Ministry of Science and Higher Education of the Republic of Kazakhstan
Korkyt Ata Kyzylorda University
Institute of Artificial Intelligence

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GRADUATE PROFILE
Bachelor of the Joint Educational Program with Seoul National University of Science and Technology
"6B01501 – Computer science"

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CONTENTS

INTRODUCTION

The graduate profile of Korkyt Ata Kyzylorda University represents a comprehensive learning outcome at all levels of education offered by the university. It is recommended for use in the development of educational programs.

The creation of a competency-based graduate profile is a crucial condition for implementing the main directions of the Bologna Process and meeting the demands of the modern labor market. The competency model of a graduate (bachelor's degree) is designed to address the question of what professional tasks a specialist of a specific rank or profile should be able to solve. Developing a modern graduate profile that meets the expectations of all stakeholders is a key strategic goal of Korkyt Ata Kyzylorda University, supported by the necessary resources for the educational process, including personnel, methodological, informational, and material-technical support.

DESCRIPTION OF THE EDUCATIONAL PROGRAM

The educational program 6B06104 – Informatics is aimed at training specialists in information technology and digital solutions, equipped with modern methods of data analysis, algorithm development, and software solutions. The program integrates informatics with artificial intelligence technologies, providing graduates with highly sought-after competencies in the modern labor market.

The primary goal of the program is to develop professional competencies in graduates for software development, data analysis and visualization, and the implementation of intelligent systems to solve problems across various fields.

KEY COMPONENTS IN DEVELOPING THE GRADUATE PROFILE OF THE EDUCATIONAL PROGRAM

2.1 Objectives of the Educational Program:

- Training specialists in informatics with advanced knowledge in data analysis and programming.
- Developing skills for creating intelligent solutions using artificial intelligence and machine learning technologies.
- Teaching the fundamentals of information system management and the implementation of digital technologies in various industries.

Tasks of the Educational Program:

- Teaching the basics of algorithms, data structures, and programming languages (Python, Java, R).
- Developing competencies in data analysis, statistical modeling, and machine learning.
- Building the ability to create intelligent solutions based on AI and big data.
- Training in software design and optimization.
- Mastering data visualization methods and the development of information systems for various fields.
- Learning to apply cloud solutions and DevOps technologies for process automation.

1.2 General and Professional Competencies:

General Competencies:

- Knowledge of the basics of mathematical modeling, logic, and computational methods.
- Ability to think critically and analyze complex problems.
- Skills in teamwork and project management using Agile and Scrum methodologies.

- Adaptability to rapidly changing technologies and processes.
- Proficiency in working with large data volumes and presenting results in a clear and visual format.

Professional Competencies:

- Development and optimization of algorithms for solving applied problems.
- Data analysis, processing, and visualization using modern tools (Pandas, Tableau, Power BI).
- Application of machine learning and deep learning technologies for creating intelligent systems.
- Development of software solutions using Python, Java, and R for process automation and modeling.
- Design and implementation of information systems and databases (SQL, NoSQL).
- Implementation of cloud solutions and DevOps approaches for project management.
- Integration of AI-based systems for process automation and decision support.
- Development of systems for image recognition, natural language processing (NLP), and big data analysis.

Personal Qualities of a Specialist in Informatics:

- Logical and analytical thinking.
- Creativity and ability to propose innovative solutions.
- Inclination for information systematization and process structuring.
- Responsibility and attention to detail.
- Flexibility and adaptability to new technologies.
- Capability for self-learning and professional growth.
- Teamwork skills and task distribution abilities.
- Stress resilience and promptness in problem-solving.
- Initiative and a commitment to implementing advanced AI-based solutions.

