edición: 1 (15 de septiembre de 2015). Colección: ARQUITECTURA. Idioma: Español, Inglés. ISBN-10: 8494430041. ISBN-13: 978-8494430046
- Instalaciones eléctricas en el diseño de edificios - VV. AA. [Edición Bilingüe] Roberto Alonso Gonzalez Lezcano (Autor), José Manuel del Río Campos (Autor), Félix Aramburu Gaviola (Autor) y Sonia Cesteros Garcia (Autor). Editor: Ediciones Asimétricas; Edición: 1 (15 de enero de 2016). Colección: ARQUITECTURA. Idioma: Español, Inglés. ISBN-10: 8494474340. ISBN-13: 978-8494474347