


«K.Kulazhanov Kazakh University of Technology and Business» JSC	EP 27/02-18-2025	
Educational program	Edition 4	

EDUCATIONAL PROGRAM

7M07188- «Automation and Control»

code and name of the educational program

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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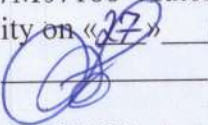
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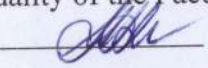
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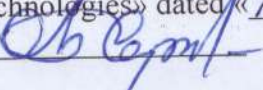
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Preface

The educational program «7M07188- Automation and Control» was developed in accordance with the requirements of the State Mandatory Standard of Higher and Postgraduate Education, approved by Order No. 2 of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022.

The educational program «7M07188- Automation and Control» was approved at the meeting of the Council on Academic Quality on «27» 03 2025, protocol No. 4
 Chairman Baibolova L.K. 

The educational program «7M07188- Automation and Control» was approved at the meeting of the Commission on Academic Quality of the Faculty on «Technology» 29.11 2024, protocol No. 2
 Chairman Zhunusova G.S. 

The educational program «7M07188- Automation and Control» was developed and discussed at the meeting of the department «Information technologies» dated «19» 11 2024, protocol No. 4
 Head of the department Serimbetov B.A. 


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Approval sheet

Educational program "7M07188 - Automation and Control "


AGREED:

Vice-Rector for Administrative Affairs		E.Askarbekov	"27" 03 2025 year
Head of Educational Programs Department		B.Bayadilova	"27" 03 2025 year
General manager WesCo Group LLP		T.Murzabekov	"19" 11 2024 year
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Director of «ZHOBA LTD» LLP		R.Bersinkulov	"19" 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 fields
Direction of training	7M071- Engineering and Engineering
Number and name of the group of educational programs	M100- Automation and control
Code and name of the educational program (EP)	7M07188- Automation and control
Educational program profile	Scientific and pedagogical
Goal of the educational program	The purpose of this master's program is to prepare masters who are required in various sectors of the economy and industry of the Republic of Kazakhstan, who are able to effectively solve pressing problems in the field of automation and control, who have received theoretical and practical skills in solving engineering problems and designing various automation facilities, who are able to conduct research, develop and implement automated control systems for technological processes and objects.
Completion criterion of an educational program	At least 120 academic credits, including all types of undergraduate academic activities
Language of instruction of the	Kazakh, Russian
Distinctive features of the educational program	Accreditation of the OP by the International Accreditation Agency for Quality Assurance of Education IAAR
Partner University	-

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2 Qualification characteristics of a graduate of an educational program

Degree awarded	Master of Technical Sciences in the educational program «7M07188 - Automation and Control»
Field of professional activity	<p>The modular educational program was developed by the faculty of the Department of Information Technology at the Kazakh University of Technology for the preparation of Masters of Technical Sciences in the educational program «7M07188-Automation and Control». The OP sets the requirements for the content of the studied modules and the level of master's degree in the educational program «7M07188- Automation and Control».</p> <p>The OP is provided during accreditation and licensing, as well as to potential employers for familiarization and making recommendations.</p> <p>Organizational and managerial:</p> <ul style="list-style-type: none"> - managing the activities of departments and organizations involved in projects in the field of implementation of electronic automation and control tools; - work in research institutes, scientific and industrial associations of any form of ownership, state and non-state educational institutions of any level.; <p>Scientific and research:</p> <ul style="list-style-type: none"> - scientific research in the field of electronics, automation and control; <p>Project information:</p> <ul style="list-style-type: none"> - design, development and maintenance of electronic automation systems for various branches of human activity; <p>Pedagogical:</p> <p>implementation of educational services in the field of industrial electronics, automation and control</p>
Types of professional activity	<p>Design and engineering;</p> <p>Production and technological;</p> <p>Organizational and managerial;</p> <p>Scientific research;</p> <p>Pedagogical.</p>
Objects of professional activity	<p>Manufacturing enterprises, Government agencies, defense enterprises, organizations that use digital tools and implement electronic automated control systems in production processes, enterprise management, personnel management, public administration, and state border protection.</p>
Functions of professional activity (labor functions)	<p>Ensuring uninterrupted operation of electronic devices for various functional purposes and design. Creation and improvement of methods and means of information transformation using electronic means and technologies.</p>



