

Academic Year/course: 2021/22

## 30825 - Food Technology II

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 30825 - Food Technology II

**Faculty / School:** 105 - Facultad de Veterinaria

**Degree:** 568 - Degree in Food Science and Technology

**ECTS:** 6.0

**Year:** 3

**Semester:** Second semester

**Subject Type:** Compulsory

**Module:**

### 1. General information

### 2. Learning goals

### 3. Assessment (1st and 2nd call)

### 4. Methodology, learning tasks, syllabus and resources

#### 4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. It favors the understanding of the different chemical and physical processes that occur in the environment. A wide range of teaching and learning tasks are implemented, such as theory sessions, laboratory sessions, assignments, and tutorials.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

Students must follow the regulations described in:

- Prevention: A guide for students at the University of Zaragoza:  
[https://uprl.unizar.es/sites/uprl.unizar.es/files/archivos/Procedimientos/guia\\_preventiva\\_para\\_estudiantes.pdf](https://uprl.unizar.es/sites/uprl.unizar.es/files/archivos/Procedimientos/guia_preventiva_para_estudiantes.pdf)
- Manual de seguridad en los laboratorios de la Universidad de Zaragoza y normas marcadas por la Unidad de Prevención de Riesgos Laborales:

[https://uprl.unizar.es/sites/uprl.unizar.es/files/archivos/Procedimientos/manual\\_de\\_seguridad\\_en\\_los\\_laboratorios\\_de\\_la](https://uprl.unizar.es/sites/uprl.unizar.es/files/archivos/Procedimientos/manual_de_seguridad_en_los_laboratorios_de_la)

<https://uprl.unizar.es/inicio/manual-de-procedimientos>

In addition, students will follow as well any instructions related to biosecurity given by the professor

#### 4.2. Learning tasks

The course includes 6 ECTS organized according to:

- Lectures (3.7 ECTS): 37 hours (1 hour per session). It is scheduled to deliver the documentation for each lesson at

least 1 week in advance.

- Pilot Plant sessions (1.9 ECTS): 19 hours (3-4 hours per session). They will be held in sessions of 3-4 hours.
- Seminars (troubleshooting and cases) (0.4 ECTS): 4 hours (2 hours per session).
- Development of coordinated work in collaboration with the subjects of "Legislación alimentaria" and "Higiene Alimentaria Aplicada". It will include 3 tutorials of 1 hour for each group.

The coordinated work will be done in coordination with the subjects of "Legislación alimentaria" and "Higiene Alimentaria Aplicada", in groups of 5-7 persons. Students will have to assess from legal, hygienic and technological terms the development process of a product.

The project is divided into two phases: in the first one, students will have to present the control and processing parameters for each of the stages, considering the equipment that could be used throughout the production and storage process available at the Pilot Plant; the probes that such equipment may have, as well as the probes that may be needed to control each of the stage. These materials will be discussed with students during the 3 tutorial sessions of 1 hour/session per group. In addition, in the third tutorial session, the results obtained in practice 4 will be assessed. In the second phase, the coordinated work will be defended at a joint session of the three subjects referenced above; it constitutes an additional practice session. Prior to the defense of the work, it will be presented to the professors to prepare the debate.

Students will have 2 hours of tutoring per week.

All material both theoretical and practical sessions will be available to students in the ADD (<https://moodle2.unizar.es/add/>).

### 4.3. Syllabus

The course will address the following topics:

#### Section I. Introduction

- Lectures:
  - Topic 1. Introduction (0.1 ECTS).
  - Topic 2. Cleaning, sorting and grading. Resizing (0.2 ECTS).
  - Topic 3. Transport and pumping (0.2 ECTS).

#### Section II. Food processing by heat, ionization and other non-thermal technologies.

- Lectures:
  - Topic 4. Food preservation by heat. Applications (blanching, pasteurization, sterilization, extrusion). Equipment and facilities. Process Control (0.7 ECTS).
  - Topic 5. Food preservation by ionizing radiation. Sources and facilities. Applications. dosimetry control (0.2 ECTS).
  - Topic 6. Food preservation by new technologies. Applications. Equipment and facilities. Process Control (0.2 ECTS).
- Practice sessions:
  - PRACTICE 1. Canning processing. Retort setting up and management (0.4 ECTS).
  - PRACTICE 2. Pasteurization / sterilization of a liquid product. (0.4 ECTS).
- TUTORING 1 for carrying out the coordinated work.

#### Section III. Food processing by lowering the temperature and by modifying the atmosphere.

- Lectures:
  - Topic 7. Food preservation by lowering the temperature. Cooling and freezing systems. Cold chain. Applications. Equipment and facilities. Process Control (0.9 ECTS).
  - Topic 8. Food preservation by controlling the atmosphere. Types. Applications. Equipment and facilities. Process Control (0.1 ECTS).
- Practice sessions:
  - PRACTICE 3A. Preparation of frozen green beans. Management and characterization of tunnel freezer. Components of the liquid nitrogen freezer (0.3 ECTS).
  - PRACTICE 3B. Components of cooling and freezing systems: the freezing/cooling/maduration chambers, indirect cooling system and refrigerator.
  - PRACTICE 4A. Activity of the coordinated work at pilot plant (0.3 ECTS)
  - PRACTICA 4B. Review of the results from Practice 4A (0.1 ECTS).
- SEMINAR. Cooling load calculations (0.2 ECTS).
- TUTORING 2 for carrying out the coordinated work.

#### Section IV. Food processing by lowering the water activity. Chemical food preservation.

- Lectures:
  - Topic 9. Food preservation by lowering the water activity. Applications. Equipment and facilities. Process control. Reconstitution of food (0.7 ECTS).

Topic 10. Chemical Food Preservation. Smoked, salting and brining (0.1 ECTS).

- Practice sessions:
- SEMINAR. Dehydration and storage of a dehydrated product. Evaporation and freeze-drying (0.2 ECTS).
- TUTORING 3 for carrying out the coordinated work.

#### Section V food packaging.

- Lectures:  
Topic 11. Packaging. Materials and manufacturing. Filling and sealing. Aseptic packaging. Active packaging. Smart packaging. Edible films and coatings (0.3 ECTS).
- Practice sessions:  
PRACTICE 5. Presentation and oral discussion of the integrated work together with the subjects of "Legislación Alimentaria" and "Higiene Alimentaria Aplicada?" (0.3 ECTS).

#### **4.4. Course planning and calendar**

For further details concerning the timetable, classroom and further information regarding this course please refer to the "Facultad de Veterinaria" website (<http://veterinaria.unizar.es>).