


«K.Kulazhanov Kazakh University of Technology and Business» JSC	EP 27/01-17-2025	
Educational program	Edition №4	

EDUCATIONAL PROGRAM

7M07138 Chemical technology of organic substances

Level: Master's (scientific and pedagogical)

Approved

by the Board of Directors of JSC

«K. Kulazhanov KazUTB» «02»04 2025,
protocol No. 3




Recommended

by the Academic Council of JSC

«K. Kulazhanov KazUTB» «28»03 2025,
protocol No. 8


Astana – 2025

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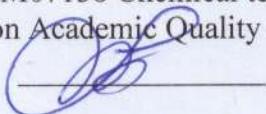
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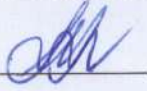
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Preface

The educational program «7M07138 Chemical technology of organic substances» was developed in accordance with the State Compulsory Standard of Higher Education / Postgraduate Education, approved by the order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No. 2, as well as on the basis of professional standards: Professional standard: Teacher (faculty) of higher and (or) postgraduate education organizations 20.11.2023; Quality control of oil and petroleum products 12.06.2022; Oil and gas processing and petrochemicals 12.06.2022

The educational program «7M07138 Chemical technology of organic substances» was approved at the meeting of the Council on Academic Quality on "27" 03 2025, protocol No. 4
Chairman L.K.Baibolova 

The educational program «7M07138 Chemical technology of organic substances» was approved at the meeting of the Commission on Academic Quality of the Faculty on "29" 11 2024, protocol No. 2
Chairman G.S.Zhunosova 



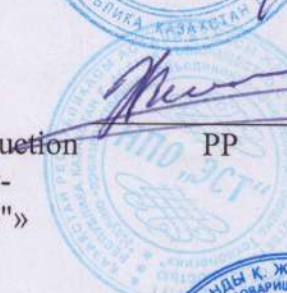



The educational program «7M07138 Chemical technology of organic substances» was developed and discussed at the meeting of the department "Chemistry, Chemical Technology and Ecology" dated "20" 11 2024, protocol No. 5
Head of the department Zh.T.Nurtai 


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Approval sheet

Educational program "7M07138 - Chemical technology of organic substances"

AGREED:

- | | | | |
|--|---|-----------------|-------------------|
| Vice-Rector for Administrative Affairs |  | E. Askarbekov | "27" 03 2025 year |
| Head of Educational Programs Department |  | B. Bayadilova | "27" 03 2025 year |
| Director of «Astana Gas Service» LLP |  | K. Bagramova | "20" 11 2024 year |
| Director of «Institute of Chemistry, Coal and Technology» LLP |  | B. Yermagambet | "20" 11 2024 year |
| Director of «Scientific and Production Association "Energy-saving Technologies"» LLP |  | E. Zhatkanbayev | "20" 11 2024 year |
| Director of «KazGeoMap» LLP |  | A. Rakhmetulla | "20" 11 2024 year |
| Director of «Petrum» LLP | | R. Romazanov | "20" 11 2024 year |
| Master's student HTOVNPN-242/1 | | Z. Tagishova | "20" 11 2024 year |


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1 Passport of the educational program

International Standard Classification of Education (ISCED) level	7
National Qualification Framework (NQF) level	7
Sectoral Qualifications Framework (SQF) level	7
Code and name of the field of education	7M07 Engineering, manufacturing and construction industries
Direction of training	7M071 Engineering and Engineering affairs
Number and name of the group of educational programs	M097 Chemical engineering and processes
Code and name of the educational program (EP)	7M07138 Chemical technology of organic substances
Educational program profile	Scientific and pedagogical
Purpose of the educational program	Training of highly qualified specialists in the field of chemical technology of organic substances, with deep professional and social competencies, in demand in almost all industries, focused on solving issues of development of the most important areas of the petrochemical and oil and gas processing industries.
Completion criterion of an educational program	120 academic credits
Language of instruction of the educational program	Russian, Kazakh,
Distinctive features of the educational program	-
Partner University	-

2 Qualification characteristics of a graduate of an educational program

Degree awarded	Master of Engineering Sciences in the educational program 7M07138 Chemical technology of organic substances
Field of professional activity	The graduate is intended to work in the following industries (fields): science and education; oil refining; petrochemistry; polymer processing; geology; hydrogeology; manufacturing plants and laboratories in the food and processing, microbiological, pharmaceutical and mining industries.
Types of professional activities	Graduates of the educational program 7M07138 Chemical technology of organic substances can perform the following types of professional activities: - scientific research; - educational, pedagogical; - organizational and technological; - production and management; - design


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Object of professional activity	Enterprises for the production of organic substances, for the processing of oil, gas, coal and polymers, elastomers, paints and varnishes, gunpowder, solid and liquid rocket fuels, for the preparation, extraction and transportation of hydrocarbon raw materials and their rational use; research and design industry institutes; secondary technical educational institutions; defense enterprises, mining industries.		
Functions of professional activity	The objects of professional activity of graduates are enterprises producing organic substances, processing oil, gas, coal and polymers, elastomers, paints and varnishes, gunpowder, solid and liquid rocket fuels, preparing, extracting and transporting hydrocarbon raw materials and their rational use; research and design industry institutes; secondary technical educational institutions; defense enterprises, mining industries. Implementation of research and teaching activities in accordance with modern requirements in the field of chemical technology; collection and preparation of scientific materials, qualified setting up of experiments, conducting research work.		


