

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

APPROVED
by Director of the Institute
of Artificial Intelligence
Kulmurzaev N. S.
"29" 08 20



GRADUATE MODEL
Bachelor of a Double Degree program with Seoul National University
University of Science and Technology
"6B06103-Data management"

Kyzylorda, 2025

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introduction

The model of a graduate of the Korkyt Ata KU is a comprehensive image of the result of studying at the university at all levels of education. The graduate model is recommended for use in the development of educational programs.

The development of a graduate competence model is an important condition for implementing the main directions of the Bologna process and a requirement of the modern labor market. The competence model of a graduate (bachelor) is designed to answer the question of what professional tasks a specialist of a certain rank (position), a particular profile should be able to solve. The formation of a modern model of a university graduate that meets the needs of all interested parties is the main strategic goal of Korkyt Ata KU and is provided with the necessary resources for the educational process, including personnel, educational and methodological, information and material and technical support.

1. OP DESCRIPTION

The educational program 6B06103-Data Management is aimed at training specialists who know modern approaches to corporate and research data management, methods of analytics and visualization, as well as the development of solutions based on big data. The program combines knowledge from the fields of computer science, artificial intelligence, data analysis, cloud technologies and cybersecurity, providing graduates with practical skills in working in the digital economy.

The main goal of the program is to develop students' professional and managerial competencies in the field of data analysis, integration, protection and interpretation, as well as the introduction of data-driven approaches to managing organizations and projects.

2. COMPOSITE COMPONENTS IN FORMING THE GRADUATE MODEL OF AN EDUCATIONAL PROGRAM

2.1 Objectives of the Educational program:

- Training specialists who can manage data at all stages of its life cycle.
- Develop skills in designing and optimizing data storage and analysis systems.
- Training in data visualization, modeling, and interpretation tools.
- Develop competencies in integrating AI and machine learning into decision-making processes.
- Creating a digital and analytical culture that meets the requirements of sustainable development and data ethics.

2.2 Objectives of the Educational program:

1. Mastering database technologies (SQL, NoSQL, PostgreSQL, MongoDB).
2. Training in data processing and analysis tools (Python, R, Power BI, Tableau, Excel, Pandas, NumPy).
3. Develop skills in working with Big Data and Data Engineering (Hadoop, Spark, Airflow, Kafka).
4. Learn machine learning techniques for data analysis and forecasting.
5. Providing knowledge in the field of cybersecurity and data protection.
6. Developing soft-skills: project management, teamwork, digital ethics.
7. Promotion of academic mobility and research internships at SeoulTech and other foreign universities and industrial partners

2.3 General and professional competencies:

General competencies:

- Proficiency in critical and systems thinking.

- Ability to analyze socio-economic data and make decisions based on them.
- Proficiency in English and Korean in a professional environment.
- Understanding the principles of digital security, sustainability, and data ethics.
- Communication skills and work in interdisciplinary teams.

Professional competencies:

- Manage data flows and build a storage architecture.
- Data analysis and visualization using BI tools.
- Design and maintenance of databases, optimization of SQL queries.
- Application of statistical and machine methods of data analysis.
- Integration of AI and ML models into business processes.
- Organization and maintenance of ETL processes and data infrastructures.
- Implementation of DevOps / MLOps approaches in data management.
- Ensuring data quality, confidentiality, and security.

2.4 Matrix of correlation of learning outcomes of an educational organization programs with emerging competencies

Competencies	RO 1	RO 2	RO 3	RO 4	RO 5	RO 6	RO 7	RO 8
OK1	+							
OK 2	+							
OK 3	+							
OK 4	+							
OK 5			+					
OK 6	+							
OK 7	+							
OK 8	+							
OK 9								
OK 10	+							
OK 11								
OK 12	+							
OK 13							+	
SK1		+						
SK 2	+							
SK 3		+						
SK 4				+				
SK 5	+							
SK 6			+					
SK 7	+							
SK 8	+							

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

R O 1	Applies the knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
R O 2	adapts the language skills of Kazakh (Russian), English, and Korean in a multilingual environment and has a basic knowledge of international academic and business communication.
R O 3	uses mathematical models for data analysis and processing, methods of statistical analysis, and tools of probability theory using mathematical tools for working with large amounts of data.

