

SUBJECT DESCRIPTION

1. Information on the study programme

1.1 The institution of higher education	UNIVERSITY OF ORADEA
1.2 Faculty	FACULTY OF ENVIRONMENTAL PROTECTION
1.3 Department	FOOD PRODUCT ENGINEERING
1.4 Field of study	FOOD PRODUCT ENGINEERING
1.5 Cycle of study	BACHELOR
1.6 Program of study/Qualification	CONTROL AND EXPERTISE OF FOOD PRODUCTS/ENGINEER

2. Information on the discipline

2.1 Name of discipline	SPECIAL MICROBIOLOGY						
2.2 Course holder	ASSOCIATED PROFESSOR PhD BARA CAMELIA						
2.3 Seminar/Laboratory/Project holder	LECTURER PhD IOANA VLAD						
2.4 Year of study	2	2.5 Semester	IV	2.6 Type of evaluation	EX	2.7 Regimen of the subject	C

(C) Compulsory; (O) Optional; (E) Elective

3. Total estimate time (hours per semester of didactic activities)

3.1 Number of hours per week	4	out of which: 3.2 course	2	out of which 3.3 laboratory	2
3.4 Total hours from the curriculum	56	Of which: 3.5 course	28	out of which 3.6 laboratory	28
Time allotment					69 hours
Study assisted by manual, course support, bibliography and notes					20
Additional documentation in the library/ on specialised electronic platforms and in the field					20
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					20
Tutorship					7
Examinations					2
Other activities.....					-
3.7 Total hours of individual study	69				
3.9 Total hours per semester	125				
3.10 Number of credits	5				

4. Prerequisites (where appropriate)

4.1 curriculum	Knowledge of Organic Chemistry, Biochemistry, Cell Biology.
4.2 competences	Manipulation of biological samples in safe conditions for the user.

5. Conditions (where appropriate)

5.1. related to course	The course room equipped with projector; internet connection.
5.2. related to laboratory	Laboratory equipment: optical microscope, sample homogenizer, pH meter, UV lamp, related equipment (autoclave machine, oven, laminar flux), specific utensils (inoculation loops, pipettes).

6. Specific competences acquired

Professional competences	<p>C1.1. Description and use of basic concepts, theories and methods for food engineering on the structure and properties of food components and contaminants, the transformations that they undergo during processing, the devices, equipment and technologies in food industry (knowledge provided by disciplines such as: general, inorganic, organic chemistry, food chemistry, biophysics, biochemistry, physical and colloidal chemistry, devices, equipment and technologies in the food industry)</p> <p>C4.1. Description and use of basic concepts, theories and methods used in quality control of food products, on the chemistry of compounds that determine food quality, the transformations that they undergo during processing, transport and storage, the apparatus and methods for determining and analyzing of these compounds (knowledge provided by the disciplines of general, inorganic, organic chemistry, food chemistry, biochemistry, analytical chemistry, instrumental analysis, microbiology, hygiene, food additives, food quality control)</p> <p>C5.1. Description and use of basic concepts, theories and methods used in food expertise related to chemical compounds that determine the quality and traceability of food products, the transformations that they undergo during processing, transport and storage, the apparatus and methods for determining and analysis of these compounds and the relevant legislation (knowledge provided by the disciplines of general, inorganic, organic chemistry, food chemistry, biochemistry, analytical chemistry, instrumental analysis, microbiology, hygiene, food additives, food quality control).</p> <p>C5.2. Explanation and interpretation of concepts, methods and models used in food expertise, using basic knowledge on chemical compounds that determine the quality and traceability of food products, the transformations that they undergo during their processing, transport and storage, the methods for the determination and analysis of these compounds and relevant legislation.</p>
Transversal competences	<p>CT1 Applying strategies of perseverance, rigor, efficiency and accountability in the work, punctuality and accountability for the results of personal activities, creativity, common sense, analytical and critical thinking, problem solving, etc., based on the rules and principles of professional ethics code values in the food sector.</p> <p>CT2 Applying networking techniques within a team, enhancement and shaping of empathic capacities of interpersonal communication and ownership of some specific tasks in the group activity to treat / solve individual / group conflict, as well as the optimal management of time.</p> <p>CT3 Efficient use of various ways and learning/ training techniques to acquire the information from electronic and bibliographic databases both in Romanian and in an international language, as well as to evaluate the need and usefulness of extrinsic and intrinsic motivation of continuing education.</p>

7. Objectives of discipline (coming from the specific competences acquired)

7.1 General objective	Knowledge of microbiological criteria for assessing the quality of a food product and methods of microbiological control of food products. Knowledge of general notions of sources of food contamination with microorganisms.
7.2 Specific objectives	Characterization of saprophytic microorganisms involved in the processes of microbiological food alteration. Characterization of pathogenic microorganisms with increased biological risk for the generation of food poisoning by eating contaminated food.