3 Requirements for the content of the educational program

Name of cycles and disciplines	Workload in academic credits
Theoretical training	88
Cycle of basic disciplines (BD)	35
University component	20
Component of choice	15
Cycle of profile disciplines (PD)	53
University component	10
Component of choice	30
Research practicum	13
Master's student's research work	24
Experimental and research work of a master's student, including an internship and a master's project	24
Final certification (FC)	8
Design and protection of the master's project	8
Total	120

4 Competency map of the educational program «7M07188 - Automation and control»

Competence map of the educational program	Learning outcome code	Learning Outcome (according to Bloom's Taxonomy)
Behavioral skills and personality traits (Softskills)	LO1	Conducts research in the field of information technology based on a holistic systematic scientific worldview using knowledge of the history and philosophy of science
	LO2	Uses modern methods and technologies of scientific and professional communication in a foreign language in the field of professional activity
	LO3	Capable of active social mobility and independent learning of new research methods, applying psychologically sound approaches to managing the educational process and interacting with future specialists
	LO4	Possesses pedagogical, scientific-methodological, and research skills in the field of automation and control, utilizing professional and practical skills to conduct scientific research and make managerial decisions
Digital competencies (Digital skills)	LO5	Possesses knowledge of the main trends in the development of mathematical and simulation modeling, methods for evaluating model quality, software tools for model development, and skills in



		on a systems approach, and formulating a strategy of action
	LO6	Possesses the methodology of scientific cognition for solving research problems, the basic principles of the formation and organization of scientific management of ACS, the selection, processing, and planning of experiments, as well as the analysis and evaluation of the effectiveness of using the principles of scientific management
	LO7	Conducts information and analytical work using modern IT technologies, collects and analyzes scientific and technical information based on domestic and foreign experience on the subject of scientific research
Professional skills (Hardskills)	LO8	Capable of solving problems in the fields of kinematics, mathematical modeling of robotic systems, structural control, evaluation of flexible automated production performance, and justification of automation tools
	LO9	Performs engineering calculations and process modeling using software tools such as SCADA, CAD, CAE systems, and SADT methodologies
	LO10	Implements data transmission technologies, automation systems for control and monitoring, and methods for evaluating the reliability of automation elements, drives, and mechanisms

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5 Learning outcomes of the educational program and modules

Key competencies	Learning Outcomes (LO) for the educational program	Name of module	Learning outcomes for the module	The name of the disciplines that form the learning outcomes
Behavioral skills and personality traits (Softskills)	LO1 Conducts research in the field of information technology based on a holistic systematic scientific worldview using knowledge of the history and philosophy of science	The module of basic disciplines	Demonstrates the skills of using methods and methodologies in selecting, processing, planning the experiments, and processing the results of scientific research. Demonstrates skills in analyzing and evaluating the effective use of scientific management principles in automated production, in various sectors of the economy and industry	History and philosophy of science
	LO2 Uses modern methods and technologies of scientific and professional communication in a foreign language in the field of professional activity		Uses the techniques of logical analysis of scientific texts in a foreign language. Demonstrates knowledge of modern methods and technologies of professional communication in a foreign language.	Foreign language (professional)
	LO3 Capable of active social mobility and independent learning of new research methods, applying psychologically sound approaches to managing the educational process and interacting with future specialists		Demonstrates the ability to apply knowledge of psychology for the purpose of self-knowledge and the knowledge of others.	Management psychology



