

«K.Kulazhanov Kazakh University of Technology and Business» JSC	EP 27/03-18-2025	
Educational program	Edition 4	

EDUCATIONAL PROGRAM

6B06155 Artificial intelligence

code and name of the educational program

Level: *Bachelor's*

Approved



Board of Directors of JSC

«K.Kulazhanov KazUTB» " 02 " 04 2025

3

Recommended

Academic Council of JSC

«K.Kulazhanov KazUTB» " 28 " 03 2025

protocol No. 4

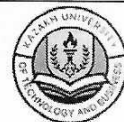
Astana–2025

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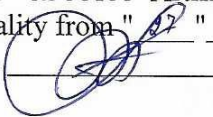
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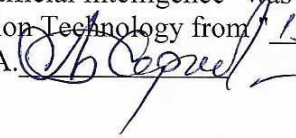
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Preface

The educational program "6B06155 Artificial Intelligence" was developed in accordance with the requirements of the State Mandatory Standard of Higher and 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 and based on professional standards.: "Development of artificial intelligence applications" (Appendix No. 2 to the Order of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 222 dated 05.12.2022); "System and Network Administration" (Appendix No. 1 to the order of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 222 dated 05.12.2022); "Software development" (Appendix No. 7 to the order of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 222 dated 05.12.2022)

The educational program "6B06155 Artificial Intelligence" was approved at the meeting of the Council on Academic Quality from " 27 " 03 2023 g., protocol №. 4
Chairman Baibolova L.K. 

The educational program "6B06155 Artificial Intelligence" was approved at the meeting of the Commission on Academic Quality of the Faculty of Technology from " 29 " 11 2024 g., protocol №. 2
Chairman Zhunusova G.S. 

The educational program "6B06155 Artificial Intelligence" was developed and discussed at the meeting of the Department of Information Technology from " 19 " 11 2024 g., protocol №. 4
Head of the department Serimbetov B.A. 

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1 Passport of the educational program

International Classification of Education (ISCED) level	Standard of Education	6
National Qualification Framework (NQF) level		6
Sectoral Qualifications Framework (SQF) level		6
Code and name of the field of education		6B06 Information and communication technologies
Direction of training		6B061 Information and communication technologies
Number and name of the group of educational programs		B057 Information technology
Code and name of the educational program (EP)		6B06155 Artificial Intelligence
Educational program profile		Higher education in the field of Information and Communication Technology
Goal of the educational program		Training of qualified specialists who possess modern technologies and methods of intelligent data processing and analysis in the field of artificial intelligence, have knowledge and practical skills that meet modern quality requirements for specialists with higher education.
Completion criterion of an educational program		240 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	Bachelor (Master) in the educational program "6B06155 Artificial Intelligence"
Field of professional activity	Analysis and processing of large data sets, statistics and forecasting, research, development, implementation, and maintenance of artificial intelligence technologies and methods in various sectors of the economy, such as: natural language processing, financial management, mobile applications, environmental analysis, computer games, transportation, healthcare, and industry.
Types of professional activities	Design and engineering Production and technological Experimental and research Organizational and managerial Operational Scientific
Object of professional activity	Enterprises and organizations involved in the production and

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	operation of computing equipment, computer systems and networks, and software; Design, research, and educational institutions, as well as enterprises and organizations of various forms of ownership that apply artificial intelligence models and methods.
Functions of professional activity	1. Artificial Intelligence Systems Designer 2. Data Specialist 3. Information Dissemination Specialist (<i>и.и.и</i>) Information 4. Promotion Specialist 5. Machine Learning Data Specialist 6. Robotic Process Analyst 7. Digital Information Manager

3 Requirements for the content of the educational program

Name of cycles and disciplines	Workload in academic credits
Cycle of general education disciplines (GED)	56
Required component	51
University component	5
Cycle of basic disciplines (BD)	89
University component	25
Component of choice	62
Professional practice	2
Cycle of major disciplines (MD)	87
University component	15
Component of choice	55
Professional practice	17
Final assessment	8
Total	240

4 Additional educational programs (minor)

4.1 Minor «Economic analysis and management»

Name of disciplines	Workload in academic credits
Enterprise economics	5
Economic analysis	5
Economic risks in enterprises	5
Total	15

5 Competency map of the educational program «6B06155 – Artificial Intelligence»

Competence map of the educational program	Learning outcome code	Learning Outcome (according to Bloom's Taxonomy)
Behavioral skills and personality traits (Softskills)	LO 1	He applies economic, legal, and financial literacy, sustainable development, and life safety principles in his professional activities, using key economic and

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		legal principles, analyzing financial risks and their impact on quality of life, demonstrating civic responsibility and responsible behavior.
	LO2	Solves professional tasks in the field of information systems and technologies, applying the rules and methods of mathematical and natural sciences.
	LO _{GED1}	It forms a system of general competencies that ensure the socio-cultural development of the personality of a future specialist based on his ideological, civic and moral position, oriented towards a healthy lifestyle.
	LO _{GED2}	He is capable of communication in oral and written forms in Kazakh, Russian and foreign languages to solve problems of interpersonal, intercultural and professional communication.
	LO _{GED3}	Promotes the development of information literacy through the acquisition and use of modern information and communication technologies in all fields of activity
Digital competencies (Digital skills)	LO3	Designs simple neural networks to solve given tasks, applying the basic concepts and components of neural networks, manages the processes of creating and using information services.
	LO4	Ensures the system security of the organization, information security at the enterprise, using modern methods of information protection.
	LO5	Applies modern algorithms, methods and technologies in the design and development of software
	LO6	It uses various platforms and programming languages, analyzing the results of the program code.
Professional skills (Hardskills)	LO7	It uses prototypes of an intelligent system based on existing artificial intelligence models using programming languages.
	LO8	Implements the development processes, requirements and fundamental principles of software construction, using modern algorithmic languages by implementing scalable applications based on modern libraries and frameworks.
	LO9	Applies modern methods of designing and modeling software applications and information systems.
	LO10	Based on scientific research, he uses quantitative and qualitative analysis methods in the work of analytical systems and robotic equipment, artificial intelligence and neural networks in making managerial decisions.
	LO11	Analyzes economic indicators, offering effective strategies for solving economic problems of enterprises, using basic methods of analysis and evaluation using software tools.

