Order number: 13

Order number		**Subject program of the third cycle of studies**			
1.	Title of the teaching subject	Food safety and risk analysis			
2.	Code	FE2M32			
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, University "St. Cyril and Methodius" in Skopje Institute of Organic Technology Department of Food Technology and Biotechnology			
5.	Degree (first, second, third cycle)	Second cycle			
6.	Academic year / semester	Year	I	semester	II
7	Subject load expressed in ECTS credits	6			
8.	Teacher (in the case of several teachers appointed responsible teacher)*	Dr. Donka Doneva-Shapcheska * Dr. Darko Dimitrovski			
9.	Language of instruction	English			
10.	Necessary prerequisites for listening and passing the subject	Knowledge of general microbiology, food microbiology and sanitation			
11.	Objectives of the subject program (competencies) and learning outcomes:	This course aims to introduce students to the basics of food safety, to familiarize them with the main types of hazards that affect food quality and safety, as well as to enable the practical application of risk assessment and management methods in the food industry. .			

<table>
<tr><td>12.</td><td>Detailed course content by chapter and unit with learning outcomes for each chapter</td><td colspan="3">
 Introduction to Food Safety:
• Basic principles and importance of food safety.
• Basic terms: contaminants, hazards, risk.
 Microbial food contaminants:
• Major pathogenic microorganisms and their impact on health.
• A brief overview of bacterial toxins and mycotoxins.
 Chemical and physical hazards in food:
• Hazards from allergens and exposure to chemical and physical agents.
• Genetically modified organisms (GMOs) and the safety of their products.
 Process conditions and their impact on safety:
• Impact of food processing and storage.
• Contamination prevention measures.
 Basics of risk analysis:
• Fundamentals of risk assessment, management and communication.
• Qualitative and quantitative approaches to risk assessment.
Learning outcomes:
After completing the course, the student will be able to:
• To identify the main sources of food hazards and ways to reduce them.
• To understand and apply the basic methods of risk analysis.
• Distinguish and explain the types of hazards and risks in food.
• To know and apply basic food safety standards and tools.
• To participate in risk assessment and management in the food industry.
</td></tr>
<tr><td>13</td><td>Interrelationship of the subjects</td><td colspan="3">There is none</td></tr>
<tr><td>14.</td><td>Detailed description of teaching and working methods for the subject</td><td colspan="3">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. Individual and possibly group or team collaborative and cooperative methods of active learning will be used from the teaching methods. Developing skills for presenting and presenting research according to the latest relevant scientific research in the field of food safety and risk analysis.</td></tr>
<tr><td>15.</td><td>Total available fund on time</td><td colspan="3">180</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Forms of teaching activities</td><td>16.1.</td><td>Lectures - theoretical teaching. hours</td><td>30</td></tr>
<tr><td>16.2.</td><td>Exercises (laboratory, classroom), seminars, teamwork: classes</td><td>20</td></tr>
<tr><td>16.3.</td><td>Practice: classes</td><td>10</td></tr>
<tr><td rowspan="2">17.</td><td rowspan="2">Other forms of activities</td><td>17.1.</td><td>Project assignments: lessons</td><td>20</td></tr>
<tr><td>17.2.</td><td>Independent assignments: lessons</td><td>20</td></tr>
</table>

	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 point	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.	Mohammed Kuddus, Syed Amir Ashraf and Pattanathu Rahman	*Food Safety, Quality Control and Management*	CRC Press, Taylor & Francis Group, LLC	2024
2.	Costa, R. and Kristbergsson, K.	*Predictive Modeling and Risk Assessment*	Springer, LLC	2009
3.	Hal King, Wendy Bedale	*Hazard Analysis and Risk-Based Preventive Controls-* Improving Food Safety in Human Food Manufacturing for Food Businesses	Academic Press	2018
4.	Reij, MW, Alink.GM, M van Wessel, Rietjens IMCM	*Risk associated with food, course reader*	Wageningen University, The Netherlands	2007

Additional literature

Ord. number	Author	Title	Publisher	Year
1.	Jeanne-Marie Membre	*Microbiological Risk Assessment Associated with the Food Processing and Distribution Chain*	Wiley-ISTE	2022
2.	Fernando Pérez-Rodríguez	*Risk Assessment Methods for Biological and Chemical Hazards in Food*	CRC Press	2021
3.	Authors of scientific papers	Scientific papers in the field of interest	Publishers of scientific works	2010-202X