3 Requirements for the content of the educational program

Name of cycles and disciplines	Workload in academic credits
Cycle of basic disciplines (BD)	35
University component	20
Component of choice	15
Professional practice	53
Cycle of major disciplines (MD)	25
University component	20
Component of choice	13
Professional practice	24
Final certification	8
Total	120

4 Competency map of the educational program «7M07138 Chemical technology of organic substances »

Type of competence	Learning Outcomes Code	Learning outcome (according to Bloom's taxonomy)
Behavioral skills and personality traits (Softskills)	LO 1	Conducts research in the industrial field of technology based on a holistic systematic scientific worldview using knowledge of the history and philosophy of science
	LO 2	Participates in oral and written communications in a foreign language to solve problems of interpersonal and intercultural interaction in professional activities
	LO 3	Applies knowledge of psychology and methodological foundations of higher school pedagogy in planning professional and personal development, training and socialization of students


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Digital competencies (Digital skills)	LO 8	Selects the type of control and measuring instruments and automation equipment using artificial intelligence, monitoring and analyzing the input and output parameters of technological processes to optimize and improve the efficiency of control and management of production systems	
Professional skills (Hardskills)	LO 4	Applies modern scientific concepts and theories in the field of creating organic substances for innovative technologies using engineering models of technological installations and processes.	
	LO 5	Possesses the skills of conceptual, logical and analytical thinking, applying modern scientific methods and means of cognition for intellectual improvement and cultural development, enhancing professional competence	
	LO 6	Manages the process of quality control of oil, gas and their refined products	
	LO 7	Creates engineering models of process plants and processes capable of simulating various operating conditions of the plants in the appropriate software	
	LO 9	Implements modern approaches to modeling and designing industrial processes of organic and petrochemical synthesis using specialized software packages using the fundamentals of scientific research methodology in chemistry	

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5 Learning outcomes of the educational program and modules

Key competence	Learning Outcomes (LO) for the educational program	Name of module	Learning outcomes for the module	Name of disciplines that form learning outcomes		
Key Behavioral skills and personality traits (Softskills)	LO1 Conducts research in the industrial field of technology based on a holistic systematic scientific worldview using knowledge of the history and philosophy of science	Modern problems of science and education	Applies philosophical knowledge to planning tasks of professional and personal development, the basis of a holistic systemic scientific worldview using knowledge in the field of history and philosophy of science.	History and philosophy of science		
	LO2 Participates in oral and written communications in a foreign language to solve problems of interpersonal and intercultural interaction in professional activities				Demonstrates the ability to communicate orally and in writing in a foreign language to solve problems of interpersonal and intercultural interaction.	Foreign language (professional)
	LO3 Applies knowledge of psychology and methodological foundations of higher school pedagogy in planning professional and personal development, training and socialization of students					
Digital competencies (Digital skills)	LO8 Selects the type of control and measuring instruments and automation equipment using artificial intelligence, monitoring and analyzing the input and output parameters of technological processes to optimize and improve	Fundamentals of technology and design of organic and petrochemical production	Demonstrates knowledge of the classification, types, purpose and main characteristics of typical control and measuring instruments, automatic and signaling devices at their installation location, design and operating principles. Applies skills in the application of methods for developing functional control and regulation systems	Software complexes for modeling and designing industrial processes of organic and petrochemical synthesis Fundamentals of designing chemical production		


Professional skills (Hardskills)	LO4 Applies modern scientific concepts and theories in the field of creating organic substances for innovative technologies using engineering models of technological installations and processes.	<p>Scientific methods for the study of gas chemistry</p> <p>Innovative technologies and quality control in oil refining and petrochemistry</p> <p>Modern approaches and technologies in organic chemistry and oil and gas processing</p> <p>Modern approaches and technologies in organic chemistry and oil and gas processing</p> <p>Innovative technologies and quality control in oil refining and petrochemistry</p>	<p>for chemical-technological processes.</p> <p>Possesses the principles of constructing automated process control systems, standard systems of automatic regulation of technological processes, methods and means of automation of technological processes;</p> <p>Develops the technological part of the project of the enterprise of organic and petrochemical synthesis; selects and carries out technological calculations of chemical equipment, rational placement of chemical equipment</p> <p>Capable of carrying out the technological process in accordance with the technological regulations and using technical means to measure the main parameters of the technological process, properties of raw materials and products.</p> <p>Demonstrates knowledge of modern methods of chemical processing of hydrocarbons included in oil, gases, as well as technological processes of plants and installations, indicating the basic principles of processing hydrocarbon raw materials</p> <p>Demonstrates knowledge of the theoretical foundations of physicochemical methods of analysis in the study of the physicochemical properties of</p>	<p>Automation and control at oil and gas processing enterprises</p> <p>Planning and processing an experiment</p> <p>Modern problems of quality control of chemical products</p> <p>Fundamentals of planning research work for master's students</p> <p>Current oil and gas refining technologies</p> <p>Current oil and gas refining technologies</p> <p>Advanced technologies for processing organic substances</p> <p>Modern methods of analysis of petroleum products</p> <p>Modern problems of quality</p>
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<p>control in oil refining and petrochemistry</p> <p>Topical issues of petrochemical synthesis</p> <p>Modern approaches and technologies in organic chemistry and oil and gas processing</p> <p>Fundamentals of technology and design of organic and petrochemical production</p>	<p>substances.</p> <p>Initiates the creation, development and experimental testing of innovative technologies in the development and implementation of chemical reagents for various purposes in oil and gas production. Conducts experimental studies of physical and chemical processes in oil and gas production.</p> <p>Explore new methods and catalysts, master the principles of sustainable production, environmentally friendly technologies, analysis of scientific information, process design, product life cycle assessment and the use of innovative materials in the chemical industry</p> <p>Demonstrates knowledge of the use of theoretical foundations of fundamental sections of chemistry in solving professional problems.</p> <p>Apply acquired skills to search, accumulate and process scientific information, as well as conduct, process and formalize the results of experimental research</p> <p>Capable of adapting modern versions of quality management systems to specific production conditions based on international standards.</p> <p>Uses the acquired knowledge about the theoretical foundations of physicochemical methods of analysis in the study of the physicochemical properties of</p>	<p>control of chemical products</p> <p>Innovative technologies of oil refining and petrochemistry</p> <p>Planning and processing an experiment</p> <p>Modern problems of chemistry and polymer technology</p> <p>Modern trends in the development of basic organic and petrochemical synthesis</p> <p>Special technology for the production of fuels from oil and gas</p> <p>Modern organic chemistry</p> <p>Research Methodology in Chemistry</p> <p>Advanced technologies for processing organic substances</p> <p>Fundamentals of planning research work for master's students</p> <p>Modern methods of physical and chemical research</p>
<p>LO5 Possesses the skills of conceptual, logical and analytical thinking, applying modern scientific methods and means of cognition for intellectual improvement and cultural development, enhancing professional competence</p>		

