


MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE  
SUMY NATIONAL AGRARIAN UNIVERSITY

Department of Food Technology

"Approved"

Head of Department  
food technology

 "25" June 2020  
(F. V. Pertsevov)

WORKING PROGRAM TRAINING COURSE

INNOVATIONS IN THE INDUSTRY

Industry knowledge 18 "Production and Technology"

Specialty 181 "Food Technology"

2020 - 2021

Work Program on **industry innovation** in preparation for PhD specialty **181 "Food Technology"**

Developers: Melnyk, O.Y., c. t. s. Associate Professor of Food Technology,  
Pertsevov F.V., PhD., Professor, Department of Food Technology.

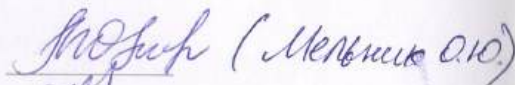
Work Program endorsed by the Department of Food Technology.

Protocol from "25" June 2020 № 16

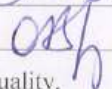
Head of the Department  (Pertsevov F.V.)  
(signature) (surname and initials)

**Approved:**

Guarantor of the educational program

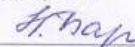
 (Melnyk O.Y.)

Dean of the Faculty of Food Technologies

 (O.V. Radchuk)

Methodist of the Department of Education Quality,

Licensing and Accreditation

 (N.M. Baranik)

Registered in the electronic database: date: 28.08. 2020 p.

### 1. Description of discipline

Name of indicators	Industry knowledge and direction of training, education level	Characteristics of discipline	
		full-time education	
Credits - 3	Field of knowledge: <i>18 "Production and Technology"</i>	<i>Special (training</i>	
Modules - 2	Specialty: <i>181 "Food Technology"</i>	Year of training:	
Content module 4		2020-2021	
Individual the research task has		Course	
		2	
		Semester	
Total hours - 208		3	
A weekly hours for full-time: classroom - independent work applicant -	Educational and scientific level: third	Lectures	
		44 hours	
		Practical, seminar	
		44 hours	
		Independent work	
		32 hours	
		One problem:	
		-	
		Type of control:	
		- differentiated test	

**Note.**

The ratio of hours of classes to work independently is (%): 73.3 / 26.7

### 2. The purpose and objectives of discipline

**The purpose:** to expand and deepen the knowledge of the current state and prospects of food industry development, to provide scientific justification for the use of innovative methods of processing raw materials, to master theoretical, practical skills and to realize them in the design of new functional foods; ability to diagnose culinary

products technologies as integral technological systems aimed at improving existing and developing more efficient innovative technologies.

**Objective:** to train professionals capable of solving complex problems in the field of professional or research-innovation activities in the field of food technology, which involves deep rethinking of existing and creation of new holistic knowledge capable of abstract thinking and project development and management, familiar with important problems and issues of nutrition technologies, main directions and methodical approaches to designing innovative food products, improving and developing innovative technologies food technology based on the latest advances in science and technology.

*A study of the discipline applicant must:*

**to know** the current state and prospects of development of nutrition; innovative methods of processing raw materials; the latest functional foods; alternative types of food; the characteristics of modern dietary supplements and the latest technologies for the production of dietary supplements; technologies of using dietary supplements in the production of functional and culinary products; methodology for determining rational technological regimes for the production of restaurant food; classification and characterization of functional foods; characterization of foodstuffs that contribute to the enhancement of the body's protective functions; innovative technologies of restaurant products; conditions of sale of finished products; requirements for the quality of the finished product.

**be able** to identify, pose and solve problems, organize, plan, implement 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 science, to generate new ideas for solving existing complex problems in the field of food technologies; apply knowledge of modern theories of nutrition, food combinatorics to create foods with new properties; present and discuss research findings; develop regulatory, technical and patent documentation for the results of scientific and practical developments in the chosen direction.

