

## COURSE PROGRAM

Academic Year: 2025/2026

| Identification and characteristics of the course |   |                  |  |
|--|---|------------------|--|
| Code   | 501256  | ECTS Credits     | 6  |
| Course name (English)                            | Sensory Analysis of Food.                             |                  |  |
| Course name (Spanish)                            | Análisis Sensorial de Alimentos.                      |                  |  |
| Degree programs                                  | INGENIERÍA DE LAS INDUSTRIAS AGRARIAS Y ALIMENTARIAS. |                  |  |
| Faculty/School                                   | Escuela de Ingenierías Agrarias.                      |                  |  |
| Semester   | 2º(8º)  | Type of course   | Optional.  |
| Module   | Optional.   |                  |  |
| Matter   | Análisis sensorial de alimentos.                      |                  |  |
| Lecturer/s                                       |   |                  |  |
| Name   | Office  | E-mail           | Web page   |
| <b>Ana Isabel Carrapiso Martínez</b>             | D712<br>Valle del Jerte building                      | acarrapi@unex.es | <a href="http://www.unex.es/unex/centros_ue/centros/eia/info_academica_centro/ asignaturas/info_asignatura?idCentro=5&amp;idTitulacion=852&amp;idPlan=0506&amp;idAsignatura=106250">http://www.unex.es/unex/centros_ue/centros/eia/info_academica_centro/ asignaturas/info_asignatura?idCentro=5&amp;idTitulacion=852&amp;idPlan=0506&amp;idAsignatura=106250</a><br><a href="http://campusvirtual.unex.es/zonaue/avuex/course/view.php?id=3691">http://campusvirtual.unex.es/zonaue/avuex/course/view.php?id=3691</a> |
| <b>José Manuel Martínez Torres</b>               | D113<br>Alfonso XIII building                         | jmtorres@unex.es |  |
| Subject Area                                     | Tecnología de Alimentos.                              |                  |  |
| Department                                       | Producción Animal y Ciencia de los Alimentos.         |                  |  |
| Coordinating Lecturer (If more than one)         | Ana Isabel Carrapiso Martínez.                        |                  |  |

| Competencies / Learning Outcomes <sup>1*</sup>   |
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| <p>Competencies<br/>CB2, CB3, CB4, CB5, CG7, CG8, CG9, CG10, CG11.<br/>CETE1.</p> <p>Learning Outcomes<br/>At the end of this course, the students are expected to be able to:</p> <ul style="list-style-type: none"> <li>- Demonstrate adequate knowledge of the most relevant aspects related to sensory evaluation.</li> <li>- Demonstrate the ability to analyse and interpret the results of sensory tests.</li> <li>- Demonstrate practical knowledge to design and carry out sensory analysis tests and interpret the results.</li> <li>- Rigorously prepare a sensory analysis-based assignment and critically evaluate its validity.</li> </ul> |
| Contents   |
| Course outline*  |

<sup>1\*</sup> The sections concerning competencies, course outline, educational activities, teaching methodology, learning outcomes and assessment systems must conform to that included in the ANECA verified document of the degree program.

Main sensory features of food and the way we perceive them. Elements involved in the sensory test: the panellists, the samples and the environment. Measuring responses. Statistical hypothesis. Types of tests for sensory evaluation. Standardised procedures for food: oil, wine, etc. UNE standards for sensory evaluation. Reporting results and analysing data by applying statistical tests.



### Course syllabus

**MODULE I. THE SENSORY CHARACTERISTICS AND THEIR PERCEPTION.**  
 (Lectures and other activities: cooperative assignment, classroom activities).  
 Competencias: CETE1.  
 Learning outcomes: RA181.

Name of lesson 1: **Introduction. The human perception as a measuring instrument.**

Contents of lesson 1: Current importance for research and industry; definition; historical evolution; the human perception as a measuring instrument: definitions, involved elements.

Description of the practical activities of lesson 1: there are not any practical activities.

Name of lesson 2: **The sensory traits and their perception. I. Appearance. Consistency and texture.**

Contents of lesson 2: Appearance: characteristics, terms, applications, appearance perception; consistency and texture: characteristics, terms, applications, consistency and texture perception.

Description of the practical activities of lesson 2: see lesson P1.

Name of lesson 3: **The sensory traits and their perception. II. Taste. Odour and flavour. Others.**

Contents of lesson 3: Taste: characteristics, terms, applications, taste perception; odour and flavour: characteristics, terms, applications, perception; other traits: noise, pain, temperature.

Description of the practical activities of lesson 3: see lesson P2.