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<p>LO6 Manages the process of quality control of oil, gas and their refined products</p>	<p>Modern approaches and technologies in organic chemistry and oil and gas processing</p> <p>Innovative technologies and quality control in oil refining and petrochemistry</p> <p>Topical issues of petrochemical synthesis</p> <p>Scientific methods for the study of gas</p>	<p>substances, areas and boundaries of use of the main methods of physicochemical analysis of chemical substances and reactions.</p> <p>Selects optimal conditions for the technological process. Demonstrates basic knowledge in the ability and readiness to use the basic laws of natural sciences in professional activities, in the implementation of the technological process in accordance with the technological regulations and use technical means for measuring the main parameters of the technological process, the properties of raw materials and products</p> <p>Apply acquired knowledge and skills in the basic methods of analysis and synthesis of organic substances, analyze available information, identify fundamental problems and perform laboratory research using modern equipment.</p> <p>Analyzes industrial technological installations for the production of surfactants, and the designs of the main devices of technological installations.</p> <p>Develops practical work skills in the field of organic synthesis, studies the principles and methods of organizing technological processes for obtaining basic products of organic synthesis, the main methods of technological calculation of the most important apparatuses for organic synthesis</p> <p>Capable of analyzing flow and basic process flow diagrams; performs process calculations for the main equipment of oil and gas refining processes</p>	<p>Modern organic chemistry Special technology for the production of fuels from oil and gas Research Methodology in Chemistry</p> <p>Modern methods of analysis of petroleum products Innovative technologies of oil refining and petrochemistry</p> <p>Modern problems of chemistry and polymer technology Modern trends in the development of basic organic and petrochemical synthesis</p> <p>Oil and gas chemistry Research practice</p>
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		<p>chemistry</p> <p>Fundamentals of technology and design of organic and petrochemical production</p>	<p>Applies skills in complex experimental planning on the fundamental principles of the tasks (processes) under consideration, modern methods for solving them, and choosing ways to achieve the final result of the research being conducted</p>	<p>Modern methods of physical and chemical research</p>
<p>LO7 Creates engineering models of process plants and processes capable of simulating various operating conditions of the plants in the appropriate software</p>		<p>Innovative technologies and quality control in oil refining and petrochemistry</p> <p>Topical issues of petrochemical synthesis</p> <p>Scientific methods for the study of gas chemistry</p>	<p>Applies practical skills in the application of modern methods for calculating technological and structural equipment</p> <p>Demonstrates the knowledge, skills and abilities necessary to study the composition of pre-project and design documentation, requirements for it, principles, methods and technology of modeling and industrial design of organic and petrochemical synthesis enterprises,</p> <p>Demonstrates knowledge of the basics of automation and control of oil and gas refining processes, types and methods of measurement. Applies skills in solving problems in the analysis and synthesis of automatic control systems for process parameters and principles of building automated control systems for technological processes of oil and gas refining enterprises</p>	<p>Innovative technologies of oil refining and petrochemistry</p> <p>Modern trends in the development of basic organic and petrochemical synthesis</p>
		<p>Fundamentals</p>	<p>Demonstrates knowledge of the main stages and</p>	<p>Oil and gas chemistry</p> <p>Automation and control at oil and gas processing enterprises</p> <p>Fundamentals of designing</p>

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		of technology and design of organic and petrochemical production	principles of technological design of chemical production; analysis and assessment of the impact of designed enterprises on the environment; principles of calculation and design of main and auxiliary equipment	chemical production Software complexes for modeling and designing industrial processes of organic and petrochemical synthesis	
LO9	Implements modern approaches to modeling and designing industrial processes of organic and petrochemical synthesis using specialized software packages using the fundamentals of scientific research methodology in chemistry	Fundamentals of technology and design of organic and petrochemical production Modern approaches and technologies in organic chemistry and oil and gas processing	Expands and deepens knowledge in the ability to set up, configure, organize and carry out preventive inspections and routine repairs of equipment, check equipment and software; is able to check the technical condition of equipment; master and operate newly introduced equipment. Possesses skills in placing technological equipment in industrial buildings and open areas. Conducts patent search, analytical review of scientific literature. Defines research objectives and conducts experiments.	Software complexes for modeling and designing industrial processes of organic and petrochemical synthesis Research Methodology in Chemistry	


6 The relationship between the attainability of the formed learning outcomes according to the educational program and academic disciplines

№	Name of the discipline	Brief description of the discipline	Numb er of credits	Formed learning outcomes (codes)														
				LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9						
Cycle of basic disciplines University Component/Elective Component																		
1	Foreign language (professional)	The purpose of the course is to acquire and improve competence in accordance with international standards of foreign language education, allowing the use of a foreign	4		+													


	language as a means of communication in the intercultural, professional and scientific activities of the future master. The study of the discipline contributes to the training of highly qualified specialists who are able to compete in the labor market.						
2	History and philosophy of science	The purpose of studying the discipline is to philosophically comprehend science, comprehend the factual and ideological content of the stages of its development with the further use of acquired knowledge and skills in theoretical and practical professional activities. The course focuses on analyzing the main philosophical and methodological problems that arise in science at the present stage of its development, and gaining insight into the trends in the historical development of science.	4	+			
3	Higher school pedagogy	The objective of the course is aimed at developing pedagogical competence, mastering teaching methods and techniques, as well as modern educational technologies and their application in higher education practice. The course content covers the design and delivery of academic classes, the implementation of innovative pedagogical approaches, and the development of professional pedagogical thinking.	4		+		
4	Management psychology	The objective of the course is aimed at mastering the methods of teaching psychological and managerial disciplines and instructional technologies that ensure the development of managerial and communication competencies. The course explores psychological mechanisms of management, methods of teaching them, as well as instructional technologies used in academic and professional education.	4		+		
5	Current oil and	The discipline forms knowledge on the technological	5			+	+