R O 4	Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.
R O 5	uses state-of-the-art artificial intelligence tools to store, process, and analyze big data, and applies machine learning algorithms for forecasting, business intelligence, and decision-making.
R O 6	Applies computer systems and network infrastructure for data storage, transmission, and processing, and masters parallel and distributed computing technologies to make effective technical decisions for working with big data.
R O 7	Provides data protection and applies advanced artificial intelligence technologies to use cloud computing, mobile platforms, deep learning and blockchain technology.
R O 8	Applies research methods to develop a graduate project in the field of data management and implements the results obtained at a professional level.

2.5 Personal qualities:

- Responsibility and analytical thinking
- Initiative and readiness for self-development
- Ethical attitude to data and privacy
- Creativity and innovation
- Critical thinking and decision-making skills
- Ability to adapt to technological change
- Teamwork and leadership

conclusions

The Data Management graduate model forms specialists who are proficient in data analysis, visualization, and management tools. Graduates are able to design and maintain data storage and processing systems, apply machine learning and BI technologies to decision-making. The program provides training for next-generation analysts who can effectively manage data and develop organizations' digital ecosystems.

Graduate competence model

Module	DD B Mo dule (Dublin Baccalaureate Descriptors)	Formed competencies			Planned learning
		outcomesные general education competencies	basic competencies	profile competencies	
1	2	3	4	5	6
M1	DDB1 DDB2 DDB3 DDB4 DDB5	OK 1	SK 2		RO 1 Applies knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
	DDB1 DDB2 DDB3 DDB4 DDB5	OK 2	SK 5		RO 1 Applies the knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
	DDB1 DDB2 DDB3 DDB4 DDB5	OK 3	SK 9		RO 1 Applies knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
	DDB1 DDB2 DDB3 DDB4 DDB5	OK 4	SK 13		RO 1 Applies knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
	DDB1 DDB2 DDB3 DDB4 DDB5	OK 5			RO 1 Applies the knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
	DDB1 DDB2 DDB3 DDB4 DDB5	OK 6			RO 1 Applies knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
	DDB1	OK 7			RO 1

	DDB2 DDB3 DDB4 DDB5				Applies knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
	DDB1 DDB2 DDB3 DDB4 DDB5	OK 9			RO 1 Applies knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
	DDB1 DDB2 DDB3 DDB4 DDB5	OK 10			RO 1 Applies knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
	DDB1 DDB2 DDB3 DDB4 DDB5	OK 11			RO 1 Applies knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
	DDB1 DDB2 DDB3 DDB4 DDB5	OK 12			RO 1 Applies knowledge of social and humanitarian disciplines in professional and scientific activities and uses in practice the requirements of professional ethics, safety standards and research methods.
M2	DDB1 DDB2 DDB3 DDB4 DDB5		SK 7		RO 2 Adapts language skills of Kazakh (Russian), English, Korean in a multilingual environment and knows the basics of international academic and business communication.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 8		RO 2 Adapts the language skills of Kazakh (Russian), English, Korean in a multilingual environment and knows the basics of international academic and business communication.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 17		RO 2 Adapts the language skills of Kazakh (Russian), English, Korean in a multilingual environment and knows the basics of international academic and business communication.
M3	DDB1 DDB2 DDB3 DDB4 DDB5		SK 1		PO 3 Uses mathematical models for data analysis and processing, methods of statistical analysis, tools of probability theory using mathematical apparatuses for working with large amounts of data.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 3		PO 3 Uses mathematical models for data analysis and processing, statistical analysis methods, and probability theory tools using mathematical tools for working with large amounts of data.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 4		PO 3 Uses mathematical models for data analysis and processing, statistical analysis methods, and probability theory tools using mathematical tools for working with large amounts of data.

