NJSC SHAKARIM UNIVERSITY OF SEMEY

EDUCATIONAL PROGRAM

8D07 - Engineering, Manufacturing and Civil engineering
(Code and classification of the field of education)

8D072 - Manufacturing and processing
(Code and classification of the direction of training)

0720
(Code in the International Standard Classification of Education)

D111 - Food production
(Code and classification of the educational program group)

8D07201 - Technology of food products
(Code and name of the educational program)

Doctor of philosophy (PhD)
(Level of preparation)

Semey

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Semey 2023

PREFACE

Developed

The educational program 8D07201 - Technology of food products in the direction of preparation 8D072 - Manufacturing and processing on the basis of the State Compulsory Standards of Higher and Postgraduate Education approved by the Order of the Ministry of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No 2 (as amended by the order) was developed by the Academic Committee dated 20.02.2023 No 66).

Members of the Academic Committee	Full name	Academic degree, academic title, position	Signature
Head of the Academic Committee	Nurymkhan Gulnur	dean, assosiation professor	
Educational program manager	Amirkhanov Kumarbek	professor	
Member of the AC	Nurgazezova Almagul	assosiation professor	
Member of the AC	Idyryshev Berik	teacher	
Member of the AC	Zharykbasova Clara	vice-rector	
Member of the AC	Mayzhanova Aigul	doctoral student	
Member of the AC	Isimbekov Zhanibek	projekt manager	
Member of the AC	Raimkhanova Guldana	doctoral student	

Reviewing

Full name of the reviewer	Position, place of work	Signature
Igenbaev Aidyn	Kazakh agrotekhnical university after S.Seifullin	

Reviewed

at the meeting of the Quality Assurance Commission of the Faculty of Engineering and Technology
Recommended for approval by the Academic Council of the University
Protocol № 4.6 "10" April 2023
Chairman of the Commission on Quality Assurance Abdilova G.

Approved at the meeting of the Academic Council of the University Protocol No. 8 "25" April 2023.

Approved

at the meeting of the Academic Council of the University
Protocol № 1 "01" of September 2023
Chairman of the Academic Council of the University Orynbekov D.R.

Content

1.Introduction

1.1.General data

The curriculum of the discipline (course) is a mandatory part of the main educational program. The program of each discipline (course) is aimed at implementing a single target setting for training a specific specialist and is a basic educational and methodological document.

The introduction of a modular system for organizing the educational process imposes special requirements for the preparation of academic programs, their structure and content. The curriculum of the discipline is developed for each direction (specialty) of higher professional education, indicating the corresponding stage (level).

1.2.Completion criteria

The main criterion for the completion of the educational process in the educational program "8D07201 food Technology" is the development of at least 45 credits of theoretical training, as well as at least 10 credits of pedagogical practice, 10 credits of research practice, 123 credits of research work, at least 12 credits for writing and defending a doctoral dissertation. A total of 180 credits.

1.3.Typical study duration: 3 years.

2.PASSPORT OF THE EDUCATIONAL PROGRAM

2.1.EP purpose	Training of highly qualified specialists, competitive in the international labor market, for food industry enterprises with professional and social competence, meeting the requirements of the modern economy and labor market.
2.2.Map of the training profile within the educational program	
Code and classification of the field of education	8D07 - Engineering, Manufacturing and Civil engineering
Code and classification of the direction of training	8D072 - Manufacturing and processing
Code in the International Standard Classification of Education	0720
Code and classification of the educational program group	D111 - Food production
Code and name of the educational program	8D07201 - Technology of food products
2.3.Qualification characteristics of the graduate	
Degree awarded / qualification	Doctor of philosophy PhD in the educational program 8D07201 - Technology of food products
Name of the profession / list of positions of a specialist	May hold positions: • general manager; • Director (head) of the organization; * Deputy Director (head) of the organization for scientific work; • chief engineer of the organization; • scientific Secretary; • head of the food industry research laboratory; * head and leading specialist in research institutes, SPC, food production institutions, structural divisions of the Ministry of agriculture; * teacher in higher and secondary educational institutions of food profile; * specialist in agricultural formations of various forms of ownership, agricultural production institutions, land and territorial committees; * expert in projects carried out on a tender basis and in various food and agricultural funds, etc.
OQF qualification level (industry qualification framework)	8
Area of professional activity	The field of Professional activity of the PhD doctor is all branches of the processing industry, food certification enterprises, sanitary supervision enterprises, institutions of state bodies that control food safety, research organizations, as well as firms of various forms of ownership, higher education institutions.
Object of professional activity	- higher education institutions (Shakarim State University, Almaty Technological University, Kazakh national agrarian University, S. Seifullin Kazakh state agrarian and technical University, West Kazakhstan agrarian and technical University named after S. Seifullin). Zhangirkhan etc.); - research institutes (Kazakh research Institute of processing and food industry, Kazakh research Institute of fruit and viticulture, Kaznii of agriculture