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	gas refining technologies	<p>processes of oil and gas refining, allowing you to choose the optimal production modes, design technological devices, automate the management of oil and gas refining processes, calculate material and energy balances. Students will be able to simulate technological processes, analyze the basic principles of deepening oil refining, the main trends and current problems in the production of high-quality motor fuels</p>	5								+
6	Research Methodology in Chemistry	<p>The discipline studies the systems of approaches and methods used in chemical research, and forms students' ideas about modern directions of development of the science of chemistry. Within the framework of the discipline, students acquire modeling skills in scientific research, knowledge in the search, accumulation and processing of scientific information, and choose the direction of scientific research</p>	5								+
7	Fundamentals of planning research work for master's students	<p>The discipline forms knowledge on the basics and practical skills of organizing and planning scientific research. Students will be able to formulate and solve problems arising in the course of professional, research and teaching activities; process, analyze and comprehend them, taking into account the available literary data; present the results of the work done in the form of reports, abstracts, articles</p>	5								+
8	Modern methods of analysis of petroleum products	<p>The discipline is aimed at the practical development of modern methods of control over the chemical composition and physical properties of petroleum products using elemental analysis of petroleum and petroleum products, mass spectrometry and chromato-mass spectrometry. Students will be able to analyze technological parameters and production mode, optimize the production process, make chemical and technological flowcharts of production</p>	5								+

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	control at oil and gas processing enterprises	basics of automation and control of oil and gas refining processes, types and methods of measurement, device and operation features of specific sensors of basic technological parameters, secondary devices and microprocessor technology. Students gain skills in solving problems related to the analysis and synthesis of automatic control systems for technological parameters and the principles of building automated process control systems for oil and gas processing enterprises				
17	Oil and gas chemistry	The discipline forms theoretical knowledge and practical skills in the field of oil refining and petrochemical production aimed at studying the processes of refining oil and natural gas components. As part of the study of the discipline, students can use modern methods of producing a variety of organic products when using oil and natural gas as raw materials and predict the behavior of oil and gas in various thermodynamic conditions, based on knowledge of their composition and physico-chemical properties	5		+	+
18	Fundamentals of designing chemical production	The discipline forms skills in the field of design and automation of basic processes and devices of chemical production, technological schemes of chemical production. Within the framework of the discipline, students acquire knowledge of the main stages and principles of technological design of chemical industries; analysis and assessment of the impact of projected enterprises on the environment; principles of calculation and design of basic and auxiliary equipment and design of the main and auxiliary equipment	5		+	+
19	Advanced technologies for processing organic	The discipline forms a system of knowledge in the field of synthesis and isolation of organic substances, mastering the principles of creating low-waste technologies. Students acquire skills and abilities in the field of using basic	5	+	+	

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	substances	reaction equipment, building process flow charts for isolating a product with a given quality, and study the most dynamically developing processes for obtaining organic synthesis products	5								
20	Software complexes for modeling and designing industrial processes of organic and petrochemical synthesis	The discipline forms theoretical and practical knowledge on the study of the composition of pre-design and project documentation, modeling methods, industrial design and automation of enterprises of organic and petrochemical synthesis. Students will be able to analyze the basic principles of the construction part of the project, the basics of designing the general and situational plan of the enterprise, transport communications and engineering networks of chemical enterprises	5								+
21	Modern organic chemistry	The discipline studies the features of the structure of organic compounds; the basic scientific concepts and patterns of organic chemistry. Students acquire knowledge on the general patterns of chemical and biochemical processes, will be able to analyze the chemical behavior of organic compounds depending on their structure; plan and implement measures to improve the stability of industrial chemical systems and facilities	5								+

7 Alignment of planned learning outcomes with assessment technologies and teaching methods within the module

Learning Outcomes (LO) Number	Planned learning outcomes for the module	Assessment technologies (tools)	Methods of learning and teaching
LO1	Conducts research in the industrial field of technology based on a holistic systematic scientific worldview using knowledge of the history and	Abstract. Problem solving. survey, colloquium, test research work. Creative work	Interactive lectures, training and discussions. Group work, game methods. Situational games, circle of time, philosophy of children. Rainbow groups.

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	philosophy of science		
LO2	Participates in oral and written communications in a foreign language to solve problems of interpersonal and intercultural interaction in professional activities	Project defense. Abstract. Problem solving, presentation. Survey, colloquium, test assignments. Submission of calculation and graphic work, research work.	Brainstorming. Case study. Project. Portfolio. Round table, discussion, polemics, debate, "Get the question" method. Business and/or role-playing game.
LO3	Applies knowledge of psychology and methodological foundations of higher school pedagogy in planning professional and personal development, training and socialization of students	Colloquium. Business and/or role play, case task, delivery calculation and graphic work, Research work. Creative work, independent work	Problem-solving method. Discussion. Associogram method. Work in small groups, Brainstorming method. Question and answer method.
LO 4	Applies modern scientific concepts and theories in the field of creating organic substances for innovative technologies using engineering models of technological installations and processes.	Presentation, survey, test, colloquium, tasks in test form. Research work, creative work. Independent work, test work	Interactive lectures. Trainings. Discussions. Role-playing games, Situational games. Venn diagram, association method, cluster, dialogue learning, group work, brainstorming, video, project method
LO 5	Possesses the skills of conceptual, logical and analytical thinking, applying modern scientific methods and means of cognition for intellectual improvement and cultural development, enhancing professional competence	Round table, discussion, polemic, debate, Colloquium. Interview, abstract. Essay, etc.	Interactive practical lesson (problem topics, business and role-playing games, case studies (analysis of specific circumstances), brainstorming. "Questions-answers-discussion". Strategic methods "INSERT"
LO 6	Manages the process of quality control of oil, gas and their refined products	Colloquium. Workbook, Creative task, essay	Interactive lectures. training and. discussions. Group work, game methods. Situational games, circle of time, philosophy of children. Rainbow groups. Paired speech, listening trio, Jigsaw method, spectrum of values, distance.