	DDB1 DDB2 DDB3 DDB4 DDB5		SK 10		PO 3 Uses mathematical models for data analysis and processing, methods of statistical analysis, tools of probability theory using mathematical apparatuses for working with large amounts of data.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 15		RO 3 Uses mathematical models for data analysis and processing, methods of statistical analysis, tools of probability theory using mathematical apparatuses for working with large amounts of data.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 18		RO 3 Uses mathematical models for data analysis and processing, methods of statistical analysis, tools of probability theory using mathematical apparatuses for working with large amounts of data.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 20		RO 3 Uses mathematical models for data analysis and processing, methods of statistical analysis, tools of probability theory using mathematical apparatuses for working with large amounts of data.
M4	DDB1 DDB2 DDB3 DDB4 DDB5		SK 6	PC 1	PO 4 Applies algorithms, programming languages and object-oriented programming methods to manage data analysis.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 11	PC 3	PO 4 Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 12	PC 4	PO 4 Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.
	DDB1 DDB2 DDB3 DDB4 DDB5		SC 16	PC 5	PO 4 Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.
	DDB1 DDB2 DDB3 DDB4 DDB5		SC 19		PO 4 Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.
	DDB1 DDB2 DDB3 DDB4 DDB5		SC 22		RO 4 Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 23		PO 4 Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.

	DDB1 DDB2 DDB3 DDB4 DDB5		SK 23		PO 4 Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 24		PO 4 Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.
	DDB1 DDB2 DDB3 DDB4 DDB5		SC 27		PO 4 Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.
	DDB1 DDB2 DDB3 DDB4 DDB5		SC 28		PO 4 Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.
	DDB1 DDB2 DDB3 DDB4 DDB5		SC 29		PO 4 Applies algorithms, programming languages, and object-oriented programming techniques to manage data analysis.
M5	DDB1 DDB2 DDB3 DDB4 DDB5		SK 14	PC 6	PO 5 Uses modern artificial intelligence tools for storing, processing and analyzing big data and applies machine learning algorithms for forecasting, business intelligence and decision making.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 26	PC 8	PO 5 Uses modern artificial intelligence tools for storing, processing and analyzing big data and applies machine learning algorithms for forecasting, business intelligence and decision making.
	DDB1 DDB2 DDB3 DDB4 DDB5			PC 9	PO 5 Uses state-of-the-art artificial intelligence tools for storing, processing, and analyzing big data and applies machine learning algorithms for forecasting, business intelligence, and decision-making.
	DDB1 DDB2 DDB3 DDB4 DDB5			PC 10	PO 5 Uses state-of-the-art artificial intelligence tools for storing, processing, and analyzing big data and applies machine learning algorithms for forecasting, business intelligence, and decision-making.
M6	DDB1 DDB2 DDB3 DDB4 DDB5		SK 21	PC 2	PO 6 Applies computer systems and network infrastructure for data storage, transmission and processing and masters parallel and distributed computing technologies to make effective technical solutions for working with big data.
	DDB1 DDB2 DDB3 DDB4 DDB5		SK 25	PC 7	PO 6 Applies computer systems and network infrastructure for data storage, transmission and processing and masters parallel and distributed computing technologies to make effective technical solutions for working with big data.

	DDB1 DDB2 DDB3 DDB4 DDB5		SK 26		PO 6 Applies computer systems and network infrastructure for data storage, transmission and processing and masters parallel and distributed computing technologies to make effective technical solutions for working with big data.
	DDB1 DDB2 DDB3 DDB4 DDB5		SC 29		RO 6 Applies computer systems and network infrastructure for data storage, transmission, and processing, and masters parallel and distributed computing technologies to make effective technical decisions for working with big data.
M7	DDB1 DDB2 DDB3 DDB4 DDB5	OK 13	CK 30		PO 7 Provides data protection and applies advanced artificial intelligence technologies to use cloud computing, mobile platforms, deep learning and blockchain technology.

M1-Basic humanities және
language disciplines

M2- Mathematical modeling and
analysis

M3- Programming and Algorithms

M4- Artificial Intelligence and Machine Learning

M5- Data and Security

M6-Computer Systems and Computing
Architecture

M7-Application Programming and Multimedia

M8- Final certification