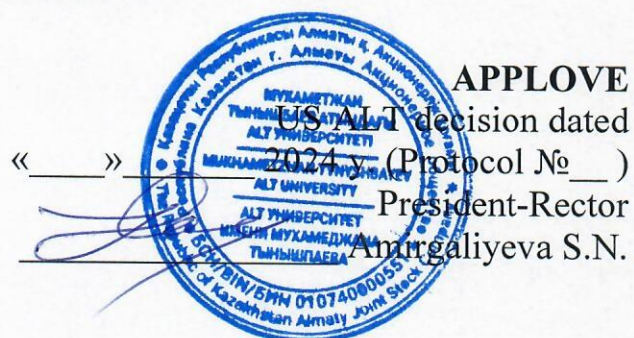


Joint Stock Company «Mukhametzhan Tynyshbayev ALT University»



EDUCATIONAL PROGRAM

Name: «6B06126 - APPLIED ARTIFICIAL INTELLIGENCE»

Level of training: bachelor's degree

Code and classification of areas of study: 6B061-Information and Communication Technologies

Code and group of educational programs: B057 - Information technology

Date of registration in the Register: 03.12.2021

Registration number: 6B06100331

Almaty, 2024

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1. INFORMATION ABOUT CONSIDERATION, APPROVAL AND APPROVAL OF THE PROGRAM, DEVELOPERS, EXPERTS AND REVIEWERS

1 DESIGNED BY:

Head of the Department of ICT,
assistant professor
(job title)


(signature)

Kasymova D.T.
(full name)

Director of "СкайМедАй" LLP, PhD
(job title)


(signature)

Pak A. A.
(full name)

Teaching assistant
(job title)


(signature)

Blen Zh.Zh.
(full name)

Student gr. IS
(job title)


(signature)

Bekbayev A. E.
(full name)

2 EXPERTS:

Deputy General Director of IIVT KN
MNVO RK
(job title)


(signature)

Mamyrbayev O.Zh.
(full name)

Head of "Information technologies and
Internet networks" service of
Almatytranstelecom JSC
(job title)


(signature)

Razbekov A.
(full name)

3 REVIEWERS:

General Director of "RTEL Group"
(job title)


(signature)

Bekenov E.E.
(full name)

Director of "Research&Development
Systems"
(job title)


(signature)

Sabyruly B.
(full name)

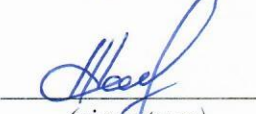
4 REVIEWED AND RECOMMENDED:

Meeting of the AC (department) "ICT"
Protocol №. 8a, "22" 04 2024 y.


(signature)

Kasymova D.T.
(full name)

Meeting of QACEMB "A&T"
Protocol №. 8a, "23" 04 2024 y.


(signature)

Toygozhinova A.T.
(full name)

Meeting of SMA
Protocol №. 4a, "24" 04 2024 y.


(signature)

Zharmagambetova M.S.
(full name)

5 APPLIED by the decision of the Academic Council dated «___» ____ 2024 y. №___

6 NEW EP 14.05.2024 y.

2. REGULATORY REFERENCES

The educational program is developed on the basis of the following legal acts and professional standards:

1. Law of the Republic of Kazakhstan «On Education» dated July 27, 2007 №319-III (as amended and supplemented as of March 27, 2023).
2. The National Qualifications Framework, approved by the protocol of March 16, 2016, by the Republican Tripartite Commission on Social Partnership and the Regulation of Social and Labor Relations.
3. Sectoral Qualifications Framework for the «Education» sphere, approved by the protocol of the meeting of the sectoral commission of the Ministry of Education and Science of the Republic of Kazakhstan on social partnership and regulation of social and labor relations in the field of education and science dated November 27, 2019 №3.
4. State obligatory standard of higher and postgraduate education (Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated February 20, 2023 №66).
5. Qualification directory of positions of managers, specialists and other employees, approved by order of the Minister of Labor and Social protection of the population of the Republic of Kazakhstan dated August 12, 2022 №309.
6. Rules for organizing the educational process on credit technology of education in organizations of higher and (or) postgraduate education, approved by Order of the Minister of the Ministry of Education and Science of the Republic of Kazakhstan №152 dated April 20, 2011 (with additions and changes dated April 04, 2023 №145).
7. The classifier of areas for training personnel with higher and postgraduate education, approved by order of the Minister of Education and Science of the Republic of Kazakhstan dated October 13, 2018 №569 (as amended and supplemented as of June 05, 2020).
8. The algorithm for including and excluding educational programs in the Register of educational programs of higher and postgraduate education, approved by the Order of the Minister of Education and Science of the Republic of Kazakhstan dated December 4, 2018 №665 (with additions and changes as of December 23, 2020 №536).
9. RI-ALT-33 «Regulations on the procedure for developing an educational program for higher and postgraduate education».
10. Professional standard: "Ensuring the security of information infrastructure and IT", NCE RK "Atameken", approved by order dated 05.12.2022
11. Professional standard: "Infrastructure of computer systems", NCE RK "Atameken", approved by Order №259 dated 05.12.2022
12. Professional standard: "Creation and management of information technologies", NCE RK "Atameken", approved by Order №259 dated 12/24/2019.

3. PASSPORT OF THE EDUCATIONAL PROGRAM

№	Field name	Note
1	Registration number	6B06100287
2	Code and classification of the field of education	6B06 Information and Communication Technology
3	Code and classification of areas of study	6B061 - Information and communication technologies
4	Code and group of educational programs	B057 - Information technology
5	Name of the educational program	6B06126 - Applied Artificial Intelligence
6	EP type	Current
7	EP purpose	Training of specialists with the necessary competencies for the operation of modern systems based on artificial intelligence and for the development of new AI-based systems in the professional training system.
8	ISCED level	6
9	Level on NQF	6
10	Level on SQF	6
11	EP distinctive features	No
	Partner Higher education institution (joint educational program)	-
	Partner higher education institution (two-degree educational program)	-
12	Form of training	Full-time, full-time with transfer to FT
13	Language of education	Kazakh, Russian
14	Volume of the credits	240
15	Awarded Academic Degree	Bachelor in Information and Communication Technologies in the educational program "6B06126 - Applied Artificial Intelligence"
16	Availability of an appendix to the license for the direction of training	№KZ12LAA00025205 dated 04.03.2021
17	EP accreditation existence	
	Name of the accreditation body	
	Validity period of accreditation	

4. COMPETENCE MODEL OF A GRADUATE

Objectives of the educational program:

1. Formation of a personality capable of self-improvement and professional growth with versatile humanitarian and natural science knowledge and interests.
2. Formation in graduates of the ability to critically rethink the accumulated experience, change, if necessary, the profile of their professional activities, awareness of the social significance of their future profession, and high motivation to perform professional activities.
3. Formation of graduates' readiness for organizational and administrative activities, the ability to find a compromise between various requirements (cost, quality, safety and deadlines) in long-term and short-term planning and make optimal decisions in the field of modernization, operation and repair of modern telecommunications systems, information technology and radio engineering means, to own the culture of technical thinking.
4. Formation of the ability to generalize, analyze, perceive information, set a goal and choose ways to achieve it.
5. To form a system of knowledge, skills and experience necessary for the implementation of professional competencies in the field of information technology and artificial intelligence..
6. Formation of culture in graduates application of the basics of computer science and programming in the design, assembly and testing of software products.
7. Formation of graduates' readiness for research activities, the use of modern software applications for processing the results of experimental and theoretical studies.

Learning outcomes:

LO1 - Apply the fundamental knowledge gained in the field of mathematical and (or) natural sciences and use them in professional activities.

LO2 - To investigate methods of data processing and solving scientific and technical problems using mathematical models using the theory of forecasting and decision-making, neural network technologies.

LO3 - To model reliable methods of information protection in the development of intelligent expert systems and in cloud services.

LO4 - To model research tasks and develop new tools and applications for the collection, storage, analysis of big data and optimal data management.

LO5 - Classify and identify artificial intelligence tasks, choose adequate methods and tools for solving artificial intelligence problems.

LO6 - To develop and test software for solving various applied tasks of artificial intelligence using modern tools and programming languages.