1.4 Matrix of Correlation Between Educational Program Learning Outcomes and Developed Competencies

Competencies	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	
GC 1	+						
GC 2	+						
GC 3	+						
GC 4	+						
GC 5							
GC 6							
GC 7							
GC 8	+						
GC 9							
GC 10	+						
GC 11							
GC 12	+						
GC 13							
SC 1	+		+		+	+	
SC 2							

SC 3					+		
SC 4						+	
SC 5					+		
SC 6						+	
SC 7	+						
SC 8							
SC 9			+				
SC 10	+						
SC 11	+						
SC 12						+	
SC 13						+	
SC 14		+					
SC 15	+						
SC 16						+	
SC 17						+	
SC 18						+	
SC 19					+		
SC 20						+	
SC 21							
SC 22							
SC 23						+	
SC 24		+					
SC 25						+	
SC 26				+			
SC 27					+		
SC 28				+			
SC 29				+			
SC 30					+		
SC 31				+			
SC 32							
PC 1						+	
PC 2						+	
PC 3							
PC 4				+			
PC 5				+			
PC 6			+				
PC 7				+			
PC 8							
PC 9							
PC 10							

PO 1	Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.
PO 2	Knows the principles of pedagogy, teaching theory and management methods. Has skills in optimizing the educational environment. Able to analyze techniques and apply knowledge in practice.
PO 3	Able to develop software solutions, design databases, and create graphical objects. Has the skills of optimizing information systems and applying technologies for practical tasks.
PO 4	Knows the principles of AI, computer vision, and image processing techniques, as well as the basics of designing and programming robotic systems. Can use AI to create and optimize robotic systems and computer vision solutions.
PO 5	Knows big data processing techniques, principles of data structures, the basics of deep and machine learning. Has skills to analyze big data, optimize solutions, develop learning models.
PO 6	Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods.
PO 7	Knows basics of labor protection and law, anti-corruption culture, environmental standards, assesses economic risks. Proficient in project management methods in R&D and IT.

2.5 Personal Qualities of a Specialist in Informatics:

- Logical and analytical thinking.
- Ability to adapt IT technologies to solve applied problems in various fields.
- Creativity and an innovative approach to developing software solutions.
- Attention to detail and accuracy when working with data and programming code.
- Independence and responsibility in completing professional tasks.
- Capability for self-learning and mastering modern technologies in the field of informatics.
- Skills in effectively distributing tasks within a team and organizing collaborative work.
- Stress resilience and the ability to work in multitasking environments.
- Initiative and commitment to improving software solutions using modern IT tools.

CONCLUSION

The graduate profile of the educational program "Informatics" ensures the training of specialists with comprehensive knowledge in programming, data analysis, and artificial intelligence technologies. Graduates of this program will be in high demand in the labor market due to their proficiency in advanced tools for developing and implementing intelligent solutions. The university continues to enhance its educational programs, focusing on the integration of innovative technologies and the needs of the digital economy

Appendix 1

Компетентностная модель выпускника

Module	DDB (Dublin Descriptors for Bachelor's Degree)	Developed Competencies			Planned Learning Outcomes
		General Education Competencies	Basic Competencies	Specialized Competencies	
1	2	3	4	5	6
M1	DDB1 DDB2 DDB3 DDB4 DDB5	GC 1	CK 7		PO 1 Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.
	DDB1 DDB2 DDB3 DDB4 DDB5	GC 2	CK 10		PO 1 Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.
	DDB1 DDB2 DDB3 DDB4 DDB5	GC 3	CK 11		PO 1 Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.
	DDB1 DDB2 DDB3 DDB4 DDB5	GC 4	CK 15		PO 1 Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.
	DDB1 DDB2 DDB3 DDB4 DDB5	GC 5			PO 1 Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.
	DDB1 DDB2 DDB3 DDB4 DDB5	GC 6			PO 1 Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.
	DDB1 DDB2 DDB3 DDB4 DDB5	GC 7			PO 1 Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.
	DDB1 DDB2 DDB3 DDB4	GC 9			PO 1 Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.

