Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Interplay Diet–Gut Microbiome–Human Health
Code der Lehrveranstaltung	44770
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	MEDS-08/C
Sprache	Englisch
Studiengang	Master in Lebensmittelwissenschaften für Innovation und Authentizität
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	Ass. Prof. David Vauzour, https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/55171
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Erstes Semester
Studienjahr/e	2
KP	2
Vorlesungsstunden	20
Laboratoriumsstunden	-
Stunden für individuelles Studium	30
Vorgesehene Sprechzeiten	6
Inhaltsangabe	-
Themen der Lehrveranstaltung	This course introduces advanced concepts and current evidence on how dietary patterns and specific food components interact with the gut microbiome and its metabolites to influence human health outcomes, with emphasis on mechanistic and translational human

	nutrition. The course aligns with the master's degree programme's focus on nutrition for health promotion and on the evidence-based use of foods and supplements to support health. 1. Foundations - Gut microbiome ecology: composition, diversity, resilience, and dysbiosis - Host-microbe interactions: intestinal barrier, immune signaling, and enteroendocrine communication - Key analytical approaches: 16S sequencing, shotgun metagenomics, metabolomics, dietary assessment basics, causality, and confounding 2. Diet as a driver of microbiome structure and function - Dietary patterns (Mediterranean, Western-style, and plant-forward) and microbiome signatures - Macronutrients and microbiome responses (fiber, resistant starch, fats, and proteins) - Food processing, additives, emulsifiers, and sweeteners: what is known and unknown 3. Microbial metabolite pathways - Short-chain fatty acids, bile acids, tryptophan metabolites, and polyphenol-derived metabolites - Inflammation, oxidative stress, metabolic regulation, and gut barrier integrity - Inter-individual variability: responders and non-responders and precision nutrition concepts 4. Diet-microbiome-health links across outcomes - Cardiometabolic health (obesity, insulin resistance, and NAFLD risk factors) - Immune-mediated and inflammatory conditions - Gut-brain axis, cognition, and ageing: overview of emerging evidence 5. Evidence evaluation and translation - Reading and critiquing clinical trials, cohort studies, and mechanistic papers - From association to intervention: study design, endpoints, and limitations - Practical implications for nutrition professionals: claims, supplements, and ethical communication
Stichwörter	

Empfohlene Voraussetzungen	
Propädeutische Lehrveranstaltungen	
Unterrichtsform	- Interactive lectures on concepts, mechanisms, and evidence synthesis - Journal-club-style discussion of selected papers - Case-based learning, such as designing an intervention study or evaluating a health claim - Guided support for presentation topic selection and structure
Anwesenheitspflicht	No
Spezifische Bildungsziele und erwartete Lernergebnisse	By the end of the module, students will be able to: - explain how diet influences microbiome composition and function, and how microbial metabolites affect host physiology; - critically evaluate scientific literature on diet-microbiome-health relationships, including study design, bias, causality, and endpoints; - interpret key microbiome and metabolomics outputs at a conceptual level and relate them to nutrition questions; - discuss translational implications for nutrition practice, including responsible interpretation of evidence and limitations; - develop and communicate an evidence-based argument, through an oral presentation, on a focused topic within the module.
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	
Art der Prüfung	Individual or group assignment: preparation and delivery of a PowerPoint presentation on one or more topics covered in the module.
Bewertungskriterien	- Scientific accuracy and depth; - quality of evidence appraisal, including strengths and limitations and causality versus association; - clarity of structure, visuals, and oral communication; - appropriate and correctly cited sources; - ability to answer questions and defend choices and interpretations.

Pflichtliteratur	Recent scientific articles. A detailed week-by-week reading list can beattached to the official course sheet and updated to keep it current.
Weiterführende Literatur	
Weitere Informationen	Visiting Professor: David Vauzour Home institution: University of East Anglia, Norwich, United Kingdom Role: Associate Professor in Molecular Nutrition
Ziele für nachhaltige Entwicklung (SDGs)	Kein Hunger, Nachhaltiger Konsum und Produktion, Gesundheit und Wohlergehen