LO7 - Understand the principles of operation of hardware and software tools for developing models of local, regional and global computer networks and cloud computing with processing large amounts of data.

LO8 - Apply skills in the development and support of neural network models and machine learning methods to solve problems.

LO9 - Apply skills in the implementation of one or more end-to-end digital subtechnologies of artificial intelligence.

LO10 - Compare the principles of functioning of various telecommunications networks built using the Arduino complex and programming in the Arduino IDE development environment, which has passed software quality control.

LO11 - Plan and implement your own professional and personal development using knowledge on financial literacy and critical thinking in various life situations.

LO12 - Apply decision-making skills in issues related to the field of information systems, taking into account the basic laws of the functioning and development of nature and society,

socio-economic, socio-legal, ethical, political aspects and using linguistic knowledge to solve problems in an interdisciplinary and multilingual environment.

Area of professional activity: Programming languages in solving artificial intelligence problems, mathematical models, algorithms, numerical methods, applied software, computing and programming technologies, information storage and processing technologies.

Objects of professional activity:

- artificial intelligence systems and technologies for the development of intelligent systems;
- methods and technologies for the use of artificial neural networks;
- methods and technologies for the development of system and application software;
- data mining and big data processing technologies;
- information systems and their research by methods of mathematical forecasting and system analysis;
- high-performance computing and parallel programming technologies;
- methods and systems of decision-making and decision support;
- application software;
- applied mathematics.

Types of professional activity:

- production and technological;
- service and operational;
- organizational and managerial;
- settlement and design;
- experimental and analytical.

Functions of professional activity:

A bachelor, in accordance with basic and specialized training, can perform the following functions at the objects of professional activity:

- machine learning;
- computer vision;
- natural language processing;
- speech recognition and synthesis;
- intelligent decision support;
- testing of programs and systems;

List of specialist positions:

- an artificial intelligence engineer;
- developer of recommendation systems;
- Data Mining Specialist;
- Software developers and WEB and multimedia application testing specialists;
- Big Data specialist;
- digital marketer;
- robotics engineer;
- Natural Language Processing Engineer (NLP);
- development of artificial intelligence applications;
- Research associate;
- software development;
- software testing;
- database architect.

Professional certificates received at the end of training: Cisco certificates:

- CCENT (Cisco Certified Entry Networking Technician) - certified network technology technician;
- CCNA Routing and Switching (Cisco Certified Network Associate) - a certified specialist in routing and switching;
- CCNA Security - Certified Network Security Specialist;
- CCNA VoIP - certified specialist in IP-telephony;
- CCNA Wi-Fi - Certified Wireless Network Specialist.

Requirements for the previous level of education: general secondary, technical and vocational, post-secondary, higher education (bachelor's degree).

In the process of training, students undergo various types of professional practice:

- educational;
- production;
- undergraduate.

Educational practice.

During the internship, students should get an idea of the role of transport equipment in the country's economy, the variety of vehicles, the importance of mechanization and automation in increasing labor productivity, as well as an idea of the main technological processes of operation, maintenance and repair of transport equipment and technology of transport enterprises.

Production practice 1.

During the period of industrial practice, the student receives certain practical knowledge, skills and abilities according to the chosen educational program.

The objectives of the production practice are: deepening and consolidating the theoretical knowledge gained in the learning process; obtaining skills for the practical use of professional knowledge gained during the period of theoretical training; training in skills for solving practical and managerial problems; acquaintance with the specifics of the professional activity of a bachelor in a particular production; formation of a professional position of a specialist, style of behavior, development of professional ethics.

The tasks of industrial practice are to consolidate, deepen and systematize the knowledge gained in the study of theoretical basic and major disciplines at a particular enterprise or organization and to acquire initial practical experience.

Production practice 2.

The content of the pre-graduate practice is determined by the topic of the thesis (project). During the pre-graduate practice, the student collects factual material about the production (professional) activities of the enterprise (organization) and uses it in the development of the graduation project (work). The practice involves working out a given problem (the topic of the thesis) on the materials of the activities of a particular enterprise (organization) with the student's independent formulation of conclusions, suggestions, recommendations, etc. In the course of practice, the student must demonstrate his knowledge and skills of a specialist, organizational skills, decision-making skills, performance discipline, responsibility, initiative.

Final certification it is carried out in the form of writing and defending a thesis (project) or preparing and passing a comprehensive exam. The purpose of the final certification is to evaluate the learning outcomes and the acquired competencies achieved upon completion of the study of the educational program of higher education.

The thesis (project) aims to identify and evaluate the analytical and research abilities of the graduate and is a generalization of the results of the student's independent study of an urgent problem in the field of his chosen specialty. The program of the comprehensive exam reflects the integrated knowledge and key competencies that meet the requirements of the labor market in accordance with the educational program of higher education .

5. MATRIX OF CORRELATION OF LEARNING OUTCOMES IN THE EDUCATIONAL PROGRAM WITH EDUCATIONAL DISCIPLINES / MODULES

№	Name of the discipline	Number of credits	Matrix for correlating learning outcomes in an educational program with academic disciplines												
			LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	History of Kazakhstan	5												+	
2	Philosophy	5												+	
3	Foreign language	10												+	
4	Kazakh (Russian) language	10												+	
5	Information and Communication Technologies	5												+	
Socio-Political Knowledge Module		8													
6	Sociology	2												+	
7	Culturology	2												+	
8	Political science	2												+	
9	Psychology	2												+	
10	Physical Culture	8												+	
University component module		5													
11	Ecology and life safety	3													+
12	Scientific research methods	2													+
13	Economics and business activities	3													+
14	Basics of law and anti-corruption culture	3													+
15	Engineering Mathematics 1	4	+												
16	Engineering Mathematics 2	5	+												
17	Applied Physics 1	5	+												
18	Applied Physics 2	4	+												
19	Labor protection	6													+
20	Discrete mathematics for programmers	6			+		+								
21	Computer and engineering modeling	6		+											
22	Simulation modeling	6		+											
23	Algorithms and data structures	9				+									
24	Cyber security	6			+										
25	Educational practice	2			+	+		+							
26	Fundamentals of Computer Networks and Telecommunications (Cisco+Huawei)	6								+					

27	Cloud Infrastructure Fundamentals	6			+				+				
28	Robot control systems	6										+	
29	Software testing	6						+			+		
30	Game design and game design	6										+	
31	Image processing and recognition methods	6										+	
32	Supercomputer technologies for modeling distributed systems and processes	6											
33	Basics of text processing	6	+									+	
34	Object Oriented Programming	9						+					
35	Linux operating systems	9							+				
36	Databases	6											
37	Artificial intelligence technologies	6											
38	Methods of sound processing and recognition	6		+								+	
39	Deep machine learning	6											
40	Logical inference in artificial intelligence systems	9											
41	Cloud Computing	9											
42	Production practice 1	3											
43	Production practice 2	4		+	+	+	+	+	+	+	+	+	+
44	Java Programming	6											
45	Python Programming	6											
46	Intelligent data analysis methods	6											
47	AI in transport	6		+									
48	Big Data Technologies	9											
49	IT Project Management	9											
50	Managerial Economics	3											
51	Time Management	3											
52	Minor program 1	3											
53	Minor program 2	3											
54	Minor program 3	3											
55	Fundamentals of financial literacy	3											
56	Critical thinking	3											
57	Final certification	8	+	+	+	+	+	+	+	+	+	+	+

6. STRUCTURE OF THE BACHELOR EDUCATIONAL PROGRAM

№	Name of cycles of disciplines	General labor intensity	
		in academic hours	in academic credits
1	Cycle of general education disciplines (GED)	1680	56
1)	Required Component	1530	51
	History of Kazakhstan	150	5
	Philosophy	150	5
	Foreign language	300	10
	Kazakh (Russian) language	300	10
	Information and Communication Technologies	150	5
	Module of socio-political knowledge (sociology, political science, cultural studies, psychology)	240	8
	Physical Culture	240	8
2)	University component and (or) elective component	150	5
2	Cycle of basic and major disciplines (BD, PD)	not less than 5280	at least 176
1)	University component and (or) elective component		
2)	Professional practice		
3	Additional types of training (VET)		
1)	Selectable Component		
4	final examination	at least 240	at least 8
	Total	at least 7200	at least 240

