



COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
Introduction to Fermentation and Functional Foods	

Lecturer(s)	Department(s) where the course unit (module) is delivered
Coordinator: Dr. Eric Banan-Mwine Daliri (15 contact hours) Other(s): Dr. Aurelijus Burokas (2 contact hours) Akshay Kumar Vijaya (15 contact hours)	Institute of Biochemistry, Life Science Center, Saulėtekio al. 7, LT-10223, Vilnius

Study cycle	Type of the course unit (module)
First, second, third	Elective

Mode of delivery	Period when the course unit (module) is delivered	Language(s) of instruction
Face-to-face	Semester (Autumn)	English

Requirements for students	
Prerequisites: Basic knowledge of biology and microbiology	Additional requirements (if any):

Course (module) volume in credits	Total student's workload	Contact hours	Self-study hours
5	132	32	100

Purpose of the course unit (module): programme competences to be developed

The course aims to provide participants with a comprehensive understanding of the application of fermentation in functional food development, their scientific basis, practical applications, and potential health benefits. Participants will gain insights into the role of functional foods in promoting health and preventing chronic diseases, as well as practical knowledge for incorporating functional foods into dietary patterns.

The course unit aims to develop:

Specific competences:

- comprehensive understanding of functional foods and their role in promoting health and preventing disease;
- understanding about emerging trends, research advancements, and regulatory updates in the field of functional foods
- ability to apply scientific approach when investigating, analyzing, and explaining microbiota-gut-brain communication;

Generic competences:

- analytical and critical thinking ;
- skills for self-development, learning skills in order to study general science resources;

Learning outcomes of the course unit (module)	Teaching and learning methods	Assessment methods
<ul style="list-style-type: none"> • Developing practical teamwork skills, including: a) Coordinating group work, facilitating discussions, addressing challenges, and collectively presenting results. b) Critically and fairly assessing the individual contributions of each group member. 	Activities (conducting experiments as a group, researching and analyzing information), presentations (preparing and delivering presentations), and discussions	A seminar covering the methodology and experimental design, anticipated outcomes, and potential challenges of the experiment.

Content: breakdown of the topics	Contact hours						Self-study work: time and assignments		
	Lectures	Tutorials	Seminars	Exercises	Laboratory work	Internship/work placement	Contact hours	Self-study hours	Assignments
1. Introduction to Fermentation and Functional Foods	2						2	8	Scientific literature reading.
2. Application of Fermentation in Functional Food Development	2						2	8	Scientific literature reading.
3. Functional Foods and Health	2						2	8	Scientific literature reading.
4. Functional Foods and The Gut Microbiome	2						2	8	Scientific literature reading.
5. Functional Ingredients and Bioactives	2						2	8	Scientific literature reading, preparation of presentations, practical works.
6. Evidence-Based Research on The Health Benefits of Functional Ingredients	4		2				6	16	Scientific literature reading. Performing oral presentations and preparing the written paper.
7. Functional Foods in Disease Prevention and Management	2		2				4	12	Scientific literature reading. Performing oral presentations and preparing the written paper.
8. Dietary Guidelines and Recommendations for Incorporating Functional Foods into Healthy Eating Patterns	2						2	8	Textbooks and scientific literature reading.
9. Regulatory Framework and Quality Assurance	2		2				4	10	Scientific literature reading. Performing oral presentations and preparing the written paper.
10. Strategies to Design and Test the Activity of Functional Foods	4		2				6	14	Scientific literature reading.
Total	24		8				32	100	

Assessment strategy	Weight %	Deadline	Assessment criteria
Personal task – oral presentation	30	During the semester	In the seminar sessions, students are required to deliver two oral presentations on assigned or self-selected topics. Completion of these presentations is a prerequisite for eligibility to take the final exam.
Personal task – written paper	30	During the semester	Students are required to produce a scholarly paper spanning 15-25 pages in length. The paper must include a reference list comprising a minimum of 15 sources, encompassing books, peer-reviewed journal articles, conference papers, and other reputable references. Presentation of the paper in electronic format is mandatory for students to be eligible to sit for the final exam
Exam	40	During the exam session	Written exam consists of 20 open / test questions, each evaluated 0.5 points, and duration is 1.5 hours.

Author	Year of publication	Title	Issue of a periodical or volume of a publication	Publishing place and house or web link
Compulsary reading				
Editors-in-Chiefs: <ul style="list-style-type: none"> F. Toldrá, PhD Instituto de Agroquímica y Tecnología de Alimentos (CSIC), Valencia, Spain R.Y. Yada The University of British Columbia, Vancouver, British Columbia, Canada 	2023	Trends in Food Science & Technology	Volume 142	https://www.sciencedirect.com/science/article/pii/S092422442300331X
Optional reading				
Edited by: Koen Venema and Ana Paula do Carmo	2015	Probiotics and Prebiotics: Current Research and Future Trends	ISBN: 978-1-910190-10-4	Beneficial Microbes Consultancy, 6709 TN Wageningen NL, The Netherlands and Instituto Federal do Espírito Santo, Soteco, Vila Velha ES, Brazil (respectively). Caister Academic Press.