

Syllabus

Descrizione corso

Titolo insegnamento	Food structure and physical properties
Codice insegnamento	44749
Titolo aggiuntivo	
Settore Scientifico-Disciplinare	AGRI-07/A
Lingua	Inglese
Corso di Studio	Corso di laurea magistrale in Scienze degli alimenti per l'innovazione e l'autenticità
Altri Corsi di Studio (mutuati)	
Docenti	prof. - ass. Lara Manzocco, Lara.Manzocco@unibz.it https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/43388
Assistente	
Semestre	Primo semestre
Anno/i di corso	2
CFU	6
Ore didattica frontale	40
Ore di laboratorio	20
Ore di studio individuale	90
Ore di ricevimento previste	18
Sintesi contenuti	-
Argomenti dell'insegnamento	Type of course: area caratterizzante Scientific area: Food Technology The course is part the profile "Food quality control and management" The structural complexity of food materials will be illustrated as the result of the interactions among different components under non-equilibrium conditions. The principles of food microstructural engineer required to predict and control biomolecules interactions and their consequences will be

	presented. An overview of analytical methodologies applicable for food structure evaluation (particle size, thermal, optical and electric properties) will be provided, critically discussing the role of the different analytical conditions. Food physical properties as a result of structural interactions. Food structure preservation, destruction, transformation and creation. Polymer science, colloid science, material science. The dynamic multiphase nature of foods. Basic material science concepts - Glass transition. Gordon-Taylor equation. Molecular mobility. WLF equation. Non equilibrium state diagrams. Modified state diagrams. Stickiness. Collapse. - Sol systems. Macro- and nano- disperse systems. Characterization of disperse systems. Formation and destabilization. Surfactants, HLB, HLD. Disperse systems of polymers. DLVO theory. Excluded volume. Intrinsic viscosity. W/W disperse systems. Segregative and associative phase separation. Phase diagrams. - Gels. Classification. Properties. Phase diagrams. Mixed gels. Food physical properties - Particle size and zeta potential analysis - Optical properties. Color measurement. Image analysis. - Thermal properties. TG, DTA, DSC, TMA, DTMA. The course includes lessons, working in groups, practices, laboratory activities, report preparation, experimental data presentation.
Parole chiave	
Prerequisiti	
Insegnamenti propedeutici	
Modalità di insegnamento	
Obbligo di frequenza	No
Obiettivi formativi specifici e risultati di apprendimento attesi	Students are expected to: - recognize the structural complexity of food materials as a result of the interactions among different components under non-equilibrium conditions; - understand the relations between structure of foods and their physical properties following processing and storage; - define analytical protocols to evaluate physical properties of food materials; - develop independent thinking, communication skills, learning and team working capability.
Obiettivi formativi specifici e risultati di apprendimento	

attesi (ulteriori info.)	
Modalità di esame	Written with review questions.
Criteri di valutazione	Final mark: clarity and organization of the answers, mastery of technical language, ability to establish relationships between topics.
Bibliografia obbligatoria	
Bibliografia facoltativa	
Altre informazioni	
Obiettivi di Sviluppo Sostenibile (SDGs)	