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LO7	Creates engineering models of process plants and processes capable of simulating various operating conditions of the plants in the appropriate software	Simulator, case task, creative assignment	Brainstorming. SWOT analysis. Case study. Controversy, dispute, debate
LO 8	Selects the type of control and measuring instruments and automation equipment using artificial intelligence, monitoring and analyzing the input and output parameters of technological processes to optimize and improve the efficiency of control and management of production systems	Abstract. Problem solving. Presentation, survey, colloquium, test assignments, research work. Creative work	Interactive lectures. Trainings. Discussions. Role-playing games, Situational games. Venn diagram, association method, cluster, dialogue learning, group work, brainstorming, video, project method
LO 9	Implements modern approaches to modeling and designing industrial processes of organic and petrochemical synthesis using specialized software packages using the fundamentals of scientific research methodology in chemistry	Project defense. Abstract. Problem solving, presentation. Survey, colloquium, test assignments. Submission of calculation and graphic work, research work. Creative work, independent work	Interactive practical lesson (problem topics, business and role-playing games, case studies (analysis of specific circumstances), brainstorming. "Questions-answers-discussion". Strategic methods "INSERT", "Bingo"

8 Correlation of learning outcomes of the educational program with the labor functions of professional standards (if any)


Name of used professional standards	Professions by level 7	Labor functions	Tasks	Learning Outcomes by LO
"Quality control of oil, gas and their processed products" dated 24.12.2024	Head of Laboratory (Manufacturing Industry)	Labor function 1: Management of the quality control process for oil, gas	Task 1: Management of tests to check the quality of oil, gas and their processed products	LO6 Manages the process of quality control of oil, gas and their refined products

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No. 486	and their processed products	Task 2: Optimization of quality control processes and laboratory management team	
Requirements for competencies "Oil, gas and petrochemical processing" 06.12.2022 No. 224	<p>Systems thinking; Analytical thinking; Responsibility for decisions made; Ability to make decisions in situations of partial and complete uncertainty; Organizational skills</p> <p>Labor function 1: Ensuring and monitoring reliable, uninterrupted and trouble-free operation of the installation</p> <p>Labor function 1: Creation and maintenance engineering models technological processes oil and gas refining and petrochemicals</p> <p>Process Simulation Engineer</p>	<p>Task 1: Uninterrupted and trouble-free operation installations</p> <p>Task 1: Creation and adjustment of engineering models of technological installations and processes capable of simulating various operating conditions of the plants in the appropriate software</p> <p>Task 2: Analysis of the quality and properties of raw materials, products, and parameters of the process installations for development updating engineering models</p> <p>Task 3: Modeling of physicochemical processes before conducting technological runs on technological</p>	<p>LO8 Selects the type of control and measuring instruments and automation equipment using artificial intelligence, monitoring and analyzing the input and output parameters of technological processes to optimize and improve the efficiency of control and management of production systems</p> <p>LO7 Creates engineering models of process plants and processes capable of simulating various operating conditions of the plants in the appropriate software</p> <p>LO8 Selects the type of control and measuring instruments and automation equipment using artificial intelligence, monitoring and analyzing the input and output parameters of technological processes to optimize and improve the efficiency of control and management of production systems</p> <p>PO4 Applies modern scientific concepts and theories in the field of creating organic substances for innovative technologies using engineering models of technological installations and processes.</p> <p>LO9 Implements modern approaches to modeling and designing industrial processes of organic and petrochemical synthesis using specialized software packages using the fundamentals of scientific</p>

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			installations for predicting changes in the technological regime and properties of products	research methodology in chemistry
Requirements for competencies	for personal	Ability to work with large volumes of information Analytical, mathematical mindset Ability to organize work, plan, make decisions Ability to search for opportunities to improve processes Communication skills, skills in public speaking and presentation of completed work		
"Teacher (teaching staff) of higher and (or) postgraduate education organizations" dated 20.11.2023 No. 591	Teacher, assistant in the field of education, OVPO	Job Function 1: Training	Skill 1: Ensuring the required level of academic competencies of students Skill 2: Ensuring the required level of professional competencies of students	LO2 Participates in oral and written communications in a foreign language to solve problems of interpersonal and intercultural interaction in professional activities LO3 Apply knowledge of psychology and methodological foundations of higher education pedagogy in planning professional and personal development, training and socialization of young students
		Job Function 2: Conducting Scientific Research	Skill 1: Ensuring the integration of science, higher education and the labour market Skill 2: Developing the required level of research skills in students	LO1 Conducts research in the industrial field of technology based on a holistic, systems-based scientific worldview using knowledge of the history and philosophy of science LO5 Possesses the skills of conceptual, logical and analytical thinking, applying modern scientific methods and means of cognition for intellectual improvement and cultural development, increasing professional competence
				LO4 Applies modern scientific concepts and theories in the field of creating organic substances for innovative technologies using engineering models of technological installations and processes. LO9 Implements modern approaches to modeling


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		<p>Labor function 3: Socialization of studying youth</p>	<p>Skill 1: Promoting Social Values in the Student Environment</p>	<p>and designing industrial processes of organic and petrochemical synthesis using specialized software packages using the fundamentals of scientific research methodology in chemistry</p> <p>LO1 Conducts research in the industrial field of technology based on a holistic, systemic scientific worldview using knowledge of the history and philosophy of science</p> <p>LO3 Apply knowledge of psychology and methodological foundations of higher education pedagogy in planning professional and personal development, training and socialization of young students</p>
		<p>Skill 2: Introducing students to the values of the chosen profession</p>	<p>LO2 Participates in oral and written communications in a foreign language to solve problems of interpersonal and intercultural interaction in professional activities</p> <p>LO5 Possesses the skills of conceptual, logical and analytical thinking, applying modern scientific methods and means of cognition for intellectual improvement and cultural development, enhancing professional competence</p>	
Requirements for personal competencies	<p>Friendliness, sociability, empathy, stress resistance, emotional balance, professional and social responsibility, ability to develop teaching and research skills</p>			

