


AGREED

Chairman of the Educational and
Methodological Department
Council of JSC «International Information
Technology University»


Mustafina A.K.
«19» 03 2024

APPROVED

Chairman of the Board-Rector
of JSC «International Information
Technology University»


Khikmetov A.K.
2024

EDUCATIONAL PROGRAM

7M06101 «Software Engineering»

Code and classification of the field of education: 7M06 – Information and Communication Technology

Code and classification of training area: 7M061 – Information and Communication Technology

Group of educational programs: M094 – Information Technology

ISCED level: 7

NQR level: 7

ORC level: 7

Duration: 2 years

Number of credits: 120

AGREED

Director of

«KnewIT Programming School» LLC

Bekaulov N.M.

2024



AGREED

Director of

«ProTechSolutions» LLC

Rakhmankulov Z.M.

2024



Almaty, 2024

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List of abbreviations and notation

BC	Basic competence
BM	Base module
HE	Higher education
SCES	State compulsory education standard
EQF	European qualification framework
EEF	European Education Foundation
KSC	Knowledge, skills, cum-savvy
NCO	National Classification of Occupations
NQF	National Qualifications Framework
NQS	National qualifications system
HM	Humanitarian module
CM	Common module
EP	Educational program
GPM	General Professional Module
IQF	Industry Qualifications Framework
PS	Professional standard
PE	Postgraduate education
PC	Professional competence
PM	Professional module
SW	Software
WG	Working group
RK	The Republic of Kazakhstan
LO	Learning outcome
SM	Special module
QMS	Quality Management System
SEM	Socio-economic module
TVE	Technical and vocational education
TaVPE	Technical and vocational education and post-secondary education
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO	Specialized agency of the United Nations Educational, Scientific and Cultural Organization
Cedefop	European Center for Development of Vocational Training
DACUM	from Eng. Developing curriculum
ECVET	European Credit System for vocational education and training
EQAVET	European Quality Assurance in Vocational Education and Training
ENQA	European Association for Quality Assurance in Higher Education / Europe-Skye association by to ensure qualities at higher education
ESG	Standards and Guidelines for Quality Assurance in the European Higher Education Area
FIBAA	International Agency (non-profit foundation) for accreditation and examination of the quality of higher education (Bonn, Germany)
IQM-HE	Internal Quality Management in Higher Education
TACIS	Technical Assistance for the Commonwealth of Independent States
WSI	WorldSkills International

1 Description of the educational program

The educational program 7M06101 «Software Engineering» is designed to implement the principles of democratic education management, expanding the boundaries of academic freedom and the powers of educational institutions, which will ensure the adaptation of the system of technical and vocational education to the changing needs of society, the economy of the labor market. The flexibility of the program will take into account the abilities and needs of the individual, production and society.

The educational program is developed taking into account the needs of the labor market in the field of information and communication technologies. This educational program ensures the application of an individual approach to students, ensures the transformation of professional competencies from professional and qualification standards into learning outcomes. Student-centered learning is provided. This principle of education implies a shift in emphasis in the educational process from teaching to learning.

The fields of professional activities of graduates are higher educational institutions, research institutions, production of software development for information and computing systems for various purposes, software companies, IT departments of industrial enterprises, design organizations, public and private enterprises and organizations that develop, implement and use computer hardware and software in various fields, in other words almost all spheres of human activity.

2 The goal and objectives of the educational program

The goal of the EP is to train researchers in the field of software engineering, managers in the field of software development, highly qualified developers of software and information systems and architects of software systems for the IT industry of the Republic of Kazakhstan.

The objectives of the EP to:

1. To train researchers in the field of software development.
2. To teach the conduct of scientific research related to the objects of professional activity, and the analysis of existing concepts, theories and approaches to the development of programs and the creation of corporate information systems.
3. To develop the ability of graduate students to develop new and improve existing methods and algorithms for data processing in information and computer systems.
4. To teach graduate students to apply the obtained theoretical and practical knowledge in solving practical problems in the field of ICT, to successfully carry out managerial and research activities.
5. To instill in graduate students the skills to independently, constantly acquire, develop and apply professional knowledge, skills and abilities to solve non-standard tasks.
6. To teach graduate students to apply the knowledge of pedagogy and psychology of higher education in their teaching activities, as well as apply interactive teaching methods.
7. Familiarize undergraduates with conducting system analysis to solve complex technical problems and applying the analysis results to optimize the software development process to the greatest extent possible.
8. Teach undergraduates to optimize the software development process.
9. To teach a generalization of the results of research and analytical work in the form of a dissertation, a scientific article and reports at scientific and technical conferences, a report, an analytical note, etc.

