



Universitat de Lleida

DEGREE CURRICULUM  
**SENSORY EVALUATION  
TECHNIQUES**

Coordination: ROMERO FABREGAT, MARIA PAZ

Academic year 2023-24

## Subject's general information

<b>Subject name</b>	SENSORY EVALUATION TECHNIQUES			
<b>Code</b>	102253			
<b>Semester</b>	2nd Q(SEMESTER) CONTINUED EVALUATION			
<b>Typology</b>	<b>Degree</b>	<b>Course</b>	<b>Character</b>	<b>Modality</b>
	Bachelor's Degree in Food Science and Technology	3	OPTIONAL	Attendance-based
<b>Course number of credits (ECTS)</b>	6			
<b>Type of activity, credits, and groups</b>	<b>Activity type</b>	PRALAB	PRAULA	TEORIA
	<b>Number of credits</b>	1	4	1
	<b>Number of groups</b>	1	1	1
<b>Coordination</b>	ROMERO FABREGAT, MARIA PAZ			
<b>Department</b>	FOOD TECHNOLOGY, ENGINEERING AND SCIENCE			
<b>Teaching load distribution between lectures and independent student work</b>	Hores presencials: 60 Hores no presencials: 90			
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.			
<b>Language</b>	Castellà			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
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## Subject's extra information

Tècniques de l'avaluació sensorial és una assignatura optativa dels plans d'estudi del Graduat en Ciència i Tecnologia d'Aliments. L'avaluació sensorial és una tecnologia que té per objectiu la determinació de les propietats sensorials o organolèptiques dels aliments, és a dir, la repercussió produïda sobre els diversos receptors sensorials estimulats durant i després de la ingestió d'aliments, i la recerca de les preferències o aversions provocades per aquestes propietats sensorials.

L'assignatura està dirigida a estudiants que vulguin incorporar-se professionalment en el camp de l'R+ D i en el control de qualitat. No s'ensenya a tastar, s'ensenyen els procediments per a executar correctament els estudis sensorials, des de quin atribut o atributs avaluar, quin tipus de jutge és el més adequat i com seleccionar-lo, com desenvolupar les proves i com processar les dades fins a com elaborar els resultats.

### Requisits per a cursar-la

Nivell d'anglès que permeti manejar nombrosa documentació escrita i bibliografia en anglès.

## Learning objectives

The student who passed this subject will be able to:

1. To argue the necessity and importance of sensory evaluation in the scope of quality control and development of new products
2. Conèixer els mechanisms of perception of the taste and the smell.
3. Defining the sensorial attributes and the impact on the quality of the food.
4. Identify sensorial descriptors
5. Plan and execute proves sensorials amb alimentants.
6. Select and train jutges to be part of tast panells.
7. Associate an experimental design with the correct statistical tractament.
8. Analyze and interpret results of sensory evaluation.
9. Prepare reports on sensorial proves.

## Competences

### Basical skills

It will contribute to the achievement of the following basic competencies:

CB1: That the students have demonstrated their understanding of connections starting at the base of the general secondary education at a level that, if it is based on text advancements, also includes some aspects that involve connections coming from the guardian 'this area.

CB2: That the students need to apply their connections to their treball or vocation in a professional way and after the competencies that tend to demonstrate per mitjà de l'elaboració i defensa d'arguments i la solució de problemes dins la seva àrea d'estudi

CB3: That the students have the ability to gather and interpret fillings per emetre judicis that included one that reflected on filling topics of a social, scientific or ethical nature.

CB4: That the students puguin transmit information, ideas, problems and solutions to a public both special and non-specialized.

CB5: That the students have developed the skills of apprenticeship that are necessary for the subsequent study of a high level of autonomy.

## **General skills**

CG1. Analyze specific situations, define problems, make decisions and implement action plans in search of solutions.

CG2. Interpret studies, reports, data and analyze them numerically.

CG3. Select and manage the available written and computerized sources of information related to the professional activity.

CG4. Work alone and in a multidisciplinary team.

CG5. Understand and express themselves with the appropriate terminology.

CG6. Discuss and argue in various forums.

CG8. Value comprehensive training, personal motivation and mobility.

CG9. Analyze and assess the social and ethical implications of professional activity.

CG10. Have a critical and innovative spirit.

## **Transversal skills**

CT1: Present information correctly orally and in writing

CT3: Use the computer systems and the existing communication with support for the development of the seva professional activity

CT4. Respect the fundamental rights of equality between men and women, the promotion of Human Rights and the values of a culture of peace and democratic values.

