


**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SYMY NATIONAL AGRARIAN UNIVERSITY**

Department of Nutrition Technology

«Approved by»

Head of Department

 **(F.V. Pertsevoi)**
«25» June 2020

EDUCATIONAL PROGRAM

**INNOVATIVE FOOD INGREDIENTS IN TECHNOLOGY OF FOOD
PRODUCTS**

Knowledge Area 18 “Manufacturing and Technology”

Specialty: 181 “Food technologies”

2020 – 2021 academic year

Educational program of subject «**Innovative food ingredients in technology of food products**» for postgraduate students by specialty 181 “Food technologies”

Developed by: PhD, Associate Professor of Food Technology Department Stepanova T.M.

The educational program is approved at the meeting of the **Department of Nutrition Technology**

Protocol from “25” June 2020 № 16

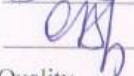
Head of Department  (Pertsevoi F.V.)

Agreed:

Guarantor of the educational program

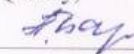
 (O.V. Radchuk)

Dean of the Faculty of Food Technologies

 (N.M. Baranik)

Methodist of the Department of Education Quality,

Licensing and Accreditation

 (L.S. Of.)

Registered in the electronic database: date: 28.06. 2020 p.

Description of the discipline

Name of indicators	Name of indicators	Characteristics of the discipline
		full-time education
Amount of credits – 3	Branch of knowledge: <u>18 «Production and technology»</u>	<i>Special (vocational training)</i>
	Specialty: <i>181 Food technology</i>	
Modules - 2		Year of education:
Content modules - 2		2020-2021
Total hours – 120		Course
		2
		Semester
		3
Weekly hours for full-time study: classroom – 1,5 independent work of the student – 1,5	Lectures	
	44	
	Practical, seminars	
	44	
	Independent work	
	32	
	Individual tasks: -	
	Type of control: <i>differentiated credit</i>	

Note.

The ratio of the number of hours of classroom studies to independent work is (%):for full-time education (%): 73,3/26,7

2. Purpose and tasks of the discipline

Purpose: expanding and deepening the knowledge of the current state and prospects of the development of food science, as well as the theoretical substantiation of the use of innovative food ingredients.

Tasks: training of specialists who are able to solve complex problems in the field of professional or research-innovative activity in the field of the use of innovative food ingredients, which implies a deep rethinking of existing and creation of new holistic knowledge capable of abstract thinking and the development of projects and acquainted with them important problems and questions regarding the use of food ingredients in innovative food production technologies, main directions and methodological approaches of creation formulations of innovative products, improvement and development of modern food safety systems based on the latest achievements of science and technology.

As a result of studying the discipline, the postgraduate student must:

Know: characterization of modern food ingredients and their application in the latest food technologies; technologies of the use of food ingredients in the production of functional and culinary products, characterization of foods that contribute to the enhancement of the protective functions of the body.

Be able to: identify, pose and solve problems, organize, plan, conduct research, analyze, evaluate and compare various theories, concepts and approaches in the subject area of scientific research, make appropriate conclusions, provide suggestions and recommendations; to analyze the scientific and technical level and trends of development of world and domestic food technologies using innovative food ingredients, to generate new ideas for solving existing complex problems in the field of functional food technologies; apply knowledge of the safety and expertise of food ingredients to create foods with new properties; present and discuss research findings; to develop normative and technical documentation on the results of scientific and practical developments in the chosen direction.

3. Educational program

(Approved by AC of SNAU 28.11.18, Protocol № 3)

Content module 1. Characteristics of food ingredients

Topic 1. Protein based ingredients

Lecture 1. The purpose of the discipline. Milk powder and milk powder. Casein and caseinates. Milk protein concentrates. Whey milk powder and whey powder

Lecture 2. Serum protein concentrates and isolate. Butter is dry. Cream is dry. Other sources of protein ingredients.

Topic 2. Carbohydrate components. Taste and aromatic additives.

Lecture 3. Monosaccharides. Sugar starch products. Dietary fiber.

Lecture 4. Taste and aromatic additives. Natural extracts.

