28439 - Food Technology

Información del Plan Docente

Academic Year 2017/18
Faculty / School 105 - Facultad de Veterinaria
Degree 451 - Degree in Veterinary Science
ECTS 12.0
Year 5
Semester Annual
Subject Type Compulsory
Module ---

1. General information

1.1. Introduction

1.2. Recommendations to take this course

1.3. Context and importance of this course in the degree

1.4. Activities and key dates

2. Learning goals

2.1. Learning goals

2.2. Importance of learning goals

3. Aims of the course and competences

3.1. Aims of the course

3.2. Competences

4. Assessment (1st and 2nd call)

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

5. Methodology, learning tasks, syllabus and resources

5.1. Methodological overview

"Food Technology"

This part consists of 100 hours divided in 70 hours for lectures in classroom, 20 hours for laboratory and 10 hours for seminars.
Student will have in advance the contents of the corresponding lectures. Professor will focus his presentation in those aspects harder to understand. Student should have read the material supplied in advance in order to formulate questions to the professor.

Laboratory activities will consist in 5 sessions of 4 hours. The main objective of laboratory activities is to show and demonstrate different issues previously explained in the lectures.

Seminars will be attended by smaller number of students that lectures. In this activity it will present "case studies" to be solved by students with the support of the professor and some person working in the food industry will be invited to do a presentation.

"Practicum in Food Technology "

This part consists in 30 hours (4 h of lectures, 18 h of activities in the pilot plant and 8 hours for the presentation of the work conducted in the pilot plant).

In this part it will be simulate in the pilot plant that students are in a food company and they will have to conduct all the steps required for elaboration of a specific food: quality control of the raw material, elaboration of the foods, control of the final products. These activities will be conducted in coordination with the curse "Hygiene, inspection and food control" and it will be also develop the good hygienic practices for the corresponding food elaborated during this activity.

5.2. Learning tasks

5.3. Syllabus

" Food technology "

Lessons:

UNIT I.- INTRODUCTION (2H)

Lesson 1. Introduction. Food Technology in Veterinary degree. Activities of a veterinarian in the food industry. Course objectives, teaching methodology, contents and bibliography.


UNIT II.- QUALITY PARAMETERS AND FOOD COMPONENTS (8H)


Lesson 8. Vitamins and minerals. Content and distribution in foods. Losses of vitamins and minerals during food processing.

Lesson 9. Disperse systems. Importance of the physical structure in food properties. Disperse systems: gels, emulsions and foams.


UNIT III. FOOD SPOILING (5H)


UNIT IV. FOOD PRESERVATION (19H)


Lesson 17. Freezing. Introduction. Ice crystals formation, nucleation and crystal growth. Freezing curve. Effect of
freezing on food properties, microorganisms and microbial and enzymatic reactions. Frostbite, recrystallization. Frozen storage. Unfreeze.

**Lesson 18. Food preservation by atmosphere modification.** Vacuum package, controlled atmosphere and modified atmosphere. Properties and characteristics of used gases. Effect on microorganism and food properties. Applications in the food industry.


**Lesson 27. Sterilization.** Sterilization: objectives, application, facilities. Alterations of foods treated by heat.

**Lesson 28. New technologies for food preservation.** New systems for microbial inactivation: ionizing irradiation, high hydrostatic pressure, pulsed electric fields, light pulses, ultrasound. Food preservation by combined process.


**UNIT V. MEAT AND MEAT PRODUCTS (12H)**

Lesson 31. Fresh meat technology. Meat categories, dressing and cutting. Fresh meat preservation and commercialization.


Lesson 33. Fresh and dry-cured meat products. Production processes and most important alterations.

Lesson 34. Cooked meat products. Production processes and most important alterations.

Lesson 35. Dry-cured products. Dry-ham elaboration processes and most important alterations. Other dry-cured products.

UNIT VI FISH, FISH PRODUCTS, FISH EGGS, EGGS AND EGGS-PRODUCTS. (7H)


UNIT VII MILK AND MILK PRODUCTS (12H)


Lesson 41. Fermented milks: yogurt elaboration. Other fermented milks.


UNIT VIII. OTHER ASPECTS RELATED WITH THE FOOD INDUSTRY (5H)


Lesson 45.- Catering. Organization of a catering kitchen. Processing of foods by catering.


Laboratory lessons

Lesson 1.- Sensors for controlling food safety and quality. (4 H) Mainsensor used in the food industry: temperature, pH, water activity, relative humidity.

Lesson 2.- Predictive Microbiology. (4 H) Programs and resources of predictive microbiology to predict factors affecting microbial growth and survival.

Lesson 3.- Pilot plant for food processing. (4 H) Organization. Identification of the different equipment for food preservation and processing.

Lesson 4.- Processing of meat (4 H) Main physico-chemical and microbiology analysis in meat processing.

Lesson 5.- Milk processing (4 H) Main physico-chemical and microbiology analysis in milk processing.

SEMINARS

Seminar 1.- Thermal processing (4 H). Survival curve, thermodestructin curve. Graphic calculation of D and z values. F 0 parameter and "botulinum cook".

Seminar 2.- Case. (2 H) It will be presented a practical issue related with food preservation and students will have to find the solution to the issue using different sources of information (books, internet etc).

Seminar 3 Meat and meat products (2 H) Discussion of a current issue related with the food industry.

Seminar 4 Milk and milk products (2 H) Discussion of a current issue related with the food industry.

Practicum

Activities related with Practicum will be conducted in the Pilot Plant of Food Science and Technology. Small group of students will conduct all the steps related with the elaboration of a specific food. Examples of foods that will be elaborated are: Yogurt, cheese, Curd sausages, chorizo, chistorra.
5.4. Course planning and calendar


5.5. Bibliography and recommended resources

[BB: Bibliografía básica / BC: Bibliografía complementaria]

- [BB] Ciencia de los alimentos : bioquímica, microbiología, procesos, productos. Volumen 1, Estabilización biológica y físicoquímica / coordinadores, Romain Jeantet ... [et al.]. Zaragoza : Acribia, 2010
- [BB] Ciencia de los alimentos : bioquímica, microbiología, procesos, productos. Volumen 2, Tecnología de los productos alimentarios / coordinadores, Romain Jeantet ... [et al.]. Zaragoza : Acribia, 2010

Listado de URL

- Agencia española de consumo, seguridad alimentaria y nutrición [http://www.aecosan.msssi.gob.es/]
- CTA-Magazine [http://www.catedu.es/ctamagazine/]
- European Food Safety Authority [http://www.efsa.europa.eu/]
- Grupo de Bioquímica de los Alimentos (PACA) [http://milksci.unizar.es/]
- Página web de Paul Singh [http://www.rpaulsingh.com/]
- Planta Piloto de Ciencia y Tecnología de los Alimentos de la Facultad de Veterinaria de Zaragoza [http://ppcta.unizar.es/]