7. WORKING CURRICULUM FOR THE WHOLE TERM OF TRAINING

JSC "Mukhametzhann Tynysbayev ALT University"

STUDY PLAN

Form of study: full-time

Direction of training:
6B061 Information and communication technologies

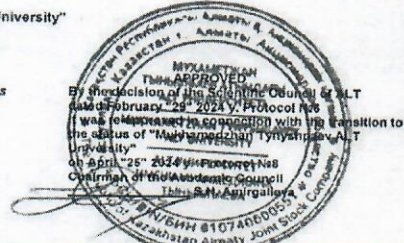
Duration of study: 3 years

Group of educational programs:
B057 - Information technology

Name of the educational program:
6B06126 - Applied Artificial Intelligence

Admission: 2024

Degree: bachelor of engineering and technology



№	Discipline code	Name of cycles and disciplines	Total labor intensity		Form of control, semester		The amount of study load, contact hours						Distribution by semester									Securing the chair										
			in academic hours	in academic credits	Exam	KF (KR)	Total hours	Classroom			IWSU			1 course			2 course			3 course												
								lectures	practical	laboratory	IWSUT	IWSU	10 weeks	10 weeks	10 weeks	10 weeks	10 weeks	10 weeks	10 weeks	10 weeks	10 weeks											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23										
CYCLE OF GENERAL EDUCATION DISCIPLINES (OOD):																																
M1 The module of general education competencies																																
1.1. Required component:																																
1.1.1	23-0-B-OK-K	History of Kazakhstan	150	5	2	150	30	15		8	97			5									SHDPE									
1.1.2	23-0-B-OK-F	Philosophy	150	5	0	150	30	15		8	97			5									SHDPE									
1.1.3	23-0-B-OK-FK	Physical education	240	8	4	240		88		32	120		2	2	2								SHDPE									
M2 Language competence module																																
1.1.4	23-0-B-OK-Ita	Foreign language	300	10	1.2	300		90		16	194		5	5									LT									
1.1.5	23-0-B-OK-KRIta	Kazakh (Russian) language2	300	10	1.2	300		90		16	194		5	5									LT									
M3 The module of socio-political competencies																																
1.1.6	23-0-B-OK-Sots	Sociology	240	8	5.5	240	7	15		8	30												SHDPE									
	23-0-B-OK-Kul	Culturology					8	15		8	29															SHDPE						
	23-0-B-OK-Pol	Political science					7	15		8	30																SHDPE					
	23-0-B-OK-Psi	Psychology					8	15		8	29																SHDPE					
M4 Information technology and artificial intelligence module																																
1.1.7	23-0-B-OK-ICT	Information and Communication Technologies	150	5	5	150	30	15	0	8	97												ICT									
1.2	Component of choice:		150	5		150	30	15	0	8	97	0	0	0	0	0	0	0	0	0	0	0	0									
M5 Life skills module																																
1.1.8	23-0-B-KV-EBSD	Ecology and life safety	150	5	7	150	30	15	8	97													MVLS									
	23-0-B-KV-MMI	Scientific research methods																													SHDPE	
	24-0-B-KV-EIPD	Economics and business activities																														LTM
	23-0-B-KV-DPAK	Basics of law and anti-corruption culture																														SHDPE
TOTAL for the OOD cycle:																																
			1680	56		1680	150	373	15	128	1014	12	17	2	2	9	9	5	0	0												
CYCLE OF BASIC DISCIPLINES (BD):																																
2.1	The university component:		1770	59		1770	255	195	120	1020	15	9	17	0	0	0	0	6	12	0												
M6 Natural science competencies																																
2.1.1	24-0-B-VK-IM1	Engineering Mathematics 1	120	4	1	120	15	30		12	93	4											FE									
	24-0-B-VK-IM2	Engineering Mathematics 2	150	5	2	150	15	30		12	93	5											FE									
	24-0-B-VK-PF1	Applied Physics 1	150	5	1	150	15	15	15	12	93	5												FE								
	24-0-B-VK-PF2	Applied Physics 2	120	4	2	120	15	15	15	12	93	4												FE								
M7 Professional module																																
2.1.2	23-0-B-VK-OT	Labor protection	180	6	8	180	30	15	15	12	108													MVLS								
2.1.3	24-18-B-VK-DMP	Discrete mathematics for programmers	180	6	3	180	30	15	15	12	108				6									ICT								
2.1.4	24-0-B-VK-AM	Simulation modeling	180	6	7	180	30	15	15	12	108													ICT								
2.1.5	23-18-18-B-VK-KB	Cybersecurity	180	6	8	180	30	30		12	108													ICT								
M8 Information Technology and Artificial Intelligence Module																																
2.1.6	24-0-B-VK-KM	Computer and engineering modeling	180	6	1	180	30	30		12	108	6												ICT								
2.1.7	23-18-18-B-VK-OAP	Fundamentals of algorithmization and programming	270	9	3	270	45	45	12	168					9									ICT								
M9 Practice-oriented module																																
2.1.8	24-0-VK-Up7	Educational practice	60	2	3	60									2									ICT								
2.2	Component no category:		1170	39		1170	185	90	105	84	696	0	0	9	0	9	0	15	0	6												
M7 Professional module																																
2.2.1	23-0-B-KV-OCBIT (Cisco-Huawei)	Fundamentals of computer networks and telecommunications (Cisco + Huawei)	160	5	5	160	30	30	12	108														ICT								
	23-0-B-KV-ODI	Cloud Infrastructure Basics																														
2.2.2	23-0-B-KV-SUR	Robot control systems	160	5	7	160	30	30	12	108														AM								
	23-0-B-KV-TPD	Software testing																														
2.2.3	24-08-B-KV-MORH	Game design and game design	160	5	7	160	30	30	12	108														ICT								
	23-18-18-B-KV-OOP	Image processing and recognition methods																														
2.2.4	23-18-18-B-KV-OOP	Object-oriented programming	270	9	3	270	45	45	12	168					9									ICT								
	23-18-18-B-KV-OSlin	Linux operating systems																														

8. CATALOG OF DISCIPLINES OF THE UNIVERSITY COMPLEMENT

EDUCATIONAL PROGRAM

6B06126 - Applied artificial intelligence

Level of education: bachelor's

degree Duration of study: 3 years

Year of admission: 2024

Cycle	Component	Name of the discipline	General labor intensity		Semester	Learning Outcomes	Brief description of the discipline	Prerequisites	Post-requirements
			in academic hours	in academic credits					
1	2	3	4	5	6	7	8	9	10
Natural science competencies									
BD	US	Engineering Mathematics 1	120	4	1	LO1	<p>The discipline studies the basic concepts of higher mathematics and its applications. The purpose of the course is to master the mathematical apparatus for solving theoretical and applied problems of a specific profile, to get an idea of mathematical modeling and interpretation of the solutions obtained. The course sections include elements of linear algebra and analytical geometry, an introduction to mathematical analysis, differential calculus of functions of one and several variables</p>	Basic school knowledge in mathematics	Engineering Mathematics 2, Discrete Mathematics for Programmers, Robot Control Systems/ Software Testing
BD	US	Engineering Mathematics 2	150	5	2	LO1	<p>The formation of students' mathematical knowledge and skills necessary for the study of related natural science disciplines, disciplines of the professional cycle and skills of mathematical modeling and research in professional activities. The course sections include integral calculus of functions of one and several variables, ordinary differential equations, and series theory. Special attention is paid to the application of mathematical methods to solve engineering problems.</p>	Basic school knowledge in mathematics	Discrete Mathematics for Programmers, Robot Control Systems/ Software Testing