**MODULE II. ELEMENTS INVOLVED IN THE SENSORY TESTS: THE PANELLISTS, THE SAMPLE AND THE ENVIRONMENT.**

(Lectures and other activities: cooperative assignment, classroom activities).  
 Competences: CETE1.  
 Learning outcomes: RA181.

Name of lesson 4: **The environment during the sensory tests. The test room: location. Environmental conditions.**

|   |
|---|
| <p>Contents of lesson 4: The environment during the sensory tests. The test room and the Sustainable Development Goals (SDGs): the booth area, the round table area, the sample preparation area, other areas; location; environmental conditions: lighting and colour, air circulation, temperature and humidity, construction materials.</p> <p>Description of the practical activities of lesson 4: see lesson P9.</p> |
| <p>Name of lesson 5: <b>Sample preparation and presentation.</b></p> <p>Contents of lesson 5: Sample preparation: equipment, materials, preparation procedures; sample presentation: presentation depending on the test type, serving size, serving containers, order, coding, and sample number per session.</p> <p>Description of the practical activities of lesson 5: there are not any practical activities.</p>     |
| <p>Name of lesson 6: <b>The sensory panel. Types of panellists. Selection and training of panellists.</b></p> <p>Contents of lesson 6: The sensory panel; types of panellists; selection and training of panellists.</p> <p>Description of the practical activities of lesson 6: see lessons P1 and P2</p>  |
| <p>Name of lesson 7: <b>Factors influencing the results from the sensory tests. Physiological and psychological factors.</b></p> <p>Contents of lesson 7: Factors influencing the results from the sensory tests. Physiological and psychological factors.</p> <p>Description of the practical activities of lesson 7: there are not any practical activities.</p>  |
| <p>MODULE III. SENSORY TESTS: RESPONSE MEASUREMENT, STATISTICAL HYPOTHESES AND TYPES OF TESTS.</p> <p>(Lectures and other activities: cooperative assignment, classroom activities).</p> <p>Competencies: CETE1.</p> <p>Learning outcomes: RA181, RA182.</p>  |
| <p>Name of lesson 8: <b>Measuring responses. Psychophysical theories. Classification, grading, ranking, scaling.</b></p> <p>Contents of lesson 8: Most important psychophysical functions; types of sensory data; methods for response measurement.</p> <p>Description of the practical activities of lesson 8: there are not any practical activities.</p>   |
| <p>Name of lesson 9: <b>Statistical design for sensory testing.</b></p> <p>Contents of lesson 9: Introduction; common statistical designs for sensory tests.</p> <p>Description of the practical activities of lesson 9: there are not any practical activities.</p>  |
| <p>Name of lesson 10: <b>Classification of the sensory tests. Affective tests: qualitative and quantitative methods.</b></p> <p>Contents of lesson 10: Classification of the sensory test; affective tests: purpose and applications, people taking part in the tests, choice of test location, types of tests.</p> <p>Description of the practical activities of lesson 10: see lesson P8.</p>                           |
| <p>Name of lesson 11: <b>Difference tests. Overall difference tests and attribute difference tests.</b></p> <p>Contents of lesson 11: Difference tests: purpose and applications, people taking part in the tests, choice of test location, types of tests (overall difference tests and attribute difference tests).</p> <p>Description of the practical activities of lesson 11: see lesson P4 and 5.</p>               |
| <p>Name of lesson 12: <b>Descriptive tests. Components. Commonly used descriptive tests.</b></p> <p>Contents of lesson 12: Descriptive tests: purpose and applications, people taking part in the tests, choice of test location, components of the descriptive tests, commonly used descriptive tests.</p> <p>Description of the practical activities of lesson 12: see lessons P6 and P7.</p>                           |
| <p>Name of lesson 13: <b>Tests for quality control. Special features and applications.</b></p> <p>Contents of lesson 13: Tests for quality control: introduction, purpose and applications, people taking part in the tests, choice of test location, classification, special features, examples.</p> <p>Description of the practical activities of lesson 13: there are not any practical activities.</p>                |
| <p>Name of lesson 14: <b>Standardised procedures for food sensory analysis. UNE standards for sensory analysis.</b></p>   |

Contents of lesson 14: standardised procedures for food sensory analysis (oil, wine, others): procedures accredited by ENAC, developed by IOC, others. Standards for sensory analysis: UNE standards.

Description of the practical activities of lesson 14: see lesson P10

Name of lesson 15: **Other sensory tests.**

Contents of lesson 15: Other sensory tests: threshold determination, gas chromatography-olfactometry, time-intensity tests.

