Nr._____din _____ **Formular USAMV–CN-0706010212**

COURSE DESCRIPTION

1. General data

1.1. Higher Education Institution	University of Agricultural Sciences and Veterinary Medicine
1.2. Faculty	Faculty of Food Science and Technology
1.3. Department	Food Engineering
1.4. Study field	Food Engineering
1.5. Study level[1)]	Master
1.6. Specialization/ Study Program	Food Safety and Consumer Protection
1.7. Teaching Form	FT

2. Course Characteristics

2.1. Name of the course	**Food safety in the development of novel foods**							
2.2. Course leader				Prof. Dr. Dan Cristian VODNAR				
2.3. Coordinator of the laboratory/seminar activity				Prof. Dr. Dan Cristian VODNAR				
2.4. Year of study	I	2.5. Semester	**2**	2.6. Type of Evaluation	Continously	2.7. Course regime	Content[2]	DS
							Level of compulsory[3]	DO

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

3.1. Number of hours/week– frequency form	1	of which care: 3.2. course	0	3.3. seminar/ laboratory/ project	1
3.4.Total hours in the curricula	14	Of which: 3.5.course	0	3.6.seminar/laboratory	14
Distribution of time					h
3.4.1.Study based on handbook, notes, bibliography					**3**
3.4.2. Extra documentation in the library, on specific electronic platforms and on field					**3**
3.4.3. Prepare the seminars / laboratories / projects, theme, essays, reports, portofolio					**3**
3.4.4.Tutorial					**3**
3.4.5.Examination					**2**
3.4.6. Other activities					**0**
3.7. Total hours of individual study	86				
3.8. Total hours per semester	100				
3.9. Number of ECTS [4]	4				

4. Pre-conditions (where is the case)

4.1. of curriculum	Nutrients and food ingredients, Food chemistry, General / special microbiology
4.2. of competences	The student must have knowledge of food technologies; Chemical reactions involved in the process of obtaining food products; Knowledge of microbiology and the conditions of microorganisms development in food products; Knowledge of food preservation

5. Conditions (where is the case)

5.1. of course development	
5.2. of seminar/laboratory/project development	Students must consult the literature provided in the discipline. Students will create projects on certain topics established together with the teacher, individually or in

	small groups. Academic discipline is required throughout the duration of the projects

6. Specific acquired competences

Proffesional competences	C1. Identify, describe and use appropriately the specific notions of food science and food safety. C4. Planning, organizing and coordinating agri-food marketing activities. C5. New food design, implementation and project management.
Transversal competences	CT2. Applying interrelationship techniques within a team; Amplifying and refining the empathic capacities of interpersonal communication and assuming specific attributions in carrying out group activity in order to deal with / resolve individual / group conflicts, as well as optimal time management

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

7.1. Subject general objectives	To acquire knowledge regarding the development of new foods, innovative foods, functional foods, food supplements / nutraceutical foods.
7.2. Specific objectives	Understand the distribution of nutrients in newly developed foods. To be able to interpret the functionality of an innovative food product. Know the factors that influence the stability, safety and quality of food.

8. Content

8.1.COURSE **Number of hours-**	Methods of teaching -	Observations -

8.2. PRACTICAL WORK **Number of hours – 14**		
1. Use of biotechnological techniques to obtain novel foods.	Seminar	1 meeting (discussions on fermentation processes)
2. Obtaining functional compounds (eg lactic acid) with applicability in the food industry.	Practical work	1 session (obtaining metabolites by fermentation)
3. Bioconversion of carbohydrate resources into functional compounds used in obtaining novel foods.	Practical work	1 meeting (obtaining biomass from plant substrates)
4. Microencapsulation technique (atomization)	Practical work	1 session (spray-drying / atomization powder formulation)
5. Development of dairy foods using microencapsulated probiotic strains	Practical work	1 session (obtaining probiotic-enriched yogurt)
6. Obtaining 3D functional foods	Practical work	1 meeting (3D printing technique)
7. Formulation of bioactive edible packaging	Practical work	

		1 session (obtaining alternative packaging with nutritional potential)

Compulsory bibliography:

1. Vodnar Dan Cristian. Notiuni de Biotehnologii Alimentare. AcademicPress, ClujNapoca, 2013.
2.Vodnar Dan Cristian. In vitro survivability of probiotic bacteria during exposure to gastrointestinal tract conditions. Academic Pres, ClujNapoca, Romania, 2014.
3.Vodnar Dan Cristian. Biotehnologii alimentare – Lucrări practice. AcademicPress, ClujNapoca, 2013.
4. Banu,C. (coordonator) – Biotehnologii în industria alimentară ,EdituraTehnică, Bucureşti, 2000.
5. Banu, C. (coordonator)- Biotehnologii în industria alimentară, EdituraTehnică, Bucureşti, 2004.
6. Jurcoane, Ştefana (coordonator) – Tratat de biotehnologie, volumul I, EdituraTehnică, Bucureşti, 2004.
7.Jurcoane, Ştefana (coordonator) – Tratat de biotehnologie, volumul II, EdituraTehnică, Bucureşti, 2006.

Optional bibliography:

1. Jin S. şi colab., 2015, An Overview of 3D Printing Technologies for Food Fabrication Springer Science+Business Media, New York
2. Serizawa, R., Shitara, M., Gong, J., Makino, M., Kabir, M. H., & Furukawa, H., 2014, 3D jet printer of edible gels for food creation. In: Proceedings of SPIE smart structures and materials+nondestructive evaluation and health monitoring, San Diego, United States.

9. Correlations between the subject against the expectations of the epistemic communitiy representatives, of the professional associations and employers' representatives in the domain

In order to identify ways to modernize and continuously improve the teaching and content of the courses, with the most current topics and practical problems, teachers consult the international literature.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation methods	10.3. Percent of the final grade
10.4. Course			
10.5. Seminar/Laboratory	Logical, correct and consistent application of the acquired notions	Project	100%
10.6.Minimal standard of performance Mastery of scientific information transmitted through lectures and practical work at an acceptable level. Obtaining the pass mark for the project is a condition of passability			

[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 teh 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).

Date of completition
09.09.2021

Course coordinator
Prof. Dr. Dan Cristian Vodnar

Leader of the laboratory/seminar
Prof. Dr. Dan Cristian Vodnar

Subject coordinator
Prof. Dr. Dan Cristian Vodnar

Approved by the Department on
22.09.2021

Department manager
Assoc.Prof. Ramona SUHAROSCHI

Approved by the Faculty
Council on
28.09.2021

Dean
Prof. Dr. Elena Mudura