BD	US	Applied Physics 1	150	5	1	LO1	<p>The discipline studies the simplest and at the same time the most general laws of natural phenomena, the properties and structure of matter, and the laws of its motion. The course of kinematics reflects the basic equations of dynamics, equations of motion, the limits of applicability of classical mechanics, stable time, moment of time and energy, statistical physics and thermodynamics, electricity and magnetism.</p>	Basic school knowledge in physics	Applied Physics 2, Cybersecurity, Fundamentals of Computer Networks and Telecommunications (Cisco+Huawei), Robot Control Systems/ Software Testing
BD	US	Applied Physics 2	120	4	2	LO1	<p>The discipline studies the phenomena of electromagnetic induction, electromagnetic vibrations and waves, the laws of optics, the basic principles of quantum mechanics, physics and elements of atomic nucleus physics. The structure of atomic nuclei. Nuclear forces. Patterns of alpha-beta and gamma radiation. The course reflects the current state of modern physics and combines macroscopic and microscopic approaches.</p>	Basic school knowledge in physics	Cybersecurity, Fundamentals of Computer Networks and Telecommunications (Cisco+Huawei), Robot Control Systems/ Software Testing
Professional module									
BD	US	Labor protection	180	6	8	LO12	<p>Formation of analytical thinking skills in the implementation of conclusions on economic issues; the ability to independently draw conclusions on the basis of the studied material; navigate in any economic situations, apply theoretical economic knowledge in practice, realize their abilities, both in a personal and professional direction. Active learning methods - business and role-playing games</p>	Ecology and safety of life	Production practice I, Final certification
BD	US	Discrete mathematics for programmers	180	6	3	LO3, LO5	<p>The discipline studies the basic theoretical provisions of the basic course of discrete mathematics of computer science, will gain skills in applying modern computer programs using classical methods to solve applied problems, and also forms the ability to use logical and infological connections, events and processes using discretely considered relations, in particular, by means of graph theory, Boole algebras, logical circuits, etc.</p>	Engineering Mathematics 1, 2, ICT, Computer and Engineering modeling	Fundamentals of Computer Networks and Telecommunications (Cisco+Huawei), Fundamentals of Cloud Infrastructure, Robot Control Systems/ Software Testing

BD	US	Simulation modeling	180	6	7	LO2	As a result of studying the discipline, the student will be introduced to the basic methods of solving problems based on simulation modeling, gaining skills in creating models of systems for various purposes, studying methods of planning experiments, applying the knowledge gained in creating and conducting experiments with simulation models of systems of varying complexity.	Engineering Mathematics 1, 2, Applied Physics 1, 2, Computer and Engineering modeling, Robot control systems	Supercomputer technologies for modeling distributed systems and processes, Artificial intelligence technologies, Cloud computing	
BD	US	Cybersecurity	180	6	8	LO3	Formation of knowledge and skills on issues of software quality control - verification and testing of software products. Active teaching methods: case methods; business role-playing games, group work	ICT, Algorithms and data structures, Applied Physics 1, 2, Fundamentals of Computer Networks and Telecommunications (Cisco +Huawei), Logical inference in artificial intelligence systems, Databases, Deep machine learning, Intelligent data analysis methods, AI in transport	all major disciplines of the 9th semester and practice semesters	
Information Technology and Artificial Intelligence Module										
BD	US	Computer and engineering modeling	180	6	3	LO2	The study of the discipline makes it possible to master the basic images of spatial forms on a plane and teach how to work in modern modeling systems in order to develop innovative computer models, and also contributes to the development of spatial representation and imagination, constructive geometric thinking based on graphical models of spatial forms and practical skills in building computer models, applying them to solving real problems.	Basic school knowledge in computer science, Information and communication technologies	Java programming, Python programming, Simulation modeling, Image processing and recognition methods, Game design and game processing and recognition	

BD	US	Algorithms and data structures	180	6	3	LO4	<p>Formation of students' skills in making an informed choice of data storage method when solving problems of processing large amounts of information, which can make this solution effective and competitive. To familiarize students with the basics of using data structures of varying complexity (arrays, lists, hash tables, trees, graphs, stacks, queues) and algorithms for working with them in solving various problems. The C++ or C# programming languages are used to solve various practical problems.</p>	<p>Basic school knowledge in computer science, Information and communication technologies</p>	<p>Game design and game design, Image processing and recognition methods, Sound processing and recognition methods, Logical inference in artificial intelligence systems, Databases, Artificial Intelligence technologies, Intelligent Data Analysis methods, Cybersecurity, Big Data Technologies, Java Programming, Python programming, Big Data Technologies, IT Project Management</p>	<p>methods, Artificial intelligence technologies, Supercomputer technologies for modeling distributed systems and processes</p>
PD	US	Databases	180	6	6	LO4	<p>Formation of skills and knowledge in the field of creating and using databases in management systems, acquiring the necessary competencies for designing the logical structure of a database, choosing a DBMS, organizing interfaces for working with a database and preparing reporting forms. The following software is used: DBMS: MSAccess, Oracle, MSSQL, etc. When studying the discipline, interactive methods of teaching case-learning, discussion are used. As part of the discipline, on-site classes are provided at the branch of the department and guest lectures by top managers.</p>	<p>ICT, Algorithms and data structures, Linux operating systems</p>	<p>Logical inference in artificial intelligence systems, Intelligent data analysis methods, Big Data technologies</p>	
PD	US	Artificial intelligence	180	6	7	LO4, LO5	<p>The study of the discipline "AI Technologies" consists in the formation of students' basic theoretical knowledge and</p>	<p>ICT, Algorithms and data</p>	<p>Cloud computing, Supercomputer technologies for</p>	

									practical skills in the field of basic artificial intelligence strategies, as well as obtaining skills in designing artificial intelligence systems and working with tools for implementing the principles of artificial intelligence. The discipline examines the theoretical foundations in the field of AI, the development of skills for solving applied problems in the field of AI, the formation of abilities for the independent development of algorithms for solving problems and their analysis.	structures, Computer and engineering modeling, Logical inference in artificial intelligence systems, Deep machine learning, Intelligent data analysis methods, AI in transport, Big data technologies	modeling distributed systems and processes Production practice 2, Final certification
PD	US	Methods of sound processing and recognition	180	6	7	LO2, LO10			The purpose of the course "Methods of sound processing and recognition" is to study mathematical models and algorithms underlying modern methods of processing audio, primarily speech signals. All stages of the signal processing process are considered, starting with preliminary analysis and identification of characteristic features, and ending with the construction of a classifying or recognizing system. Much attention is paid to such methods of digital signal analysis as hidden Markov models, Fourier transform, wavelet transform, artificial neural networks, clustering, filtering, etc. The analysis of modern recognition systems and tools for their development is carried out.	ICT, Algorithms and data structures	Fundamentals of text processing, Production practice 2, Final certification
PD	US	Deep machine learning	270	9	8	LO4, LO8, LO11			Formation of students' theoretical knowledge and practical skills on the basics of building large neural networks for deep learning.	Engineering Mathematics 1,2, ICT, Algorithms and Data structures	Logical inference in artificial intelligence systems, Artificial intelligence technologies, Python programming, Cloud computing, Production practice 2, Final certification

PD	US	Logical inference in artificial intelligence systems	270	9	7	LO5	<p>The course includes an overview of the main logical systems used in AI, from classical propositional and predicate logic to the main non-classical systems - intuitionistic, modal, temporal logic, monotonic and non-monotonic systems. The course provides a number of examples illustrating the use of logical inference in AI systems</p>	<p>ICT, Algorithms and Data structures, Deep Machine Learning, Intelligent Data Analysis methods, and in transport</p>	<p>Big Data Technologies, Java Programming, Python Programming, Artificial Intelligence Technologies, Python Programming Cloud Computing</p>
Practice-oriented module									
BD	US	Educational practice	60	2	4	LO3, LO5, LO7, LO8	<p>The organization of educational practice is aimed at ensuring familiarization of bachelors with the main areas, objects, areas of professional activity and profiles of training and consolidation of theoretical material, as well as conducting study tours in the branch of the department for this educational program.</p>	<p>ICT, Computer and engineering modeling</p>	<p>All disciplines of the DB and PD cycles, Methods of scientific research</p>
PD	US	Cloud Computing	270	9	5	LO3, LO7, LO9	<p>The purpose of the discipline is to study the theoretical foundations of cloud computing, the internal structure and practical implementation, and applied examples of the use of cloud computing and web services.</p>	<p>ICT, Algorithms and data structures, Computer and engineering modeling, Game design and game design, Image processing and recognition methods, Sound processing and recognition methods, Logical inference in artificial intelligence systems, Databases, Artificial intelligence technologies,</p>	<p>Production practice 2, Final certification</p>