Description of the practical activities of lesson 15: there are not any practical activities.

**MODULE IV. Exploratory data analysis, statistical analysis and data reports.** (Lectures and other activities: cooperative assignment, classroom activities).

Competencies: CG7, CETE1.

Learning outcomes: RA181, RA182.

Name of lesson 16: **Basic analyses for results from sensory tests.**

Contents of lesson 16: Exploratory data analyses. Common estimators. Basic statistical methods. Guidelines for reporting results.

Description of the practical activities of lesson 16: see lessons P4, 5, 7, 8 and 10.

Name of lesson 17: **Other tests to explore variable relationships.**

Contents of lesson 17: introduction; classification; independence relationships; dependence relationships.

Description of the practical activities of lesson 17: see lesson P7.

**PRACTICAL SESSIONS (Laboratory sessions or field practice)**

Name of lesson P1: **Preselection for panellist's recruitment. Selection and training: appearance, taste matching tests**

Contents of lesson P1: pre-screening questionnaires and procedure for panellist's preselection; screening test and criteria for panellist's selection for appearance; taste matching tests for panellist's selection and/or training.

Description of practical activities for unit P1:

Hours: 3.

Type and place: laboratory; test room and/or pilot plant.

Competencies: CETE1.

Learning outcomes: RA182, RA183.

Materials and instruments: solutions, test samples, questionnaires.

Name of lesson P2: **Selection and training of panel members: odour matching tests, flavour.**

Contents of lesson P2: screening and training tests for odour and flavour traits: odour matching tests, flavour.

Description of practical activities for unit P2:

Hours: 3.

Type and place: laboratory; test room and/or pilot plant.

Competencies: CETE1.

Learning outcomes: RA182, RA183.

Materials and instruments: solutions, test samples, questionnaires.

Name of lesson P3: **Selection and training of panel members: detection and discrimination tests, scaling exercises.**

Contents of lesson P3: screening and training tests: detection and discrimination tests (triangle test, intensity rating method, others), scaling exercises (category and lineal scales).

Description of practical activities for unit P3:

Hours: 3.

Type and place: laboratory; test room and/or pilot plant.

Competencies: CETE1.

Learning outcomes: RA182, RA183.

Materials and instruments: solutions, test samples, questionnaires.

Name of lesson P4: **Discrimination tests I.**

Contents of lesson P4: discrimination testing, data analysis and interpretation, reporting results: overall difference tests (triangle test, two-out-of-five test, others).

Description of practical activities for unit P4:

Hours: 3.

Type and place: laboratory; test room and/or pilot plant.

Competencies: CB2-CB5, CG8, CG9, CG10, CETE1.

Learning outcomes: RA182, RA183, RA184.

Materials and instruments: solutions and/or test samples, questionnaires.

Name of lesson P5: **Discrimination tests II.**

Contents of lesson P5: discrimination testing, data analysis and interpretation, reporting results: attribute difference tests (directional difference test, ranking test).

Description of practical activities for unit P5:

Hours: 3.

Type and place: laboratory; test room and/or pilot plant.

Competencies: CB2-CB5, CG8, CG9, CG10, CETE1.

Learning outcomes: RA182, RA183, RA184.

Materials and instruments: solutions and/or test samples, questionnaires.

Name of lesson P6: **Descriptive tests I.**

Contents of lesson P6: Consensus step and trait selection. General guidelines for training for descriptive tests. Conventional descriptive test.

Description of practical activities for unit P6:

Hours: 3.

Type and place: laboratory; test room and/or pilot plant.

Competencies: CB2-CB5, CG8, CG9, CG10, CETE1.

Learning outcomes: RA182, RA183, RA184.

Materials and instruments: solutions and/or test samples, questionnaires.

Name of lesson P7: **Descriptive tests II.**

Contents of lesson P7: Other descriptive tests. Data analysis for descriptive tests, interpretation and result reporting.

Description of practical activities for unit P7:

Hours: 3.

Type and place: laboratory; test room and/or pilot plant.

Competencies: CB2-CB5, CG8, CG9, CG10, CETE1.

Learning outcomes: RA182, RA183, RA184.

Materials and instruments: solutions and/or test samples, questionnaires.

Name of lesson P8: **Affective tests.**

Contents of lesson P8: tests to estimate consumer response: preference tests, acceptance tests. Data analysis.

Description of practical activities for unit P8:

Hours: 3.

Type and place: laboratory; test room and/or pilot plant.