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9 Graduate model

MODEL OF A GRADUATE			
Professional standard "Quality control of oil, gas and their processed products"	Competencies (Soft skills, digital skills)		
	Attributes of a graduate	Knowledge	Skills
	1. Able to analyze technological parameters and production mode, optimize the production process, draw up chemical and technological flow charts of production 2. Capable of leading the development and implementation of new methods for measuring and assessing quality materials and manufactured products, new methods control in the field of industrial sanitation, safety and environmental protection 3. Applies modeling skills in scientific research, knowledge in searching, accumulating and processing scientific information	1. Methods of product quality control. 2. Regulatory requirements and quality standards. 3. Analysis of test results. 4. Occupational safety and health rules. 5. Documentation and reporting. 6. Methods of personnel training and development.	1. Ensure efficient use of laboratory equipment - organization of work with equipment, planning its maintenance and modernization, minimizing downtime. 2. Conduct analysis of test results and optimize analysis methods - analysis of the obtained data to find ways to improve accuracy and the effectiveness of laboratory tests. 3. Assess and eliminate the causes of errors during testing - analyze the causes of possible deviations or errors in test results and implement measures to prevent them
	Professional skills (hard skills)		
1. Conduct testing management to check the quality of oil, gas and their refining products 2. Assess and eliminate the causes of errors during testing - analyze the causes of possible deviations or errors in test results and implement measures to prevent them 3. Conduct modern methods of calculating technological and structural equipment; analyze oil refining processes aimed at solving the problem of increasing the depth of oil refining, improving the quality of the obtained petroleum products			
Professional standard "Oil, gas and"	Competencies (Soft skills, digital skills)		
	Attributes of a graduate	Knowledge	Skills
	1. Creation and adjustment of engineering models of technological installations and processes capable of simulating various operating conditions of installations in the corresponding software	1. Basic requirements for operation and maintenance of the installation 2. Legislative and regulatory legal acts, methodological materials on the organization of	1. Implementation of the organization and distribution of work at the installation 2. Ability to rationally assign personnel to jobs 3. Implementation of administrative and technical management of production

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	2. Able to use modern methods of managing an organization and project when leading employees to achieve high-quality results and implement innovations.	operation, maintenance and repair technological equipment	activities
		3. Production capacities, technical characteristics, design features, purpose and operating modes of the installation, its rules exploitation	4. Carrying out work on the introduction of new equipment and production technology to improve the efficient operation of installations
	Professional skills (hard skills)		
	1. Analysis of the quality and properties of raw materials, products, parameters of the process installations for the development of updated engineering models		
2. Modeling of physicochemical processes before conducting technological runs on technological installations to predict changes in the technological regime and properties of products			
3. Ensuring optimization of the technological mode of installations, analysis, control and forecasting of the operation of technological equipment and quality indicators of refinery products			
Competencies (Soft skills, digital skills)			
"Teacher (teaching staff) of higher and (or) postgraduate education organizations" "Quality control of oil, gas and their processed products"	Attributes of a graduate	Knowledge	Skills
	1. Establishes feedback to undergraduate students using digital technologies	1. Principles of pedagogical interaction with students;	1. To involve students in public youth movements and organizations;
	2. Uses modern and innovative (including digital) teaching technologies.	2. Strategies and mechanisms of communication in the academic and professional environment.	2. Involve employers in the process of training future specialists;
	3.	3. Regulatory legal acts (including the National Qualifications System) in the field of higher education;	3. Develop and implement programs for advanced training courses for industry employees in the area of training;
		4. Mechanisms and principles of integration of psychological, pedagogical and subject (special) knowledge	4. Publish relevant articles in the media at various levels, social networks
Professional skills (hard skills)			
1. Develop teaching and methodological materials for the disciplines taught, taking into account the integration of education, science and innovation			
2. Take part in the implementation of research and development work/creative projects			
3. Involve undergraduate and graduate students in research and development work.			
4. Interaction with stakeholders of higher and postgraduate education			

Модуль / Module №	Характеристика содержания модуля / Module content description	Коды / Codes	СРС / SRS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 1	Химикал өткерген сандық бағалау және зерттеулер / Quantitative analysis and research	БЕЛ (ЖБ) / BEL (JG)	СРС (ЖБ) / SRS (JG)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 2	Модуль-химиялық синтездің өнертәсілдері / Typical issues of petrochemical synthesis	БЕЛ (ЖБ) / BEL (JG)	СРС (ЖБ) / SRS (JG)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 3	Модуль-технологиялық синтездің өнертәсілдері / Typical issues of technological synthesis	БЕЛ (ЖБ) / BEL (JG)	СРС (ЖБ) / SRS (JG)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 4	Модуль-технологиялық синтездің өнертәсілдері / Typical issues of technological synthesis	БЕЛ (ЖБ) / BEL (JG)	СРС (ЖБ) / SRS (JG)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 5	Модуль-технологиялық синтездің өнертәсілдері / Typical issues of technological synthesis	БЕЛ (ЖБ) / BEL (JG)	СРС (ЖБ) / SRS (JG)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 6	Модуль-технологиялық синтездің өнертәсілдері / Typical issues of technological synthesis	БЕЛ (ЖБ) / BEL (JG)	СРС (ЖБ) / SRS (JG)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Модуль / Module №	Корытынды аттестация / Final assessment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 1	Корытынды аттестация / Final assessment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 2	Корытынды аттестация / Final assessment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 3	Корытынды аттестация / Final assessment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 4	Корытынды аттестация / Final assessment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 5	Корытынды аттестация / Final assessment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Модуль / Module № 6	Корытынды аттестация / Final assessment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Модуль / Module №	Барлығы / Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ
на образовательную программу 7М07138 – «Химическая технология
органических веществ» на 2025-2029 годы
АО «Казахский университет технологии и бизнеса имени К.Кулажанова»

Образовательная программа, каталог элективных дисциплин разработаны в соответствии с требованиями Государственного общеобязательного стандарта высшего и послевузовского образования, утвержденный приказом Министра науки и высшего образования Республики Казахстан от 20 июля 2022 года № 2, а также на основе профессиональных стандартов «Переработка нефти и газа» от 06.12.2022 г., «Контроль качества нефти, нефтепродуктов» от 06.12.2022 г., «Управление производством по переработке и реализации нефти и газа» от 06.12.2022 г.