### 3. The program of discipline

(Approved 28/04/2014 SNAU AC, the protocol № 9)

#### **Theme 1: Introductory lecture. Innovation in the food industry. Health food as one of the objects of innovation**

Innovations in food production. An integrated approach to creating innovative food products. Basic Definitions and Terms. Innovative developments and trends in the modern restaurant market. Getting acquainted with the legal support of innovative



activity in the production and sale of food products. Wellness food as one of the objects of innovation. The role of science in the development of innovative technologies. Purpose and principles of the state innovation policy of Ukraine. Objects and subjects of innovative activity in Ukraine.

## **Theme 2: Fundamentals of new food products based on the sustainable use of functional ingredients and new raw materials**

Scientific substantiation of the use of food ingredients and new raw materials for food and restaurant products. Requirements for the creation of new restaurant products based on the rational use of food ingredients and new raw materials. Stages of development and production of micronutrient enriched foods. Basic principles of designing modern food and restaurant food products. Development of the latest technologies of food restaurant products based on the rational use of food ingredients and new raw materials.

## **Theme 3: Characteristics and technology using products and substances increased biological activity for food enrichment products**

Characteristics and technology of the use of algae nutrients and products of their processing at the restaurants. Characteristics and technology of the use of nutrients from herbal products. Characteristics and technology of using nutrients using foods rich in dietary fiber, vitamins and other BARs. Cryogenic technologies of processing of vegetable raw materials. Modern types of raw materials for food production (exotic vegetables, fruits and berries; new types of fish and non-fishery products of the sea; exotic types of cereals and legumes, including: quinoa, couscous, rice varieties, alfalfa, chia seeds, polba, legumes, chickpeas, mung beans, lentils, etc.). Exotic types of meat used in restaurants. Types of food salt and its use in food technology.

## **Theme 4: Modern trends in the preparation and processing of food using new types and methods of processing**

New trends and approaches to the use of techniques and technological processing of restaurant products. Principles on which thermal cooking methods are based. Prepare al-dente. Saute. Degassing. Grilling. Papilot. Sealing. Eratinization. Waxing. Coloring. Intensive cooling and shock freezing. Modern types and methods of processing food and restaurant products. Winking. Cooking in a Frying pan. New trends and approaches to the design, submission and storage of finished products. Art-visage. Carving.

## **Theme 5: Use of innovative equipment in food technology**

Applied innovative technologies in the food industry. Vacuuming. Vacuum cooking. Cookvac - Innovations in vacuum cooking and marinating products. Application of Sous - vide technology. Technology of thermomixing. Packaging technology. Sublimation drying. Modern types of equipment of restaurants. VarioCooking Automated Culinary Center. Stefan grill. Grilling fry. Cooking in microwave oven. Processing in the flame of a gas burner. Ways to improve the technological process of soups production using modern equipment (herb filter, thermomixer, autoclave). Diffraction. Freezing. Shock cooling.

## **Topic 6: The use of new spices in innovative food technologies**

The history of appearance, the healing properties of spices and spices. The value of spices in human nutrition. Classification of spices. Features of the use of spices and

spices in innovative food technologies. Use of medicinal raw materials as spices. Applied aspects of the use of spices in the production of food and culinary dishes.

#### **Topic 7: Innovative molecular technologies Food restaurant business establishments**

The pioneers of molecular gastronomy. Representatives of domestic and foreign scientific schools and applied research. Techniques in the molecular kitchen. Gelification and spherification in molecular cuisine. Espumas and emulsification in molecular cuisine. Carbonization. Dry ice and liquid nitrogen in the molecular kitchen. The use of aromadistillation in molecular gastronomy. Foodpairing in the molecular kitchen (non-standard flavor combinations). Prospects for the development of the range of products of the restaurant industry using molecular technology. Fusion cuisine is a creative direction in modern cooking. Architectural geometric desserts in cooking (world experience).

