No_____from _____ **Form code USAMV–CN-0702040109**

COURSE DESCRIPTION

1. D General data

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

2. Course characteristics

2.1. Name of the course	**Functional foods probiotics and prebiotics 2**							
2.2. Course leader				**Prof. PhD** Adriana Paucean				
2.3. Coordinator of laboratory activity				**Lecturer PhD** Anca Farcas				
2.4. Year of study	IV	2.5. Semester	**VII I**	2.6. Type of evaluation	**summative**	2.7. Course regime	Content [2]	FS
							Level of compulsory [3]	CI

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

3.1. Number of hours/week – frequency form	4	of which : 3.2. course	2	3.3. seminary/ laboratory/ project	2
3.4. Total hours in the curricula	56	of which: 3.5.course	28	3.6.seminary/laboratory	28
Distribution of time					Hours
3.4.1.. Study based on handbook, notes, bibliography					8
3.4.2. Extra documentation in the library, on specific electronic platforms and on field					4
3.4.3. Preparation of seminaries/ laboratories/ projects, themes, papers, portfolies and essays					4
3.4.4.Tutorial					1
3.4.5. Examination					2
3.4.6. Other activities					
3.7. Total hours of individual study	19				
3.8. Total hours per semester	75				
3.9. Number of ECTS[4]	3				

4. Pre-conditions (where appropriate)

4.1. of curriculum	Raw vegetable materials, Biochemistry, Food chemistry, General and Special Microbiology, Technology of plant products
4.2. of competences	Identification, description and appropriate use of specific concepts of food science and food safety Management of general engineering processes

5. Conditions (where appropriate)

5.1. of course development	Projector, power point presentation In the case of the didactic activity carried out online, the teaching methods are adapted.
5.2. of seminary/laboratory/ project development	Pilot Station for pastry- bakery products, raw and auxiliary materials , recipes, analysis laboratory

	In the case of the didactic activity carried out online, the teaching methods are adapted.

6. Specific acquired competences

Professional competences	C 1.2 Explanation and interpretation of concepts, processes, models and methods in food science, using basic knowledge of the composition, structure, properties and transformations of food components and their interaction with other systems throughout the agri-food chain C2.3 Application of basic engineering principles and methods for solving technological problems in the agri-food chain
Transversal competences	CT1.Applying strategies of perseverance, rigor, efficiency and responsibility at work, punctuality and accountability for the results of personal activities, creativity, common sense, analytical and critical thinking, solving matters etc, by principles, norms and values of the professional ethics code in food area

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

7.1. Subject general objectives	Rationalize the new trends for functional foods of plant origin and description of obtaining technologies
7.2. Specific objectives	Identification of the bioactive compounds in the functional food and description of their role in the human body The scientific principles and analytical methods for the determination of some bioactive compounds in the laboratory The design of technological diagrams and description of the technological flow for vegetal functional food production

8. Contents

8.1.COURSE **Number of hours – 28**	Methods of teaching	Observations
The perspectives of developing foods with health benefits. The nomenclature and the labeling requirements of functional food products	Lecture, heuristic conversation, debate, algorithmic, case study, directed observation	1 lecture
Biological active compounds in the vegetal functional food. Description and action mechanism		2 lecture
The dietary fibers. Prebiotics-classification, structures, action mechanism	Lecture, heuristic conversation, debate, algorithmic, case study, directed observation	2 lecture
Functional foods from cereals. Specific technologies for production of functional foods from cereals		2 lecture
Current tendencies in the area of dietary fats and oils.		1 lecture
The specific technologies for functional fats and oils		1 lecture
Fruits and vegetables as heath protective foods	Lecture, heuristic conversation, debate, algorithmic, case study	1 lecture
The technology of germinated cereals. Functional foods based on cereal's germs and brewery yeast		1 lecture
Strengthened foods. Tendencies and specific technologies		1 lecture
Organic food		2 lectures

8.2. PRACTICAL WORK **Number of hours – 28**		
General considerations for functional foods. The role and importance of functional foods		1 lecture 1 lecture

The functional foods evaluation Carotenoids analysis. Total carotenoids determination from different matrices. The lycopene content determination from tomatoes and tomato based products. Case study-the role of lycopene in the human body. Anthyoxidants- bioactive compounds. Anthyoxidants extraction-methods/solvents Total polyphenols content determination from different matrices. Phenolic compounds- role and functionality. The determination of flavonoids content from different vegetal sources. Flavonoids -role and function Determination of antioxidant capacity of plant extracts. Functional food with germinated wheat-proposal and development recipe/product. The development and the design of a functional food from germs. Chlorophyll content determination. Determination of the degree of oxidation for different types of vegetable oils.The determination of peroxide index in different types of oils. Iodine index determination Spectrophotometric evaluation of lipid peroxidation Verification of knowledge	Debate, algorithmic, case study, heuristic conversation Self-study	1 lecture 1 lecture 1 lecture 1 lecture 1 lecture 1 lecture 1 lecture 1 lecture 1 lecture 1 lecture 1 lecture 1 lecture 1 lecture 1 lecture

Compulsory Bibliography:

1. Costin, G., Segal, R., *Alimente functionale- alimentele si sanatatea- 1999, Editura Academica, Galati*
2. Mincu, I., Segal, B., Segal, R., *Orientari actuale in nutritie, 1989, Editura Medicala, Bucuresti*
3. *Costin, G.,Segal,R., Alimente pentru nutritie speciala, 2001, Editura Academica, Galati*

5. Farcas, Anca, Paucean Adriana, Socaci Sonia, Alimente functionale-Indrumator de lucrari practice, 2019, Ed. Mega, Cluj-Napoca

Facultative Bibliography:

1. *Costin, G., M., Tehnologia produselor destinate alimentatiei copiilor, 1987, Editura Tehnica, Bucuresti*
2. *Banu, C., Biotehnologii in industria alimentara*
3. *Segal, B., Segal, R., Tehnologia produselor alimentare de protective, Ed. Ceres, 1991, Bucuresti*

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

The course content is congruent with the requirements/needs of professional national specific associations.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation methods	10.3. Percent of the final grade
10.4. Course	Identification of the bioactive compounds in the vegetal food Evaluation of a food product in terms of health benefits due to its bioactive compounds Argumentation of the importance of functional foods in the diet The ability to correctly use the concepts and the specific terms of the	Oral exam	70%

	discipline		
10.5. Seminary/Laboratory	Design of a functional food of plant origin Using analytical methods for identification of bioactive compounds from functional foods	Supporting the project	30%
10.6. Minimal standard of performance			
Mastering scientific information given through the lectures and practical works at an acceptable level. Obtaining the passing mark at knowledge verification to the end of the practical works is the condition of graduation.			

[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).

Course coordinator

Prof. PhD Adriana Paucean

Laboratory work/seminar coordinator

Lecturer. PhD Anca Farcas

Filled in on

8.09.2021

Subject coordinator

Prof. PhD Adriana Paucean

Approved by the Department on

22.09.2021

Head of the Department

Prof. PhD. Sevastita Muste

Approved by the Faculty Council on

28.09.2021

Dean

.Prof. PhD Elena Mudura