UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
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Nr._____din _____ **Form code USAMV CN - 0703020108**

COURSE DESCRIPTION

1. General data

1.1. Higher Education Institution	University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca
1.2. Faculty	Faculty of Food Science and Technology
1.3. Department	Food Science
1.4. Study field	Food Engineering
1.5. Cycle of study[1]	Cycle 1. Bachelor
1.6. Specialization/ Study Program	Food Engineering
1.7. Teaching Form	Regular studies

2. Information on the discipline

2.1. Name of the discipline	**SPECIAL MICROBIOLOGY**							
2.2. Course coordinator				Proffesor PhD. Ancuţa M. Rotar				
2.3. Laboratory coordinator				Lecturer PhD. Carmen Rodica Pop				
2.4. Year of study	**II**	2.5. Semester	**IV**	2.6. Type of Evaluation	Continuous	2.7. Discipline status	Content[2]	DS
							Level of compulsory[3]	DI

3. Total estimated time (hours/semester for the teaching activities)

3.1. Hours/week – Full time programme	4	out of which: 3.2. lecture	2	3.3. laboratory	2
3.4. Total number of hours in the curriculum	56	out of which: 3.5. lecture	28	3.6. laboratory	28
Distribution of the time allotted					Hours
3.4.1. Study based on book, textbook, bibliography and notes					23
3.4.2. Additional documentation in the library, on specialised electronic platforms and field					12
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					10
3.4.4. Tutorials					4
3.4.5. Examinations					15
3.4.6. Other activities					
3.7. Total hours of individual study	64				
3.8. Total hours per semester	100				
3.9. Number of credits[4]	4				

4. Pre-conditions (where is the case)

4.1. of curriculum	Getting base of: General Microbiology, Food Biochemistry, Food Chemistry, The food innocuousness
4.2. of competences	Knowledge of the morphological, physiological and biochemical properties of the major groups of microorganisms with incident in the food microbiology. Knowledge of cultivation and quantification conditions of the microorganisms, that contaminate the food. Handling of biological samples under security conditions for the user and the environment

5. Conditions (where is the case)

5.1. of course development	Space and facilities: Classroom equipped with board, projector and computer
5.2. of seminar/laboratory/project development	Laboratory Equipment: Photon microscope; UV lamp; Homogenized (Stomacher) Thermostat; gas connection; related facilities (autoclave, oven, utensils specific).

6. Specific acquired competences

Proffesional competences	C1.1. To describe and use the basic concepts, theories and methods of general microbiology, referring to the main groups of microorganisms involved in the food industry. C1.3. Apply basic principles and methods in microbiology to solve engineering and technological problems, including those related to food safety C.2.3. To apply the principles and methods of microbiological investigation for solving technological problems in the agri-food chain
Transversal competences	CT2. Applying interrelationship techniques within a team; amplifying and refining the empathic capacities of interpersonal communication and of assuming specific attributions in carrying out the group activity in order to treat / solve individual / group conflicts, as well as the optimal time management.

7. Suject Objectives (as a result of the specific acquired competences)

7.1. Subject general objectives	Study of the microbiological conditions of producing food in conditions that ensure biochemical stability, innocuity and food safety. The use of microorganisms useful for food diversification, conservation and improvement of nutritional value and the functional character. Knowledge of regulations and microbiological criteria for assessing the quality and methods of microbiological control of foods.
7.2. Specific objectives	Knowledge of the general notions about the sources of food contamination by microorganisms with implications in ensuring food innocuousness and food safety. Characterization of the microorganisms groups involved in food spoilage and induction of biological risks by consuming contaminated food (poisoning, food poisoning, illness). Knowledge of the the beneficial effects of microorganisms in food production and stability during storage (starter cultures and probiotic cultures).

8. Content

8.1. COURSE **Number of hours – 28**	Methods of teaching Lecture	Observations Lecture
Microbiology of milk and dairy products The significance of microorganisms that contaminate milk. Pathogenic microorganisms. Pathogenic microorganisms. Organoleptic changes of milk and milk products produced by microorganisms. Influence of different thermal processing on microorganisms in milk. Selected cultures used in dairy products.	Lecture, heuristic conversation, explanation	2 lectures
Microbiology of meat and meat products Microbiology of refrigerated raw meat. Microbiology of frozen meat. Microbiology of minced meat. Microbiology of meat and meat products dehydrated. Microbiology of meat and salted meat. Microbiology of poultry meat.	Lecture, heuristic conversation, Explanation	2 lectures
Microbiology of canned Microbiological quality control of canned. The main groups of microorganisms found in canned	Lecture, heuristic conversation, Explanation	2 lectures
Microbiology of spices Groups of microorganisms and contamination level. Alteration	Lecture, heuristic	1 lecture