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6 Learning outcomes of the educational program and modules

Key competences	Learning Outcomes (LO) for the educational program	Name of module	Learning outcomes for the module	Name of disciplines that form learning outcomes
	LO _{GED1} - It forms a system of general competencies that ensure the socio-cultural development of the personality of a future specialist based on his ideological, civic and moral position, oriented towards a healthy lifestyle.	Man and society are the basis of ideological and socio-political knowledge	He applies the basic laws of the history of Kazakhstan, philosophy, socio-political knowledge for effective socialization and adaptation in changing socio-cultural conditions, forming a personality capable of mobility in the modern world, critical thinking and physical self-improvement.	History of Kazakhstan Philosophy Physical Culture Module of socio-political knowledge (political science, sociology, cultural studies, psychology)
	LO _{GED2} - He is capable of communication in oral and written forms in Kazakh, Russian and foreign languages to solve problems of interpersonal, intercultural and professional communication.	Information and communication module	He is able to classify software, use it for its intended purpose, structure and interpret it as needed, as well as manage software products developed by himself.	Kazakh (Russian) language Foreign language
	LO _{GED3} - Promotes the development of information literacy through the acquisition and use of modern information and communication technologies in all fields of activity		He is proficient in various types of information and communication technologies for the search, storage, processing, protection and dissemination of information	Information and communication technologies
	LO1- He applies economic, legal, and financial literacy, sustainable development, and life safety principles in his professional activities, using key economic and legal principles, analyzing financial risks and their impact on	Module of economic, legal, scientific and environmental knowledge	Using basic economic and legal principles, financial awareness, and civic responsibility in behavior, he applies knowledge of economics and law, as well as entrepreneurial and financial literacy skills, as well as waste management, ecosystem restoration, disaster risk reduction, investments in the green economy, and the introduction of energy-saving	Module of economics, entrepreneurship, law and financial literacy (fundamentals of economics and entrepreneurship, basics of law and anti-corruption culture, basics of financial literacy) Sustainable development, ecology and life safety

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Информационные компетенции (Digital skills)	quality of life, demonstrating civic responsibility and responsible behavior.		technologies. Understanding the main stages of scientific research, from choosing a topic to publishing the results.	
	LO2- Solves professional tasks in the field of information systems and technologies, applying the rules and methods of mathematical and natural sciences.	Mathematics	Uses basic mathematical formulas, knowledge in solving applied problems, and mathematical methods in constructing models for solving problems of an applied nature and mathematical methods. the main types of selection and decision-making tasks, their formulation and implementation, methods and models used in the design of human-machine systems for selection and decision-making.	Mathematical analysis Linear algebra Probability theory and mathematical statistics. Numerical methods Theory of decision-making Graph theory
	LO3 – Designs simple neural networks to solve given tasks, applying the basic concepts and components of neural networks, manages the processes of creating and using information services.	Architecture of neural and computer networks and information security	Uses the basic principles and methods of artificial neural network development. Examines neural network architectures, learning algorithms, optimization methods, and their applications. Learns theoretical and practical knowledge about cloud computing technology, and manages the creation and use of information services. Learns skills in developing safe and ethical artificial intelligence solutions.	Development of artificial neural networks Introduction to Neural Network architectures Computer networks and cloud technologies Representation of data and knowledge on the web Cryptographic methods of information protection Information security and information protection Безопасность и этика ИИ Cloud databases
	LO4 - Ensures the system security of the organization, information security at the enterprise, using modern methods of information protection.			Algorithms, data structures, and programming (SI) Basics of programming in a language Python Modern programming methods and tools Advanced Python Cross-platform programming Object-oriented programming (Java) Network administration
	LO5 – Applies modern algorithms, methods and technologies in the design and development of software	Algorithmization and programming languages	Uses language tools to describe various data structures, develops efficient data processing algorithms in well-known programming languages, understands the basics of Python programming syntax and logic, the principles of algorithm, data structures, and basic code correction methods. Increases competence in the field of software development and standardization, demonstrates the	
	LO6- It uses various platforms and programming languages, analyzing the results of the program code.			

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Профессиональные навыки (Hardskills)		ability to apply the concept of object-oriented programming, develop, debug and test Java programs in the Eclipse environment.	Web programming Visual programming Educational practice
	LO7 – It uses prototypes of an intelligent system based on existing artificial intelligence models using programming languages.	Artificial intelligence and data mining	Artificial intelligence systems Natural language processing Artificial intelligence in the management of object
	LO8 – Implements the development processes, requirements and fundamental principles of software construction, using modern algorithmic languages by implementing scalable applications based on modern libraries and frameworks.	Programming software applications	Pre-graduate practice / Industrial practice Image processing in artificial intelligence systems Deep Machine learning Mathematical models of artificial intelligence Hardware and software implementation of artificial intelligence elements Modern statistical methods of forecasting Artificial intelligence and cognitive systems Social media analysis and data visualization Intelligent control systems Big Data Processing (Big data)
	LO9- Applies modern methods of	Demonstrates skills in designing relational database structures, managing data in SQL, ensuring data integrity and security, and integrating information systems using DBMS. Creates and implements innovative solutions using virtual and augmented reality technologies in various fields of activity. Applies principles of construction for the application of predictive models, provides an overview and description of the classification and clustering of forecasting, domain analysis using forecasting methods and models in various tasks,	Industrial practice 1 Industrial practice 2 Databases and DBMS Programming of mobile applications (iOS and Android) Design and development of information system architectures Virtual and augmented reality technologies Scientific approaches for information analysis Artificial intelligence tools in solving forecasting problems