## **Specific skills**

The subject will contribute, together with others, to the achievement of many specific skills, highlighting specific competences of module 3: Food Science

CE1. Select and apply the physical and mathematical foundations necessary for the development of other disciplines and the activities of the profession.

CE3. Identify and apply the fundamentals of Biology and Human Physiology necessary for the development of other disciplines and the activities of the profession.

CE4. Select and apply the basic concepts of the statistical method, being able to statistically analyze the results of studies and interpret them critically.

CE5. Apply the basic processes of a laboratory and use equipment, handle reagents, meet safety conditions and prepare reports.

CE6. Posing and solving problems by correctly applying the concepts acquired to specific situations.

CE14. Recognize the chemical composition of food and its chemical reactions.

CE15. Relate the composition of foods with their physical, chemical and technological properties.

CE16. Interpret the physical, chemical and biochemical transformations that occur throughout the manufacturing and storage processes.

CE17. Select and apply the methods and instrumentation for the physical-chemical and sensory analysis of food.

## Subject contents

- **CONTENTS**

### **Unit 1. Introduction to sensory techniques.**

Introduction. Sensory evaluation in the food industry. ISO i UNE regulations.

### **Unit 2. Sensory Attributes .**

Introduction. terminology for food description: visual aspects, odor-aroma, flavor and texture. Flavor and texture profile methodologies.

### **Unit 3. Controls for sensory studies.**

Introduction. Tests room. Products controls. Panelist controls.

### **Unit 4. Physiological and psychological factor.**

### **Unit 5. Measuring responses.**

Introduction. Ranking and scaling. New hedonic scales. Thresholds determination.

### **Unit 6 Basic statistical methods.**

Statistical hypothesis testing. Statistical design: sampling, blocking an experimental design. More usual experimental designs. Normal and binomial distributions. Non parametric methods. Analysis of variance.

### **Unit 7. Discriminative test: overall differences.**

Introduction. Triangle test. Duo-trio test. Same/Different test. A-noA test. Difference from control test. Sequential tests.

### **Unit 8. Discriminative test: attribute differences.**

Introduction. Paired sampling test: Comparing two samples and pair wise ranking test. Comparing more than two samples. ranking and rating tests in several designs (RBD, BIB, split-plot)

### **Unit 9. Selection and training of panelists.**

Introduction. Guidelines to select and train panel members for discriminative and descriptive test. Panel

performance controls.

## **Unit 10. Descriptive test.**

Introduction. Components of descriptive analysis. Commonly used descriptive test methods. The Spectrum and QDA methods.

## **Unit 11. Affective test.**

Introduction.. Field of application. The consumer panel. The test location. Qualitative and quantitative affective methods. Protocol design for consumer studies.

## **Unit 12 Sensory shelf-life estimation of foods.**

Design of sensory shelf-life experiments. Cut-off point methodology. Accelerate storage. Survival analysis.

## **Unit 13 Sensory evaluation in product development**

Case-study: development a product.

## **Unit 14. Guides for the selection of sensory tests**

Introduction. Project and test objectives. Summary of the area of application of sensory tests.

## **Unit 15. Guides to report results.**

Introduction. Summary. Objective. Experimental. Results and discussion.

- **PRACTICAL ACTIVITIES**

### **COMPUTER BASED ACTIVITIES**

The aim of this activities is to provide basic knowledge of statistic applied to sensory evaluation of foods.

P1: Working with statistical tables

P2: Statistical hypothesis testing

P3: The binomial test: applicatons in sensory differene and preference testing.

P4: Non parametric test: Friedman, Wilcoxon

P5: Analysis of variance: randomized, two factors with and without interactions and spli-plot designs

### **TASTING ROOM ACTIVITIES**

P1: Aroma identification

P2: Test organization

P3: Matching test: flavor

P4 i 5: Discriminative test with two samples

P6: Samples presentation: complets and incomplete designs.

P7 i 8: Discriminative test with more than two samples

P9: Sequential test .

P10:Determining threshold

## **GROUP WORK**

Affective test with students of the ETSEA campus.