8. Contents*

8.1 Course	Methods of teaching	No. of hours
Spontaneous fermentation of grape must to obtain wine.	Interactive conversation; video presentation; oral exposure.	2
Contamination of wine with bacteria.	Interactive conversation; video presentation; oral	2

	exposure.	
Contamination of wine with yeasts and molds.	Interactive conversation; video presentation; oral exposure.	2
Use of yeast in brewing technology.	Interactive conversation; video presentation; oral exposure.	2
Microbiological contamination of beer.	Interactive conversation; video presentation; oral exposure.	2
Microbiological contamination of fruit.	Interactive conversation; video presentation; oral exposure.	2
Microbiological contamination of vegetables.	Interactive conversation; video presentation; oral exposure.	2
Microbiological contamination of milk and dairy products.	Interactive conversation; video presentation; oral exposure.	2
Sources of contamination of meat and meat products with microorganisms.	Interactive conversation; video presentation; oral exposure.	2
Microbial contamination of meat and meat products with bacteria, yeasts, molds and parasites.	Interactive conversation; video presentation; oral exposure.	2
Microbiological contamination of fish and fish products.	Interactive conversation; video presentation; oral exposure.	2
Microbiological contamination of eggs, egg powder, mayonnaise.	Interactive conversation; video presentation; oral exposure.	2
Microbiological contamination of sugar.	Interactive conversation; video presentation; oral exposure.	2
Microbiological contamination of water for human consumption.	Interactive conversation; video presentation; oral exposure.	2
Bibliography Bara Camelia, <i>Food Microbiology</i> , Oradea University Press, Oradea, 2005. Bara Camelia, <i>Principles of appreciating the quality of some foods</i> , Oradea University Press, Oradea, 2008. Bara Camelia, <i>Microbiology and quality of food of animal origin</i> , Oradea University Press, Oradea, 2008. Apostu Sorin, <i>Food Microbiology, vol. II</i> , Cluj-Napoca, Risoprint Publishing House, 2006. Bărzoî, D., Apostu, S., <i>Microbiology of Foods</i> , Risoprint Publishing House, Cluj-Napoca, 2002. Dan, V., <i>Microbiology of Foods</i> , Alma Publishing House, Galați, 2001.		
8.2 Seminary	-	-
8.3 Laboratory	Methods of teaching	No. of hours
Identification of coliforms in food.	Presentation, description, observation, demonstration, directed learning.	2
Identification of <i>Escherichia coli</i> in food.	Presentation, description, observation, demonstration, directed learning.	2
Identification of <i>Proteus</i> in food.	Presentation, description,	2

	observation, demonstration, directed learning.	
Identification of <i>Staphylococcus aureus</i> in food.	Presentation, description, observation, demonstration, directed learning.	2
Identification of <i>Clostridium perfringens</i> in food.	Presentation, description, observation, demonstration, directed learning.	2
Identification of <i>Bacillus cereus</i> in food.	Presentation, description, observation, demonstration, directed learning.	2
Identification of <i>Listeria monocytogenes</i> in food.	Presentation, description, observation, demonstration, directed learning.	2
Identification of <i>Salmonella</i> in food.	Presentation, description, observation, demonstration, directed learning.	2
Identification of <i>Lactobacillus</i> in food.	Presentation, description, observation, demonstration, directed learning.	2
Identification of bacteria of the <i>Streptococcus</i> in food.	Presentation, description, observation, demonstration, directed learning.	2
Identification of parasites in food.	Presentation, description, observation, demonstration, directed learning.	2
Identification of yeast in food.	Presentation, description, observation, demonstration, directed learning.	2
Identification of food viruses.	Presentation, description, observation, demonstration, directed learning.	2
Identification of molds in food.	Presentation, description, observation, demonstration, directed learning.	2
Bibliography Bara Camelia, <i>Practical work of microbiology</i> , Oradea, Oradea University Press, 2009. Bara, V., Chipurici, M., Zabik, A., Bara C., Nechita Derevenco, R., Paul, G., Bonta, M., <i>General methods of practical microbiology</i> , Oradea, Oradea University Press, 2000. Bara Vasile, Bara Camelia, Pop Constantin, <i>Applied microbiology techniques</i> , Oradea, Oradea University Press, 1998.		

* The content, respectively the number of hours allocated to each course / seminar / laboratory / project will be detailed during the 14 weeks of each semester of the academic year.

9. Corroboration of discipline content with the expectations of the epistemic community, professional associations and representative employers from the field corresponding to the study programme

Identification of consumer-induced risks by microorganisms developed in food. Control of the microbiological quality of foodstuffs, within traceability, with the aim of ensuring the biochemical stability of food products and food safety and security.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the final grade
10.4 Course	- interactive activity at the	- continuous evaluation (80%

	course - by written/oral exams.	percentage 20%) - <i>cumulative evaluation</i> (percentage 80%)	
10.5 Seminary			
10.6 Laboratory	- evaluation by oral methods, written tests and home works (paper on a subject at choice from the thematic of the subject); - evaluation by practical tests.	- <i>continuous evaluation</i> (percentage 40%) - <i>cumulative evaluation</i> (percentage 60%)	20%
10.7 Project			
10.8 Minimum standard of performance			
Accomplishment of analyzes and food quality control using the basics of compound chemistry that determine food quality and transformations that they undergo during their processing, transport and storage as well as concepts, theories, methods and basic apparatus in the field. Accomplishment of food surveying, using the basics of compound chemistry that determine the food quality and traceability, the transformations that they undergo during their processing, transport and storage, and analysis and determination methods of these compounds, the concepts, theories and legislation in the field.			

Date of completion Signature of course holder**

Signature of seminar
laboratory/project holder **

01.10.2023 Assoc.prof. PhD Camelia Bara
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Date of approval in the department

Signature of the Head of Department

01.10.2023

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Dean signature

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** - Name, first name, academic degree and contact details (e-mail, web page, etc) will be specified.

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