COURSE SYLLABUS

Academic Year: 2024/2025

Identification and characteristics of the course				
Code	501256	ECTS Credits		6
Course title (English)	Sensory Analysis of Food.			
Course title (Spanish)	Análisis Sensorial de Alimentos.			
Degree programs	INGENIERÍA DE LAS INDUSTRIAS AGRARIAS Y ALIMENTARIAS.			
Faculty/School	Escuela de Ingenierías Agrarias.			
Semester	2º(8º)	Course type (compulsory/optional)	Optional.	
Module	Optional.			
Subject matter	Análisis sensorial de alimentos.			

Lecturer/s			
Name	Room	E-mail	Web page
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Subject Area	Tecnología de Alimentos.
Department	Producción Animal y Ciencia de los Alimentos.
Coordinator (Only if there is more than one lecturer)	Ana Isabel Carrapiso Martínez.

Competencies[1]*

CB2, CB3, CB4, CB5, CG7, CG8, CG9, CG10, CG11.

CETE1.

Contents

Course outline*

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.

[1]* The sections concerning competencies, course outline, teaching activities, teaching methodology, learning outcomes and assessment methods must conform to those included in the ANECA verified document of the degree program.

OBJETIVOS DE DESARROLLO SOSTENIBLE CONTEMPLADOS

Course syllabus

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

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

Title of unit 2: **The sensory traits and their perception. I. Appearance. Consistency and texture.**
Contents of unit 2: Appearance: characteristics, terms, applications, appearance perception; consistency and texture: characteristics, terms, applications, consistency and texture perception.

Title of unit 3: **The sensory traits and their perception. II. Taste. Odour and flavour. Others.**
Contents of unit 3: Taste: characteristics, terms, applications, taste perception; odour and flavour: characteristics, terms, applications, perception; other traits: noise, pain, temperature.

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.

Title of unit 4: **The environment during the sensory tests. The test room: location. Environmental conditions.**
Contents of unit 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.

Title of unit 5: **Sample preparation and presentation.**
Contents of unit 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.

Title of unit 6: **The sensory panel. Types of panellists. Selection and training of panellists.**

Contents of unit 6: The sensory panel; types of panellists; selection and training of panellists.
Title of unit 7: **Factors influencing the results from the sensory tests. Physiological and psychological factors.** Contents of unit 7: Factors influencing the results from the sensory tests. Physiological and psychological factors.
MODULE III. SENSORY TESTS: RESPONSE MEASUREMENT, STATISTICAL HYPOTHESES AND TYPES OF TESTS. (Lectures and other activities: cooperative assignment, classroom activities). Competencies: CETE1. Learning outcomes: RA181, RA182.
Title of unit 8: **Measuring responses. Psychophysical theories. Classification, grading, ranking, scaling.** Contents of unit 8: Most important psychophysical functions; types of sensory data; methods for response measurement.
Title of unit 9: **Statistical design for sensory testing.** Contents of unit 9: Introduction; common statistical designs for sensory tests.
Title of unit 10: **Classification of the sensory tests. Affective tests: qualitative and quantitative methods.** Contents of unit 10: Classification of the sensory test; affective tests: purpose and applications, people taking part in the tests, choice of test location, types of tests.
Title of unit 11: **Difference tests. Overall difference tests and attribute difference tests.** Contents of unit 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).
Title of unit 12: **Descriptive tests. Components. Commonly used descriptive tests.** Contents of unit 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.
Title of unit 13: **Tests for quality control. Special features and applications.** Contents of unit 13: Tests for quality control: introduction, purpose and applications, people taking part in the tests, choice of test location, classification, special features, examples.
Title of unit 14: **Standardised procedures for food sensory analysis. UNE standards for sensory analysis.** Contents of unit 14: standardised procedures for food sensory analysis (oil, wine, others): procedures accredited by ENAC, developed by IOC, others. Standards for sensory analysis: UNE standards.
Title of unit 15: **Other sensory tests.** Contents of unit 15: Other sensory tests: threshold determination, gas chromatography-olfactometry, time-intensity tests.
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.
Title of unit 16: **Basic analyses for results from sensory tests.** Contents of unit 16: Exploratory data analyses. Common estimators. Basic statistical methods. Guidelines for reporting results.
Title of unit 17: **Other tests to explore variable relationships.** Contents of unit 17: introduction; classification; independence relationships; dependence relationships.
PRACTICAL SESSIONS (Laboratory sessions or field practice)
Title of unit P1: **Preselection for panellist's recruitment. Selection and training: appearance, taste matching tests** Contents of unit 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.

Title of unit P2: **Selection and training of panel members: odour matching tests, flavour.**
Contents of unit 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.

Title of unit P3: **Selection and training of panel members: detection and discrimination tests, scaling exercises.**
Contents of unit 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.

Title of unit P4: **Discrimination tests I.**
Contents of unit 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.

Title of unit P5: **Discrimination tests II.**
Contents of unit 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.

Title of unit P6: **Descriptive tests I.**
Contents of unit 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.
Title of unit P7: **Descriptive tests II.** Contents of unit 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.
Title of unit P8: **Affective tests.** Contents of unit 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.
Title of unit P9: **Visit to an external sensory test room.** Contents of unit 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).
Title of unit P10: **Sensory evaluation of olive oil.** Contents of unit 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 (hours per lesson)		Lectures	Practical sessions				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
Assessment (Partial exam)	**11.5**	**1**						**10.5**
Assessment (exam)[2]**	**12**	**1**						**11**
TOTAL ECTS	**150**	**30**		**30**			**7.5**	**82.5**

L: Lectures (85 students)
HI: Hospital internships (7 students)
LAB: Lab sessions or field practice (15 students)
COM: Computer room or language laboratory practice (20 students)
SEM: Problem-solving classes, seminars or case studies (40 students)
SGT: Scheduled group tutorials (educational monitoring, ECTS type tutorials)
PS: Personal study, individual or group work and reading of bibliography

Teaching Methodology*

1. Lectures and discussion of theoretical contents.
3. Laboratory practices, pilot plants and field practices.
7. Use of the virtual classroom.
8. Visits.
9. Study of the subject.

[2**] Insert as many rows as necessary. For instance, you can include one row for a partial exam and another for the final exam.

10. Search and management of scientific literature
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%)
- Panning 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.

AENOR. (1997). "Análisis Sensorial. Alimentación. Recopilación de Normas UNE". Ed. AENOR.
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". (2nd 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. Ámsterdam.

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).
https://www.internationaloliveoil.org/ (International Olive Council).
http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1745-459X;jsessionid=B100D78A907EE243E160BEA70A5AA0DC.d01t01 (Journal of Sensory Studies).
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).

Tutorials

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