9. CATALOG OF DISCIPLINES OF THE OPTIONAL COMPLEMENT

EDUCATIONAL PROGRAM

6B06126 - Applied artificial intelligence

Level of education: bachelor's

degree Duration of study: 3 years

Year of admission: 2024

Cycle	Complement	Name of the discipline	General labor intensity		Semester	Learning Outcomes	Brief description of the discipline	Prerequisites	Post-requirements
			in academic hours	in academic credits					
1	2	3	4	5	6	7	8	9	10
Life skills module									
GED	EC1	Ecology and life safety	150	5	3	LO12	The study of the basic environmental concepts, environmental problems and approaches to their solution, sources and types of environmental pollution by enterprises, the principles of standardizing the quality of atmospheric air and water, the main provisions of legislation in various fields, natural and man-made emergencies, their causes, methods of prevention and protection . Teaching methods - case-study analysis, group discussions	Basic school knowledge on ecology	Occupational Safety and Health
	EC2	Scientific research methods				LO12	Obtaining theoretical and applied knowledge by students on the methods of scientific research of problems in the field under study, training of specialists with the skills of cognitive activity in the field of science, the formation of deep ideas about the content of scientific activity, its methods and forms of knowledge. Active learning methods - Group, scientific discussion, debate, project method	Socio-Political Knowledge Module	Training practice, Production practice 1, Production practice 2, Final certification

	EC3	Fundamentals of Economics and Entrepreneurship				LO12	Formation of analytical thinking skills in the implementation of conclusions on economic issues; the ability to independently draw conclusions on the basis of the studied material; navigate in any economic situations, apply theoretical economic knowledge in practice, realize their abilities, both in a personal and professional direction. Active learning methods - business and role-playing games	Socio-Political Knowledge Module	Managerial economics, Time management
	EC4	Fundamentals of law and anti-corruption culture				LO12	Improving the public and individual legal awareness and legal culture of students, as well as the formation of a system of knowledge and civil position to combat corruption as an anti-social phenomenon. As a result of studying the course, the student must master the fundamental concepts of law, the constitutional structure of the state power of the Republic of Kazakhstan, the rights and freedoms of citizens enshrined in the Constitution, the mechanism and protection of the legitimate interests of a person in case of their violation. Active learning methods - case studies, brainstorming	Socio-Political Knowledge Module	Managerial economics, Time management
Professional module									
	EC5	Fundamentals of computer networks and telecommunications (Cisco +Huawei)	180	6	4	LO7	PO3 Students ' mastering the principles of building and functioning of local, regional, global computer networks and mobile telecommunications, as well as obtaining practical skills in the following areas: working with their information resources, working with Cisco and Huawei networks, SD-WAN and SDN. Active learning methods - "simulator" training methods, i.e. aimed at the formation of special knowledge, skills: situational tasks, error detection method, project method, case method, open and closed tests	Information and communication technologies, Computer and engineering modeling	Cybersecurity, Supercomputer technologies for modeling distributed systems and processes
BD	EC6	Fundamentals of cloud infrastructure				LO3, LO8	Mastering the technology of creating a cloud service, work with existing cloud services, students will learn how to use cloud computing and be ready to apply cloud computing technology to solving IT process optimization problems. The discipline uses interactive teaching methods, computational and analytical method, case task	ICT, Computer and engineering modeling, Algorithms and data structures,	Cybersecurity, Supercomputer technologies for modeling distributed systems and Processes, Cloud

BD	EC9	Game design and game design	180	6	7	LO9	<p>During the training, students will learn how to design computer games, analyze and design games and master all stages of production – from concept preparation to game development, as well as familiarization with practical skills for creating digital and board games, video games in various genres, gamification applications, game scenarios, game graphics in 2D and 3D.</p>	<p>Applied Physics 1,2, Fundamentals of Computer Networks and Telecommunications (Cisco+Huawei), Fundamentals of cloud infrastructure, Methods of sound processing and recognition, Big Data technologies</p>	<p>Cybersecurity, Supercomputer technologies for modeling distributed systems and processes, Fundamentals of word processing</p>
BD	EC10	Image processing and recognition methods				LO10	<p>Studies the basic mathematical methods of image processing, master the methods of their solutions and get an idea of the use of mathematical methods of image processing in solving practical problems.</p>	<p>Applied Physics 1,2, ICT, algorithms and structures of these, Object-Oriented Programming, deep machine learning</p>	<p>Cybersecurity, Supercomputer technologies for modeling distributed systems and processes, Fundamentals of word processing</p>
BD	EC11	Object Oriented Programming				LO6	<p>Studying the basics of the classical theory of object-oriented programming, including: the evolution of programming technologies from algorithmic to OOP, the basic principles of object-oriented construction of software systems (Abstraction, Encapsulation, Hierarchy, Modularity, Typing, Parallelism, Persistence), the concepts of classes, objects, relationships between them, as well as a multi-level OMG model. studying the means of object-oriented and generalized programming of the C++ language, the means of the STL standard library. Within the framework of the discipline, active learning methods</p>	<p>ICT, Algorithms and data structures</p>	<p>Java Programming, Python Programming, Databases</p>

								are used - presentations based on modern multimedia tools, a method of working in small groups.												
EC12	Linux operating systems	180	6	4	LO7			Formation of the ability of future students to work with the structures and mechanisms of various operating systems, as well as in the Linux operating system. Within the framework of the discipline, the following aspects of Linux are considered: functions and architectural requirements for the OS, general principles of resource management, file system architecture, memory management, input management, data management system. In practical exercises, Linux (Ubuntu) OS is used. Within the framework of the discipline, active learning methods are used - "brainstorming", thematic discussion.	ICT, Algorithms and data structures	Databases, Supercomputer technologies for modeling distributed systems and processes										
EC13	Java Programming	180	6	5	LO6			Formation of a system of concepts, knowledge, skills and abilities in the field of modern programming, which includes methods for designing, analyzing and creating software products in the Java language, based on the use of object-oriented methodology. Within the framework of the discipline, active learning methods are used - presentations based on modern multimedia tools, the method of working in small groups, practical analysis of the results.	ICT, Algorithms and data structures, Databases, Big data technologies	Artificial Intelligence technologies, Cloud computing, Production practice 2										
EC14	Python Programming	180	6	5	LO6			Formation of students to create modern cross-platform applications in Python using the universal PyQt5 graphics platform, interaction with the Internet, office documents, databases, graphics, multimedia and printing. Within the framework of the discipline, active learning methods are used - laboratory experiments, the method of working in small groups, "brainstorming".	ICT, Algorithms and data structures, Databases, Big data technologies	Artificial Intelligence technologies, Cloud computing, Production practice 2										
EC15	Intelligent data analysis methods	270	9	8	LO4, LO7			Formation of an idea about the types of tasks that arise in the field of data mining and methods of solving them, which will help students identify, formalize and successfully solve practical data analysis problems that arise in the course of their professional activities.	ICT, Algorithms and data structures, Object-oriented programming	Logical inference in artificial Intelligence systems, Big Data Technology										
PD																				
PD																				

EC16	AI in transport	180	6	7	LO2, LO4	The purpose of studying the discipline is the ability to apply modern methods and means of technical, information and algorithmic support to solve applied problems related to the field of transport activities using AI.	ICT, Algorithms and data structures, Object-oriented programming	Logical inference in artificial Intelligence systems, Big Data Technology, IT Project Management
EC17	Big Data Technologies	180	6	7	LO4, LO7	Formation of students with the necessary theoretical base and practical skills that will allow them to comprehensively and systematically understand modern problems of applied mathematics and computer science, problems of information processing and analysis, as well as develop and analyze conceptual and theoretical models for solving scientific and applied problems in the field of information technology.	ICT, Algorithms and data structures, Object-oriented programming, Logical inference in artificial intelligence systems Intelligent data analysis methods	Artificial intelligence technologies, Production practice 2, Final certification
EC18	IT Project Management							
PD								