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designing and modeling software applications and information systems.		skills in choosing methods and tools of artificial intelligence to solve problems	Visual programming and data mining. Development of game applications on modern platforms Information technology in the design of computer games	
LO10 - Based on scientific research, he uses quantitative and qualitative analysis methods in the work of analytical systems and robotic equipment, artificial intelligence and neural networks in making managerial decisions.	Organization of modern systems and technologies	Understands the principles of designing, developing, and controlling robots, as well as the basics of integrating Internet of Things (IoT) devices, including sensors, actuators, and microcontrollers. Analyzes the management of processes, memory, and I/O in operating systems. Demonstrates the ability to use knowledge of computer architecture, organization of computer systems	Operating systems Computer data processing systems Engineering Computer Graphics Reliability of information systems Computer organization and system programming Modern data mining tools and technologies Robotics and IoT technologies Fundamentals of scientific research Final assessment	
LO11 - Analyzes economic indicators, offering effective strategies for solving economic problems of enterprises, using basic methods of analysis and evaluation using software tools.		Forms analytical and creative thinking, understands and applies the basic methods of economic analysis at various stages of management decision-making, and also acquires practical skills in analyzing and evaluating the production, economic, financial and investment activities of an organization. He is able to operate with economic indicators, analyze and propose effective strategies for solving economic problems of enterprises, taking into account the peculiarities of their functioning in modern market conditions.	Economic analysis Economics of enterprise Economic risks at enterprises	

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7 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	Formed learning outcomes (codes)													
				LO GED1	LO ED2	LO ED3	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11
Cycle of general education disciplines																	
University component/Elective component																	
1	Foreign language	This program is designed to provide training for students in the general education discipline "Foreign language" as one of the compulsory subjects of the general education cycle. The aim of the program is to form the intercultural and communicative competence of students in the process of foreign language education at a sufficient level (A2, pan-European competence) and the level of basic sufficiency (B1, pan-European competence). Depending on the level of training of students at the time of completion of the course, it reaches the B2 level of pan-European competence if the student's language level at the start is higher than the B1 level of pan-European competence.	10	+													
2	Kazakh/Russian language	This program in the general education discipline "Kazakh language" is aimed at a new format of language learning and the formation of socio-cultural knowledge, improving the student's communicative competence, and developing personal potential. This program is designed to develop the language personality of a student who is able to carry out cognitive and communicative activities in Russian in the areas of interpersonal, social, professional, and intercultural communication in the context of the implementation of state programs for trilingualism and the spiritual modernization of national consciousness.	10	+													
3	Information and communication	The program is aimed at studying the updated content of the general education discipline "Information and Communication	5	+													

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technologies	Technologies" (hereinafter referred to as the discipline), developing the ability to critically understand the role and significance of modern information and communication technologies in the era of digital globalization, forming a new "digital" mindset, acquiring knowledge and skills to use modern information and communication technologies in various activities.														
4	Physical culture	8	+												
This program is aimed at studying the general education discipline "Physical Culture", which provides physical training in accordance with international educational standards. The program defines the joint cooperation of the teacher and the student in the process of physical education throughout the course of study in the context of the requirements for the level of mastery of the discipline.															
5	The history of Kazakhstan	5	+												
The program consists of five thematic blocks: Ancient people, the formation of a nomadic civilization, the Turkic civilization and the Great Steppe, Kazakhstan in the new era (XVIII –early XX centuries), Kazakhstan in the Soviet period, Independent Kazakhstan. The purpose of the discipline is to provide objective knowledge about the main stages of the development of the history of Kazakhstan from ancient times to the present.															
6	Module of socio-political knowledge (political science, sociology, cultural studies, psychology)	8												+	
This program involves the study of four scientific disciplines – sociology, political science, cultural studies, psychology, each of which has its own subject, terminology and research methods. Interactions between these scientific disciplines are carried out on the basis of the principles of information complementarity; integrativity; methodological integrity of research approaches of these disciplines; commonality of result-oriented teaching methodology; a single systematic representation of the typology of learning outcomes as formed abilities. Within the disciplines of sociology and psychology, special attention is paid to inclusion as a key social and humanistic value. It is considered as an integral part of modern social and psychological knowledge, contributing to the formation of students' respect for social and individual															

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		spaces. Students master the basic methods of working with linear structures, understand the properties of vector spaces, learn how to solve systems of linear equations and use matrix methods to analyze various mathematical and applied problems.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

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15	Web programming	The discipline is aimed at mastering programming for web applications and developing skills in working with web page elements, as well as integrating various technologies to create modern projects on the web. After studying the discipline, students acquire skills in creating and styling web pages, working with server technologies and databases, developing dynamic web applications, optimizing and protecting web applications, as well as working in a team using version control systems.	5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												</

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20	Information security and information protection	This course is aimed at an in-depth study of the basics of information security and methods of Information Protection. The course discusses the basic principles of information security, types of threats, cryptographic methods, authentication and authorization, network security, information protection technologies	5										+	+								
21	Natural language processing	The discipline is aimed at studying basic concepts and tasks such as speech recognition, machine translation, tonality analysis and text generation. Methods of data purification and normalization, an overview of the learning methods used to create models that can recognize patterns and make decisions based on the data. Students master the development process, can apply algorithms, and use existing libraries and tools to solve real-world problems.	5													+						
22	Artificial intelligence in the management of object	The discipline studies the basic concepts and principles of artificial intelligence systems, as well as their application in object management. Methods and technologies of artificial intelligence for effective management of objects. Upon completion of the course, students gain the skills and knowledge necessary for successful management of facilities using	5													+						
23	Computer networks and cloud technologies	The discipline is aimed at studying the concepts and tools for building a cloud infrastructure, the main models for providing cloud computing services, and modern cloud computing platforms. Students master theoretical and practical knowledge about cloud computing technology, manage the processes of creating and using information services.	4											+	+							
24	Representation of data and knowledge on the web	The discipline is aimed at studying the basic elements of network technologies: terminology, technical means, the basics of data transmission theory and network software, the basics of network service quality, as well as the basics of information security of computer systems and networks. At the end of the course, students are able to verify the correctness of data transmission; detect and eliminate errors in data transmission.	4											+	+							
25	Operating systems	The discipline is aimed at the formation of theoretical knowledge	5																			+

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		in the field of building modern operating systems, methods of organizing computing processes, methods of developing algorithms for the interaction of application programs with the operating system and mechanisms for their implementation. Studies the purpose and functions of operating systems, the architecture of operating systems, the management of processes, threads, memory in operating systems and I/O management and file systems.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
26	Computer data processing systems	5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						</