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	<p>LO4 Possesses pedagogical, scientific-methodological, and research skills in the field of automation and control, utilizing professional and practical skills to conduct scientific research and make managerial decisions</p>	<p>Uses knowledge of teaching methods in organizing and conducting training sessions. Demonstrates knowledge of the theoretical and methodological foundations of teaching, the formation of professional and pedagogical culture and moral attitudes. Compiles programs. And plans using various teaching methods and technologies.</p>	<p>Higher school pedagogy Teaching practice</p>
	<p>LO5 Possesses knowledge of the main trends in the development of mathematical and simulation modeling, methods for evaluating model quality, software tools for model development, and skills in selecting appropriate software for implementing developed simulation models; capable of assessing the economic efficiency of developed mathematical and simulation models, performing critical analysis of problem situations based on a systems approach, and formulating a strategy of action</p>	<p>Uses the methodology of mathematical and simulation modeling, demonstrates skills in developing mathematical and simulation models of research, mathematical formulation of the research problem</p>	<p>Methods of mathematical and simulation modeling Mathematical formulation of the research problem</p>
<p>Digital competencies (Digital skills)</p>	<p>Module 3 Automation and robotics system</p>	<p>Demonstrates the skills of using decision-making techniques for various conditions, applies basic principles, classification of methods to solve optimization problems.</p>	<p>Optimization of design solutions Automation of electric drive control systems Oscillation theory Stability and reliability of</p>



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				machines and mechanisms
<p>LO6 Possesses the methodology of scientific cognition for solving research problems, the basic principles of the formation and organization of scientific management of ACS, the selection, processing, and planning of experiments, as well as the analysis and evaluation of the effectiveness of using the principles of scientific management</p>	<p>Module 2 Scientific research in automation and control</p>	<p>Demonstrates the skills of using methods and methodologies in selecting, processing, planning experiments, and processing the results of scientific research. Demonstrates skills in analyzing and evaluating the effective use of scientific management principles in automated production, in various sectors of the economy and industry</p>	<p>Aspects and principles of scientific research Integrated control systems in automated production</p>	
<p>LO7 Conducts information and analytical work using modern IT technologies, collects and analyzes scientific and technical information based on domestic and foreign experience on the</p>	<p>Module 3 Automation and robotics system</p>	<p>Uses knowledge of teaching methods in organizing and conducting training sessions. Demonstrates knowledge of the theoretical and methodological foundations of teaching, the formation of professional and pedagogical culture and moral attitudes. Compiles programs. And plans using various teaching methods and technologies.</p>	<p>Technical means of automated control systems The use of data transmission networks in automated management Modern communication technologies</p>	
	<p>Module 2 Scientific research in automation and control</p>	<p>Uses methods of analysis and processing of experimental data, information technologies and software products in research, processes</p>	<p>The methodology of scientific work</p>	



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	subject of scientific research		experimental data and draws conclusions about the reliability of experiments.	Software tools in control automation systems
Professional skills (Hardskills)	LO8 Capable of solving problems in the fields of kinematics, mathematical modeling of robotic systems, structural control, evaluation of flexible automated production performance, and justification of automation tools	Module 3 Automation and robotics system	Demonstrates the skills of designing actuators, controlling robots and manipulators. Demonstrates the skills of organizing the structure and main elements of the GAP, determines the required number of GAP elements to ensure increased productivity and production efficiency.	Kinematics of control schemes for robots and manipulators Organization and provision of automated production Design of mechatronic systems Management of robotic systems Modern software tools for designing automated control systems Flexible automated production management