	and crop production, Kaznii of soil science and Agrochemistry named after U.Uspanov, kaznii of potato and vegetable farming, kaznii of rice growing, Kaznii of grain farming named after A. I. Barayev; Pavlodar research Institute, Karaganda research Institute of Sir, etc.); - research and production and methodological centers; - state enterprises of the MES system and the Ministry of agriculture of the Republic of Kazakhstan; expert and design institutions, - agricultural formations, committees, firms, etc. of various forms of ownership. - enterprises that produce and control food products, institutions of state bodies that control food safety.
Types of professional activity	Graduates of the educational program "8D07201technology of food products" can perform the following types of professional activities: production and technological; organizational and management; experimental research educational (scientific and pedagogical).
Graduate Model	- Be able to use the possibilities of written communication in academic and scientific-technical field when writing research papers and conducting classes; - Interpret the results of scientific research and the limits of their application; - Implement methods and take part in the implementation of measures to improve production efficiency, aimed at reducing the consumption of raw materials, reducing labor intensity, increasing labor productivity; - To create scientifically based nutrition concepts based on the need for nutrients and energy for individual groups of the population; - Possess various educational technologies, methods and techniques of oral and written presentation of the subject material, contributing to the improvement of the quality of the educational process; - Apply practical skills and teaching methods in higher education school; - Apply innovation

3.Modules and content of the educational program

Theory and practice of food production

Academic writing

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32362 (3010980)
Course	1
Term	1
Credits count	5
Practical and seminar classes	30hours
Lections	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

Features of academic writing. The genre of academic writing. Writing grant applications and accounting documents for scientific projects. Bibliography and reference apparatus. Academic writing is a method of writing scientific texts, such as essays, theses, master`s and doctoral dissertations, scientific articles and monographs. Academic subscription is the realization by doctoral students of their thoughts and ideas, their justification and communication to users.

Purpose of studying of the discipline

The purpose of the discipline academic writing is an essay, term paper, thesis, master`s and doctoral mastering the methodology of writing scientific texts, such as dissertations, scientific articles and monographs. Academic letter of doctoral students. Professional competence and communicative strengthening of communication. Formation of linguistic and pragmatic thinking.

Learning Outcomes

ON1 Use the possibilities of written communication in the academic and scientific-technical field when writing research papers and conducting classes.

Prerequisites

Masters degree course

Postrequisites

Doctoral student research work, including internship and doctoral dissertation VI

Research methods

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32333 (3010981)
Course	1
Term	1
Credits count	5
Practical and seminar classes	15hours
Lections	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

Methods of product quality assessment. Scientific knowledge, its principles, patterns of assimilation, levels of knowledge. Information approaches in research. The problem of choice in scientific research. Methods for assessing the quality of raw materials and finished products: spectrometric methods, polarimetric method, chromatographic method, rheological method, potentiometric method, methods of electrolysis and coulometric, radiometric analysis. Methods and methods of investigation of the physico-chemical composition of raw materials, finished products

Purpose of studying of the discipline

The purpose of the discipline is the formation of knowledge among doctoral students in the field of modern methods of scientific research.

Learning Outcomes

ON2 Interpret the results of scientific research and the boundaries of their application.
ON6 Apply practical skills and teaching methods in higher education.

Prerequisites

Masters degree course

Postrequisites

Doctoral student research work, including internship and doctoral dissertation VI

Innovative knowledge

Innovative technological processes in the production of new foods

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32638 (3010985)
Course	1
Term	1
Credits count	5
Lections	45hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The use of modern technology and innovative technologies to reduce the duration of technological processes. New physical methods of processing food raw materials and products. The use of biologically active substances, natural food additives in order to accelerate the biochemical processes of raw materials. New methods and methods of heat treatment of unconventional energy sources and raw materials. New methods of forming and packaging of food products.

Purpose of studying of the discipline

The purpose of the discipline is the formation of doctoral students` knowledge in the field of the development of innovative food technologies.

Learning Outcomes

ON3 Implement methods and take part in the implementation of measures to improve production efficiency, aimed at reducing the consumption of raw materials, reducing labor intensity, increasing labor productivity.
ON4 To create scientifically based nutrition concepts based on the need for nutrients and energy for individual groups of the population.