#### **4. The structure of the discipline**

topic	Number of hours											
	Full-time						Part-time					
	Total	including					Total	including				
		l	n	lab	ind	s.i.w	l	l	n	lab	ind	s.i.w
1	2	3	4	5	6	7	8	9	10	11	12	13
1. Introductory lecture. Innovation in the food industry. Health food as one of the objects of innovation.	16	6	6			4						
2. Fundamentals of new food products based on the sustainable use of functional ingredients and new raw materials.	18	6	7			5						
3. Characteristics and technology using products and substances increased biological activity for food enrichment products.	18	6	7			5						
4. Modern trends in the preparation and processing of food	17	6	6			5						



using new types and methods of processing.														
5. Use of innovative equipment in food technology.	17	6	6			5								
6. The use of new spices in innovative food technologies.	16	6	6			4								
7. Innovative molecular technologies Food restaurant business establishments.	18	8	6			4								
<b>Together</b>	<b>120</b>	<b>44</b>	<b>44</b>			<b>32</b>								

### 5. Themes and lectures plan

№	The name of the topic	Number of hours
1	Introductory lecture. Innovation in the food industry. Health food as one of the objects of innovation	6
2	Fundamentals of new food products based on the sustainable use of functional ingredients and new raw materials	6
3	Characteristics and technology using products and substances increased biological activity for food enrichment products	6
4	Modern trends in the preparation and processing of food using new types and methods of processing	6
5	Use of innovative equipment in food technology	6
6	The use of new spices in innovative food technologies	6
7	Innovative molecular technologies Food restaurant business establishments	8
<b>Total</b>		<b>44</b>

### 6. Topics of seminar papers

№	The name of the topic	Number of hours
1	Innovations in food production. The role of science in development innovative technologies	6
2	Development of the latest technologies of restaurant products	7

	based on rational use of food ingredients and new raw materials	
3	Innovative technologies in the food restaurant business establishments	7
4	Basic principles of construction of restaurant products on the basis of rational use of food ingredients and new raw materials	6
5	Modern types and methods of food processing in restaurant practice	6
6	Innovative molecular technologies Food restaurant business establishments	6
<b>Total</b>		<b>44</b>

### 7. Independent work

№	The name of the topic	Number of hours
1	The purpose and principles of state innovation policy of Ukraine. Objects and subjects of innovation activity in Ukraine	4
2	Scientific principles of fortification of foodstuffs and wellness dishes for optimization of tourists nutrition	5
3	Exotic types of meat used in establishments restaurant business. Types of food salt and its use in food technology	5
4	New trends and approaches to the design, submission and storage of finished products. Art-visage. Carving	5
5	Modern types of equipment of restaurants. VarioCooking Automated Culinary Center	5
6	Applied aspects of the use of spices in production food products of the restaurant industry	4
7	Fusion cuisine is a creative trend in modern cooking. Architectural-geometric desserts in cooking (world experience)	4
<b>Total</b>		<b>32</b>

### 8. Learning methods

*1. Methods The workshop individually differentiated:*



1.1. Personalized Learning - individually directed process of reflection graduate achievements in the online mode, which provides a flexible learning environment, introduction of more resources,

1.2. Differentiated instruction - in consultation with the applicants according to the schedule

1.3. Inquiry-based Learning - acquisition of knowledge by formulating their own questions and finding answers to them.

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

2.1. Problem (problem-information)

2.2. Active learning methods - use of technology learning, problem situations, the use of training and control tests using reference lectures.

2.3. Interactive learning technologies - the use of multimedia technology, interactive whiteboard and spreadsheets.

## 9. Control methods

1. Rating control a 100-point scale assessment ECTS

2. Implementation of the interim control during the semester

3. Multicriteria evaluation of job applicants:

- the level of knowledge demonstrated in laboratory studies;
- activity when discussing issues submitted to classes;
- results of performance and protection of laboratory work;
- independent processing threads in general or specific issues;
- test results;
- writing assignments during the tests.

