



Universitat de Lleida

**DEGREE CURRICULUM  
AUXILIARY SYSTEMS IN THE  
FOOD INDUSTRY**

Coordination: ARANTEGUI JIMENEZ, JAVIER

Academic year 2021-22

## Subject's general information

<b>Subject name</b>	AUXILIARY SYSTEMS IN THE FOOD INDUSTRY			
<b>Code</b>	102591			
<b>Semester</b>	2nd Q(SEMESTER) CONTINUED EVALUATION			
<b>Typology</b>	Degree	Course	Character	Modality
	Bachelor's Degree in Agricultural and Food Engineering	3	COMPULSORY	Attendance-based
<b>Course number of credits (ECTS)</b>	9			
<b>Type of activity, credits, and groups</b>	<b>Activity type</b>	PRALAB	PRAULA	TEORIA
	<b>Number of credits</b>	0.6	3	5.4
	<b>Number of groups</b>	1	1	1
<b>Coordination</b>	ARANTEGUI JIMENEZ, JAVIER			
<b>Department</b>	FOOD TECHNOLOGY			
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.			
<b>Language</b>	Català / Castellà			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
ARANTEGUI JIMENEZ, JAVIER	javier.arantegui@udl.cat	4	
IBARZ MARTÍNEZ, RAQUEL	raquel.ibarz@udl.cat	4	
RAMO APARICIO, TOMAS	tomas.ramo@udl.cat	1	

## Subject's extra information

### Assignatura/matèria en el conjunt del pla d'estudis

L'assignatura "Instal·lacions auxiliars a la indústria alimentària", aporta coneixements tècnics i eines de càcul per al disseny i selecció de les instal·lacions habituals en una indústria alimentària, tal com les instal·lacions de fred, generació de vapor i control i regulació, entre d'altres.

Els coneixements impartits en aquesta assignatura resulten necessaris per a un millor aprofitament de les matèries de Disseny de plantes de processat, Projectes i Treball final, relacionats amb els processos d'elaboració d'aliments que es porten a terme en les indústries alimentàries.

### Recomanacions

És convenient haver cursat i assimilat correctament les matèries de "Fonaments d'Enginyeria d'aliments" i "Indústries alimentàries" corresponents al primer semestre.

## Learning objectives

This subject is not taught in English. Please, check the available information in Catalan or Spanish. In case you need information in English, please contact the teaching staff of the subject.

## Competences

### Basic skills

CB1. That students demonstrate to have and understand knowledge in an area of study that starts from the base of general secondary education, and is usually found at a level that, while supported by advanced textbooks, also includes some aspects that involve knowledge coming from the vanguard of his field of study.

CB2. That students know how to apply their knowledge to their work or vocation in a professional way and have the skills that are usually demonstrated through the elaboration and defense of arguments and problem solving within their area of study.

CB3. That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant issues of a social, scientific, or ethical nature.

# AUXILIARY SYSTEMS IN THE FOOD INDUSTRY 2021-22

CB4. That students can convey information, ideas, problems and solutions to both specialized and non-specialized audiences.

CB5. That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

## General skills

CG1. Ability to prepare, design, draft and sign projects for the construction, refurbishment, repair, conservation, demolition, manufacture, installation, assembly or operation of movable or immovable property which by their nature and characteristics are included in the own technique of agricultural and livestock production (facilities or buildings, farms, infrastructures and rural roads), the agri-food industry (extractive, fermentative, dairy, canning, fruit and vegetable, meat, fishing, salting and, in general, any other dedicated industries to the elaboration and / or transformation, conservation, manipulation and distribution of food products) and gardening and landscaping (urban and / or rural green spaces, parks, gardens, nurseries, urban trees, etc., public or private sports facilities and environments subject to landscape recovery).

CG6. Ability to direct and manage all kinds of agri-food industries, with knowledge of new technologies and quality processes.

CG8. Ability to solve problems with creativity, initiative, methodology and critical reasoning.

CG10. Ability to research and use the rules and regulations relating to its scope of action.

CG12. Ability to work in multidisciplinary and multicultural teams.

## Transversal skills

CT1. Correction in oral and written expression.

CT4. Respect for the fundamental rights of equality between men and women, the promotion of human rights and the values of a culture of peace and democratic values

CT5. Apply the gender perspective to the functions of the professional field

## Specific skills

CEIAA1. Ability to know, understand and use the principles of: Food engineering and technology. Basic food engineering and operations. Food technology. Processes in the agri-food industries. Modeling and optimization. Food quality and safety management. Food analysis. Traceability.