Срок освоения образовательной программы магистра специальности 7М07138 – «Химическая технология органических веществ» составляет 2 года. Целью образовательной программы является обеспечение специального образования и углубленной подготовки специалистов для промышленности. Цель достигается изучением специализированных курсов дисциплин во всех модулях.

С позиции эксперта, представляющего химическую промышленность, необходимо отметить, что представленная образовательная программа по направлению "Химическая технология органических веществ" соответствует базовым потребностям отрасли. В программе отражены актуальные вопросы, связанные с современными технологиями переработки углеводородного сырья, синтезом органических соединений, каталитическими процессами, а также управлением химико-технологическими системами.

Актуальность программы обусловлена высоким спросом на специалистов, способных решать задачи, связанные с экологической безопасностью, импортозамещением химической продукции и переходом на устойчивые и энергоэффективные технологии. Особенно важно, что программа включает дисциплины, посвящённые цифровизации химических процессов, использованию программных средств для моделирования и оптимизации производств. Положительным моментом является наличие практик на предприятиях, которая позволяет обучающимся участвовать в решении реальных производственных задач.

Считаем, что предоставленные для согласования дисциплины образовательной программы, каталога элективных дисциплин специальности 7М07138 – «Химическая технология органических веществ» достаточно проработаны, логически взаимосвязаны и направлены на формирование практических навыков и умений у обучающегося в области изучаемого курса.

Образовательная программа имеет высокий потенциал для подготовки специалистов, способных эффективно работать на химических предприятиях и рекомендуется к реализации.

Эксперт: Б.С. Мит Сатбаев Б.С., директор Астанинского филиала РГП «Национальный центр по комплексной переработке минерального сырья», д.т.н., профессор



ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ

на образовательную программу 7М07138 – «Химическая технология органических веществ» на 2025-2029 годы
АО «Казахский университет технологии и бизнеса имени К. Кулажанова»

Образовательная программа, каталог элективных дисциплин разработаны в соответствии с требованиями Государственного общеобязательного стандарта высшего и послевузовского образования, утвержденного приказом Министра науки и высшего образования Республики Казахстан от 20 июля 2022 года № 2, а также на основе профессиональных стандартов «Переработка нефти и газа» от 06.12.2022 г., «Контроль качества нефти, нефтепродуктов» от 06.12.2022 г., «Управление производством по переработке и реализации нефти и газа» от 06.12.2022 г.

Целью образовательной программы является обеспечение специального образования и углубленной подготовки высококвалифицированных специалистов для химической промышленности. Цель достигается изучением специализированных курсов дисциплин во всех модулях.

С научной точки зрения, представляемая магистерская программа демонстрирует сбалансированное сочетание фундаментальной подготовки и практико-ориентированных дисциплин. Особое внимание уделено современным направлениям химической технологии органических веществ, включая органический синтез, катализ, экологически безопасные технологии, а также научным методам исследования материалов и продуктов. В программу включены дисциплины, посвященные цифровизации химических процессов, использованию программных средств для моделирования и оптимизации производств.

Необходимо отметить, что представленная образовательная программа по направлению "Химическая технология органических веществ" соответствует базовым потребностям отрасли. В программе отражены актуальные вопросы, связанные с современными технологиями переработки углеводородного сырья, синтезом органических соединений, каталитическими процессами, а также управлением химико-технологическими системами.

Предоставленные для согласования дисциплины образовательной программы, каталога элективных дисциплин специальности 7М07138 – «Химическая технология органических веществ» достаточно проработаны, логически взаимосвязаны и направлены на формирование практических навыков и умений у обучающегося в области изучаемого курса.

Программа демонстрирует высокую степень научной зрелости и перспективность для подготовки высококвалифицированных исследователей-практиков. Рекомендуются к реализации и может служить моделью для аналогичных магистерских программ в химико-технологической области.

Эксперт:

Карагандинский университет имени Е.А. Букетова,
д.х.н., профессор-исследователь

Ибраев Марат Кирымбаевич

ҚОЙЫЛҒАН ҚОЛДЫ РАСТАЙМЫН

От. и.и.и. уи.и.и.



ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ
на образовательную программу 7М07138 – «Химическая технология
органических веществ» на 2025-2029 годы
АО «Казахский университет технологии и бизнеса имени К.Кулажанова»

Образовательная программа, каталог элективных дисциплин разработаны в соответствии с требованиями Государственного общеобязательного стандарта высшего и послевузовского образования, утвержденный приказом Министра науки и высшего образования Республики Казахстан от 20 июля 2022 года № 2, а также на основе профессиональных стандартов «Переработка нефти и газа» от 06.12.2022 г., «Контроль качества нефти, нефтепродуктов» от 06.12.2022 г., «Управление производством по переработке и реализации нефти и газа» от 06.12.2022 г.

Целью образовательной программы является обеспечение специального образования и углубленной подготовки высококвалифицированных специалистов для химической промышленности. Цель достигается изучением специализированных курсов дисциплин во всех модулях.

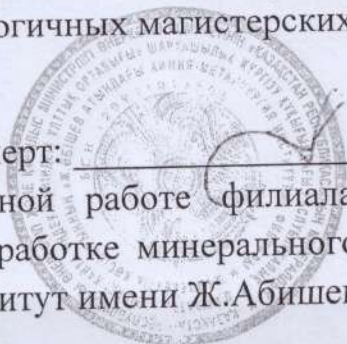
С научной точки зрения, представляемая магистерская программа демонстрирует сбалансированное сочетание фундаментальной подготовки и практико-ориентированных дисциплин. Особое внимание уделено современным направлениям химической технологии органических веществ, включая органический синтез, катализ, экологически безопасные технологии, а также научным методам исследования материалов и продуктов. В программу включены дисциплины, посвящённые цифровизации химических процессов, использованию программных средств для моделирования и оптимизации производств.

