

Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Food structure and physical properties
Code der Lehrveranstaltung	44749
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	AGRI-07/A
Sprache	Englisch
Studiengang	Master in Lebensmittelwissenschaften für Innovation und Authentizität
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	Prof. - Ass. Lara Manzocco, Lara.Manzocco@unibz.it https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/43388
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Erstes Semester
Studienjahr/e	2
KP	6
Vorlesungsstunden	40
Laboratoriumsstunden	20
Stunden für individuelles Studium	90
Vorgesehene Sprechzeiten	18
Inhaltsangabe	-
Themen der Lehrveranstaltung	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.
Stichwörter	
Empfohlene Voraussetzungen	
Propädeutische Lehrveranstaltungen	
Unterrichtsform	
Anwesenheitspflicht	No
Spezifische Bildungsziele und erwartete Lernergebnisse	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.
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	
Art der Prüfung	Written with review questions.
Bewertungskriterien	Final mark: clarity and organization of the answers, mastery of technical language, ability to establish relationships between topics.
Pflichtliteratur	
Weiterführende Literatur	
Weitere Informationen	
Ziele für nachhaltige Entwicklung (SDGs)	