CEIAA2. Ability to know, understand and use the principles of: Engineering of the agri-food industries. Auxiliary equipment and machinery of the agri-food industry. Automation and process control. Engineering of works and facilities. Agro-industrial constructions. Waste management and use.

## Subject contents

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## Methodology

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## Development plan

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## Evaluation

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## Bibliography

La bibliografia de les matèries tecnològiques requereix una revisió contínua. No obstant això, se citen alguns manuals el contingut dels quals és adequat per al nivell que es pretén de l'estudi dels sistemes auxiliars a les indústries alimentàries.

### Bibliografia bàsica

AMIGO, P. (2000) Termotecnia. Aplicaciones Agroindustriales. Mundi-Prensa. Madrid.

BAQUERO, J.; LLORENT, V. (1985) Equipos para la industria química y alimentaria. Alhambra. Madrid.

DIVERSOS AUTORS (1993) Nuevo curso de ingeniería del frío. AMV ediciones. Madrid.

LÓPEZ, A. (1993) Las instalaciones frigoríficas en las industrias agroalimentarias. AMV ediciones. Madrid.

MELGAREJO, P. (2000) Cámaras frigoríficas y túneles de enfriamiento rápido. AMV ediciones-Mundi Prensa. Madrid.

MINISTERIO DE INDUSTRIA Y ENERGIA. (1981) Operadores industriales de calderas. Programa oficial ITC-MIE-AP-1-BOE- 23.09.1981

NAVARRO, J., CABALLO, R., TORRELLA, E. (2003). Fluidos refrigerantes. Tablas y Diagramas. A. Madrid Vicente editores.

PERRY, R.H.: GREEN, D.W.: MAHONEY, J.O. - 1993 - Perry manual del ingeniero químico. - McGraw-Hill (México)

RAPIN, P.J. (1990) Instalaciones frigoríficas. Vol. 1 i 2 Marcombo. Barcelona

SÁNCHEZ P., MT. (2001) Ingeniería del frío: teoría y práctica. AMV Ediciones.- MundiPrensa. Madrid

### *Instrumentació industrial i control de processos*

[ALTMAN, Wolfgang; MACDONALD, David; MACKAY, Steve \(2005\). Practical Process Control for Engineers and Technicians. Newnes](#)

[CORRIU, Jean-Pierre \(2017\). Process Control. Springer.](#)

[MORRIS Alan S.; LANGARI, Reza \(2012\). Measurement and Instrumentation: Theory and Application. Butterworth-Heinemann.](#)

## Bibliografia complementària

- MELGAREJO, P. (1995). Aislamiento, cálculo y construcción de cámaras frigoríficas. AMV ediciones.
- ASHRAE (1990) Refrigeración. Sistemas y aplicaciones. ATECYR
- BRENNAN, J.G.; BUTTERS, J.R.; COWELL, N.D.; LILLY, A.E.V. (1980) Las operaciones de la ingeniería de los alimentos. Acribia. Zaragoza
- CREUS SOLÉ, Antonio - 1993 - Instrumentación industrial - Marcombo
- CREUS SOLÉ, Antonio - 1988 - Control de procesos industriales. Criterios de implementación - Marcombo
- DOSSAT, R.J. (1995) Principios de refrigeración. CECSA. México.
- INSTITUTO INTERNACIONAL DEL FRÍO (1995) Guía de almacenamiento frigorífico. AMV Ediciones
- MCFARLANE, I. - 1994 - Automatic control for food manufacturing processes - Chapman and Hall Altres edicions
- MURPHY, S.D. - 1995 - In-process measurement and control. - Marcel Dekker. Otras ediciones
- PERRY, R.H.; CHILTON, C.H. (1992) Manual del ingeniero químico. McGRAW- Hill
- PINDER, A.C.: GODFREY, G. - 1993 - Food process monitoring systems - Chapman and Hall
- RENARD,M.:BIMBENET,J.J. - 1988 - Automatic Control and optimization of food processes - Chapman and Hall
- SPIRAX-SARCO (1985) Curso de vapor. Catàlegs Spirax-Sarc
- TSE, F.S.: MORSE, I.E. - 1995 - Measurement and instrumentation in engineering. - Marcel Dekker Otras ediciones