Competencies: CB2-CB5, CG8, CG9, CG10, CG11, CETE1.

Learning outcomes: RA182, RA183, RA184.

Materials and instruments: solutions and/or test samples, questionnaires.

Name of lesson P9: **Visit to an external sensory test room.**

Contents of lesson P9: visit to an external sensory test room.

Description of practical activities for unit P9:

Hours: 2.5.

Type and place: field practice; an external sensory test room.

Competencies: CB2-CB5, CG8, CG9, CG10, CETE1.

Learning outcomes: RA182, RA183, RA184.

Materials and instruments: (depending on the place visited).

Name of lesson P10: **Sensory evaluation of olive oil.**

Contents of lesson P10: Sensory evaluation of olive oil according to the International Olive Council: containers, sensory traits, instructions to use the questionnaire, data analysis.

Description of practical activities for unit 10:

Hours: 3.5

Type and place: laboratory; test room and/or pilot plant.

Competencies: CB2-CB5, CG8, CG9, CG10, CETE1.

Learning outcomes: RA182, RA183, RA184.

Materials and instruments: solutions and/or test samples, questionnaires.

| Educational activities *   |             |           |                      |           |     |     |                     |             |
|--|-------------|-----------|----------------------|-----------|-----|-----|---------------------|-------------|
| Student workload in hours by lesson  |             | Lectures  | Practical activities |           |     |     | Monitoring activity | Homework    |
| Lesson   | Total       | L         | HI                   | LAB       | COM | SEM | SGT                 | PS          |
| 1  | 2           | 1         |                      |           |     |     |                     | 1           |
| 2  | 4           | 2         |                      |           |     |     |                     | 2           |
| 3  | 4           | 2         |                      |           |     |     |                     | 2           |
| 4  | 7.5         | 2         |                      |           |     |     | 1.5                 | 4           |
| 5  | 2           | 1         |                      |           |     |     |                     | 1           |
| 6  | 2           | 1         |                      |           |     |     |                     | 1           |
| 7  | 4           | 2         |                      |           |     |     |                     | 2           |
| 8  | 7.5         | 2         |                      |           |     |     | 1.5                 | 4           |
| 9  | 4           | 2         |                      |           |     |     |                     | 2           |
| 10   | 4           | 2         |                      |           |     |     |                     | 2           |
| 11   | 4           | 2         |                      |           |     |     |                     | 2           |
| 12   | 4           | 2         |                      |           |     |     |                     | 2           |
| 13   | 5.5         | 1         |                      |           |     |     | 1.5                 | 3           |
| 14   | 2           | 1         |                      |           |     |     |                     | 1           |
| 15   | 2           | 1         |                      |           |     |     |                     | 1           |
| 16   | 4           | 2         |                      |           |     |     |                     | 2           |
| 17   | 4           | 2         |                      |           |     |     |                     | 2           |
| P1   | 6           |           |                      | 3         |     |     |                     | 3           |
| P2   | 8.5         |           |                      | 3         |     |     | 1.5                 | 4           |
| P3   | 5           |           |                      | 3         |     |     |                     | 2           |
| P4   | 5           |           |                      | 3         |     |     |                     | 2           |
| P5   | 5           |           |                      | 3         |     |     |                     | 2           |
| P6   | 5           |           |                      | 3         |     |     |                     | 2           |
| P7   | 5           |           |                      | 3         |     |     |                     | 2           |
| P8   | 6           |           |                      | 3         |     |     |                     | 3           |
| P9   | 9.5         |           |                      | 2.5       |     |     | 1.5                 | 5           |
| P10  | 5           |           |                      | 3.5       |     |     |                     | 2           |
| <b>Assessment</b>  | <b>23.5</b> | <b>2</b>  |                      |           |     |     |                     | <b>21.5</b> |
| <b>TOTAL ECTS</b>  | <b>150</b>  | <b>30</b> |                      | <b>30</b> |     |     | <b>7.5</b>          | <b>82.5</b> |
| L: Lectures (85 students)<br>HI: Hospital internships (7 students)<br>LAB: Laboratory or field practices (15 students)<br>COM: Computer room or language laboratory practice (20 students)<br>SEM: Problem classes or seminars or case studies (40 students)<br>SGT: Scheduled group tutorials (educational monitoring, ECTS type tutorials)<br>PS: Personal study, individual or group work and reading of bibliography |             |           |                      |           |     |     |                     |             |
| Teaching Methodologies*  |             |           |                      |           |     |     |                     |             |
| 1. Lectures and discussion of theoretical contents.<br>3. Laboratory practices, pilot plants and field practices.<br>7. Use of the virtual classroom.<br>8. Visits.<br>9. Study of the subject.<br>10. Search and management of scientific literature<br>14. Planning and carrying out a written project assignment.   |             |           |                      |           |     |     |                     |             |
| Learning outcomes *  |             |           |                      |           |     |     |                     |             |

