

Annex 6

DISCIPLINE DESCRIPTION

1. Information on the study programme

1.1 Academic institution	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 Study programme/Qualification	CONTROL AND EXPERTISE OF FOOD PRODUCTS/ENGINEER

2. Information on the discipline

2.1 Name of discipline	GENERAL MICROBIOLOGY I						
2.2 Course holder	ASSOCIATED PROFESSOR PhD BARA CAMELIA						
2.3 Seminar/Laboratory/Project holder	LECTURER PhD IOANA VLAD						
2.4 Year of study	I	2.5 Semester	II	2.6 Type of evaluation	EX	2.7 Regime of discipline	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 seminar/laboratory/project	2
3.4 Total hours in the curriculum	56	out of which: 3.5 course	28	out of which 3.6 seminar/laboratory/project	28
Time allotment					44
Study assisted by manual, course support, bibliography and notes					10
Additional documentation in the library/ on specialised electronic platforms and in the field					10
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					10
Tutorship					12
Examinations					2
Other activities.....					
3.7 Total hours of individual study	44				
3.9 Total hours per semester	100				
3.10 Number of credits	4				

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 video projector; internet connection.
5.2. related to seminar/laboratory/ project	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>C3.1. Description and use of basic concepts, theories and methods on the operation of the monitoring and automation systems for the food processes and food quality control and expertise laboratories (knowledge provided by the disciplines of appliances, machines and automation in the food industry) by using specific software (knowledge provided by the disciplines of computer science).</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>
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 competencesacquired)

7.1 General objective	To develop control and prevention strategies for emerging food
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	borne pathogens, thereby helping to reduce the unacceptably high incidence of food borne disease and to improve the competitiveness of the food industry.
7.2 Specific objectives	To offer a comprehensive array of analytical tools to identify unwanted microbiological contamination issues.

8. Content*/

8.1 Course	Methods of teaching	No. of hours/Remarks
Distribution of microorganisms in nature.	Interactive Lecture	2
The main relationships between microorganisms.	Interactive Lecture	2
Pathogenicity of microorganisms.	Interactive Lecture	2
The main classes of microorganisms with practical significance for food units.	Interactive Lecture	2
Classification of microorganisms.Taxonomic criteria.	Interactive Lecture	2
The development of microorganisms in a culture media. The influence of environmental effects on microbiological growth.	Interactive Lecture	2
Useful morphological aspects for bacterian identification.	Interactive Lecture	2
The cell structure of bacteria.	Interactive Lecture	2
Physiology and nutrition of the bacterial cell.	Interactive Lecture	2
Bacterial spore.	Interactive Lecture	2
General characters of molds.	Interactive Lecture	2
General characters of viruses.	Interactive Lecture	2
General characters of yeasts.	Interactive Lecture	2
General characters of parasites.	Interactive Lecture	2
Bibliography Apostu Sorin, <i>Food Microbiology, vol. I</i> , Cluj-Napoca, Risoprint Publishing House, 2006. Apostu Sorin, <i>Food Microbiology, vol. II</i> , Cluj-Napoca, Risoprint Publishing House, 2006. Bara Camelia, <i>General Microbiology</i> , Oradea, Oradea University Press, 2009. Bara Camelia, <i>General microbiology of agrifood units</i> , Oradea, Oradea University Press, 2010.		
8.2 Seminar	Methods of teaching	No. of hours/Remarks
Bibliography		
8.3 Laboratory	Methods of teaching	No. of hours/Remarks
Presentation of the Microbiology Laboratory. Labor Safety Standards in the Microbiology Laboratory. Laboratory equipment and supplies. Disinfection techniques of specific instruments. Objects and biological material.	Explanations, exemplification, dialogue, case study, video	2
Presentation of dry heat sterilization methods - practical examples. Presentation of wet sterilization methods - practical application.	Explanations, exemplification, dialogue, case study	2

Presentation of optical microscope operation. Practical use of the optical microscope.	Explanations, exemplification, dialogue, case study	2
Examination of morphological and structural characters of microorganisms. Presentation of the microbial smear technique. Steps of microbial smear preparation. Staining techniques. Gram staining smear examination.	Explanations, exemplification, dialogue, translations	2
Types of culture media used in the Microbiology Laboratory. Common ingredients of culture media. Culture media preparation steps. Culture media storage protocol and conditions. Culture handling procedure.	Explanations, exemplification, dialogue, case study	2
Presentation of sampling technique from a biological material. Steps in sampling process. The technique used to make serial dilutions.	Explanations, exemplification, dialogue, case study	2
Methods of culturing microorganisms in liquid medium.	Explanations, exemplification, dialogue, case study, video	2
Interpreting the appearance of bacterial cultures on liquid culture media.	Explanations, exemplification, dialogue, case study, video	2
Techniques for sowing microorganisms on solid culture media.	Explanations, exemplification, dialogue, case study, video	2
Interpretation of the appearance of bacterial cultures on solid culture media.	Explanations, exemplification, dialogue, case study, video	2
Identification of bacteria based on biochemical tests.	Explanations, exemplification, dialogue, case study, video	2
Calculating bacterial growth. Determination of aerobic plate.	Explanations, exemplification, dialogue, case study, video	2
Mold identification methods. Mold cell counting by using microscopy.	Explanations, exemplification, dialogue, case study, video	2
Yeast identification methods. Yeast cell counting.	Explanations, exemplification, dialogue, case study, video	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.		

8.4 Project		
Bibliography		

* 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

Execution of specific operations in the sphere of production according to the job description by complying with the rules of professional ethics and values. Making a portfolio by identifying and describing professional roles within a subordinate team. Accomplishing a bibliographic study on the food theme.
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10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the final grade
10.4 Course	- for grade 5 - 50% knowledge of the subject for grade 6 - 60% knowledge of the subject for grade 7 - 70% knowledge of the subject Summative assessment - exam - written or oral test 70% subject for grade 8 - 80% knowledge of the subject for grade 9 - 90% knowledge of the subject for grade 10 - knowledge of the subject in proportion of 100% (the student proves the consultation of the presented bibliographic material).	Summative assessment - exam - written or oral test	70%
10.5 Seminar			
10.6 Laboratory	for grade 5 - the student answers 50% of the questions correctly for grade 6 - the student answers 60% of the questions correctly for grade 7 - the student answers 70% of the questions correctly for grade 8 - the student	Practical evaluation	30%

	answers 80% of the questions correctly for grade 9 - the student answers 90% of the questions correctly for grade 10 - the student answers 100% of the questions correctly		
10.7 Project			
10.8 Minimum standard of performance			
<p>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.</p> <p>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.</p>			

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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