The module of economic and managerial competencies											
									Formation of the conceptual apparatus and development of skills of economic analysis using modern models and patterns of economic science, consideration of economic problems and challenges facing the head of the firm. The study of this discipline will allow students to obtain and develop knowledge in the field of analytical research of economic, technological and technical parameters of the enterprise, as well as allow you to master the skills of using special methods of economic justification of management decisions and assessment of their consequences.	Economics and entrepreneurship, Fundamentals of law and anti-corruption culture	Final certification
EC19	Managerial Economics	90	3	7	LO11, LO12				The discipline studies a system of methods, tools and approaches that are aimed at effective time management in order to achieve set goals. The course is designed to improve skills in organizing and optimizing the use of working time, increasing productivity, reducing stress, planning, delegation, using tools and technologies, as well as knowing your time and energy rhythms in order to use your time effectively	Economics and entrepreneurship, Fundamentals of law and anti-corruption culture	Final certification
EC20	Time - management				LO12				Formation of general functional economic and financial literacy, mastering methods and tools of economic and financial calculations for solving practical problems	The OOD cycle	Final certification
EC21	Fundamentals of financial literacy	90	3	5	LO12				The discipline studies the forms and techniques of rational cognition, the creation of a general idea of logical methods and approaches used in the field of professional activity, the formation of practical skills of rational and effective thinking.	The OOD cycle	Final certification
EC22	Critical thinking				LO12						
Practice-oriented module											
BD	Supercomputer technologies for modeling distributed systems and processes	180		7	LO4				Formation of students' practical skills in the methods of construction, parallel implementation and research of models and methods of distributed information processing. Familiarization with classical and modern distributed computing models and algorithms – cellular automata, neural networks, genetic algorithms, swarm intelligence methods, etc.	Engineering Mathematics, Computer and Engineering Modeling, Simulation modeling, Object-oriented programming,	Production practice 2, Final certification

						<p>Databases, Logical inference in artificial intelligence systems, Intelligent data analysis methods, Deep Machine Learning, Java programming, Python programming, Game design and Game design, Robot control systems, Software testing.</p>	<p>Engineering Mathematics, Computer and Engineering Modeling, Simulation modeling, Object-oriented programming, Databases, Logical Inference in artificial intelligence systems, Intelligent Data Analysis methods, Deep Machine Learning, Java Programming.</p>
	EC24	Basics of text processing		LO1, LO10	<p>The purpose of the discipline is to provide an overview of modern approaches to the use of artificial neural networks in the tasks of analyzing texts in natural language. The main features of the Tensorflow library for the design and training of neural networks are being studied. Knowledge of approaches to the development of applications and word processing modules in natural language, skills in designing and training artificial neural networks to solve word processing problems are being formed.</p>	<p>Production practice 2, Final certification</p>	

10. EXPERT CONCLUSIONS

ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ на образовательную программу 6B06126 - Прикладной искусственный интеллект

Реализация образовательной программы «6B06126 - Прикладной искусственный интеллект» осуществляется посредством последовательности изучаемых дисциплин, с установлением конкретных задач и целевых индикаторов. Четко прослеживается междисциплинарное взаимодействие, которое заключается в комплексной связи между содержанием отдельных учебных дисциплин, посредством которых достигается внутреннее единство программы подготовки специалистов.

В учебном плане образовательной программы «6B06126 - Прикладной искусственный интеллект» определен перечень всех учебных дисциплин обязательного компонента и компонента по выбору, трудоемкость каждой учебной дисциплины в кредитах, последовательность их изучения, виды учебных занятий и формы контроля. Такой подход обеспечивает логичность и последовательность освоения учебного материала, способствует постепенному наращиванию знаний и навыков, необходимых для профессиональной деятельности в области искусственного интеллекта.

Учебные дисциплины программы охватывают широкий спектр тем, включая основы машинного обучения, нейронные сети, обработку и анализ больших данных, компьютерное зрение, обработку естественного языка, а также современные методы и инструменты разработки интеллектуальных систем. Важным аспектом программы является практическая направленность обучения, что достигается через лабораторные работы, курсовые проекты и стажировки, обеспечивая студента

Цель образовательной программы «6B06126 - Прикладной искусственный интеллект» заключается в подготовке высококвалифицированных специалистов, обладающих комплексными знаниями и навыками в области искусственного интеллекта (ИИ). Программа направлена на формирование у студентов способности решать сложные профессиональные задачи, основываясь на актуальных требованиях рынка труда и потребностях работодателей. Этот подход полностью соответствует современным тенденциям и вызовам в сфере ИИ, что подтверждает актуальность и востребованность выпускников данной программы на рынке труда.

В рамках образовательной программы студенты овладевают современными методами и инструментами управления проектами, развивают аналитические и управленческие навыки, необходимые для эффективного выполнения трудовых функций, соответствующих профессиональному стандарту. Особое внимание уделяется интеграции теоретических знаний и практических навыков через проведение гостевых лекций и мастер-классов от ведущих специалистов отрасли, а также через стажировки и практическую работу на базе филиалов кафедр, созданных в сотрудничестве с профильными организациями и предприятиями.

Представленная на экспертизу образовательная программа «6B06126 - Прикладной искусственный интеллект» по направлению подготовки кадров «6B061 - Информационно-коммуникационные технологии», полностью соответствует требованиям ГОСО указанной специальности и может быть рекомендована к внедрению.

Заместитель генерального
директора ИИВТ КН
МНВО РК



Мамырбаев О.Ж.

ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ
на образовательную программу
6В06118 - Программная инженерия

Реализация образовательной программы «6В06118 - Программная инженерия» (ОП «ПИ») осуществляется посредством последовательности изучаемых дисциплин, с установлением конкретных задач и целевых индикаторов. Четко прослеживается междисциплинарное взаимодействие, которое заключается в комплексной связи между содержанием отдельных учебных дисциплин, посредством которых достигается внутреннее единство программы подготовки специалистов.

В учебном плане ОП «ПИ» определен перечень всех учебных дисциплин обязательного компонента и компонента по выбору, трудоемкость каждой учебной дисциплины в кредитах, последовательность их изучения, виды учебных занятий и формы контроля. Актуально изучение вопросов экологической обстановки и обеспечение условий безопасной трудовой деятельности в АО «Алматытранстелеком». Данные дисциплины формируют у обучающихся понимание роли экологии в решении современных экономических и политических проблем, умение анализировать явления и события природного, техногенного и социального характера.

Образовательные траектории разработаны в соответствии с запросами транспортно-коммуникационной отрасли.

Цель ОП «ПИ» актуальна, сформулирована достаточно лаконично и объединяет в себе результаты обучения. В описании дисциплин отражены их цели и содержание, как индикатора достижения результатов обучения по данной образовательной программе. Также, в образовательной программе, разработанной на основе профессионального стандарта, отражены основные трудовые функции в компетенциях и результатах обучения, указаны виды связей с работодателями: проведение гостевых лекций, лекций ведущих топ менеджеров, наличие филиалов кафедр на базе организаций.

Таким образом, представленная на экспертизу образовательная программа «6В06118 - Программная инженерия» по направлению подготовки кадров «6В061 - Информационно-коммуникационные технологии», полностью соответствует требованиям ГОСО, имеет четкую последовательность при разработке, отвечает современным запросам рынка труда, профессиональным стандартам и может быть реализована для подготовки кадров по образовательной программе «6В06118 - Программная инженерия» по направлению «6В061 - Информационно-коммуникационные технологии».

Эксперт
Начальник службы «Информационных
технологий и интернет сети»
АО «Алматытранстелеком»



Разбеков А.

11. REVIEWER'S CONCLUSION

Рецензия

на образовательную программу
по направлению подготовки 6В06126 - Прикладной искусственный интеллект

Образовательная программа «6В06126 - Прикладной искусственный интеллект» содержит следующую информацию: квалификация выпускника, форму и срок обучения, направление и характеристику деятельности выпускников, приведен полный перечень компетенций, которыми должен обладать выпускник в результате освоения данной образовательной программы.

Дисциплины учебного плана по рецензируемой образовательной программе формируют весь необходимый перечень общекультурных и профессиональных компетенций, предусмотренных ГОСО по соответствующим видам деятельности.