Content module 2. Use of food ingredients

Topic 3. The use of food ingredients

Lecture 5. Flour products. Sugar confectionery. Cheese, fresh cheese.

Lecture 6. Whole milk products. Condensed dairy products. Ice cream and frozen foods. Processing of meat, poultry, fish. Fast food products. Oil and fat products. Drinks

Topic 4. Experience in the use of food ingredients.

Lecture 7. Use of local non-traditional ingredients. Innovative supplements. New dietary supplements.

4. Structure of the discipline

Names of content modules and topics	4. Structure of the discipline										
	Number of hours										
	Full-time						Full-time				
	Total	including					Total	including			
Lectures		Practical	Laboratory	Individual	Independent work	Lectures		Practical	Laboratory	Individual	Independent work
Content module 1. Characteristics of food ingredients											
Topic 1. Protein based ingredients	32	12		12		8					
Topic 2. Carbohydrate components. Taste and aromatic additives.	32	12		12		8					
Total content module 1	64	24		24		16					
Content module 2. Use of food ingredients											
Topic 3. The use of food ingredients	32	12		12		8					
Topic 4. Experience in the use of food ingredients.	24	8		8		8					
Total content module 2	56	20		20		16					
Total	120	44		44		32					

2. Topics and plan of lectures

No	Title	Number of hours
1	Topic 1. Protein based ingredients	12
2	Topic 2. Carbohydrate components. Taste and aromatic additives.	12
3	Topic 3. The use of food ingredients	12
4	Topic 4. Experience in the use of food ingredients.	8
	Total	44

6. Теми лабораторних робіт

No	Title	Number of hours
1	The study of the properties of milk protein ingredients	6
2	Studying the properties of carbohydrate ingredients	6

3	The study of the properties of flavoring ingredients.	6
4	The study of the influence of calcium caseinate on the quality of buckwheat porridge.	6
5	The study of the effect of whey protein concentrate (WPC) on the quality of cookie-rich.	6
6	Study of the effect of dry yeast extract (DYE) on the quality of white sauce.	6
7	The study of the impact of innovative ingredients on the quality of dishes	6
8	Evaluation of the success of learning the learning material	2
	Total	44

7. Individual work

No	Title of theme	Number hours
1	Topic 1. Protein based ingredients	8
2	Topic 2. Carbohydrate components. Taste and aromatic additives.	8
3	Topic 3. The use of food ingredients	8
4	Topic 4. Experience in the use of food ingredients.	8
	Total	32

8. Methods of training

1. Methods of individually differentiated learning:

1.1. Personalized Learning - an individually directed process of displaying graduate student achievement online that provides a flexible learning environment, deploying more resources,

1.2. Differentiated Instructoin – by consulting the applicants as scheduled,

1.3. Inquiry-based Learning – gaining knowledge by formulating your own questions and finding answers to them.

2. Methods of training on the nature and level of independent mental activity of applicants.

2.1. Problematic (problematic-informational)

2.2. Active teaching methods are the use of technical training tools, the use of problematic situations, the use of training and control tests, the use of basic lecture notes.

2.3. Interactive Learning Technologies are the use of multimedia technologies, interactive whiteboards and spreadsheets.

9. Control methods

1. Rating control over a 100-point ECTS rating scale

2. Conducting intermediate control during the semester

3. Multicriteria evaluation of the applicants:

- the level of knowledge demonstrated in laboratory classes;
- activity during the discussion of the issues raised in the class;
- results of laboratory work execution and protection;

- self-study of the topic as a whole or individual issues;
- test results;
- written tasks in the course of control work.

4. Conducting an assessment of the applicant on the results of individual work on the topic received during the presentation and protection of the completed task before the commission.