Prerequisites

Masters degree course

Postrequisites

Doctoral student research work, including internship and doctoral dissertation VI

Innovative Technology of food products

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32867 (3010984)
Course	1
Term	2
Credits count	10
Lections	90hours
Independent work of a student under the guidance of a teacher	70hours
Independent work of the student	140hours
Total	300hours
Knowledge control form	Examination

Short description of discipline

Classification of scientific directions of food production and organization of innovative scientific research. Improving the efficiency of using the results of scientific and scientific-technical activities. Drawing up a plan for research work. The use of innovative modern methods and techniques for determining the quality of food products. The use of new technologies in the production processes of new products. Methods of introducing innovations into production. Production of meat and meat products using Halal technology.

Purpose of studying of the discipline

Purpose of studying of the discipline: Getting doctoral knowledge about innovative technologies of food products.

Learning Outcomes

ON9 Promote the search, selection and use of new information in the field of consumer market development, systematize and summarize information.

Prerequisites

Masters degree course

Postrequisites

Doctoral student research work, including internship and doctoral dissertation III Doctoral student research work, including internship and doctoral dissertation IV Research practice

Method of teaching of engineering subjects

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32866 (3010983)
Course	1
Term	2
Credits count	10
Lections	90hours

Independent work of a student under the guidance of a teacher	70hours
Independent work of the student	140hours
Total	300hours
Knowledge control form	Examination

Short description of discipline
Introduction to the methodology of teaching special disciplines. General didactic principles of teaching in the system of vocational education. Organizational forms and methods of classes. Learning tools. Methods of activating cognitive activity of doctoral students. Theories and concepts of nutrition; modern directions of production of combined foods; scientific principles of enrichment of combined foods with micro- nutrients. Features of the use of various food and biologically active additives, dyes, preservatives and other components in the production of combined foods.

Purpose of studying of the discipline
The purpose of the discipline is the development of forms, methods and means of teaching special disciplines by doctoral students.

Learning Outcomes
ON5 Possess various educational technologies, methods and techniques of oral and written presentation of subject material, contributing to improving the quality of the educational process.
ON8 Conduct independent scientific research, characterized by academic integrity, based on modern theories and methods of analysis.

Prerequisites
Masters degree course

Postrequisites
Doctoral student research work, including internship and doctoral dissertation VI

Scientific-theoretical basis for the creation of combination products

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	32865 (3010982)
Course	1
Term	2
Credits count	10
Lections	90hours
Independent work of a student under the guidance of a teacher	70hours
Independent work of the student	140hours
Total	300hours
Knowledge control form	Examination

Short description of discipline
Theories and concepts of nutrition. Peculiarities of nutrition of various population groups, scientific foundations of food combinatorics. Modern directions of mixed food production. Scientific principles of fortification of mixed foods with micronutrients. Classification and application of food and biologically active additives. Features of the use of various food and biologically active additives. The influence of the processing method on the change of nutrient content in food products, the main directions of development of food technology

Purpose of studying of the discipline
The purpose of the discipline is the formation of skills in the development of new products using special additives.

Learning Outcomes
ON7 Apply technologies of management of scientific research and teams in solving problems in the professional field of activity.
ON10 Generate his own new scientific ideas, communicate his knowledge and ideas to the scientific community, expanding the boundaries of scientific knowledge.

Prerequisites
Masters degree course

Postrequisites
Doctoral student research work, including internship and doctoral dissertation VI

Pedagogical practice

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	32868 (3010979)
Course	2
Term	1
Credits count	10
Pedagogical practics	300hours
Total	300hours
Knowledge control form	Total mark on practice

Short description of discipline
pedagogical practice is aimed at achieving a high quality of postgraduate professional education,
the implementation of theoretical knowledge, the development of professional qualities of a university teacher and the formation of competencies
of doctoral graduates in pedagogical activity and educational sphere Pedagogical practice is aimed at the formation of functional competencies, the development of abilities to perform tasks in professional and educational spheres. Pedagogical practice forms doctoral students` mastery of the skills of the educational process in higher educational institutions

Purpose of studying of the discipline
formation of professional and personal competencies necessary for the organization of the educational process in higher education.
Learning Outcomes
ON5 Possess various educational technologies, methods and techniques of oral and written presentation of subject material, contributing to improving the quality of the educational process.
ON6 Apply practical skills and teaching methods in higher education.
Prerequisites
Method of teaching of engineering subjects
Postrequisites
Research practice

Research and technological knowledge

Doctoral student research work, including internship and doctoral dissertation I

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	32863 (3010972)
Course	1
Term	1
Credits count	15
The research work	450hours
Total	450hours
Knowledge control form	Total mark on practice