4. Carrying out the 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 receiving students

on a test

Routine testing and independent work					Together, for modules and SIW	Certification	Sum
Content Module 1 - 35 points		Content module 2 - 35 points					
T1	T2	T3	T4	T4 (2-4)	85 (70 + 15)	15	100
15	20	15	10	10			

on a test

Routine testing and independent work				Together, for modules and SIW	Certification	Sum
Content module 3 - 35 points		Content module 4 - 35 points				
T5	T5 (2)	T6	T6 (2-5)	85	15	100
15	20	15	20	(70 + 15)		

## Grading scale: national and ECTS

Grading scale: national and ECTS			
Total points for all the educational activities	Assessment ECTS	Evaluation of national scale	
		for examination, course project (work), practice	for a test
90 - 100	A	perfectly	Accepted
82-89	B	fine	
75-81	C		
69-74	D	satisfactorily	
60-68	E		
35-59	FX	unsatisfactorily with possibility of re-drafting	not reckoned with the possibility of re-drafting
1-34	F	unsatisfactorily with the mandatory repeated study of discipline	not reckoned with the obligatory re-learning courses

## 11. Individual tasks

1. Scientific principles fortification of foods and dishes recreational purposes to optimize food tourists.
2. New trends and approaches to design, supply and zberihannyahotovoyi products.
3. Modern types of raw materials for food production
4. New trends and approaches to the design, submission and storage of finished products. Carving
5. Ten gastronomic attributes of the current restaurant.
6. Modern technologies of useful desserts.
7. Modern restaurant technology. History and popularity of Belgian waffles..
8. Fusion cuisine is a creative trend in modern cooking.
9. Foodpairing in the molecular kitchen (non-standard flavor combinations).

10. Prospects for the development of the range of products of the restaurant industry using molecular technology.
11. Soybean processing products and their use in tourists' health nutrition.
12. Foods using cryopowders to optimize tourists' nutrition.
13. Justify on a scientific basis the expediency of using seaweed and products of their processing in technologies of production of dishes of health and therapeutic and prophylactic purposes.
14. Organic food. Prospects for use in restaurants.
15. Applied aspects of the use of spices in the production of food products in the restaurant industry.
16. Modern types and methods of food processing in restaurant practice. Prepare al-dente. Saute. Examples of use in restaurant practice.
17. Modern types and methods of food processing in restaurant practice. Degassing. Grilling. Examples of use in restaurant practice.
18. Modern types and methods of food processing in restaurant practice. Papoliot. Examples of use in restaurant practice.
19. Modern types and methods of food processing in restaurant practice. Sealing. Examples of use in restaurant practice.
20. Modern types and methods of food processing in restaurant practice. Grilling. Coloring. Gratinning. Examples of use in restaurant practice.
21. Modern types and methods of food processing in restaurant practice. Winking. Examples of use in restaurant practice.
22. Innovations in kitchen technology. The crescent moon is a mezzanine.
23. Innovations in kitchen technology. Moroccan national utensils of the tajin.
24. Applied innovative technologies in the food industry. Vacuuming. Vacuum cooking.
25. Applied innovative technologies in the food industry. Cookvac - Innovations in vacuum cooking and marinating products.
26. Applied innovative technologies in the food industry. Sous-vide technology in restaurant practice.
27. Applied innovative technologies in the food industry. Technology of thermomixing.
28. Applied innovative technologies in the food industry. Packaging technology.
29. Applied innovative technologies in the food industry. Sublimation drying.
30. Modern types of equipment of restaurants. VarioCooking Automated Culinary Center.
31. Modern types of equipment of restaurants. Stefan grill.
32. Modern types of equipment of restaurants. Grilling fry.
33. Modern types of equipment of restaurants. Cooking in microwave oven.
34. Modern types of equipment of restaurants. Processing in the flame of a gas burner.
35. Ways to improve the technological process of soups production using modern equipment (herb filter, thermomixer, autoclave).
36. Innovations in kitchen technology. Wok pan and its advantages.
37. Applied innovative technologies in the food industry. KECH technology



38. Applied innovative technologies in the food industry. Diffraction. Intensive cooling and shock freezing.
39. The use of aromadistillation in molecular gastronomy.
40. New trends and approaches to the use of techniques and technological processing of restaurant products.