Программа построена в логике научного подхода: от фундаментальных химических и физико-химических основ до прикладных задач. Это обеспечивает возможность интеграции обучающихся в научную деятельность, начиная с ранних этапов обучения.

Одним из значимых плюсов является наличие исследовательской составляющей в образовательной траектории. Магистранты будут вовлечены в выполнение научных работ, имеющих перспективы публикаций и внедрения результатов.

Программа демонстрирует высокую степень научной зрелости и перспективность для подготовки высококвалифицированных исследователей-практиков. Рекомендуются к реализации и может служить моделью для аналогичных магистерских программ в химико-технологической области.

Эксперт: _____ Лу Н.Ю., заместитель директора по научной работе филиала РГП «Национальный центр по комплексной переработке минерального сырья» КП МПС РК Химико-металлургический институт имени Ж.Абишева, к.т.н.



ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ

на образовательную программу «7М07138 – «Химическая технология органических веществ» на 2025-2029 годы
АО «Казахский университет технологии и бизнеса им.К.Кулажанова»

Образовательная программа 7М07138 – «Химическая технология органических веществ» разработана в соответствии с требованиями Государственного общеобязательного стандарта высшего и послевузовского образования, утвержденный приказом Министра науки и высшего образования Республики Казахстан от 20 июля 2022 года № 2, а также на основе профессиональных стандартов: «Переработка нефти и газа», «Контроль качества нефти, нефтепродуктов», «Управление производством по переработке и реализации нефти и газа».

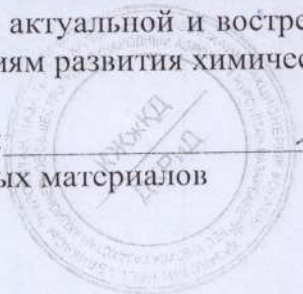
Актуальность образовательной программы определяется необходимостью подготовки специалистов с углубленными знаниями в области органического синтеза, инженерной химии, проектирования технологических процессов и систем управления производством.

Целью образовательной программы является формирование у обучающихся профессиональных, аналитических и управленческих компетенций и навыков критического мышления, обеспечивающих способность к участию в научных разработках и инновационной деятельности. Это необходимо для решения научно-исследовательских, проектных и производственных задач в химической и нефтехимической промышленности и технологического обновления химической промышленности.

Учебный план программы включает изучение современных методов органического синтеза, катализа, технологического проектирования, инженерного анализа и экологической оценки производственных процессов. Программа предусматривает углубленное освоение цифровых технологий в химико-технологических системах. Практическая подготовка осуществляется на базе научно-исследовательских институтов и производственных предприятий, что способствует применению теоретических знаний на практике и укреплению связей вуза с индустрией.

Образовательная программа рекомендуется к реализации, так как направлена на подготовку конкурентоспособных специалистов, способных эффективно решать научные и прикладные задачи, а также разрабатывать и внедрять инновационные решения в химико-технологической отрасли на современном уровне. Программа является актуальной и востребованной на рынке труда и соответствует современным тенденциям развития химической технологии.

Эксперт: _____
смазочных материалов



Искаков Р.Ж.

Искаков Р.Ж., Начальник службы горюче-

ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ

на образовательную программу 7M07138 – «Химическая технология органических веществ» на 2025-2027 года

АО «Казахский университет технологии и бизнеса им.К.Кулажанова»

Образовательная программа магистратуры 7M07138 – «Химическая технология органических веществ» отвечает требованиям Государственного общеобязательного стандарта высшего и послевузовского образования, утвержденного приказом Министра науки и высшего образования Республики Казахстан от 20 июля 2022 года № 2, а также отражает положения соответствующих профессиональных стандартов.

Программа ориентирована на подготовку высококвалифицированных специалистов, обладающих современными знаниями в области органического синтеза, инженерной химии и цифрового проектирования технологических процессов. Целью образовательной программы является формирование у обучающихся глубоких профессиональных знаний, а также развитие аналитических и управленческих компетенций, необходимых для научных исследований, разработки инновационных решений и управления производственными процессами в химико-технологической отрасли.

Программа охватывает широкий спектр теоретических и прикладных дисциплин. Обучающиеся осваивают технологии органического синтеза, методы катализа, инженерный анализ, проектирование химических производств и оценку их экологической безопасности. Большое внимание уделяется изучению цифровых решений, применяемых в управлении химико-технологическими системами. Такое содержание позволяет выпускникам уверенно решать, как научные, так и практические задачи в условиях современного производства, и после освоения программы быть готовым к профессиональной деятельности в области химической технологии,

Практико-ориентированный подход реализуется через стажировки, лабораторные исследования и участие магистрантов в реальных проектах, что позволяет не только закрепить полученные знания, но и развить навыки проектирования, оптимизации и анализа технологических процессов. Сотрудничество с научно-исследовательскими центрами и промышленными предприятиями обеспечивает качественную практическую подготовку и способствует интеграции университета в промышленную и научную среду.

Особенностью образовательной программы является возможность индивидуализации траектории обучения через выбор элективных дисциплин, что позволяет обучающимся сосредоточиться на приоритетных направлениях профессионального роста. Поддержание баланса между фундаментальной теоретической базой и практическими навыками делает данную программу

актуальной, востребованной и соответствующей современным стандартам высшего образования.

С учетом высокого уровня практической направленности, научного содержания, соответствия современным тенденциям развития химической технологии, образовательную программу 7М07138 – «Химическая технология органических веществ» можно рекомендовать к реализации в образовательном процессе.

Директор ТОО «КАЗНИИХИМПРОЕКТ»



Асилов А.А.