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Educational program		Edition 4														
35	Computer organization and system programming	The discipline is aimed at studying the basics of architecture and structure of modern operating systems and system software, the structural and functional scheme of a personal computer, the purpose, types and characteristics of central and external PC devices. Upon completion of the course, students will gain the skills and knowledge necessary to apply basic management and design techniques, model-based testing and verification, and compiler construction.	5													+
36	Modern data mining tools and technologies	The discipline is aimed at studying the basic methods of data analysis, understanding the conditions in which these methods are used to solve problems and without restrictions, using the rattle package of the free software environment R for analyzing real social data. Upon completion of the course, students gain the skills and knowledge necessary for data processing and analysis performance.	5													+
37	Basics of programming in a language Python	The discipline "Introduction to Programming (Python)" covers the basics of programming using Python. The course includes key concepts such as variables, conditional statements, loops, functions, and working with files and data collection. Students learn coding principles, algorithmization, structured programming, and the basics of using Python libraries.	4								+	+				
38	Modern programming methods and tools	The discipline studies the design, development, and testing of large software systems from the perspective of developer requirements. This course summarizes the knowledge gained and provides a study of modern software development technologies. Students get acquainted with the programming paradigm, with various programming methods and systems.	4								+	+				
Cycle major disciplines																
The university component																
39	Introduction to Neural Network architectures	The discipline studies the basic algorithms of neural network learning, including the method of error backpropagation. The use of neural networks to solve specific problems in various fields, such as computer vision, natural language processing, games, and	5									+	+			

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Educational program		Edition 4													
		other applications. At the end of the course, students are able to analyze and solve problems using neural networks and machine learning.													
40	Development of artificial neural networks	The course studies the basic principles and methods of developing artificial neural networks. It covers neural network architectures, learning algorithms, optimization methods and their application. It studies the main frameworks for developing neural networks, such as TensorFlow and PyTorch. Students master the process of designing, configuring and training neural networks, as well as the principles of working with big data and techniques for preventing overfitting.	5									+	+		
41	Fundamentals of scientific research	The discipline is aimed at studying the scientific method, methods of data collection and analysis, as well as the stages of development and implementation of scientific research. The discipline forms students' competencies in the application of scientific methods and tools for information analysis, as well as develops analytical, critical thinking and the ability to scientifically study information phenomena.	5												+
The cycle of profile disciplines															
Component of choice															
42	Artificial intelligence and cognitive systems	The discipline is aimed at studying the basic concepts and methods underlying artificial intelligence and its application in various fields. She studies both theoretical aspects and practical applications of artificial intelligence and cognitive technologies. Upon completion of the course, students are able to understand the basic concepts and terminology related to artificial intelligence and cognitive systems.	5											+	
43	Social media analysis and data visualization	The objectives of the discipline are: training in the identification of network problems in sociological data and the application of structural analysis to practical problems of sociology, mastering the conceptual apparatus of network science, training in the collection and analysis of network data. Has skills in presenting quantitative data through visualization and technical data	5											+	

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Educational program		Edition 4											
	visualization tools												
44	Hardware and software implementation of artificial intelligence elements	The discipline is aimed at acquiring the knowledge and skills necessary to solve artificial intelligence problems using hardware and software. This course involves studying and implementing a hardware model of neural network elements, and choosing an architecture that matches the hardware for performing calculations in artificial intelligence tasks.	5										+
45	Modern statistical methods of forecasting	The discipline studies multiple linear regression, parameter estimation, model diagnostics, and the use of regression for forecasting. Criteria for selecting the most effective forecasting models, using cross-validation. At the end of the course, students are able to evaluate and interpret patterns in data using various statistical methods.	5										+
46	Safety and ethics of AI	The discipline is aimed at studying the fundamentals of artificial intelligence security, the main threats and vulnerabilities of artificial intelligence systems, and ways to prevent and minimize the risks associated with the use of artificial intelligence. Understanding the principles of ethics in the context of the development and application of artificial intelligence. Students learn	5						+	+			
47	Cloud databases	The discipline is aimed at studying the technology, methods of data storage, management and processing in cloud computing. The focus is on various cloud database models, deployment methods, architecture, and security. Students master cloud application development technologies, distributed systems, and the concept of cloud systems.	5						+	+			
48	Artificial intelligence tools in solving forecasting problems	The discipline is aimed at studying the basic principles, features of the construction and scope of predictive models, provides an overview and description of the classification and clustering of forecasting, domain analysis using forecasting methods and models in various tasks, and skills in choosing methods and tools of artificial intelligence to solve problems, depending on the characteristics of the domain.	5										+

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			discipline will help you understand the concepts and technologies related to big data, which are used for data processing and analysis.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

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Educational program		Edition 4											
	applications (iOS and Android)	design. Students learn the lifecycle of applications, creating a user interface, working with files, databases, geolocation, and telephony. The discipline provides practical skills in programming, testing and optimizing mobile applications, as well as the use of development tools.											
60	Design and development of information system architectures	The course is aimed at studying the principles of designing and creating the architecture of information systems, including the choice of technologies, components and methods of their integration. Students will get acquainted with design methodologies, learn how to develop scalable, efficient and secure architectures, as well as solve problems of optimizing and ensuring the reliability of information systems.	5										
61	Robotics and IoT technologies	The discipline studies the design, development and control of robots, as well as the integration of Internet of Things devices. Students learn how sensors, actuators, and microcontrollers work, and apply their knowledge to create smart solutions in various fields.	5										
Minor													
62	Enterprise economics	The course is aimed at studying basic knowledge in the field of economics of enterprises and organizations, forms of production organization and evaluation of their effectiveness, issues of determining the size and direction of rational use of production resources, as well as mastering the skills to operate economic indicators, analyze situations and propose effective strategies for solving economic problems of enterprises, taking into account the specifics of their functioning in modern market conditions.	5										
63	Economic analysis	Formation of analytical, creative thinking through obtaining a holistic view of economic analysis as an essential function of the management of organizations, understanding and understanding the main methods of economic analysis and their application at various stages of the process of development and decision-making, acquiring practical skills in the analysis and assessment of various areas of production and economic activity, financial and	5										