## 12. Recommended Books

### Legislative and regulatory acts

1. Consumer Protection: The Law of Ukraine of 15.12.1993. Number 3682-SSISH.
2. On changes and amendments to Article 23 of the Law of Ukraine "On Protection of Consumers' Rights: Law of Ukraine of 20.06.1995 p.
3. On innovation: the Law of Ukraine of 04.07.2002. Number 40 IV.
4. On making additions to the list of products subject to mandatory certification in Ukraine, the terms introduction of mandatory certification of certain products in Ukraine and adoption of the rules of mandatory certification of hotel services and catering: State Committee of Ukraine for Standardization, metrology and certification of 27.01.1999 g., number 7 March.
5. On sanitary and epidemiological welfare of the population: the Law of Ukraine of 24.02.1994 p. 4004, SSISH number.
6. On approval of Instruction on consideration of issues concerning extension of stay in Ukraine of foreigners and stateless persons (Order number 887 of 11/19/99 p. M Society of Internal Affairs of Ukraine) [http // rada.gov.ua. / pravo](http://rada.gov.ua./pravo).
7. On approval of recommended rates equipping catering: Order of the Minister of Economy and European Integration of Ukraine of 01.03.2003 p. 2 number.
8. On the main directions of development of tourism in Ukraine 2010: Ukraine presidential decree number 973/99 of 10 August 1999
9. On advertising number 270/96-BP of 07.03.96 p. <http://rada.gov.ua./pravo>.
10. On tourism number 324/95-BP of 15.09.95 g. And on amendments and additions to the Law of Ukraine "On Tourism" from 18.11.03g. <http://rada.gov.ua./pravo>.
11. The quality and safety of food products and raw materials: the Law of Ukraine of 23.12.1997 p. Number 771/97-VR
12. ISO 4281: 2004. Establishments restaurants. Classification. K .: State Committee of Ukraine, 2004.
13. ISO 4268: 2003 Tourism services. Arrangement of equipment. General requirements.
14. ISO 4269: 2003 Tourism services. Classification of hotels.
15. ISO 4527: 2006 Tourism services. Arrangement of equipment. Terms and definitions.
16. ISO 3279- 95 Standardization services. Substantive provisions.
17. Constitution of Ukraine. - K .: Inform. Izdatel'stvo Agency "IBA", 1996.
18. Interstate standard GOST 30335-95 Services to the population. Термумы and definitions.

19. Interstate standard GOST 30390-95 sociallyE Power. Kulynarnaya out production realyzuemaya population. General specifications.
20. Interstate standard GOST 30523-97 Services the Public Power. General requirements.
21. Interstate standard GOST 30524-97 Obschestvennoe Power. Requirements for obsluzhyvayuschemu staff.
22. SanPiN 2.3.2.1324-03 Hyhyenicheskye Requirements for hodnosty timing and terms pyschevyyh storage products.
23. SanPiN 42-123-5777-91 Sanytarnyye rules for the Public POWER enterprises, vkluchaja kondyterskye shops and enterprise, the soft vyrabatyvayuschy morozhenoe.
24. Terms of institutions (companies) restaurant facilities: Order of the Minister of Economy and European Integration of Ukraine from 24.07.2002, number 219.
25. Terms of hotels and similar accommodation and hotel services (State Tourism Administration of Ukraine 16.03.04, № 19) <http://rada.gov.ua/pravo>.
26. The program of tourism development in Ukraine for 2002-2010 <http://rada.gov.ua/pravo>.
27. 140012004 ISO Environmental Management System.