At the end of this course the student is expected to:

- RA181. Show proper knowledge of the most important aspects of sensory analysis.
- RA182. Show to be able of analyse and understand the results from the sensory tests.
- RA183. Show practical knowledge to plan and carry out different sensory tests and to understand their results.
- RA184. Create a project assignment related to sensory analysis and evaluate critically its validity.

### Assessment systems \*

#### Continuous assessment:

Assessment criteria:

- To be able to answer properly to questions related to sensory analysis concepts and procedures.
- To be able to analyse and understand the results from the sensory tests.
- To show practical knowledge to plan and carry out different sensory analysis tests and to understand their results.
- To create a proper project assignment (based on either a critical review of scientific or technical literature or a specific case for sensory analysis application)
- To take part actively in the classroom activities during the lectures.

Activities and instruments for assessment:

- Final exam (40%), based on short and/or quiz questions, about the lectures. Alternatively, partial exam(s) could be performed during the course, the passing mark being five out of ten.
- Questionnaires and/or exams carried out during the practical sessions (35%)
- Planning and writing a project assignment related to the course (10%), and participation in the project assessment.
- Classroom activities (15%).

#### Assessment based on a final global exam\*.

Assessment criteria:

- To be able to answer properly to questions related to sensory analysis concepts and procedures.
- To be able to analyse and understand the results from the sensory tests.
- To show practical knowledge to plan and carry out different sensory analysis tests and to understand their results.

Activities and instruments for assessment:

- Final exam (100%), based on short and/or quiz questions, about the lectures (50%) and practical sessions (50%). The passing mark is five out of ten.

*\*The choice of the assessment system corresponds to each student, who will make their decision during the first quarter of the second term or until the last day of the extended enrolment period when it ends after that first quarter. Applications will be made by filling in a specific form on the Campus Virtual. In case of not requesting the assessment based on a final global exam, the assessment system will be the continuous assessment.*

## Bibliography (basic and complementary)

### Basic bibliography.

- ÆNOR. (1997). "Análisis Sensorial. Alimentación. Recopilación de Normas UNE". Ed. ÆNOR.
- CARPENTER, R.P., LYON, D.H., HASDELL, T.A. (2002). "Análisis sensorial en el desarrollo y control de la calidad de alimentos". Ed. Acribia. Zaragoza.
- BRIZ ESCRIBANO, J., GARCÍA FAURE, R. (2004). "Análisis sensorial de productos alimentarios". Ed. Ministerio de Agricultura, Pesca y Alimentación.
- LAWLESS, H.T., HILDEGARDE HEYMANN, H. (2010). "Sensory evaluation of food: principles and practices". (2<sup>nd</sup> ed.). Ed. Kluwer Academic-Plenum. New York.
- MEILGAARD, M., CIVILLE, G. V., CARR, T. (2015). "Sensory evaluation techniques" (3rd ed.). Ed. CRC Press. Boca Raton, FL.
- STONE, H., SIDEL, J.L. (2004). "Sensory evaluation practices". (5rd ed.). Ed. Academic Press. Amsterdam.

### Bibliography complementary.

- NÆS, T., BROCKHOFF, P., TOMIC, O. (2010). "Statistics for Sensory and Consumer Science". Ed. Wiley. Wiltshire.
- ROSENTHAL, A.J. (2001). "Textura de los alimentos: medida y percepción". Ed. Acribia.

## Other resources and complementary educational materials

Materials available on <https://campusvirtual.unex.es>.

UNE Standards ([www.aenor.es](http://www.aenor.es)).

<https://www.internationaloliveoil.org/> (International Olive Council).

[http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1745-459X;jsessionid=B100D78A907EE243E160BEA70A5AA0DC.d01t01](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1745-459X;jsessionid=B100D78A907EE243E160BEA70A5AA0DC.d01t01) (Journal of Sensory Studies).

[www.percepnet.com](http://www.percepnet.com)

<http://www.sciencedirect.com/science/journal/09503293> (Food Quality and Preference).

<http://www.springerlink.com/content/u5314u/?p=211dc03a852f483194cd5b2843fa9505&pi=0#section=109694&page=1&locus=63> (The Sensory Evaluation of Dairy Products).