CATALOG OF ELECTIVE DISCIPLINES

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

8D071 - Engineering and engineering trades
(Code and classification of the direction of training)

0710
(Code in the International Standard Classification of Education)

D103 - Engineering and Manufacturing Industries
(Code and classification of the educational program group)

8D07101 - Technological machinery and equipment
(Code and name of the educational program)

Doctor of philosophy (PhD)
(Level of preparation)

set of 2023

Semey 2023

Developed
By the Academic Committee of the EP
The head of the AC Nurymkhan G
EP Manager Abdilova G.

Reviewed
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Chairman of the Commission on Quality Assurance Abdilova G.

Approved
at the meeting of the Academic Council of the University
Protocol №5 "21" April 2023
Chairman of the Academic Council Oralkanova I.A.

Scientific-theoretical bases of heat and mass transfer processes

Discipline cycle	Profiling discipline
Course	1
Credits count	5
Knowledge control form	Examination

Short description of discipline

This course studies the scientific theoretical foundations of heat and mass transfer processes, the classification of mass transfer processes by the aggregate state of the liquid and the methods of phase coupling, as well as the methodology for calculating the main parameters of the process. Familiarization of doctoral students with the scientific theoretical foundations of heat and mass transfer processes, obtaining knowledge and experience in this field in practice. Increasing the ability and readiness to study the scientific theoretical foundations of heat and mass transfer processes.

Purpose of studying of the discipline

Familiarization of doctoral students with the scientific and theoretical foundations of thermal and mass transfer processes, obtaining knowledge, skills and abilities in this field in practice. Formation of the student`s ability and readiness to apply the scientific and theoretical foundations of thermal and mass transfer processes.

Learning Outcomes

ON3 Demonstrate basic and general knowledge about the organization of a holistic technological process, the ability to manage technical activities, skills in choosing methods, forms and technologies of food production.
ON4 Introduce students to the system of social values.
ON8 Demonstrate basic and general knowledge about the organization of an integral technological process, the ability to manage technical activities, skills in choosing methods and forms of hydromechanical processes for food processing.
ON10 To carry out methodological support of the educational process.

Learning outcomes by discipline

- Demonstrates basic and general educational knowledge about the organization of a holistic technological process, the ability to manage technical activities, the skills of using the scientific and theoretical foundations of thermal and mass transfer processes.

Prerequisites

Masters degree course

Postrequisites

Basic and profile disciplines of the EP

The latest achievements in the field of technological equipment of meat and dairy industry

Discipline cycle	Profiling discipline
Course	1
Credits count	5
Knowledge control form	Examination

Short description of discipline

This course examines the latest achievements in the field of technological equipment of the meat and dairy industry. The widespread use of machines and apparatuses in various industries requires from the student deep knowledge in the field of technological equipment and the ability to manage processes in accordance with the requirements of technology, should ensure their optimal performance at a high technical level that would meet the latest achievements of science in this field.

Purpose of studying of the discipline

Familiarization of doctoral students with modern aspects of the development of science and practice in the field of technological machines and equipment, obtaining knowledge, skills and abilities in this field in practice. Formation of the student`s ability and readiness for the development of science and practice in the field of technological machines and equipment.

Learning Outcomes

ON3 Demonstrate basic and general knowledge about the organization of a holistic technological process, the ability to manage technical activities, skills in choosing methods, forms and technologies of food production.
ON5 Check the level of consolidation of theoretical knowledge gained in the process of training and professional development.
ON10 To carry out methodological support of the educational process.
ON11 To study the level of assimilation of educational content by students, to explore the educational environment.

Learning outcomes by discipline

Demonstrates basic and general knowledge about the organization of an integral technological process, the ability to manage technical activities, skills in choosing methods and forms of hydromechanical processes for food processing.

Prerequisites

Masters degree course

Postrequisites

Basic and profile disciplines of the EP Research work of the doctoral student, including internship and doctoral dissertation II

Modern aspects of science and practice in the field of technological machinery and equipment

Discipline cycle	Profiling discipline
Course	1
Credits count	5
Knowledge control form	Examination

Short description of discipline

This course examines and describes modern aspects of the development of science and practice in the field of technological machines and equipment. Familiarization of doctoral students with the theoretical foundations of food processing processes and obtaining knowledge and experience in this field in practice. Increasing the ability and readiness to study the composition, technological purpose, driving force of the hydromechanical processes of food processing and raw materials.