Short description of discipline
The doctoral student`s research work includes a review of literary sources, patent search, selection of raw materials and materials, development of experimental schemes, laboratory research, industrial approbation,
analysis and processing of the obtained results, publication of scientific articles and defense of a doctoral dissertation. Doctoral students in the course of a scientific internship carry out research work in their field. Scientifically substantiates and publishes the results obtained.
Purpose of studying of the discipline
Mastering scientific methods and performing scientific research on the topic of dissertations, the ability to analyze and generalize a scientific problem on the topic of dissertations.
Learning Outcomes
ON2 Interpret the results of scientific research and the boundaries of their application.
ON9 Promote the search, selection and use of new information in the field of consumer market development, systematize and summarize information.
Prerequisites
Basic and profile disciplines of the EP
Postrequisites
Doctoral student research work, including internship and doctoral dissertation VI

Doctoral student research work, including internship and doctoral dissertation II

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	32862 (3010977)
Course	1
Term	2
Credits count	20
The research work	600hours
Total	600hours
Knowledge control form	Total mark on practice

Short description of discipline
The doctoral student`s research work includes a review of literary sources, patent search, selection of raw materials and materials, development of experimental schemes, laboratory research, industrial approbation,
analysis and processing of the obtained results, publication of scientific articles and defense of a doctoral dissertation. Doctoral students in the course of a scientific internship carry out research work in their field. Scientifically substantiates and publishes the results obtained.
Purpose of studying of the discipline
Mastering scientific methods and performing scientific research on the topic of dissertations, the ability to analyze and generalize a scientific problem on the topic of dissertations.
Learning Outcomes
ON8 Conduct independent scientific research, characterized by academic integrity, based on modern theories and methods of analysis.
ON9 Promote the search, selection and use of new information in the field of consumer market development, systematize and summarize information.
Prerequisites
Basic and profile disciplines of the EP
Postrequisites

Doctoral student research work, including internship and doctoral dissertation VI

Doctoral student research work, including internship and doctoral dissertation III

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	32870 (3010973)
Course	2
Term	1
Credits count	20
The research work	600hours
Total	600hours
Knowledge control form	Total mark on practice

Short description of discipline

The doctoral student`s research work includes a review of literary sources, patent search, selection of raw materials and materials, development of experimental schemes, laboratory research, industrial approbation,
analysis and processing of the obtained results, publication of scientific articles and defense of a doctoral dissertation. Doctoral students in the course of a scientific internship carry out research work in their field. Scientifically substantiates and publishes the results obtained

Purpose of studying of the discipline

Mastering scientific methods and performing scientific research on the topic of dissertations, the ability to analyze and generalize a scientific problem on the topic of dissertations.

Learning Outcomes

ON10 Generate his own new scientific ideas, communicate his knowledge and ideas to the scientific community, expanding the boundaries of scientific knowledge.

Prerequisites

Basic and profile disciplines of the EP

Postrequisites

Doctoral student research work, including internship and doctoral dissertation VI

Doctoral student research work, including internship and doctoral dissertation IV

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	32872 (3010974)
Course	2
Term	2
Credits count	30
The research work	900hours
Total	900hours
Knowledge control form	Total mark on practice

Short description of discipline

The doctoral student`s research work includes a review of literary sources, patent search, selection of raw materials and materials, development of experimental schemes, laboratory research, industrial approbation,
analysis and processing of the obtained results, publication of scientific articles and defense of a doctoral dissertation. Doctoral students in the course of a scientific internship carry out research work in their field. Scientifically substantiates and publishes the results obtained

Purpose of studying of the discipline

Mastering scientific methods and performing scientific research on the topic of dissertations, the ability to analyze and generalize a scientific problem on the topic of dissertations.

Learning Outcomes

ON7 Apply technologies of management of scientific research and teams in solving problems in the professional field of activity.
ON10 Generate his own new scientific ideas, communicate his knowledge and ideas to the scientific community, expanding the boundaries of scientific knowledge.

Prerequisites

Basic and profile disciplines of the EP

Postrequisites

Doctoral student research work, including internship and doctoral dissertation VI

Research practice

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	32874 (3010978)
Course	3
Term	1
Credits count	10
Working practice	300hours
Total	300hours

Knowledge control form	Total mark on practice

Short description of discipline
Conducting research related to the topic of the dissertation, examination and modeling of the results obtained. Organization of quantitative and qualitative research works by various modern methods. Mastering techniques, skills of determining the quality of products. Consolidation of theoretical knowledge in practice. Application of the results obtained during the study in their work.