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	investment activities of the organization.				
64	Economic risks at enterprises	The discipline develops the ability to apply economic and mathematical models to analyze and assess the risks of an enterprise, which makes it possible to make informed management decisions. Students study methods of risk modeling, including the use of software tools, and master the techniques of formalized presentation of risk assessment tasks used in the real practice of managing economic risks in an enterprise.	5		+

8 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	He applies economic, legal, and financial literacy, sustainable development, and life safety principles in his professional activities, using key economic and legal principles, analyzing financial risks and their impact on quality of life, demonstrating civic responsibility and responsible behavior.	Testing, presentation, essay, calculation assignment, practical work, report	Test questions, blitz survey, solving practical problems, preparing a report, defending a presentation, writing an essay
LO2	Solves professional tasks in the field of information systems and technologies, applying the rules and methods of mathematical and natural sciences.	Control tasks, simulation model development, presentation, testing	System analysis, simulation modeling methods, mathematical modeling methods, geometric transformation method, test tasks
LO3	Designs simple neural networks to solve given tasks, applying the basic concepts and components of neural networks, manages the processes of creating and using information services.	Presentation, testing, project activity, modeling, discussion	Test tasks, interactive project preparation, model building, lecture, demonstration method, practical teaching method, group work.
LO4	Ensures the system security of the organization, information security at the enterprise, using modern methods of information protection.	Presentation, research work, creative work, independent work, control work, case task	Interactive lecture, test tasks, demonstration method, practical teaching method, group work, solving practical tasks and cases.

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LO5	Applies modern algorithms, methods and technologies in the design and development of software	Testing, control work, software product/project, practical tasks, case task	Test tasks, interactive lecture, demonstration method, practical teaching method, group work, problem solving, analysis of specific situations.
LO6	It uses various platforms and programming languages, analyzing the results of the program code.	Software product/project, testing, written control, practical tasks, case task, computational and graphical task.	Project preparation, methods of analogy, measurement, control, visualization, analysis of specific situations, solving practical problems
LO7	It uses prototypes of an intelligent system based on existing artificial intelligence models using programming languages.	Calculation and graphical task, testing, software product/ project, practical work, case task	Project preparation, test questions, interactive lecture, demonstration method, practical teaching method, problem solving, group work
LO8	Implements the development processes, requirements and fundamental principles of software construction, using modern algorithmic languages by implementing scalable applications based on modern libraries and frameworks.	Testing, calculation and graphical task, software product/project.	The use of virtual application programs for the design and calculation of systems.
LO9	Applies modern methods of designing and modeling software applications and information systems.	Calculation and graphical task, testing, software product/project, practical work	Interactive lecture, project preparation, demonstration method, practical teaching method, tests, group work
LO10	Based on scientific research, he uses quantitative and qualitative analysis methods in the work of analytical systems and robotic equipment, artificial intelligence and neural networks in making managerial decisions.	Calculation and graphical task, testing, software product/project, practical work	Using virtual application programs for system design and calculation, project preparation, problem solving, test questions
LO11	Analyzes economic indicators, offering effective strategies for solving economic problems of enterprises, using basic methods of analysis and evaluation using software tools.	Assignment, discussion, test, presentation, essay.	Interactive lecture, brainstorming, completing control tasks, defending a presentation, writing an essay

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

Name of the professional standards used	Professions at level 6 of the SQF	Labor functions	Tasks	Learning outcomes for the educational program
Artificial Intelligence application Development	Software Designer	LF1. Software Design		LO 6, LO 9
		LF2. Software programming and testing		LO 6, LO 9
System and network administration	Specialist in system network and administration	LF4. Ensuring the organization's system security		LO 3, LO 4
Software development	Application Programmer	LF1. Development and software implementation of an artificial intelligence system	Task 1: Development of the system structure and on-screen interface forms.	LO 8, LO 9
		LF2. Development of technical documents addressed to an artificial intelligence specialist	Task 2: Implementation of an artificial intelligence system and its debugging.	LO 8, LO 9
			Task 1: Description of information and mathematical models.	LO 8, LO 9
		LF3. Prototyping and testing of artificial intelligence systems	Task 2: Description of technical solutions from the point of view of an artificial intelligence specialist	LO 8, LO 9
			Task 1: Implementation of artificial intelligence system prototypes	LO 8, LO 9
			Task 2: Testing prototypes of artificial intelligence systems	LO 8, LO 9
Artificial Intelligence Engineer	Artificial Intelligence Engineer	LF1. Implementation of artificial intelligence systems	Task 1: Development of an intelligent system project	LO 7, LO 8, LO 9
			Task 3: Software implementation of an intelligent system	LO 7, LO 8, LO 9
		LF2. Guidance on expert system development techniques		LO 7, LO 8, LO 9

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10 Graduate model

GRADUATE MODEL			
Competencies (soft skills, digital skills)			
Attributes of a graduate	Knowledge	Skills	
- Deep knowledge in the field of AI - Programming skills - Analytical thinking - Experience working with big data and computing systems - Knowledge of ethical and legal aspects of AI	- Technologies of interpersonal and group communication in business interaction. - The design and functioning of modern intelligent systems. - Functional specification formalization languages - Methods and techniques of algorithmization of assigned tasks - Algorithms for solving typical problems, areas and methods of their application. - Methods of managerial decision-making. - Principles of building the architecture of artificial intelligence systems - Methodologies and tools for designing artificial intelligence systems - Methods and tools for designing knowledge bases - Interface design methods and tools	- To form the customer's requirements for artificial intelligence systems - Develop, coordinate and approve the terms of reference for the creation of artificial intelligence systems - Develop documentation for the artificial intelligence system and its parts. - Prepare analytical reports - Modeling of fuzzy sets, fuzzy logic - Develop prototypes of expert systems - Develop a hierarchical management system for expert systems - To develop generalized and detailed algorithms that implement a mathematical model on the developed data structures	
Professional standard			
Development of artificial intelligence applications. System and network administration. Software development.			
Professional skills (hard skills)			
- Apply regulatory and technical documents (standards and regulations) on the process of developing the architecture of an intelligent system - Apply interface design methods and tools - Apply the principles of building the architecture of artificial intelligence systems and types of architectures of artificial intelligence systems - Apply methodologies and tools for designing artificial intelligence systems - Use methods and techniques of algorithmization of assigned tasks - Develop menu structures, on-screen forms, and controls on on-screen forms. - Develop graphic design of user interfaces			