Analysis of one research article related with descriptive analysis

## **SEMINAR**

Cases study

## Methodology

Tipus d'activitat	Descripció	Activitat presencial alumne		Activitat no presencial alumne		Avaluació	Temps total/ECTS
		Objectius	Hores	Treball alumne	Hores	Hores	Hores
<b>Lliçó magistral</b>	Classe magistral (Aula. Grup gran) Exposició per part de la professora dels 5 primers temes del programa	Explicació dels principals conceptes	8	Estudi: Conèixer, comprendre i sintetitzar coneixements	8	1	17
<b>Problemes i casos</b>	Explicació per part de la professora de les diferents proves sensorials (temes 6 a 12) amb resolució d'un exemple per a explicar el procediment d'anàlisi de resultats	Descriure els procediments de cada una de les proves sensorials Interpretar resultats	12	Aprendre a resoldre problemes i casos	20	2	22
<b>Problemes i casos</b>	Classe participativa Resolució de problemes i casos relacionats amb cada una de les proves sensorials estudiades		20	Aprendre a resoldre problemes i casos.  Adquirir habilitat en el maneig d'eines per al càlcul estadístic (Excel i paquets estadístics)	30	2	86
<b>Seminari</b>	Classe participativa (Grup mitjà) Casos pràctics relacionats amb els temes 13 a 15	Dissenyar un protocol complet que inclogui la selecció de varies proves d'avaluació sensorial, com eina per a la presa de decisions previes al llançament d'un producte	8	Resoldre problemes i casos. Discutir resultats	6	1	15
<b>Sala de cata</b>	Pràctiques en sala de tast Grup petit (fins 12 estudiants)	Preparar fitxes de cata. Executar cada prova sensorial Entendre-la	10	Processar els resultats de la prova sensorial assignada a cada estudiant i realitzar la memòria	2	1	13



<b>Activitats dirigides</b>	1.- Treball individual: anàlisi d' un article 2.- Treball individual: Desenvolupament d'una prova sensorial afectiva	Orientar a l'alumne en l'anàlisi crític d' un article d' investigació sobre avaluació sensorial. Descriure la metodologia per a per a portar a terme un estudi afectiu	<b>2</b>	Localitzar en les bases dedades i seleccionar un article científic Llegir-lo i interpretar-lo Realitzar un anàlisi crític  Planificar i executar una prova. Elaborar l' informe final	<b>15</b>	<b>2</b>	<b>19</b>
<b>Totals</b>			<b>60</b>		<b>81</b>	<b>9</b>	<b>150/6</b>

## Evaluation

### BLOCK 1 PERSONAL WORK (25%)

Basic statistical exercises applied to sensory evaluation (10%)

Critical study of a descriptive trial (5%)

Practice notebook (10%)

### BLOCK 2 WORK FOR COUPLES (20%)

Affective test (10%)

Useful life test (10%)

### BLOCK 3 EXAMS (20%)

Theoretical-practical exam of the contents of the first 5 topics (10%)

Written test related to judge selection protocols (10%)

### BLOCK 4 PROBLEMS EXAMS (35%)

Exam Problems discriminatory tests (T7 and T8) (25%)

NOTE: To pass, you must obtain an average grade greater than or equal to 5, and a grade equal to or greater than 4.5 in the block 4

## Bibliography

### Basic Bibliografy

LAWLESS, H.T.; HEYMANN, H. 2010 Sensory evaluation of food: principles in food. 2nd ed. Chapman and Hall. Aspen Publication (ISBN 978-1441964878)

MEILGAARD, M .; CIVILLE, G.V.; CARR, B.T. 2006 Sensory evaluation techniques. 4 ed. Ed. CRC Press. Florida (ISBN 978-0849338397)

O'MAHONY, M . -1986- Sensory evaluation of food. Statistical methods and procedures. Ed. M arcel Dekker,

**Inc. New York.** (ISBN 978-0824773373)

STONE, H and SIDEL, J.L. (2004) Sensory evaluation practices (3 ed). Elsevier Academic press. (ISBN 0-12-672690-6)

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## **Advanced Bibliografy**

DEPLEDT, F. (ed) 2009. Évaluation sensorielle: manuel méthodologique. 3<sup>a</sup> ed. Tec&Doc Lavoisier Paris (978-2-7430-0997-7)

HOUGH, G (2010) Sensory shelf life estimation of food products. CRC Press. USA. (ISBN 978-1-4200-9291-2).

KEMP, S.; HOLLOWOOD, T. AND HORT, J. (2009) Sensory Evaluation: A Practical Handbook. Ed Wiley-Blackwell. USA. (ISBN 978-1-4051-6210-4)

RESURRECCIÓN, A. (1998) Consumer sensory testing for product development. An Aspen Publication. Maryland-USA. (ISBN 0-8342-1209-9)

UREÑA, M.; D'ARRIGO, M. Y GIRÓN, O. (1999) Evaluación sensorial de los alimentos. Aplicación didáctica. Universidad Nacional Agraria La Molina. Editorial Agraria. Lima. Perú.