microorganisms. Pathogenic microorganisms. Methods used to reduce the level of contamination. Microbiological control of spices	conversation, explanation	
Microbiology of sugar Groups of microorganisms and contamination level. Alteration microorganisms. Pathogenic microorganisms. Methods used to reduce the level of contamination. Microbiological control of sugar.	Lecture, heuristic conversation, Explanation	1 lecture
Microbiology of wheat, flour and bread wheat Groups of microorganisms and contamination level. Alteration microorganisms. Bread diseases	Lecture, heuristic conversation, explanation	2 lectures
Microbiology beer and wine Groups of microorganisms and contamination level. Alteration microorganisms. Pathogenic microorganisms. Methods used to reduce the level of contamination. Microbiological control of beer and wine	Lecture, heuristic conversation, explanation	2 lectures
Microbiology of fruits and vegetables	Lecture, heuristic conversation, explanation	2 lectures

8.2. PRACTICAL WORK **Number of hours – 28**	Teaching Method: Case Study	Practical work
Microbiological analysis of water, air and work surfaces.	Case study, simulation of situations, methods of group work, individual	2 Practical works
Identification of the main microbiological parameters which is researched on food according to regulations	Case study, simulation of situations, methods of group work, individual	2 Practical works
Microbiological analysis of animal products Microbiological analysis of milk and dairy products	Case study, simulation of situations, methods of group work, individual	1 Practical work
Microbiological analysis of meat and meat products. The normal flora. The pathogenic flora Microbiological analysis of fish, crustaceans and mollusks	Case study, simulation of situations, methods of group work, individual	2 Practical works
Microbiological analysis of semi-canned and canned. Microbiological analysis of eggs and egg products	Case study, simulation of situations, methods of group work, individual	1 Practical work
Microbiological analysis of beer and wine	Case study, simulation of situations, methods of group work, individual	1 Practical work
Microbiological analysis of cereals and derivatives by cereals	Case study, simulation of situations, methods of group work, individual	1 Practical work
Microbiological analysis of spices	Case study, simulation of situations, methods of group work, individual	1 Practical work
Microbiological analysis of sugar and honey	Case study, simulation of situations, methods of group work, individual	1 Practical work
Microbiological analysis of fruits and vegetables	Case study, simulation of situations, methods of group work, individual	1 Practical work
Oral Examination	-	1 Practical work
Compulsory bibliography: Apostu S. – "Microbiologia produselor alimentare", vol. 2, Ed. Risoprint, 2012, Cluj-Napoca Apostu Sorin, Mihaela-Ancuţa Rotar, Carmen R. Pop – "Microbiologia produselor alimentare", vol.3, Ed. Risoprint, 2012, Cluj-Napoca		
Optional bibliography:		

Bărzoi D., Meica S., Negrut M. – "Toxiinfecţiile alimentare", Ed. Diacon Coresi, 1999, Bucureşti
Dan Valentina – "Microbiologia produselor alimentare", vol. 1 şi 2, Ed. Alma, 1999

9. Corroborating the course content with the expectations of the epistemic community representatives, of the professional associations and of the relevant employers in the corresponding field

Knowledge of the the impact of the presence of microorganisms in food.
Knowledge of biological risks induced on consumers by certain groups of microorganisms contaminating the food.
Food microbiological quality control for biochemical stability and food security.
Practical skills in microbiology laboratory

10. Assessment

Type of activity	10.1. Assessment criteria	10.2. Assessment methods	10.3. Percent of the final grade
10.4. Lecture	Evaluation the knowledge acquired,	Written examination	50%
10.5. Seminar/Laboratory	Evaluation the knowledge acquired, evaluation the practical knowledge, degree of involvement and individual study	**Oral final colloquium** (Practical assessment of professional competence gained)	50%
10.6. Minimal performance standard: Description of a specific microbiological process, including reasoning methods, techniques, processes and tools used. Develop a solution for the elimination of risk factors in a microbiological process			

[1] Level of study- to be chosen one of the following - Bachelor/Post graduate/Doctoral
[2] Course regime (content) – for bachelor level it will be chosen one of the following - DF (fundamental subject), DD (subject in the domain), DS (specific subject), DC (complementary subject).
[3] Course regime (compulsory level) - to be chosen one of the following - DI (compulsory subject), DO (optional subject), DFac (facultative subject)
[4] One ECTS is equivalent with 25-30 de hours of study (didactical and individual study).

Filled in on
08.09.2021

Course coordinator
Proffesor PhD. Ancuţa M. Rotar

Laboratory work/seminar coordinator
Lecturer PhD. Carmen Rodica Pop

Subject coordinator
Proffesor PhD. Ancuţa M. Rotar

Approved by the
Department on
22.09.2021

Head of the Department
Proffesor PhD. Ramona Suharoschi

Approved by the Faculty
Council on
28.09.2021

Dean
Proffesor PhD. Elena Mudura