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<p>LO9 Performs engineering calculations and process modeling using software tools such as SCADA, CAD, CAE systems, and SADT methodologies</p>	<p>Module 2 Scientific research in automation and control</p>	<p>Demonstrates skills in the field of application of software and hardware parts of SCADA devices of systems included in the technological or production process. Demonstrates the skill of understanding SADT technology to provide design solutions to improve the management efficiency of both operations and large projects.</p>	<p>SCADA Control Technology SADT methodologies</p>
<p>LO10 Implements data transmission technologies, automation systems for control and monitoring, and methods for evaluating the reliability of automation elements, drives, and mechanisms</p>	<p>Module 2 Scientific research in automation and control</p>	<p>He is proficient in the features and style of academic writing, knows how to use correctly, citation, references to sources and rules for the design of scientific papers; Demonstrates the skills of using basic research methods, defines the goals of research, objects, subject of research, methods for the implementation of the objectives of the thesis.</p>	<p>Features and style of academic writing The methodology of scientific work</p>
<p>LO6 Possesses the methodology of scientific cognition for solving research problems, the basic principles of the formation and organization of scientific management of ACS, the selection, processing, and planning of experiments, as well as the analysis and evaluation of the effectiveness of using the principles of scientific management</p>	<p>Module 4. Research activities</p>	<p>Research work of a master's student, including an internship and completion of a master's thesis</p>	<p>Research work of a master's student, including an internship and completion of a Master's thesis (R&D) Research practice</p>


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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	Number of credits	Generated learning outcomes (codes)										
				LO1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	
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 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.	4		+									
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	4		+									





Cycle of major disciplines									
University component/Elective component									
	performing technical calculations; - development of electrical, technological schemes, automated electric drive systems.								
11	Aspects and principles of scientific research	The purpose of the discipline is: the formation of knowledge, skills and abilities of undergraduates in the organization of research activities to solve problems in various fields of professional, scientific activity based on the study of the history of the development of technical sciences. Tasks of the discipline: - study of the stages and goals of scientific research; -study methodology of scientific research; - study of the directions of search, analysis and decision-making on scientific research; -methodology of processing the results of scientific and theoretical research.	5						+
12	The use of data transmission networks in automated management	The purpose of the discipline is: the formation of skills, knowledge and skills by undergraduates on the main characteristics of alarm systems, channels and paths, the construction of analog and digital data transmission systems for	5						+

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	automated production management systems.				

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 field of information technology based on a holistic, systematic scientific worldview using knowledge of the history and philosophy of science	Business games, case study, presentation, report, oral interview	Information theory (demonstration of educational material, explanation, story)
LO 2	Uses modern methods and technologies of scientific and professional communication in a foreign language in the field of professional activity	Business games, case study, presentation, report, oral interview	Information theory (demonstration of educational material, explanation, story)
LO 3	Capable of active social mobility and independent learning of new research methods, applying psychologically sound approaches to managing the educational process and interacting with future specialists	Creative assignments, abstract, presentation, oral interview, report, messages	Information theory (demonstration of educational material, explanation, story)
LO 4	Possesses pedagogical, scientific-	Business games, case study,	Information theory (demonstration of educational

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<p>methodological, and research skills in the field of automation and control, utilizing professional and practical skills to conduct scientific research and make managerial decisions</p> <p>LO 5</p> <p>Possesses knowledge of the main trends in the development of mathematical and simulation modeling, methods for evaluating model quality, software tools for model development, and skills in selecting appropriate software for implementing developed simulation models; capable of assessing the economic efficiency of developed mathematical and simulation models, performing critical analysis of problem situations based on a systems approach, and formulating a strategy of action</p>	<p>presentation, report, oral interview, material, explanation, story)</p> <p>Scientific publications</p> <p>Project assignments, oral interview, Scientific experience, experiment) publications</p>	<p>presentation, report, oral interview, material, explanation, story)</p> <p>Scientific publications</p> <p>Project assignments, oral interview, Scientific experience, experiment) publications</p>
<p>LO 6</p> <p>Possesses the methodology of scientific cognition for solving research problems, the basic principles of the formation and organization of scientific management of ACS, the selection, processing, and planning of experiments, as well as the analysis and evaluation of the effectiveness of using the principles of scientific</p>	<p>Project assignments, oral interview, Scientific experience, experiment) publications</p>	<p>Project assignments, oral interview, Scientific experience, experiment) publications</p>

