



Course guide

240EQ322 - 240EQ322 - Food Technology

Last modified: 02/06/2022

Unit in charge: Barcelona East School of Engineering
Teaching unit: 713 - EQ - Department of Chemical Engineering.

Degree: MASTER'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2012). (Optional subject).

Academic year: 2022 **ECTS Credits:** 4.5 **Languages:** Catalan, Spanish, English

LECTURER

Coordinating lecturer: XAVIER VENDRELL VILLAFRUELA

Others: Primer quadrimestre:
XAVIER VENDRELL VILLAFRUELA - T10

PRIOR SKILLS

Not necessary

REQUIREMENTS

Not necessary

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Generical:

1. Conduct proper research, undertake design and lead the development of engineering solutions in new or unfamiliar environments, linking creativity, originality, innovation and technology transfer.
3. Possess independent learning skills to maintain and enhance the competencies of chemical engineering to enable the continued development of their profession.
2. Integrate knowledge and handle complexity, making judgments and decisions, from incomplete or limited information, including reflections on the social and ethical responsibilities of professional practice.

TEACHING METHODOLOGY

- a. Lectures participatory: the order of 65% of the contact hours
- b. Debate, science-based food additives: the order of 10% of the class hours.
- c. Common Part Cooperative Learning: the order of 10% of the contact hours
- d. 15% of evaluable tests the contact hours
- e. Making questions, answers, concept maps, outlines, reading topics or articles, individual part of cooperative learning, ... (45% of non-contact hours)
- f. Conducting a study on a diet chosen from among those offered and exhibition of the same pre-established criteria (25% of non-contact hours)
- g. Outlining the basics (20% of non-contact hours)
- h. Preparation of the debate (10% non-contact hours)

LEARNING OBJECTIVES OF THE SUBJECT

By the end of the course the student will be able to:

1. Differentiate basic components of food, their basic characteristics and the contribution of each component to the properties and reactions of alteration that can occur in the most important foods.
2. Indicate the specific characteristics that determine food processing, distribution and preparation.
3. To quantify the main effects of treatment and storage conditions on the safety and nutritional and sensory quality of food.
4. Working with the basic legal and regulatory framework applicable to the processing, distribution and preparation of food, especially in the additives, packaging and labeling.
5. Designing a sensory test discriminatory and other descriptive of some foods.
6. Making decisions on the application of the quality criteria for the food industry.

STUDY LOAD

Type	Hours	Percentage
Hours large group	34,5	30.67
Self study	72,0	64.00
Hours small group	6,0	5.33

Total learning time: 112.5 h

CONTENTS

(ENG) Basic chemistry of food and basic components

Full-or-part-time: 9h

Theory classes: 3h

Group work (distance learning): 1h 30m

Theory classes: 1h 30m

Guided activities: 1h 30m

Self study : 1h 30m

(ENG) Meat and meat industries

Full-or-part-time: 8h 30m

Theory classes: 3h

Work experience: 2h

Theory classes: 1h 30m

Guided activities: 1h

Self study : 1h

(ENG) Sensory analysis of food

Full-or-part-time: 2h 30m

Practical classes: 1h 30m

Other activities: 0h 30m

Self study : 0h 30m



(ENG) Food containers

Full-or-part-time: 8h
Theory classes: 3h
Theory classes: 2h
Guided activities: 1h 30m
Self study : 1h 30m

(ENG) Quality in the food industry

Full-or-part-time: 7h 30m
Theory classes: 3h
Other activities: 0h 30m
Theory classes: 1h
Guided activities: 1h 30m
Self study : 1h 30m

(ENG) Food Additives

Full-or-part-time: 5h 30m
Group work (distance learning): 3h
Theory classes: 1h 30m
Self study : 1h

(ENG) Processing Operations

Full-or-part-time: 18h
Theory classes: 7h
Theory classes: 3h 30m
Guided activities: 4h
Self study : 3h 30m

(ENG) Project in the field of food

Full-or-part-time: 9h 30m
Tutorials: 0h 30m
Assessment sessions: 3h
Guided activities: 6h

ACTIVITIES

(ENG) DEBATE

Full-or-part-time: 2h 30m
Theory classes: 1h
Self study: 1h 30m



(ENG) CLASS ACTIVITIES

Full-or-part-time: 2h
Theory classes: 2h

(ENG) CLASS EXPOSITORY

Full-or-part-time: 13h 20m
Theory classes: 13h 20m

(ENG) ASSESSED TESTS

Full-or-part-time: 5h 30m
Theory classes: 1h
Self study: 4h 30m

(ENG) FOOD PROJECT

Full-or-part-time: 9h
Theory classes: 3h
Guided activities: 3h
Self study: 3h

(ENG) SCHEMATIZATION OF BASIC CONCEPTS

Full-or-part-time: 4h 12m
Theory classes: 4h 12m

GRADING SYSTEM

A student's grade will be calculated according to the following polynomial:

$$N_{\text{final}} = 0.20N_{\text{pp}} + 0.40N_{\text{ta}} + 0.30N_{\text{tc}} + 0.1N_{\text{nt}}$$

N_{pp} : Note partial test

N_{ta} : Note for outputs and class work

N_{tc} : Note coursework (discussions, classroom exercises, questions)

N_{nt} : Note deliverables (outside the classroom)

EXAMINATION RULES.

The partial test will be the 3rd week of November, lasting an hour and a half. It will consist of short questions, open-ended or closed, both numerically and conceptually.

In the partial tests will not be allowed to consult any material. For the resolution of the problems may use calculator and consult data are not available.



BIBLIOGRAPHY

Basic:

- Belitz, Hans-Dieter; Grosch, W.; Schieberle, Peter. Química de los alimentos. 3a ed. Zaragoza: Acribia, DL 2011. ISBN 9788420011622.
- Casal i Fàbrega, Joaquim; Clotet, Ramon. Operacions unitàries de la indústria alimentària. Barcelona: Societat Catalana de Tecnologia, 1995. ISBN 8472832805.
- Cambero Rodríguez, María Isabel [et al.]; Ordóñez Pereda, Juan Antonio (ed.). Tecnología de los alimentos. Madrid: Síntesis, 1998. ISBN 8477385777.
- Fennema, Owen R.; Parkin, Kirk Lindsay; Damodaran, Srinivasan (eds.). Fennema química de los alimentos. 3a ed. Zaragoza: Acribia, 2010. ISBN 9788420011424.
- Puig-Durán Fresco, Jorge. Ingeniería, autocontrol y auditoría de la higiene en la industria alimentaria. Madrid [etc.]: A. Madrid Vicente : Mundi-Prensa, 1999. ISBN 8471148048.
- International Commission on Microbiological Specifications for Foods. Ecología microbiana de los alimentos. Zaragoza: Acribia, DL 1983-1984. ISBN 8420005517.
- Valentas, Kenneth J.; Rotstein, Enrique; Singh, R. Paul (eds.). Handbook of food engineering practice. Boca Raton, Fla: CRC, cop. 1997. ISBN 0849386942.