В учебном плане образовательной программы определен перечень всех учебных дисциплин обязательного компонента и компонента по выбору, трудоемкость каждой учебной дисциплины в кредитах, последовательность их изучения, виды учебных занятий и формы контроля. Каталог элективных дисциплин, каталог вузовского компонента полностью отражают преемственность дисциплин (например, для изучения дисциплины «Компьютерное и инженерное моделирование» изучается дисциплина «Основы искусственного интеллекта» и т.д.).

Соблюдена последовательность изучения дисциплин, включены дисциплины, необходимые для производства и технологического процесса.

Содержание рабочих программ учебных дисциплин и практик позволяет сделать вывод, что оно соответствует компетентностной модели выпускника.

Образовательная программа предусматривает профессионально-исследовательскую подготовку обучающихся в виде практики. Содержание программы практик свидетельствует об их способности сформировать практические навыки обучающихся.

Для разработки образовательной программы были привлечены опытный профессорско-преподавательский состав, ведущие представители работодателя, обучающиеся, учтены их требования при формировании дисциплин профессионального цикла.

Заключение:

В целом, рецензируемая образовательная программа «6В06126 - Прикладной искусственный интеллект» отвечает основным требованиям ГОСО, национальной рамке квалификаций, отраслевой рамке квалификаций, профессиональных стандартов и способствует формированию общекультурных и профессиональных компетенций по направлению подготовки «6В061 - Информационно-коммуникационные технологии».

Рецензент
Генеральный директор
ТОО «RTEL Group»



Бекенов Е.Е.

12. LETTERS OF RECOMMENDATION

Уважаемый (ая) Динара Тугелбсковна!

Руководство «ТОО «СкайМедАй» в лице Пак А.А. ознакомилось с содержанием образовательной программы «6В06126 - Прикладной искусственный интеллект» и внесло следующие рекомендации:

- увеличить количество часов, выделяемых на проведение части лабораторных и практических занятий на базах работодателей с целью формирования определенных видов профессиональных компетенций;

- актуализировать содержание образовательных программ путем включения в цикл базовых и профилирующих модулей дисциплины, отражающие современные инновационные технологии в транспортно-коммуникационной сфере. Предлагается включить следующие дисциплины Глубокое машинное обучение, Методы обработки и распознавания звука, Облачные вычисления, Логический вывод в системах искусственного интеллекта, Технологии больших данных;

- увеличить количество часов, выделяемых на проведение производственных практик;

включить дисциплины:

- с ИТ компетенциями;
- касающиеся организации производства и охраны труда;
- экономического и управленческого характера;
- с программным обеспечением;
- графики ППР и т.д.

Работодатель _____ дата, печать



13. REVIEW AND APPROVAL PROTOCOLS

АО «АЛТ УНИВЕРСИТЕТ ИМЕНИ МУХАМЕДЖАНА ТЫНЫШПАЕВА»

ПРОТОКОЛ №8а

Заседания

Академического комитета по образовательным программам и ведущим преподавателей кафедры «Информационно-коммуникационные технологии»

г. Алматы

«22» апреля 2024 года

Председатель: Касымова Д.Т.

Секретарь: Андрашева Б.Х.

Присутствовали: заведующей кафедрой, ассис. профессор АЛТ Касымова Д.Т.; **ассоц. профессор АЛТ:** Доштаев К.Ж.; **сениор лекторы:** Кусамбаева Н.Ш., Нурланбек А.Д., Бижанова А.С., Қасым Р.Т., Ерішова М.Ө., Тұрдыбек Б., Өмірбекова З.М., Кунтунова Л.С., Омарова Г.А., Галимова Н.Г. **ассис. профессора:** Мамилов Б.Е., Манапбаева А.Б., Мәдібайұлы Ж., Куттыбасва А.Е; **ассис. преподавателя:** Андрашева Б.Х., Бердалы А.К., Блен Ж.Ж., Жетписбаев О.Ж., Тулемисов Т.Т., Кошжанов Р.А.

обучающиеся: Студент 3-го курса, гр. РЭТ-21-1к – Серік Ш., Қуаныш Д.Д., гр. ТКС-22-1к - Алыев Ф.Н., Ержанқызы А.

ПОВЕСТКА ДНЯ:

1. Пересмотр и обновление компетентностной модели выпускника по действующим ОП.
2. Рассмотрение возможности включения дисциплин в РУП и КВК/КЭД для ОП приёма 2024 года..

По первому вопросу

ВЫСТУПИЛА: Зав. кафедрой «ИКТ» Касымова Д.Т. предложила рассмотреть компетентностную модель выпускника по 3 уровням образования: бакалавриат, магистратура, докторантура, по действующим ОП кафедры «ИКТ»:

Бакалавриат: ОП 6В06209 – Радиотехника, электроника и телекоммуникации, 6В06208-Телекоммуникационные системы и сети ЖД связи; 6В06118 - Программная инженерия; 6В06116 – Информационные системы; 6В06126 – Прикладной искусственный интеллект; 6В06127 – Математическое и компьютерное моделирование.

Магистратура: ОП 7М06234 - Радиотехника, электроника и телекоммуникации (профильная 2 года) и ОП 7М06233- Радиотехника, электроника и телекоммуникации (научно-педагогическая, 1,5 года); ОП 7М06128 - Информационные системы (профильная 1,5 года) и ОП 7М06127 - Информационные системы (научно-педагогическая, 2 года).

Докторантура: ОП 8D06255 - Радиотехника, электроника и телекоммуникации.

Компетентностная модель выпускника включает в себя следующие части:

- Цель и задачи образовательной программы;
- Результаты обучения;
- Область, объекты, виды и функции профессиональной деятельности;
- Перечень должностей по образовательной программе;
- Профессиональные сертификаты, полученные по окончании обучения;
- Требования к предшествующему уровню образования.

ВЫСТУПИЛ: Представитель работодателей, член АК ОП 6В06116-ИС, ОП 6В06118-ПИ, ОП 6В06126 – ПИИ, ОП 6В06127 – МКМ директор ТОО «СкайМедАй» - Пак А.А., который охарактеризовал Компетентностную модель выпускника по действующей ОП 6В06116-ИС, ОП 6В06118-ПИ и по новым ОП 6В06126 – ПИИ и ОП

6B06127 – МКМ как актуальную и отвечающую требованиям рынка труда и предложил оставить без изменений.

ВЫСТУПИЛ: Представитель работодателей, директор по эксплуатации филиала Алматытранстелеком Муратбеков М.С., член АК ОП РЭТ и ОП ТКС, который охарактеризовал Компетентностную модель выпускника по действующим ОП 6B06209 – РЭТ, ОП 6B06208 – ТКС как актуальные и отвечающие требованиям рынка труда и предложил оставить без изменений.

ВЫСТУПИЛ: Представитель работодателей, член АК ОП магистратуры 7M06234/7M06233 – «РЭТ», к.т.н., директор департамента Дистанционного зондирования Земли-Бекмухамедов Б.Э., как актуальную и отвечающую требованиям рынка труда и предложил оставить без изменений.

ВЫСТУПИЛ: Представитель работодателей, член АК ОП 8D06255 - Радиотехника, электроника и телекоммуникации - Земли-Бекмухамедов Б.Э., который охарактеризовал Компетентностную модель выпускника по действующей ОП 8D06255-РЭТ, как актуальную и отвечающую требованиям рынка труда и предложил оставить без изменений.

ВЫСТУПИЛИ: Председатели Академических комитетов по образовательным программам:

- 6B06209-РЭТ – Мамилов Б.Е.,
- 6B06208-ТКС – Липская М.А.,
- ОП 7M06234 - Радиотехника, электроника и телекоммуникации (профильная 2 года), ОП 7M06233- Радиотехника, электроника и телекоммуникации (научно-педагогическая, 1,5 года) - Липская М.А.

Все председатели АК подтвердили актуальность Компетентностной модели выпускника по действующим ОП.

- 6B06118-Программная инженерия, 6B06116 – Информационные системы, 6B06126 – Прикладной искусственный интеллект, 6B06127 – Математическое и компьютерное моделирование – Касымова Д.Т.