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	management				
LO 7	Conducts information and analytical work using modern IT technologies, collects and analyzes scientific and technical information based on domestic and foreign experience on the subject of scientific research	Project activities, assignments, oral interview, publications	creative Search and creative teaching methods (observation, experience, experiment)		
LO 8	Capable of solving problems in the fields of kinematics, mathematical modeling of robotic systems, structural control, evaluation of flexible automated production performance, and justification of automation tools	Research work of a master's student, completion of a master's thesis, preparation and defense of a master's thesis, report, communication, presentation	The method of independent work (reading, examination)		
LO 9	Performs engineering calculations and process modeling using software tools such as SCADA, CAD, CAE systems, and SADT methodologies	Scientific activities, presentations, report, oral interview	Search and creative teaching methods (observation, experience, experiment)		
LO 10	Implements data transmission technologies, automation systems for control and monitoring, and methods for evaluating the reliability of automation elements, drives, and mechanisms	Scientific publications, assignments, presentations, case study, report, oral interview	Search and creative teaching methods (observation, experience, experiment)		

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




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Name of the professional standards used	Professions at level 7 of the SQF	Labor functions	Tasks	Learning outcomes for the educational program
1. Technical support of electronics	Electronic Equipment Maintenance Engineer	<p>1. Operation of electronic complexes and systems</p> <p>Labor function</p> <p>2. Development and design of electronic equipment,</p>	<p>1. Organizational and methodological support for the technical operation of electronic complexes</p> <p>2. Commissioning, maintenance and routine repair of electronic complexes</p> <p>1. Organizational and methodological support for the technical operation of electronic systems</p> <p>1. Development and approval of technical specifications for the design of technical specifications, programs and test methods for electronic</p>	<p>LO8 Capable of solving problems in the fields of kinematics, mathematical modeling of robotic systems, structural control, evaluation of flexible automated production performance, and justification of automation tools</p> <p>LO8 Capable of solving problems in the fields of kinematics, mathematical modeling of robotic systems, structural control, evaluation of flexible automated production performance, and justification of automation tools</p> <p>LO6 Possesses the methodology of scientific cognition for solving research problems, the basic principles of the formation and organization of scientific management of ACS, the selection, processing, and planning of experiments, as well as the analysis and evaluation of the effectiveness of using the principles of scientific management</p> <p>LO9 Performs engineering calculations and process modeling using software tools such as SCADA, CAD, CAE systems, and SADT methodologies</p> <p>LO9 Performs engineering calculations and process modeling using software tools such as SCADA, CAD, CAE systems, and SADT methodologies</p>



		<p>electronic complexes and systems for various purposes</p>	<p>equipment, complexes and systems I. Development of structural and functional circuits of electronic systems and complexes of circuit diagrams of devices using computer-aided design, carrying out design calculations and feasibility study of decisions</p>	<p>LO9 Performs engineering calculations and process modeling using software tools such as SCADA, CAD, CAE systems, and SADI methodologies LO5 Possesses knowledge of the main trends in the development of mathematical and simulation modeling, methods for evaluating model quality, software tools for model development, and skills in selecting appropriate software for implementing developed simulation models; capable of assessing the economic efficiency of developed mathematical and simulation models, performing critical analysis of problem situations based on a systems approach, and formulating a strategy of action LO8 Capable of solving problems in the fields of kinematics, mathematical modeling of robotic systems, structural control, evaluation of flexible automated production performance, and justification of automation tools</p>
<p>Personal competency requirements</p>	<p>Analytical thinking, critical analysis, responsibility, organization, learning ability, ability to work in a team</p>			