Типік оқу жоспары/ Типичный учебный план/ Typical curriculum

[illegible]

Module № 3		Бардыгы модуль боюнча / Total for module															Бардыгы модуль боюнча / Total for module	
Module № 3		Алгоритмизация и языки программирования / Algorithmization and programming languages															Алгоритмизация и языки программирования / Algorithmization and programming languages	
Экономика, кәсіпкерлік, құқық және қаржылық сауаттылық модулі (экономика және кәсіпкерліктің негіздері, құқық негіздері және сыйбайлас жеңілдіктер мен заңдар)	ЖБП (ЖК) ООД (БК) GED (UC)	MERPPG 1107-25 MERPPG 1107-25 MERPPG 1107-25	2	5	150	45	30	15	15	90	2+1+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Модуль экономика, предпринимательства, права и финансовой грамотности основы экономики и предпринимательства, основы права и антикоррупционная культура, основы финансовой грамотности	БП (ЖК) БД (БК) BD (UC)	UREBZh 3207-25 UREBZh 3207-25 UREBZh 3207-25	6	5	150	45	30	15	15	90	2+1+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Module of economics, entrepreneurship, law and financial literacy (fundamentals of economics and entrepreneurship, basics of law and anti-corruption culture, basics of financial literacy)	БП (ЖК) БД (БК) BD (UC)	ONP 3323-25 ONP 3323-25 ONP 3323-25	6	5	150	45	15	30	15	90	1+2+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Тұрақты даму, экология және тіршілік қауіпсіздігі	БП (ЖК) БД (БК) BD (UC)	UREBZh 3207-25 UREBZh 3207-25 UREBZh 3207-25	6	5	150	45	30	15	15	90	2+1+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Устойчивое развитие, экология и безопасность жизнедеятельности	БП (ЖК) БД (БК) BD (UC)	UREBZh 3207-25 UREBZh 3207-25 UREBZh 3207-25	6	5	150	45	30	15	15	90	2+1+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Sustainable development, ecology and life safety	БП (ЖК) БД (БК) BD (UC)	ONP 3323-25 ONP 3323-25 ONP 3323-25	6	5	150	45	15	30	15	90	1+2+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Ғылыми зерттеулердің негіздері	БП (ЖК) БД (БК) BD (UC)	ONP 3323-25 ONP 3323-25 ONP 3323-25	6	5	150	45	15	30	15	90	1+2+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Основы научных исследований	БП (ЖК) БД (БК) BD (UC)	ONP 3323-25 ONP 3323-25 ONP 3323-25	6	5	150	45	15	30	15	90	1+2+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Fundamentals of scientific research	БП (ЖК) БД (БК) BD (UC)	ONP 3323-25 ONP 3323-25 ONP 3323-25	6	5	150	45	15	30	15	90	1+2+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Module № 4		Алгоритмизация и языки программирования / Algorithmization and programming languages															Алгоритмизация и языки программирования / Algorithmization and programming languages	
Алгоритмдер, компьютер құрылымы және бағдарламалау (C/C++)	БП (ЖК) БД (БК) BD (UC)	ASDIP 1204-25 ASDIP 1204-25 ASDIP 1204-25	1	4	120	45	15	30	15	60	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Алгоритмы, структуры данных и программирование (C/C++)	БП (ЖК) БД (БК) BD (UC)	ASDIP 1204-25 ASDIP 1204-25 ASDIP 1204-25	1	4	120	45	15	30	15	60	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Algorithms, data structures, and programming (C/C++)	БП (ЖК) БД (БК) BD (UC)	ASDIP 1204-25 ASDIP 1204-25 ASDIP 1204-25	1	4	120	45	15	30	15	60	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Python тілінде бағдарламалау негіздері	БП (ЖК) БД (БК) BD (UC)	OPYAP 1202-25 OPYAP 1202-25 OPYAP 1202-25	1	4	120	45	15	30	15	60	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Основы программирования на языке Python	БП (ЖК) БД (БК) BD (UC)	OPYAP 1202-25 OPYAP 1202-25 OPYAP 1202-25	1	4	120	45	15	30	15	60	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Basics of programming in a language Python	БП (ЖК) БД (БК) BD (UC)	OPYAP 1202-25 OPYAP 1202-25 OPYAP 1202-25	1	4	120	45	15	30	15	60	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Бағдарламалауын заманауи әдістер мен құралдары	БП (ЖК) БД (БК) BD (UC)	SMISP 1202-25 SMISP 1202-25 SMISP 1202-25	1	4	120	45	15	30	15	60	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Современные методы и средства программирования	БП (ЖК) БД (БК) BD (UC)	SMISP 1202-25 SMISP 1202-25 SMISP 1202-25	1	4	120	45	15	30	15	60	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Modern programming methods and tools	БП (ЖК) БД (БК) BD (UC)	SMISP 1202-25 SMISP 1202-25 SMISP 1202-25	1	4	120	45	15	30	15	60	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Оқу практикасы	БП (ЖК) БД (БК) BD (UC)	UP 25 UP 25 UP 25	2	2	60	0					2 апта / week						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Учебная практика	БП (ЖК) БД (БК) BD (UC)	UP 25 UP 25 UP 25	2	2	60	0					2 апта / week						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Edicational practice	БП (ЖК) БД (БК) BD (UC)	UP 25 UP 25 UP 25	2	2	60	0					2 апта / week						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Визуалды бағдарламалау	БП (ЖК) БД (БК) BD (UC)	BP 2207-25 BP 2207-25 BP 2207-25	3	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Визуальное программирование	БП (ЖК) БД (БК) BD (UC)	BP 2207-25 BP 2207-25 BP 2207-25	3	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Visual programming	БП (ЖК) БД (БК) BD (UC)	BP 2207-25 BP 2207-25 BP 2207-25	3	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Web бағдарламалау	БП (ЖК) БД (БК) BD (UC)	WP 2207-25 WP 2207-25 WP 2207-25	3	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Web programming	БП (ЖК) БД (БК) BD (UC)	WP 2207-25 WP 2207-25 WP 2207-25	3	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Web programming	БП (ЖК) БД (БК) BD (UC)	WP 2207-25 WP 2207-25 WP 2207-25	3	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Кросс-платформалық бағдарламалау	БП (ЖК) БД (БК) BD (UC)	KPP 2209-25 KPP 2209-25 KPP 2209-25	3	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Кросс-платформенное программирование	БП (ЖК) БД (БК) BD (UC)	KPP 2209-25 KPP 2209-25 KPP 2209-25	3	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Cross-platform programming	БП (ЖК) БД (БК) BD (UC)	KPP 2209-25 KPP 2209-25 KPP 2209-25	3	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Озық Python	БП (ЖК) БД (БК) BD (UC)	PP 2209-25 PP 2209-25 PP 2209-25	3	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Advanced Python	БП (ЖК) БД (БК) BD (UC)	PP 2209-25 PP 2209-25 PP 2209-25	3	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Объектіне бағытталған бағдарламалау (Java)	БП (ЖК) БД (БК) BD (UC)	OOP 3214-25 OOP 3214-25 OOP 3214-25	5	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Объектно-ориентированное программирование (Java)	БП (ЖК) БД (БК) BD (UC)	OOP 3214-25 OOP 3214-25 OOP 3214-25	5	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Желілік әкімшілендіру	БП (ЖК) БД (БК) BD (UC)	SA 3214-25 SA 3214-25 SA 3214-25	5	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Сетевое администрирование	БП (ЖК) БД (БК) BD (UC)	SA 3214-25 SA 3214-25 SA 3214-25	5	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Network administration	БП (ЖК) БД (БК) BD (UC)	SA 3214-25 SA 3214-25 SA 3214-25	5	5	150	45	15	30	15	90	1+0+2						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Module № 5		Математика / Mathematics															Математика / Mathematics	
Сызықтық алгебра	БП (ЖК) БД (БК) BD (UC)	LA 1204-25 LA 1204-25 LA 1204-25	1	5	150	45	15	30	15	90	1+2+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Linear algebra	БП (ЖК) БД (БК) BD (UC)	LA 1204-25 LA 1204-25 LA 1204-25	1	5	150	45	15	30	15	90	1+2+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Математикалық талдау	БП (ЖК) БД (БК) BD (UC)	MA 1205-25 MA 1205-25 MA 1205-25	2	6	180	60	30	30	15	105	2+2+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Mathematical analysis	БП (ЖК) БД (БК) BD (UC)	MA 1205-25 MA 1205-25 MA 1205-25	2	6	180	60	30	30	15	105	2+2+0						Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Сандық әдістер	БП (ЖК) БД (БК) BD (UC)	ChM 2206-25 ChM 2206-25 ChM 2206-25															Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Численные методы	БП (ЖК) БД (БК) BD (UC)	ChM 2206-25 ChM 2206-25 ChM 2206-25															Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module
Numerical methods	БП (ЖК) БД (БК) BD (UC)	ChM 2206-25 ChM 2206-25 ChM 2206-25															Бардыгы модуль боюнча / Total for module	Бардыгы модуль боюнча / Total for module

