INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Sensory Analysis and Rheology Laboratories			Field of study	Food industries		
Bachelor in	Food Engineering			School	School of Agriculture		
Academic Year	2022/2023	Year of study	1	Level	1-1	ECTS credits	6.0
Type	Semestral	Semester	2	Code	9087-641-1202-00-22		

Workload (hours)	162	Contact hours	T -	TP -	PL -	TC -	S -	E -	OT -	O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): António Manuel Coelho Lino Peres, Fernando Jorge Ruivo Sousa

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Recognize the key elements of a sensory analysis lab
2. Explain the functioning of the sense organs and their importance in the food tasting.
3. Apply tests to teach the difference between aroma, flavor and rectronasal aroma.
4. Explain the concepts relating discriminating analysis and implement discriminatory tests for selection of assessors and food quality control.
5. Explain the concepts of quantitative descriptive analysis. Organize sessions to develop lists of attributes, set standards and anchors for the scales of measurement. Evaluate judges.
6. Distinguish panels of tasters trained consumers. Conduct tests with consumers.
7. Define and discuss the viscosity, texture and color of the food and relate with sensory methods.

Prerequisites

Not applicable

Course contents

Introduction to sensory analysis. Sensory and organoleptic properties. Four basic flavours. Aromatic substances. Discriminative sensory analysis. Descriptive analysis. Sensory attributes. Consumers. Testing consumers. Analytical measurement of physical properties. Food Rheology. Viscosity. Viscometers and rheometers. Texture of food. Colour of food. Empirical comparison of instrumental results with sensory analysis data.

Course contents (extended version)

1. Introduction to sensory analysis. Sensory LaboratoryGeneral considerations for testing.
2. Type of assessors.
3. Distinction between sensory and organoleptic properties. Functioning of human sensory apparatus.
4. Basic flavours. Aromatic substances. Distinguish taste, smell; Trigeminal nerve, tactile sensations
5. Discriminative sensory analysis. Triangular Test, paired test. Assessors selection, quality control
6. Descriptive analysis. Sensory attributes. Scales, anchors and verbal standards. Analysis of results
7. Consumers. Testing consumers: acceptability and preference. Hedonic scales.
8. Rheology of food - rheological classification of foods.
9. Shear stress and rate of shear. Concept of viscosity. Newton law for viscosity.
10. Newtonian fluids Non-Newtonian time-independent foods.
11. Pseudoplastic, dilatant, Bingham and mix plastic: models and examples.
12. Non-Newtonian time-dependent foods: thixotropic and rheopectic materials - models and examples.
13. Viscoelastic foods (elastic, viscous and plastic behaviors).
14. Viscometers: capillary, rolling/falling ball and rotational. Taylor vortices.
15. Energy losses/pressure drop due to friction and contractions, expansions, valves and fittings
16. Texture and color of foods.

Recommended reading

1. ISO 8589: 2007; NP EN ISO 8586; 2012; ISO 4121: 2003; ISO 6658: 2005; ISO10399: 2004; ISO 4120: 2004; ISO 5492: 2008; ISO 13299: 2016
2. STONE, H. ; BLEIBAUM, R. ; THOMAS, H. (2012). Sensory Evaluation Practices. 4th Edition. Editors: Herbert Stone, Rebecca Bleibaum & Heather Thomas. Academic Press . eBook ISBN: 9780123820877, 446pp.
3. RAO, M. A. (2007). Rheology of Fluid and Semisolid Foods. Principles and Applications. 2ª Edição. Springer. USA
4. SAHIN, S. ; SUMNU, S. G. (2006). Rheological Properties of Foods in Physical Properties of Foods. Springer, Alemanha

Teaching and learning methods

Lectures with theoretical approaches to main concepts including case studies and team work. Laboratory classes promoting interpretation of experimental protocols based on standards, legislation or other. It is expected that students produce reports and answer to questionnaires at the end of each practical work. Development of Sensory sessions. Painel Training.

Assessment methods

1. Continuous (70% exam + 30% practical/works) - (Regular, Student Worker) (Final, Supplementary)
   - Final Written Exam - 60% (Written test including the theorectical-practical concepts)
   - Practical Work - 40% (Laboratorial works and/or research themes)
2. Option II - (Student Worker) (Final, Supplementary, Special)
   - Final Written Exam - 100% (Final Exam)

Language of instruction

1. Portuguese
2. Portuguese, with additional English support for foreign students.

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Electronic validation

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