- ОП 7M06128 - Информационные системы (профильная 1,5 года) и ОП 7M06127 - Информационные системы (научно-педагогическая, 2 года) – Касымова Д.Т.

После рассмотрения компетентностной модели выпускника было предложено утвердить данную Модель по 3 уровням образования.

ПОСТАНОВИЛИ:

- предоставить компетентностную модель выпускника по 3 уровням образования: бакалавриат, магистратура, докторантура для рассмотрения и утверждения на КОК УМБ института «Автоматизации и телекоммуникации».

По второму вопросу

ВЫСТУПИЛА: зав. кафедрой с предложением заслушать представителей работодателей и обучающихся по включению новых дисциплин в КЭД и РУП приема 2024 г.

Было отмечено что в текущем учебном году в связи с изменениями в НПА МНВО РК есть необходимость актуализации действующих образовательных программ бакалавриата. Кроме того рассматривается перспектива участия в различных рейтингах, в связи с этим также требуется пересмотр действующих ОП. Предлагается пересмотреть названия дисциплин в соответствии с программами потенциальных международных партнеров, что даст ряд преимуществ в трансферте кредитов и в участии в международных рейтингах; уменьшить количество дисциплин в ОП, тем самым схожие дисциплины укрупнить, что поможет преподавателям сконцентрироваться на одной полной программе дисциплины, нежели разбивать ее на 2–3 логически схожие дисциплины. Рекомендуются выделять

дисциплину от 9 до 6 кредитов, что также качественно повлияет на выбор дисциплин студентами компонента по выбору и глубокое погружение в каждый предмет.

ВЫСТУПИЛ: Представитель работодателей, директор ТОО «СкайМедАй» в лице Пак А.А. ознакомился с содержанием образовательной программы «6B06126 – Прикладной искусственный интеллект» и предлагает следующие рекомендации: актуализировать содержание образовательных программ путем включения в цикл базовых и профилирующих модулей дисциплины, отражающие современные инновационные технологии в транспортно-коммуникационной сфере. Предлагается включить следующие дисциплины: Геймдизайн и проектирование игр, Суперкомпьютерные технологии моделирования распределенных систем и процессов, Интеллектуальные методы анализа данных, Управление ИТ проектами, Хранение и обработка больших данных, Логический вывод в системах искусственного интеллекта; увеличить количество часов, выделяемых на проведение производственных практик; включить дисциплины: с ИТ компетенциями; касающиеся организации производства и охраны труда; дисциплины по эксплуатации и ремонту электрооборудования; экономического и управленческого характера; с программным обеспечением; графики ППР и т.д.

ВЫСТУПИЛ: Представитель работодателей, директор по эксплуатации ф-ла Алматытранстелеком Муратбеков М.С., по ОП «6B06209 – РЭТ» предлагает поменять количество кредитов в РУП: Теория связи; Технологии цифрового телерадиовещания; Цифровые приемопередающие устройства. Уменьшить 9 кредитов на 6. По ОП «6B06208-ТКС» убрать название дисциплин минорных программ. Поменять количество кредитов в РУП: Теория связи; Основы телекоммуникаций; Электропитание и специальные измерения в технике связи; Цифровая радиосвязь на ж.д.т. Уменьшить 9 кредитов на 6.

ВЫСТУПИЛ: Представитель работодателей, член АК ОП магистратуры 7M06234/7M06233 – «РЭТ», к.т.н., директор департамента Дистанционного зондирования Земли-Бекмухамедов Б.Э.,

ВЫСТУПИЛИ: Студент 2-го курса, гр. РЭТ-21-1к – Куаныш Д.Д.; студент 2-го курса, гр. ТКС-22-1к - Алыев Г.Н.; студент 1 – го курса, гр. ИС-23-1к – Бекбаев А.Е.; студентка 1 – го курса, гр. УС-ПИ-23-1к – Хамзаева М.Ж. Считаем необходимым включить в РУП по всем ОП бакалавриата следующие дисциплины: «Основы финансовой грамотности» и «Основы искусственного интеллекта».

ВЫСТУПИЛИ: Председатели Академических комитетов по образовательным программам, которые озвучили предложения работодателей, изложенные в рекомендательных письмах, а также озвучили предложения профессорско-преподавательского состава кафедры «ИКТ»:

- Мамилов Б.Е.: Предлагается включить в ОП 6B06209 – РЭТ - следующие дисциплины: «Компьютерное и инженерное моделирование», «Критическое мышление», «Основы искусственного интеллекта».

- Липская М.А.: Предлагается изменить в ОП 6B06208-ТКС следующие дисциплины: «Инженерная математика» разделить на 2 семестра и увеличить кредиты с 9 на 12; «Прикладная физика» разделить на 2 семестра; «Основы экономики и предпринимательства» поменять название на «Экономика и предпринимательская деятельность». А также исключить «Основы компьютерного моделирования».

- Касымова Д.Т.: Предлагается включить в образовательную программу бакалавриата «6B06116-Информационные системы», «6B06118-Программная инженерия» «6B06126 – Прикладной искусственный интеллект», «6B06127 – Математическое и компьютерное моделирование» следующие дисциплины: «Технологии искусственного интеллекта», в минорную программу «Machine Learning A-Z: Python & R in Data Science», «Введение в SQL для BigQuery и Cloud SQL» и увеличить количество часов, выделяемых на проведение производственной практики.

- Оразымбетова А.К.: Для включения в образовательную программу магистратуры научно-педагогического направления 7M06234 - Радиотехника, электроника и телекоммуникации предлагается оставить без изменений.

- Липская М.А.: ОП докторантуры 8D06255 - Радиотехника, электроника и телекоммуникации предлагается оставить без изменений.

ВЫСТУПИЛИ: Обучающиеся, члены АК: Студент 3-го курса, гр. РЭТ-21-1к - Серік Ш; студент 2-го курса, гр. ТКС-22-1к - Алыев Ғ.Н.; студент 1 – го курса, гр. ИС-23-1к – Бекбаев А.Е.; студентка 1 – го курса, гр. УС-ПИ-23-1к – Хамзаева М.Ж.; магистрант гр. МН-РЭТ -22-2 – Бейбит Е., которые поддержали представленные выше предложения.

ПОСТАНОВИЛИ:

1. Информацию принять к сведению;
2. Учесть предложения и рекомендации работодателей и обучающихся;
3. Рассмотреть включение в РУП и КЭД/КВК для ОП приёма 2024 года следующих дисциплин:
 - для ОП 6B06209-РЭТ: «Основы финансовой грамотности», «Критическое мышление», «Основы искусственного интеллекта», «Компьютерное и инженерное моделирование».
 - для ОП 6B06208-ТКС: «Основы финансовой грамотности», «Критическое мышление», «Основы искусственного интеллекта», «Компьютерное и инженерное моделирование».
 - для ОП 6B06116-ИС: «Основы финансовой грамотности», «Критическое мышление», «Технологии искусственного интеллекта», «Компьютерное и инженерное моделирование».
 - для ОП 6B06118-ПИ: «Основы финансовой грамотности», «Критическое мышление», «Технологии искусственного интеллекта», «Компьютерное и инженерное моделирование».
 - для ОП 6B06126 – ПИИ: «Основы финансовой грамотности», «Критическое мышление», «Технологии искусственного интеллекта», «Компьютерное и инженерное моделирование».
 - для ОП 6B06127 – МКМ: «Основы финансовой грамотности», «Критическое мышление», «Технологии искусственного интеллекта», «Компьютерное и инженерное моделирование».
 - для ОП 7M06234-РЭТ (2 года): предлагается оставить без изменений.
 - для ОП 7M06233-РЭТ (1,5 года): предлагается оставить без изменений.
 - для ОП 7M06128 - Информационные системы (2 года): предлагается оставить без изменений.
 - для ОП 7M06127 - Информационные системы (1,5 года): предлагается оставить без изменений.

Председатель:



Касымова Д.Т.

Секретарь:



Андрашева Б.Х.

15. CHANGES REGISTRATION SHEET

№	Section, paragraph document	Type of change (replace, cancel, add)	Number and date notices	Change made	
				date	Surname and initials, signature, position