[illegible]

ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ

на образовательную программу 6B06155 - «Искусственный интеллект» АО «Казахский университет технологии и бизнеса»

Образовательная программа (далее ОП) 6B06155 - «Искусственный интеллект», реализуемая в АО «Казахский университет технологии и бизнеса» (бакалавриат), представляет собой систему учебно-методических документов, регламентирующих цели, ожидаемые результаты, содержание, условия и технологии реализации образовательного процесса, систему оценки качества подготовки выпускника и соответствует нормативно-правовым актам МОН РК.

ОП разработана и утверждена на основании требований Государственных общеобязательных стандартов высшего и послевузовского образования (Приказ МОН РК от 31.10.2018 г. № 604, Приложение 5).

Целью ОП 6B06155 - «Искусственный интеллект» (бакалавриат) является подготовка квалифицированных специалистов, владеющих современными технологиями и методами интеллектуальной обработки и анализа данных в области искусственного интеллекта, обладающих знаниями и практическими навыками, отвечающих современным требованиям к качеству специалистов с высшим образованием.

В образовательной программе 6B06155 - «Искусственный интеллект» (бакалавриат) объем теоретической подготовки позволяет обеспечить уровень, соответствующий требованиям к уровню подготовки студентов на основе Дублинских дескрипторов первого уровня высшего образования (бакалавриат) и отражают освоенные компетенции, выраженные в достигнутых результатах обучения.

Образовательная программа 6B06155 - «Искусственный интеллект» (бакалавриат) имеет достаточное кадровое, учебно-методическое, информационное и материально-техническое обеспечение, необходимое для подготовки высококвалифицированных специалистов.

Реализация образовательной программы обеспечивается квалифицированными педагогическими кадрами, занимающимися научной и научно-методической деятельностью. К преподаванию дисциплин профессионального цикла привлечены преподаватели, 50 % которых имеют ученые степени и ученые звания.

Образовательная программа включает следующие ключевые модули 6B06155 - «Искусственный интеллект» (бакалавриат): «Математика», «Системы искусственного интеллекта», «Архитектура нейронных сетей и глубокое обучение», обеспечивают теоретическую и практическую подготовку высококвалифицированных специалистов в области искусственного интеллекта, а также способность к обобщению и анализу, постановке целей и выбору путей ее достижения при проектировании программного обеспечения и автоматизации информационных процессов.

Практические навыки применения современных инструментов моделирования с использованием прикладных компьютерных программ и систем проектирования обеспечивают дисциплины: «Организация компьютера», «Компьютерные сети и защита информации».

Модуль «Алгоритмизация и программирование», «Анализ данных и обработка базы данных» обеспечивают освоение основ работы с большими данными (big data) и технологий, применяемых для их обработки, умение проектировать и создавать базы данных, включая определение схемы, таблиц и отношений.