#### Basic

28. Arkhipov VV hotel-restoranny SERVICE: Features cultures and traditions POWER peoples of the world: Lectures / V. Arkhipov, EI Yvannykova. - K.: Atyka, 2005. - 215 p.
29. Baylyk SI Hostynychnoe economy: Textbook / SI Baylyk; N-of Education and Science. - 2nd ed. rev. and add. - K.: Dakor, 2009. - 367 p.
30. Rajiv Batra. Advertising management and R. Batra, David Myers, D. M.; Aaker.- S-Pb.; K.: Williams, 2000. - 780 p.: ill.
31. Boyko MG Hotel Management Company: tutorial / MG Boyko LN Hopkalo. - K., 2010. - 447 p.
32. Van Mouryk SV Myrovoy Marketplace pyschevyyh additives - STATUS and per- spektyvy / S. Van Mouryk // produkty & ynhredyenty, 2004. - № 2. - P. 6-8.
33. Volkov YF Interior and equipment and inn restoranov: Textbook. Posobyе / S. F. Volkov. - Rostov-on-Don: Phoenix, 2003. - 351 p.
34. Golubev LV Desertnyye produkty POWER functional purpose / LV Golubev, E. I. Melnikov, EB Tereshkova // REFINING selhozsyrya and storage. - 2006. - № 10. - P. 71-73.
35. Hospitality: basic indicators, assessment of service quality: teach. Guide / M-of Education of Ukraine; Kyiv Institute of Tourism, Economics and Law. - K., 1999. - 76 p.
36. Dolgoplov SV kulynarnyye New technology / C. Dolgoplov. -M.: Company "Publishing Home" Restorannyye Gazette ", 2005. - 275 p.
37. Economics and organization of innovation: the textbook / under Chen. O. Volkov, M. Denisenko. - K.: Professional, 2004. - 960 p.
38. A. Effective Efymova menu, concept and design. - M.: ZAO "Publishing Home" "Restorannyye Gazette", 2006. - 176 p.



39. Ynnovatsyonnoe development: Economy, yntellektualnye Resources, Knowledge Management / Ed. 3. B. Mylnera. - M.: INFRA-M, 2010. - 675 p.
40. Karsekin VI Investment policy: problems of theory and practice hospitality: Monograph / VI Karsekin, LA Bovše. - X.: HDUHT, 2010. - 518 p.
41. Kokuryu D. I. Ynnovatsyonnaya Activities: monograph / DI Kokuryu. - M.: exam, 2001. - 576 p.
42. T. Conran restaurant Pervoklassnyy: Idea, creation, development / Terence Conran. - M.: Alpina Business Books, 2008. - 210s.
43. Kitchen. Management and Organization / Ed. 3. Mytshe, J. Rayzynher D. Kranzl P. Fisher, M. Buhynher. - M.: Publishing "Tsentrpoligraf", 2010. - 252 p.
44. Lukyanets TI Advertising management: Teach method. guide for self-study courses / TI Lukyanets - K.: KNEU, 2002. - 200 p.
45. Lyapyna I. Yu and Technology Organization hostynychnoho of service: Textbook / Lyapyna I. Yu. - M.: Academy, 2002.
46. Mazaraki AA service organization in business management restaurant- tion: a textbook for high schools / A. Mazaraki, NP safely, II Gaevoy, A. Grigorenko, T. Litvinenko, G. Pyatnitska T., N. Pyatnitska, A. Rasulov, ML Svetlichnaya. - K.: KNTU, 2005. - 632 p.

#### More

47. Hayets VM innovative perspectives Ukraine / VM Hayets, VP Seminozhenko. - X.: Constant, 2006. - 272 p.
48. Lazerson I. How to Attract Guests to the restaurant / Ilya Lazerson, Fedor Sokyryanskyy. - M.: Zksmo, 2011. - 288 p.
49. Lousan F. Restaurants, Clubs, Bars, planning, design, control / FM Lousan. - M.: Prospekt, 2004. - 392 p.
50. Mikhno MA ynnovatsyy role in tourism: Textbook / NA Mikhno. - M., 2004. - 210 p.
51. Morozov MA in Information Technology Tools socio-cultural and tourism. Office equipment: Textbook / NA Morozov, NS Morozov. - M.: Academy, 2002. - 240 p.
52. Halvorsen F. Fundamentals catering. As orhanyzovat vyezdnoe Maintenance / FM Halvorsen. - M.: Izdat. Home "Restorannyye Gazette", 2005. - 303 p.
53. Erdosh D. Catering. How to Start and successfully conduct business vyezdnoy restorannyy / D Erdosh. - M.: Alpina Business Books, 2005.