Order number: 14

Attachment No. 3		**Subject program of the second cycle of studies**			
1.	Title of the teaching subject	Introduction to Food Toxicology			
2.	Code	FE2M33			
3.	Study program	Food Engineering-Innovation, Sustainability and Technologies			
4.	Organizer of the study program (unit, i.e. institute, department, department)	Faculty of Technology and Metallurgy Institute of Organic Technology Food Technology and Biotechnology			
5.	Degree (first, second, third cycle)	Second cycle			
6.	Academic year / semester	Year	1	semester	2
7	Course load expressed in ECTS credits	6 ECTS			
8.	Teacher (in the case of multiple teachers designated responsible teacher*)	Dr. Zoran Kavrakovski, professor, Faculty of Pharmacy Dr. Vesna Rafajlovska, professor *			
9.	Language of instruction	English language			
10.	Necessary prerequisites for listening and passing the subject				
11.	Objectives of the subject program (competencies) and learning outcomes:	Study of toxic chemicals in food, their origin, mechanisms of action and potential impacts on human health in order to ensure food safety, understand the effects of natural and synthetic chemicals and develop regulations to reduce food-related health risks.			
12.	Detailed course content by chapter and unit with learning outcomes for each chapter	Importance of the study of food toxicology. Defining basic terminologies. General principles of food toxicology.Dose-response relationship. Classification of toxicity. Target organs in food toxicology. Identification and classification of toxic chemicals. Natural and synthetic chemicals, additives, contaminants and toxic chemicals - products of food processing. Chemical and biological aspects of toxic chemicals present in food. Identifying the effects of food chemicals on human health. Concept of food safety - risk management. Testing of chemicals and contaminants in food. Legal regulations. **Learning outcomes:** After completing the course in this subject, the studentwill learn to identify basic principles and principles in toxicology, types of chemicals in food, contaminants in food, methods for determining chemicals and contaminants in food, as well as preventive measures and protection of human life and health.			
13	Interrelationship of subjects				
14.	Detailed description of teaching and working methods for the subject	Interactive theoretical and practical teaching combined with independent work and individual consultations will be applied in all teaching chapters of the course to a varying extent, depending on the number of students. Of the teaching methods, individual and possibly group or team collaborative and cooperative methods of active learning will be used. Developing skills for displaying and presenting research according to the latest relevant scientific research in the field of food toxicology.			

15.	Total available fund on time	180 Active teaching 4 hours x15 weeks = 60 hours Project, independent tasks and homework = 120		
16.	Forms of teaching activities	16.1.	Lectures - theoretical teaching. hours	45
		16.2.	Exercises (laboratory, classroom), seminars, teamwork: lessons	10
		16.3.	Practice: classes	5
17.	Other forms of activities	17.1.	Project assignments: lessons	20
		17.2.	Independent assignments: lessons	20
		17.3.	Home study - assignments	80
18.	Conditions of signature	Realized 60% of activities under number 16 and 17		
19.	Method of assessment			
	19.1.	Tests: points		30
	19.2.	Seminar work/project, written and oral presentation: points		10
	19.3.	Final exam: points		60
20.	Evaluation criteria (points/grade)		up to 50 points	5 (five) (F)
			51 x to 60 points	6 (six) (E)
			61 x to 70 points	7 (seven) (D)
			from 71 to 80 points	8 (eight) (C)
			from 81 to 90 points	9 (nine) (B)
			from 91 to 100 points	10 (ten) (A)
21.	A method of monitoring the quality of teaching	Anonymous survey/self-evaluation		

22. Literature

22.1. Required reading

Ord. number	Author	Title	Publisher	Year
1.	Kavrakovski Z., Rafajlovska V.	Food toxicology (second edition)	UKIM, Faculty of Technology and Metallurgy CIP: 613.2.099(075.8)	2023
2.	Kavrakovski Z.	Toxic chemicals	University of St. Cyril and Methodius	2011
3.	Curtis D. Klaassen, John B. Watkins	Casarett & Doull's Essentials of Toxicology, Fourth edition	McGraw Hill LLC	2021

22.2. Additional literature

Ord. number	Author	Title	Publisher	Year
1.	Authors of scientific papers	Scientific papers in the field of interest	Publishers of scientific papers	2010-202X