Goals and learning outcomes of the undergraduate educational program "6B06102 Computer Science"

Goals	Learning outcomes
T1- Provide practice-oriented training of graduates in the field of software development, information systems and data analysis specialists. Training of graduates who can apply various technologies, knowledge and skills of software development, definition and management of information systems, data analysis to perform operational and project activities.	P1. Program in modern algorithmic languages, understand the fundamental principles of software development; own different approaches in programming methodology, know the paradigms of modular and object-oriented programming
	P2. Analyze the subject area and coordinate the requirements for the project with the customer; extract information processes from business processes and model them for domain automation
	P3. Use a unified modeling language, establish architectures and key points of distributed client-server applications, apply networking technologies for communication systems, create networking applications for tools, implement a structural and object-oriented approach in working with tools.
	P4. use the basic concepts and methods of discrete mathematics, the basics of mathematical logic, methods of probability theory and mathematical statistics in the study of mathematical models of the subject area; establish links between different mathematical theories to develop integrated methods used to build mathematical models of the subject area.
T2 - Prepare graduates for production and technological activities related to the process of developing and modifying software products focused on meeting the expectations and requirements of users, for organizational and managerial activities related to maintaining software products of various classes and categories, managing information systems, data analysis.	P5. Formulate technical requirements taking into account the functions performed by computing systems; justify the architecture; define tools for evaluating system performance.
	P6. Use methods for constructing various models of data types, information processing algorithms; it is rational to use the opportunities provided by the algorithmizing technique for solving practical problems.
	P7. Use the basic structures and mechanisms of various operating systems, work with modern operating systems. apply the basic concepts of system programming, develop programs that cover system programming issues.
	P8. Design an information model of the subject area; install, configure, use and interact with a relational database management system
	P9. Own tools for deploying and monitoring loosely coupled computing systems, use a basic set of microservices development tools

T3 - Create conditions for continuous professional self-improvement, development of social and personal competencies of graduates (broad cultural outlook, active citizenship, purposefulness, organization, diligence, communication skills, the ability to reason and make organizational and managerial decisions, possession of modern information technologies, fluency in several languages, the desire for self-development and commitment to ethical values and a healthy lifestyle, the ability to work in a team, responsibility for the final result of one's professional activity, civic responsibility, tolerance), social mobility and competitiveness in the labor market.	P10. To possess knowledge of historical, cultural and scientific achievements of the Republic of Kazakhstan; use data from historical sources and specialized literature; analyze and evaluate historical facts and events.
	P11. To have a broad socio-social, political and professional outlook. Have an idea about the subject, functions, main sections and directions of philosophy; place and role of philosophy in the life of society and man, apply the knowledge of the philosophical and methodological principles of knowledge in professional activities.
	P12. Knowledge of Kazakh, Russian, foreign languages. Be able to work with scientific and technical literature in Kazakh, Russian and foreign languages; search for scientific and technical information; understand the information provided by the normal pace, followed by the transmission of its content. Conduct intercultural dialogue, develop and deepen your knowledge, be open to new information; establish professional contacts and develop professional communication in a foreign language, make business contacts in a foreign language, know terminology, read literature in a specialty in a foreign language.

Matrix of goals and learning outcomes

Learning outcomes	Modules
P1. Program in modern algorithmic languages, understand the fundamental principles of software development; own different approaches in programming methodology, know the paradigms of modular and object-oriented programming	BM2 Programming Module
P2. Analyze the subject area and coordinate the requirements for the project with the customer; extract information processes from business processes and model them for domain automation	BM 4 Information Systems Foundation Module
P3. Use a unified modeling language, establish architectures and key points of distributed client-server applications, apply networking technologies for communication systems, create networking applications for tools, implement a structural and object-oriented approach in working with tools.	BM 3 Computer Architecture Module
P4. use the basic concepts and methods of discrete mathematics, the basics of mathematical logic, methods of probability theory and mathematical statistics in the study of mathematical models of the subject area; establish links between different mathematical	BM1 Physics and Mathematics Module

theories to develop integrated methods used to build mathematical models of the subject area.	
P5. Formulate technical requirements taking into account the functions performed by computing systems; justify the architecture; define tools for evaluating system performance.	BM2 Programming Module BM3 Computer Architecture Module
P6. Use methods for constructing various models of data types, information processing algorithms; it is rational to use the opportunities provided by the algorithmizing technique for solving practical problems.	BM5 Computer Science Foundation Module
P7. Use the basic structures and mechanisms of various operating systems, work with modern operating systems. apply the basic concepts of system programming, develop programs that cover system programming issues.	BM3 Computer Architecture Module
P8. Design an information model of the subject area; install, configure, use and interact with a relational database management system	PM1 Data Storage Module
P9. Own tools for deploying and monitoring loosely coupled computing systems, use a basic set of microservices development tools	PM 2 Intellectual Systems Module
P10. To possess knowledge of historical, cultural and scientific achievements of the Republic of Kazakhstan; use data from historical sources and specialized literature; analyze and evaluate historical facts and events.	GEM1 Social Sciences Module
P11. To have a broad socio-social, political and professional outlook. Have an idea about the subject, functions, main sections and directions of philosophy; place and role of philosophy in the life of society and man, apply the knowledge of the philosophical and methodological principles of knowledge in professional activities.	GEM1 Social Sciences Module
P12. Knowledge of Kazakh, Russian, foreign languages. Be able to work with scientific and technical literature in Kazakh, Russian and foreign languages; search for scientific and technical information; understand the information provided by the normal pace, followed by the transmission of its content. Conduct intercultural dialogue, develop and deepen your knowledge, be open to new information; establish professional contacts and develop professional communication in a foreign language, make business contacts in a foreign language, know terminology, read literature in a specialty in a foreign language.	GEM2 Language Training Module

Матрица целей и результатов обучения

	Learning outcome 1	Learning outcome 2	Learning outcome 3	Learning outcome 4	Learning outcome 5	Learning outcome 6	Learning outcome 7	Learning outcome 8	Learning outcome 9	Learning outcome 10	Learning outcome 11	Learning outcome 12
GEM 1										×	×	
GEM 2												×
BM 1				×								
BM 2	×				×							
BM 3			×		×		×					
BM 4		×										
BM 5						×						
PM 1								×				
PM 2									×			