

## 68757 - Study of the chemical basis of food flavor

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 68757 - Study of the chemical basis of food flavor

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

**Degree:** 631 - Master's Degree in Food Quality, Safety and Technology

**ECTS:** 3.0

**Year:** 1

**Semester:** Second semester

**Subject type:** Optional

**Module:**

### 1. General information

The objective of the subject is to provide students with a series of practical and theoretical knowledge related to the nature and study of the material systems responsible for the properties of aroma and flavour and our perceptual response to them. This knowledge should enable them to study, elucidate and improve the aromatic and taste properties of food.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), so that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement: Goal 4: Quality education; Goal 9: Industry, innovation and infrastructure; Goal 12: Responsible production and consumption.

### 2. Learning results

1. To understand the basic biological functions of the chemical senses (smell, taste and chemestesis) in the biosphere and in human society today, and the ethological, ecological and cultural implications associated with them.
2. To differentiate between human emotions, sensations and perceptions and the sensory properties of molecules.
3. To identify the types of physical, chemical or perceptual interaction that modulate the overall sensory perception in a complex product.
4. To know how to manage at a basic level the basic psychophysical concepts associated with the measurement of intensities and qualities of odours and flavours and their mixtures.
5. To understand the sequence of objectives linked to a sensory directed chemical screening study. To be able to assess a priori the potential efficiency of a given strategy, the convenience of employing one isolation methodology or another and the steps required to reach the unequivocal identification of a sensoactive molecule.
6. To be capable of performing the necessary laboratory operations to conduct an olfactory chemical screening experiment by GC-O, and to make decisions regarding the most effective a priori GC-O strategy.

### 3. Syllabus

#### 2-hour master classes:

- T1: Aroma and flavour from a biological perspective.
- T2: The most relevant odorant systems in nature.
- T3: Aroma as a chemical phenomenon.
- T4: Introduction to the psychology of perception and the psychophysics of aroma.
- T5: Aroma analysis. Tools and procedures

#### Chemical-sensory laboratory workshop-practice:

- P1 (3 h): Taste, touch (chemestesis) and smell. The hedonic value of some aromas.
- P2 (3 h): Chemical properties of odour molecules. Databases
- P3 (3 h): Individual and group threshold values.
- P4 (3 h): Construction of psychophysical curves. Charismatic odorants.
- P5 (4 h): Hierarchization and identification of the key odorants of food.
- P6 (4 h): Quantification of odorants in a foodstuff

### 4. Academic activities

The subject includes the following activities:

1. Five theoretical sessions (10 hours in person).
  2. Six practical-workshop sessions (20 hours in person).
  3. Preparation of papers and reports (15 hours non face-to-face).
  4. Questionary solving (30 hours non face-to-face).
- Support material: Tutorials (individual or in small groups) and complementary material via web.

## 5. Assessment system

Assessment of learning outcomes through a questionnaire with key questions and the development of individual work related to theory and practice. The following will be valued:

1. The degree of structuring and coherence of the answer.
2. The understanding and management of the concepts discussed in the subject
3. The ability to interrelate the concepts with each other and with other relevant concepts of food science, biology or chemistry,
4. Accuracy and conciseness in language and answer,
5. The depth of the analysis,
6. The originality of the same

**Global test.** For students who have not followed the above continuous assessment process, there will be a global test to pass the subject. This test will have three parts: 1.- theory questions, whose evaluation will make up 60% of the final grade; 2.- analysis of a scientific text (20% of the final grade); 3.- semi-practical test in the laboratory (20% of the final grade).

## 6. Sustainable Development Goals

- 4 - Quality Education
- 9 - Industry, Innovation and Infrastructure
- 12 - Responsible Production and Consumption