Purpose of studying of the discipline
Familiarization of doctoral students with modern aspects of the development of science and practice in the field of technological machines and equipment, obtaining knowledge, skills and abilities in this field in practice. Formation of the student`s ability and readiness for the development of science and practice in the field of technological machines and equipment.
Learning Outcomes
ON1 Evaluate modern aspects of the development of science and practice in the field of technological machines and equipment.
ON2 Broadcast educational information, teach yourself to acquire knowledge.
ON5 Check the level of consolidation of theoretical knowledge gained in the process of training and professional development.
ON10 To carry out methodological support of the educational process.
Learning outcomes by discipline
- Demonstrates basic and general educational knowledge about the organization of a holistic technological process, the ability to manage technical activities, the skills of choosing methods and forms of hydromechanical food processing processes.
Prerequisites
Masters degree course
Postrequisites
Basic and profile disciplines of the EP

Mathematical modeling of machining processes

Discipline cycle	Profiling discipline
Course	1
Credits count	5
Knowledge control form	Examination

Short description of discipline
This discipline is the basis for in-depth study and development of special mathematical methods of mathematical modeling of the machining process, as well as qualified solutions to process control problems, selection and adoption of technological solutions, the construction of intelligent decision-making systems, the study of technological processing capabilities. Familiarization of doctoral students with mathematical modeling of the machining process, obtaining knowledge and experience in this field in practice.
Purpose of studying of the discipline
Familiarization of doctoral students with mathematical modeling of machining processes in the field of technological machines and equipment, obtaining knowledge, skills and abilities in this field in practice.
Learning Outcomes
ON2 Broadcast educational information, teach yourself to acquire knowledge.
ON3 Demonstrate basic and general knowledge about the organization of a holistic technological process, the ability to manage technical activities, skills in choosing methods, forms and technologies of food production.
ON5 Check the level of consolidation of theoretical knowledge gained in the process of training and professional development.
ON7 Plan, simulate preparation and correctly conducts a scientific experiment. Performs processing of the obtained experimental data.
Learning outcomes by discipline
Demonstrates basic and general knowledge about the organization of an integral technological process, the ability to manage technical activities, skills in choosing methods and methods of mathematical modeling of machining processes.
Prerequisites
Masters degree course
Postrequisites
Basic and profile disciplines of the EP

Rheological bases of visco-plastic food

Discipline cycle	Profiling discipline
Course	1
Credits count	5
Knowledge control form	Examination

Short description of discipline
The subject of the discipline is the technological processes of the food industry associated with mechanical action on the processed product. The choice of technological equipment, the determination of its operating modes is determined by the physico-mechanical, rheological properties of food masses, semi-finished products and finished products. Formation of necessary theoretical and practical skills among students, sufficient for their further activities and allowing them to independently master new knowledge based on scientific achievements in the relevant industry.
Purpose of studying of the discipline
Familiarization of doctoral students with the rheological foundations of visco-plastic food products in the field of technological machines and equipment, obtaining knowledge, skills and abilities in this field in practice.
Learning Outcomes
ON2 Broadcast educational information, teach yourself to acquire knowledge.
ON3 Demonstrate basic and general knowledge about the organization of a holistic technological process, the ability to manage technical activities, skills in choosing methods, forms and technologies of food production.
ON8 Demonstrate basic and general knowledge about the organization of an integral technological process, the ability to manage technical activities, skills in choosing methods and forms of hydromechanical processes for food processing.
Learning outcomes by discipline
Demonstrates basic and general knowledge about the organization of an integral technological process, the ability to manage technical activities, skills in studying the rheological properties of visco-plastic food products.
Prerequisites
Masters degree course
Postrequisites

Basic and profile disciplines of the EP

Theory and technique of engineering experiment

Discipline cycle	Profiling discipline
Course	1
Credits count	5
Knowledge control form	Examination

Short description of discipline

The subject of this course is the methods of the best organization of the experiment, processing and interpretation of its results.
Currently, the main attention should be paid to the general principles of experimental work and the optimal organization of the experiment. Mastering the main issues of the discipline will ensure the formation of students with the necessary theoretical and practical skills sufficient for their further activities and allowing them to independently master new knowledge based on scientific achievements in the relevant industry.

Purpose of studying of the discipline

Familiarization of doctoral students with the theory and technique of scientific practice, obtaining knowledge and experience in this field in practice. Increasing the ability and readiness to study the theory and techniques of scientific practice.

Learning Outcomes

ON6 Manage the organization of experiments and processing of the received data.
ON7 Plan, simulate preparation and correctly conducts a scientific experiment. Performs processing of the obtained experimental data.
ON9 Apply the theory and technique of engineering experiment; understand the relationship of the theory and technique of engineering experiment with other sciences, the ability to manage technical activities, skills in using the theory and technique of engineering experiment.

Learning outcomes by discipline

Demonstrates basic and general knowledge about the organization of an integral technological process, the ability to manage technical activities, skills in using the theory and technique of scientific experiment.

Prerequisites

Masters degree course

Postrequisites

Basic and profile disciplines of the EP