CULINARY TECHNOLOGY

Degree in Human Nutrition and Dietetic

Academic year 2026-27

Code: 803988
Module: 2
Area: Food Technology
Type of subject: Core
Year: Third
Department: Farmacia Galénica y Tecnología Alimentaria (Faculty of Veterinary)
Credits: 6 ECTS
Period of teaching: First semester
Start date: September
Timetable: From 10:30 to 11:30
Place: Faculty of Medicine

TEACHING STAFF

Coordinator: Hierro Paredes, Eva
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Lectures:
Fernández Álvarez, Manuela
Orgaz Martín, Belén
Romero de Ávila Hidalgo, Mª Dolores
Fernández León, Mª Fernanda
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Navarro del Hierro, Joaquín

BRIEF DESCRIPTION

The subject deals will the study of the different culinary treatments applied to food, as well as the facilities where they are carried out, the equipment and utensils used and the staff involved in these operations. At the same time, it will also be addressed the nutritional, sensory and physicochemical changes that food undergoes as a result of culinary treatments, as well as the preservation conditions of the dishes prepared. Finally, the adaptation of culinary preparations to individuals with special nutritional needs will be reviewed.

COMPETENCES

They are those corresponding to the Module and Area to which this subject belongs.

General Competences
GC.1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 3.1, 3.2, 3.4, 4.2, 4.3, 4.6, 5.4, 6.1, 6.2, 7.1, 7.3, 7.4 and 8.1.

Specific Competences
SC.M1.1, 1.5, 1.7, 2.2, 2.3, 2.6, 2.7, 3.1, 3.2, 3.3, 3.6, 3.7, 3.8, 4.04, 4.14, 4.19, 4.22 and 5.5.

OBJECTIVES

The main objective of the course is to give the student a general vision of the culinary operations applied to food and their effect on nutritional and sensory properties, as well as the importance of their correct performance in order to guarantee food safety. This objective is composed of the following specific objectives that will address the study of: 1) equipment, facilities, staff and organization of food service/catering establishments and ready meals processing industries, 2) raw materials, 3) the characteristics and applications of the different culinary operations and 4) techniques for preparing food for individuals with special needs.

PROGRAM

THEORETICAL PROGRAM

PART I: Introduction, Objectives and Resources

Lesson 1. Introduction to Culinary Technology. Context. Objectives.
Lesson 2. Socio-economic importance. Basic concepts. Culinary process. Types of food service/catering establishments. Production systems.
Lesson 3. Culinary space. General conditions. The industrial culinary space. The culinary space in catering industry. Structure, purpose and requirements of the different parts of the kitchen and adjoining areas.
Lesson 4. Culinary equipment and tools. Materials in contact with food. Properties and applications.
Lesson 5. Staff. Types and functions. Professional categories. Organisation of tasks. Training.

PART II: Culinary Operations and Processes

Lesson 6. Refrigeration and freezing. Cold chain. Defrosting. Effects on food.

II. a. Preliminary Operations
Lesson 7. Previous operations to culinary processes. Selection. Cleaning. Size reduction. Equipment. Effects on food.

II. b. Culinary operations without heating
Lesson 8. Culinary operations to mix ingredients (1). Emulsions and foams. Preparation methods. Emulsifiers and foaming agents. Stabilising factors. Destabilisation. Effects on food.
Lesson 9. Culinary operations to mix ingredients (2). Maceration techniques: marinates and pickling. Ingredients. Methods. Effects on food.

II. c. Culinary operations involving heating
Lesson 10. Definition and cooking objectives. Thermal properties of materials and food. Heat transfer mechanisms: conduction, convection and radiation. Applications.
Lesson 11. Heat generation. Microwave heating. Induction heating. Applications. Effects on food.
Lesson 12. General effects of cooking on sensory and nutritional properties of food. Effect on food safety.
Lesson 13. Cooking in aqueous medium: boiled, blanched, poached, parboiled, steamed, *papillote* and *bain-marie*. Characteristic and applications. Effects on food.
Lesson 14. Mixed cooking: stewing, casserole and braising. Characteristic and applications. Effects on food.
Lesson 15. Cooking with fat: sautéing, stir-frying, confiting and frying. Characteristic, types and applications. Technological properties of frying fats and oils. Changes of oils during frying. Effects on food.
Lesson 16. Air cooking: roasting, baking, grilling and griddling. Cooking au gratin and toasting**.** Characteristics and applications. Effects on food.
Lesson 17. Vacuum cooking (*sous-vide*). Method. Applications. Food safety issues. Effects on food.

II. d. Uncommon ingredients and operations in Culinary Technology
Lesson 18. Molecular gastronomy.
Lesson 19. Hydrocolloids. Chemical composition. Functional properties. Encapsulation.

PART III: Culinary Technology for Dietotherapy

Lesson 20. Removal and/or replacement of starch and sugars. Characteristics of substitutes. Adaptation of formulas and processes.
Lesson 21. Removal and/or replacement of fats. Characteristics of substitutes. Adaptation of formulas and processes.
Lesson 22. Removal and/or replacement of sodium chloride. Characteristics of substitutes. Adaptation of formulas and processes.

PRACTICAL PROGRAM

The following sessions will be held:

• Study of the characteristics of different hydrocolloids and their application in the preparation of different food products.
• Effect of different cooking techniques on the vitamin content of foods. Monitoring of frying oil degradation.

- Preparation of food emulsions. Identification of the phases. Determination of the type of emulsion. Stabilizing effect of different emulsifiers.
- Preparations of sauces and dressings.
- Determination of the texture of a cooked vegetable food.

SEMINARS AND SUPERVISED ASSIGNMENT

A seminar will be given to provide students how to search for scientific information related to the content of the subject. To this end, the different types of scientific documents will be presented, as well as various search tools.
Once the seminar has been given, students will prepare an assignment on a topic related to the subject and obtained from a research article. The work will be carried out in small groups and supervised by a lecturer. The topic will be chosen by the students and must be approved by the tutor. Each group will give an oral presentation of the work carried out, followed by discussion rounds with the students in attendance.
A lecture on different aspects of coeliac disease will also be convened.

TEACHING METHODOLOGY

The contents of the theoretical program will be presented in the classroom and complemented by 5 practical sessions in the laboratories and kitchen. In addition, students will be introduced to the search for research articles through a practical seminar, which will also cover the different formats of scientific publications. In addition, students in small groups, supervised by a tutor, will prepare a topic related to the subject and obtained from a research article, thus complementing the programme.
All teaching activities will be supported by the Virtual Campus, where students will have access to teaching material, bibliographic resources and other documents of interest for learning the subject.

ASSESSMENT OF LEARNING

The evaluation of the course will be carried out according to the following criteria:
- Final exam on the contents covered in the theoretical and practical classes: 80% of the final grade.
- Supervised assignment: 20% of the final grade.

Questions in the final exam may be essay questions, short answers and multiple-choice. In order to pass the course, it is essential to attend the practical classes, as well as to obtain a minimum score of 5 in the final exam.
In relation to the evaluation of the supervised assignment, the suitability of the topic in the context of the subject, the student's attitude in the tutorials, the oral presentation and defence, as well as the active participation in the debates of the presentation sessions will be considered. The preparation and oral presentation of the assignment will be essential requirements for passing the course. Students must also attend the sessions presented by their classmates. A minimum score of 5 in this activity is required to pass the subject.
Students who voluntarily or accidentally violate the rules for conducting the examination shall be required to take an oral test. Intentional infringement will be considered very serious misconduct and will be reported to the Services Inspectorate for disciplinary action.

BASIC BIBLIOGRAPHY

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