10. Distribution of points awarded by students

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Current testing and independent work							Total for the modules and IWS	Attestation	Total
Module 1 – 35 points			Module 2 – 35 points						
T1	T2	T3	T4	T5	T6	T7			
15	10	10	10	5	10	10	85 (70+15)	15	100

Scale of assessment: national and ECTS

Scale of assessment: national and ECTS			
The amount of points for all types of educational activities	Rating ECTS	Rating on a national scale	
		for the exam	for the credit
90 – 100	A	perfectly	enrolled
82-89	B	fine	
75-81	C		
69-74	D	satisfactorily	
60-68	E		
35-59	FX	unsatisfactory with the possibility of re-examining	is not enrolled with the possibility of re-examining
1-34	F	unsatisfactorily with compulsory repeated study of discipline	is not enrolled with repeated study of discipline

11. Individual tasks

1. Characteristics of varieties and use in food technology of milk powder and milk powder milk concentrates.
2. Characterization of varieties and use in food technology of dry serum and dry whey protein concentrates
3. Characteristics and use in food technology of dry oil and dried cream
4. Characterization and use in food technology of proteins of connective tissues and vegetable proteins

5. Characterization and use in food technology of monosaccharides and sugary starch products.
6. Characterization and use in food technology of dietary fiber
7. Characterization and use in food technologies of flavoring additives.
8. Characterization and use in food technology of local non-traditional ingredients and innovative additives
9. Characteristics and use in food technology of new dietary supplements.

12. Recommended literature

Basic:

1. Boyle, M.A.; Holben, D.H. *Community Nutrition in Action: An Entrepreneurial Approach*, 5th ed.; Wadsworth: Belmont, CA, USA, 2010.
2. Herring, D.; Chang, S.; Bard, S.; Gavey, E. Five years of myplate-looking back and what's ahead. *J. Acad. Nutr. Diet.* 2016, 116, 1069–1071.
3. Montagnese, C.; Santarpia, L.; Iavarone, F.; Strangio, F.; Caldara, A.R.; Silvestri, E.; Contaldo, F.; Pasanisi, F. North and south american countries food-based dietary guidelines: A comparison. *Nutrition* 2017, 42, 51–63.
4. Montagnese, C.; Santarpia, L.; Buonifacio, M.; Nardelli, A.; Caldara, A.R.; Silvestri, E.; Contaldo, F.; Pasanisi, F. European food-based dietary guidelines: A comparison and update. *Nutrition* 2015, 31, 908–915.
5. Pfeiffer, C.M.; Sternberg, M.R.; Schleicher, R.L.; Haynes, B.M.; Rybak, M.E.; Pirkle, J.L. The CDC's second national report on biochemical indicators of diet and nutrition in the U.S. Population is a valuable tool for researchers and policy makers. *J. Nutr.* 2013, 143, 938S–947S.
6. Spiro, A.; Buttriss, J.L. Vitamin D: An overview of vitamin D status and intake in Europe. *Nutr. Bull.* 2014, 39, 322–350.
7. Troesch, B.; Hoefft, B.; McBurney, M.; Eggersdorfer, M.; Weber, P. Dietary surveys indicate vitamin intakes below recommendations are common in representative western countries. *Br. J. Nutr.* 2012, 108, 692–698.
8. Diethelm, K.; Huybrechts, I.; Moreno, L.; De Henauw, S.; Manios, Y.; Beghin, L.; Gonzalez-Gross, M.; Le Donne, C.; Cuenca-Garcia, M.; Castillo, M.J.; et al. Nutrient intake of european adolescents: Results of the helena (healthy lifestyle in Europe by nutrition in adolescence) study. *Public Health Nutr.* 2014, 17, 486–497.

Additional:

1. Boyle, M.A.; Holben, D.H. *Community Nutrition in Action: An Entrepreneurial Approach*, 5th ed.; Wadsworth: Belmont, CA, USA, 2010.
2. Montagnese, C.; Santarpia, L.; Iavarone, F.; Strangio, F.; Caldara, A.R.; Silvestri, E.; Contaldo, F.; Pasanisi, F. North and south american countries food-based dietary guidelines: A comparison. *Nutrition* 2017, 42, 51–63.
3. Montagnese, C.; Santarpia, L.; Buonifacio, M.; Nardelli, A.; Caldara, A.R.; Silvestri, E.; Contaldo, F.; Pasanisi, F. European food-based dietary guidelines: A comparison and update. *Nutrition* 2015, 31, 908–915.
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