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9 Graduate model

GRADUATE MODEL			
Competencies (soft skills, digital skills)			
Professional standard Development of IoT systems	Attributes of a graduate	knowledge	Skills
	<ul style="list-style-type: none"> -High professionalism in the field of Automation and management; - Emotional intelligence; -Adaptability to global challenges; - Leadership; -Skill in creating documentation for IoT and AI systems, including user instructions and technical descriptions 	<ul style="list-style-type: none"> - Characteristics of devices and their application in industries. - Software tools for IoT systems - Methodology of machine-to-machine interaction - Technology of working with embedded systems - Incident detection and response methods - Theory of electromagnetic compatibility, fundamentals of radio wave propagation, coverage area calculations, routing algorithms in wireless networks. 	<ul style="list-style-type: none"> - Establish communication between sensors and readers with mobile devices, Wi-Fi, and a server. - Perform error correction tasks at the network level - Understand network devices and their interaction with sensors and readers. - Take into account the computing power of devices and regulate the flow of information.
	Professional skills (hard skills)		
<ul style="list-style-type: none"> - Defines the essence and content of the processes of management, management, entrepreneurship and management; - Has the ability to establish communication and decision-making processes; has the ability to choose an effective leadership style and leadership, methods of managing groups, conflicts, and stress; -Possesses communication skills to communicate with colleagues and customers in the process of project development, as well as participates in the organization and management of projects 			

ОТЗЫВ/РЕЦЕНЗИЯ

на образовательную программу 7M07188 «Автоматизация и управление» по направлению подготовки 7M071 Инженерия и инженерное дело (магистратура).

ТОО "ZHОВА LTD", Республика Казахстан, г. Тараз

Название предприятия, страна, город

Общая характеристика образовательной программы:

Представленная на рецензию образовательная программа (ОП) 7M07188 «Автоматизация и управление» разработана на кафедре «Автоматизация и управление» КазУТБ имени К. Кулажанова в соответствии с национальной и отраслевой системой квалификаций, а также профессиональными стандартами.

Актуальность подготовки магистрантов в области «Автоматизации и управления» определяется следующими факторами:

Развитие Индустрии 4.0 и цифровых технологий требует углубленной подготовки специалистов, обладающих компетенциями в области искусственного интеллекта, промышленного интернета вещей (IIoT), больших данных (Big Data) и роботизированных систем.

В Казахстане наблюдается растущий спрос на исследовательские и инновационные разработки в сфере автоматизированных систем управления, что делает магистратуру ключевым звеном в подготовке научных кадров и разработке новых технологий.

Согласно стратегическим документам, таким как «Цифровой Казахстан» и «Национальная программа промышленного развития», одной из приоритетных задач является развитие автоматизированных систем управления производственными процессами, что требует научно-исследовательского сопровождения.

Программа ориентирована на выполнение научных исследований, направленных на оптимизацию технологических процессов, снижение затрат и повышение энергоэффективности предприятий.

В рамках подготовки магистранты осваивают методы имитационного моделирования, проектирования интеллектуальных систем управления, что способствует созданию конкурентоспособных решений для отечественной промышленности.

Предприятия Казахстана, имеют потребность в научно-обоснованных решениях и специалистах, способных разрабатывать новые подходы к управлению производственными процессами.

Описание и оценка структуры образовательной программы.

Структура ОП включает следующие компоненты:

цикл общеобразовательных дисциплин (30 кредитов);

цикл профилирующих дисциплин (48 кредитов);

научно-исследовательскую работу (24 кредита);

профессиональную практику (10 кредитов);

итоговую аттестацию (8 кредитов);

общее количество кредитов составляет 120.

Программа направлена на развитие у обучающихся исследовательских навыков, позволяя им участвовать в прикладных научных проектах и разрабатывать инновационные решения в области автоматизированного управления. Особое внимание уделяется интеграции теоретических знаний с практическими задачами производства, что позволяет магистрантам разрабатывать и внедрять решения, направленные на цифровизацию и автоматизацию промышленных объектов.

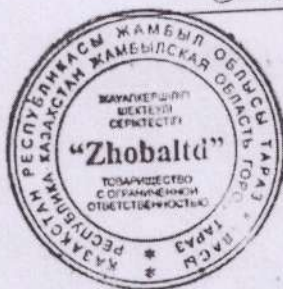
Научная стажировка осуществляется на базах ведущих университетов и предприятиях страны, где магистранты имеют возможность работать с передовыми технологиями, анализировать производственные процессы и предлагать оптимальные методы автоматизации. Данное взаимодействие способствует усилению связей между наукой и промышленностью, а также повышает уровень трудоустройства выпускников.