Purpose of studying of the discipline
obtaining knowledge about innovative technologies of food production, knowledge of the methodology of scientific research

Learning Outcomes
ON7 Apply technologies of management of scientific research and teams in solving problems in the professional field of activity.
ON8 Conduct independent scientific research, characterized by academic integrity, based on modern theories and methods of analysis.

Prerequisites
Research methods

Postrequisites
Doctoral student research work, including internship and doctoral dissertation VI

Doctoral student research work, including internship and doctoral dissertation V

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	32873 (3010976)
Course	3
Term	1
Credits count	20
The research work	600hours
Total	600hours
Knowledge control form	Total mark on practice

Short description of discipline
The doctoral student`s research work includes a review of literary sources, patent search, selection of raw materials and materials, development of experimental schemes, laboratory research, industrial approbation,
analysis and processing of the obtained results, publication of scientific articles and defense of a doctoral dissertation. Doctoral students in the course of a scientific internship carry out research work in their field. Scientifically substantiates and publishes the results obtained

Purpose of studying of the discipline
Mastering scientific methods and performing scientific research on the topic of dissertations, the ability to analyze and generalize a scientific problem on the topic of dissertations.

Learning Outcomes
ON8 Conduct independent scientific research, characterized by academic integrity, based on modern theories and methods of analysis.
ON9 Promote the search, selection and use of new information in the field of consumer market development, systematize and summarize information.
ON10 Generate his own new scientific ideas, communicate his knowledge and ideas to the scientific community, expanding the boundaries of scientific knowledge.

Prerequisites
Basic and profile disciplines of the EP

Postrequisites
Doctoral student research work, including internship and doctoral dissertation VI

Doctoral student research work, including internship and doctoral dissertation VI

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	32875 (3010975)
Course	3
Term	2
Credits count	18
The research work	540hours
Total	540hours
Knowledge control form	Total mark on practice

Short description of discipline
The doctoral student`s research work includes a review of literary sources, patent search, selection of raw materials and materials, development of experimental schemes, laboratory research, industrial approbation,
analysis and processing of the obtained results, publication of scientific articles and defense of a doctoral dissertation. Doctoral students in the course of a scientific internship carry out research work in their field. Scientifically substantiates and publishes the results obtained

Purpose of studying of the discipline
Mastering scientific methods and performing scientific research on the topic of dissertations, the ability to analyze and generalize a scientific problem on the topic of dissertations.

Learning Outcomes
ON8 Conduct independent scientific research, characterized by academic integrity, based on modern theories and methods of analysis.
ON9 Promote the search, selection and use of new information in the field of consumer market development, systematize and

summarize information.
ON10 Generate his own new scientific ideas, communicate his knowledge and ideas to the scientific community, expanding the boundaries of scientific knowledge.

Prerequisites

Basic and profile disciplines of the EP

Postrequisites

Doctoral student research work, including internship and doctoral dissertation VI

Final assessment

Doctorly dissertation orau translation

Credits count	12

4.Summary table on the scope of the educational program

«8D07201 - Technology of food products»

Name of discipline	Cycle/ Component	Term	Number of credits	Total hours	Lec	SPL	LC	IWST	IWS	Knowledge control form
Theory and practice of food production										
Academic writing	BS/US	1	5	150	15	30		35	70	Examination
Research methods	BS/US	1	5	150	30	15		35	70	Examination
Innovative knowledge										
Innovative technological processes in the production of new foods	BS/US	1	5	150	45			35	70	Examination
Innovative Technology of food products	AS/CCh	2	10	300	90			70	140	Examination
Method of teaching of engineering subjects	AS/CCh	2	10	300	90			70	140	Examination
Scientific-theoretical basis for the creation of combination products	AS/CCh	2	10	300	90			70	140	Examination
Pedagogical practice	BS/US	3	10	300						Total mark on practice
Research and technological knowledge										
Doctoral student research work, including internship and doctoral dissertation I	AS/US	1	15	450						Total mark on practice
Doctoral student research work, including internship and doctoral dissertation II	AS/US	2	20	600						Total mark on practice
Doctoral student research work, including internship and doctoral dissertation III	AS/US	3	20	600						Total mark on practice
Doctoral student research work, including internship and doctoral dissertation IV	AS/US	4	30	900						Total mark on practice
Research practice	AS/US	5	10	300						Total mark on practice
Doctoral student research work, including internship and doctoral dissertation V	AS/US	5	20	600						Total mark on practice
Doctoral student research work, including internship and doctoral dissertation VI	AS/US	6	18	540						Total mark on practice
Final assessment										
Doctorly dissertation orau translation		6	12	360						