

## 30825 - Food Technology II

### Syllabus Information

**Academic Year:** 2019/20

**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

#### 1.1.Aims of the course

#### 1.2.Context and importance of this course in the degree

#### 1.3.Recommendations to take this course

### 2.Learning goals

#### 2.1.Competences

#### 2.2.Learning goals

#### 2.3.Importance of learning goals

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

#### 3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

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

#### 4.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It favors the understanding of the different chemical 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.

#### 4.2.Learning tasks

The course includes 6 ECTS organized according to:

- Lectures (3.5 ECTS): 35 hours (1 hour per session). It is scheduled to deliver the documentation for each lesson at least 1 week in advance.
- Pilot Plant sessions (2.1 ECTS): 21 hours (3-4 hours per session). They will be held in sessions of 3-4 hours. The penultimate scheduled practice will be voluntary and will be conducted in English language.
- 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 3-5 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 work on the equipment available at the Pilot Plant that would be used in the process of preparing a product. In this part, a technical sheet of two of the apparatus used in the process will be prepared, the process parameters of each stage of the process will be defined, and the probes necessary to control and monitor the corresponding stage will be selected. These materials will be discussed with students during the 3 tutorial sessions of 1 hour/session per group. 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, a written version of the presentation 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 (0.1 ECTS).
  - Topic 6. Food preservation by new technologies. Applications. Equipment and facilities. Process Control (0.1 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 3. Management of pilot plant apparatus needed in the coordinated work (0.3 ECTS).
  - PRACTICE 4. Preparation of frozen green beans. Management and characterization of tunnel freezer, the freezing chamber and indirect cooling system (ECTS 0.4).
- 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:
  - PRACTICE 5. Determination of the conditions of evaporation of a juice (0.3 ECTS).
- SEMINAR. Dehydration and storage of a dehydrated product (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 6. 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>).

#### 4.5.Bibliography and recommended resources

BB Casp Vanaclocha, Ana. Procesos de conservación de alimentos / Ana Casp Vanaclocha, José Abril Requena . 2ª ed. corr. Madrid : A. Madrid Vicente : Mundi-Prensa, 2003

BB Cheftel, Jean-Claude. Introducción a la bioquímica y tecnología de los alimentos. Vol. I / Jean-Claude Cheftel, Henri Cheftel / traducido del francés por Francisco López Capont . [1º ed., 4ª reimp.] Zaragoza : Acribia, 2000

BB Cheftel, Jean-Claude. Introducción a la bioquímica y tecnología de los alimentos. Vol.II / Jean-Claude Cheftel, Henri Cheftel, Pierre Besançon ; prólogo de Pierre Desnuelle ; traducido del francés por Francisco López Capont . [1ª ed., 4ª reimp.] Zaragoza : Acribia, 2000

BB Fellows, Peter.. Tecnología del procesado de los alimentos : principios y prácticas / Peter Fellows ; traducción de Jesús Ceamanos Lavilla . 2ª ed. Zaragoza : Acribia, D.L. 2007

BB Las operaciones de la ingeniería de los alimentos / J.G. Brennan ... [et al.] . 3ª ed Zaragoza : Acribia, 1998

BB Tecnología de los alimentos. Vol.I, Componentes de los alimentos y procesos / Juan A. Ordóñez Pereda (editor) . Madrid : Síntesis, D.L. 1998

Graduado en Ciencia y Tecnología de los Alimentos [Plan 2009]:

<http://psfunizar7.unizar.es/br13/egAsignaturas.php?id=302>

Graduado en Ciencia y Tecnología de los Alimentos [Plan 2015-2016]

<http://psfunizar7.unizar.es/br13/egAsignaturas.php?id=10190>