Общее заключение

Образовательная программа 7M07188 «Автоматизация и управление» отвечает современным требованиям рынка труда Казахстана, способствует развитию научно-исследовательской деятельности и позволяет подготовить высококвалифицированных специалистов, способных решать актуальные задачи автоматизации и управления в промышленности. В связи с этим ОП рекомендуется к внедрению в учебный процесс КазУТБ имени К. Кулажанова.

Директор ТОО «ZHOBALTD»
Берсинкулов Р.К.

Республика Казахстан, г. Тараз,
ул. Ерденбека Нияткалиева, дом 7.



ОТЗЫВ/РЕЦЕНЗИЯ

на образовательную программу 7M07188 «Автоматизация и управление» по направлению подготовки 7M071 Инженерия и инженерное дело (магистратура).

ТОО "ЭкостройНИИ-ПВ", Республика Казахстан, г. Павлодар

Название предприятия, страна, город

Общая характеристика образовательной программы:

Образовательная программа (ОП) 7M07188 «Автоматизация и управление» ориентирована на подготовку высококвалифицированных научных и инженерных кадров, способных проводить фундаментальные и прикладные исследования в области автоматизированных систем управления, интеллектуальных технологий и цифрового моделирования сложных промышленных процессов.

Актуальность программы обусловлена следующими факторами:

Развитие научных исследований в области автоматизации. Внедрение новых методов цифрового управления, математического моделирования и алгоритмов машинного обучения требует глубокой научной проработки, что делает магистратуру важным звеном в развитии инновационных решений.

Глобальные тренды в автоматизации и цифровизации. Внедрение концепции Индустрии 4.0 ставит перед наукой задачи по созданию интеллектуальных производственных систем, цифровых двойников и предиктивного управления.

Необходимость научно-исследовательского подхода в промышленности. Отечественные предприятия требуют научно обоснованных стратегий автоматизации, обеспечивающих повышение эффективности, энергоёмкости и надёжности технологических процессов.

Государственная поддержка научной деятельности. Программы «Цифровой Казахстан» и «Развитие науки на 2023-2029 годы» предусматривают активное финансирование исследований в сфере интеллектуальных систем управления и автоматизации, что расширяет перспективы научных исследований в данной области.

Магистранты программы получают возможность участвовать в финансируемых грантовых проектах, научных конференциях, что способствует интеграции научных разработок Казахстана в мировое сообщество.

Описание и оценка структуры образовательной программы:

Программа магистратуры включает:

Структура ОП включает следующие компоненты:
цикл общеобразовательных дисциплин (30 кредитов);
цикл профилирующих дисциплин (48 кредитов);
научно-исследовательскую работу (24 кредита);
профессиональную практику (10 кредитов);
итоговую аттестацию (8 кредитов);
общее количество кредитов составляет 120.

Партнёрские предприятия, с компаниями ТОО «Astana ceramic», «AG TECH», rjnjhst предоставляют научно-исследовательские базы для апробации новых методов и технологий, разрабатываемых магистрантами. Это позволяет совмещать академическую подготовку с реальными промышленными задачами, что существенно повышает уровень трудоустройства выпускников и их востребованность в науке и промышленности.

Общее заключение

Образовательная программа 7М07188 «Автоматизация и управление» направлена на подготовку исследователей и научных специалистов, способных разрабатывать и внедрять инновационные технологии в промышленности. Программа сочетает фундаментальные знания, практическую реализацию научных проектов и международное сотрудничество, что делает её ключевой для развития передовых направлений автоматизации в Казахстане. В связи с этим ОП рекомендуется к внедрению в учебный процесс КазУТБ имени К. Кулажанова.

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