	DDB5				
	DDB1 DDB2 DDB3 DDB4 DDB5	GC 10			PO 1 Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.
	DDB1 DDB2 DDB3 DDB4 DDB5	GC 11			PO 1 Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.
	DDB1 DDB2 DDB3 DDB4 DDB5	GC 12			PO 1 Fluent in foreign languages (English and Korean), with skills in intercultural interaction and evaluating social processes.
M2	DDB1 DDB2 DDB3 DDB4 DDB5		CK 14	PC 8	PO 2 Knows the principles of pedagogy, teaching theory and management methods. Has skills in optimizing the educational environment. Able to analyze techniques and apply knowledge in practice. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 21		PO 2 Knows the principles of pedagogy, teaching theory and management methods. Has skills in optimizing the educational environment. Able to analyze techniques and apply knowledge in practice. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 22		PO 2 Knows the principles of pedagogy, teaching theory and management methods. Has skills in optimizing the educational environment. Able to analyze techniques and apply knowledge in practice. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 24		PO 2 Knows the principles of pedagogy, teaching theory and management methods. Has skills in optimizing the educational environment. Able to analyze techniques and apply knowledge in practice. .
M3	DDB1 DDB2 DDB3 DDB4 DDB5	GC 8	CK 1		PO 3 Able to develop software solutions, design databases, and create graphical objects. Has the skills of optimizing information systems and applying technologies for practical tasks. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 4		PO 3 Able to develop software solutions, design databases, and create graphical objects. Has the skills of optimizing information systems and applying technologies for practical tasks. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 8		PO 3 Able to develop software solutions, design databases, and create graphical objects. Has the skills of optimizing information systems and applying technologies for practical tasks. .
M4	DDB1 DDB2 DDB3		CK 28	PC 3	PO 4 Knows the principles of AI, computer vision, and image processing

	DDB4 DDB5				techniques, as well as the basics of designing and programming robotic systems. Can use AI to create and optimize robotic systems and computer vision solutions. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 29	PC 4	PO 4 Knows the principles of AI, computer vision, and image processing techniques, as well as the basics of designing and programming robotic systems. Can use AI to create and optimize robotic systems and computer vision solutions. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 31	PC 5	PO 4 Knows the principles of AI, computer vision, and image processing techniques, as well as the basics of designing and programming robotic systems. Can use AI to create and optimize robotic systems and computer vision solutions. .
	DDB1 DDB2 DDB3 DDB4 DDB5			PC 7	PO 4 Knows the principles of AI, computer vision, and image processing techniques, as well as the basics of designing and programming robotic systems. Can use AI to create and optimize robotic systems and computer vision solutions. .
M5	DDB1 DDB2 DDB3 DDB4 DDB5		CK 3		PO 5 Knows big data processing techniques, principles of data structures, the basics of deep and machine learning. Has skills to analyze big data, optimize solutions, develop learning models.
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 19		PO 5 Knows big data processing techniques, principles of data structures, the basics of deep and machine learning. Has skills to analyze big data, optimize solutions, develop learning models.
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 22		PO 5 Knows big data processing techniques, principles of data structures, the basics of deep and machine learning. Has skills to analyze big data, optimize solutions, develop learning models.
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 27		PO 5 Knows big data processing techniques, principles of data structures, the basics of deep and machine learning. Has skills to analyze big data, optimize solutions, develop learning models.
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 30		PO 5 Knows big data processing techniques, principles of data structures, the basics of deep and machine learning. Has skills to analyze big data, optimize solutions, develop learning models.
M6	DDB1 DDB2 DDB3 DDB4 DDB5		CK 5	PC 1	PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods. .
	DDB1 DDB2 DDB3 DDB4		CK 6	PC 2	PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer

	DDB5				architecture, operating systems, and information security methods. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 9	PC 6	PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 12		PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 13		PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 16		PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 17		PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 18		PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 20		PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 25		PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 26		PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods. .
	DDB1 DDB2 DDB3 DDB4 DDB5		CK 32		PO 6 Knows web technologies, SQL, and UI/UX, and has skills in design and programming. Knows discrete mathematics, probability theory, computer architecture, operating systems, and information security methods. .
M7	DDB1 DDB2 DDB3	GC 13			PO 7 Knows basics of labor protection and law, anti-corruption culture, environmental standards, assesses economic risks. Proficient in project

	DDB4 DDB5				management methods in R&D and IT.

M1 - Socio-Cultural Knowledge
M2 - Propaedeutics
M3 - Basic Knowledge
M4 - Fundamental Knowledge
M5 - Social Methods and Technologies
M6 - Social Models
M7 - Science, Innovation, and Educational Work
M8 - Final Attestation