Дисциплины Современные методы и средства программирования, Продвинутой Python, Объектно-ориентированное программирование (Java), Современные инструменты и технологии интеллектуального анализа данных обеспечивают освоение современных методов и инструментов соответствующих модели компетенций бакалавра ОП 6B06155 - «Искусственный интеллект»:

- Применяет современные методы построения и анализа алгоритмов, а также методов оценки их сложности, средства языка программирования и специфики реализации многопоточности (многозадачности) процесса разработки ПО,

- знает парадигмы модульного и объектно-ориентированного программирования, создает и настраивает масштабируемые Web - приложения на базе современных библиотек и фреймворков, устанавливает взаимосвязь с сервером. На основании приведенной экспертизы можно сделать следующие выводы:

- представленная к рассмотрению программа отвечает требованиям ГОСО РК;
- структурные элементы программы реализуются с учетом компетентного подхода;
- дисциплины учебного плана логически отражают содержание профиля подготовки с учетом междисциплинарных связей;
- Учебно-методическое обеспечение представлено рабочими программами дисциплин, аннотациями рабочих программ дисциплин, фондами оценочных средств дисциплин, разработанными программами практик и итоговой государственной аттестации;
- характеристики среды вуза и факультета позволяют обеспечить развитие общекультурных компетенций выпускника.

Предложения по совершенствованию образовательной программы:
Искусственный интеллект (ИИ) быстро превратился из футуристической концепции в ключевой элемент нашей повседневной жизни. Эта трансформация во многом обусловлена достижениями в области технологий искусственного интеллекта, которые произвели революцию в различных отраслях, учитывая постоянную динамику изменения методов и средств, рекомендуется обновлять элективные дисциплины на 10-20% в соответствии с компетенциями выпускника по ОП 6B06155 - «Искусственный интеллект» (бакалавриат) и требованиями рыночной экономики и спросом работодателей.

- Включить дисциплину, посвященные этике и безопасности в ИИ, чтобы студенты осознавали возможные риски и ответственность при разработке и применении технологий.
- Сформировать дисциплину, которая объединяет науки о данных, программирование и этику, чтобы студенты могли понимать не только технические аспекты, но и социальные последствия использования ИИ.

Выводы:

- Образовательная программа рекомендуется к использованию в учебном процессе;
- Структура и содержание образовательной программы 6B06155 - «Искусственный интеллект» (бакалавриат) имеет направленность на удовлетворение потребностям рынка труда и работодателей, соответствует аналогичным программам бакалавриата Европейского образовательного пространства и позволяет достичь ожидаемых результатов обучения.

ТОО "Arta Software"
Ген.директор
Дата:



Абилева А.А.

ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ

на образовательную программу 6B06155 - «Искусственный интеллект» АО «Казахский университет технологии и бизнеса»

Образовательная программа (далее ОП) 6B06155 - «Искусственный интеллект», реализуемая в АО «Казахский университет технологии и бизнеса» (бакалавриат), представляет собой систему учебно-методических документов, регламентирующих цели, ожидаемые результаты, содержание, условия и технологии реализации образовательного процесса, систему оценки качества подготовки выпускника и соответствует нормативно-правовым актам МОН РК.

ОП разработана и утверждена на основании требований Государственных общеобязательных стандартов высшего и послевузовского образования (Приказ МОН РК от 31.10. 2018 г. № 604, Приложение 5).

Целью ОП 6B06155 - «Искусственный интеллект» (бакалавриат) является подготовка квалифицированных специалистов, владеющих современными технологиями и методами интеллектуальной обработки и анализа данных в области искусственного интеллекта, обладающих знаниями и практическими навыками, отвечающих современным требованиям к качеству специалистов с высшим образованием.

Область искусственного интеллекта быстро развивается, как и сфера образования в области ИИ.

Несколько новых технологий проникают в образование в области искусственного интеллекта, улучшая учебный процесс и лучше подготавливая учащихся к реальным приложениям.

Помимо теоретических знаний, Образовательная программа подчеркивает практические навыки посредством практических проектов и реальных приложений. Эти практические компоненты помогают обучающимся применить полученные знания и подготовить их к карьере в области искусственного интеллекта.

Описание и оценка структуры образовательной программы.

Структура ОП включает следующие компоненты:

цикл общеобразовательных дисциплин - (56 кредитов);

цикл базовых дисциплин - (84 кредита);

цикл профилирующих дисциплин- 70 кредитов);

профессиональную практику - (22 кредита);

итоговую аттестацию- (8 кредитов);

общее количество кредитов составляет 240.

Предложения по совершенствованию образовательной программы:

Искусственный интеллект (ИИ) – это не просто модное слово; это преобразующая сила, меняющая отрасли промышленности, экономику и повседневную жизнь. От понимания основ искусственного интеллекта и его применения до выбора правильного образовательного пути и продвижения по карьерной лестнице — каждый шаг жизненно важен для успеха в сфере искусственного интеллекта.

рекомендуется обновлять элективные дисциплины на 10-20% в соответствии с компетенциями выпускника по ОП 6B06155 - «Искусственный интеллект » (бакалавриат) и требованиями рыночной экономики и спросом работодателей.

- Включить дисциплину, **Теория принятия решений**, чтобы студенты осознавали
- Включить дисциплину **Технологии виртуальной и дополненной реальности, AR и VR** технологии обеспечивают захватывающий опыт обучения, позволяя учащимся взаимодействовать с концепциями искусственного интеллекта в виртуальной среде.

Выводы:

Образование в области искусственного интеллекта необходимо для того, чтобы оставаться конкурентоспособным на современном рынке труда, стимулировать инновации и решать сложные проблемы в различных отраслях.

- Образовательная программа рекомендуется к использованию в учебном процессе;

- Структура и содержание образовательной программы 6B06155 - «Искусственный интеллект» (бакалавриат) имеет направленность на удовлетворение потребностям рынка труда и работодателей, соответствует аналогичным программам бакалавриата Европейского образовательного пространства и позволяет достичь ожидаемых результатов обучения.

Менеджер ИТ
Международный
научно-технический
центр



Шаяхметов И. Х.

Дата: _____