3 Requirements for the results of the mastering of the educational program

After the completion of the educational program a postgraduate student must be able to:

- Formulate and solve problems arising in the course of research activities that require in-depth professional knowledge.
- Apply data analysis methods to solve various problems of data analysis and analytical processing.
- Apply methodological and methodological knowledge in the conduct of scientific research, pedagogical and educational work.
- Apply psychological methods and means of improving the effectiveness and quality of education in the learning process.
- To have a foreign language at a professional level, allowing to conduct research and teach special subjects in universities.
- Simulate and design complex systems.
- Apply quantitative methods and techniques to develop effective solutions to problems.
- Create a database for efficient storage and data management for various big organizations, government agencies, etc.
- Manage the team in the software development process.
- Select standards, methods, technologies, tools and hardware for software maintenance work.

4 Passport of the educational program

4.1 General information

№	Field name	Note
1	Code and classification of the field of education	7M06 – Information and Communication Technology
2	Code and classification of training areas	7M061 – Information and Communication Technology
3	Group of educational programs	M094 – Information Technology
4	Name of the educational program	Software Engineering
5	Type of EP	New EP
6	Goal of EP	Training of researchers in the field of software engineering, managers in the field of software development, highly qualified developers of software and information systems and architects of software systems for the IT industry of the Republic of Kazakhstan
7	ISCED level	7 th level
8	NQF level	7 th level
9	IQF level	7 th level
10	Distinctive features of EP	No
	Partner university (SOP)	
	Partner university (PDD)	
11	Qualification characteristics of the EP graduate:	Field of professional activity of the graduate of the EP: The field of professional activity of the EP “7M06101 – Software Engineering” is mathematical, information, software, linguistic, technical and organizational-legal support of information systems, including technologies for design, development, implementation, maintenance and operation.

		<p>Objects of professional activity of graduates of the EP: Objects of professional activity of graduates of the EP “7M06101 - Software Engineering” are computers, complexes, systems and networks; - computer systems for information processing and management; - computer-aided design systems; - software for computer technology and information systems.</p> <p>Subject of professional activity of graduates of the EP: The subject of professional activity of graduates of the EP “7M06101 - Software Engineering” is mathematical, information, software, linguistic, technical and organizational-legal support of information systems, including technologies for design, development, implementation, maintenance and operation.</p> <p>Types of professional activities of EP graduates: - operation of all types of computer systems; - design and engineering; - production and technological; - experimental research; - organizational and managerial.</p> <p>Functions of professional activity of EP graduates: design and engineering activities: - development and execution of design and working technical documentation; - monitoring the compliance of developed projects and technical documentation with standards, technical specifications and other regulatory documents; - design and technological activities: the use of Web technologies in the implementation of remote access in client/server systems and distributed computing; - production and technological activities: creation of components of computer information processing and management systems, production of programs and software systems of a given quality; testing and debugging of hardware and software systems; - organizational and managerial activities: organization of workplaces, their technical equipment, placement of computer equipment; selection of technology, software tools and computer equipment when organizing the process of development and research of objects of professional activity; - research activities, innovation activities; installation and commissioning activities: - installation, debugging and configuration of technical means for putting software into operation; operation of software and their components.</p>
12	List of competencies	<p>KC1: The ability to use the knowledge gained for the original development and application of ideas in the context of scientific research.</p> <p>KC2: The ability to critically analyze existing concepts, theories and approaches to the analysis of processes and phenomena.</p>

		<p>KC3: The ability to independently, constantly acquire, develop and apply professional knowledge and skills for solving non-standard tasks.</p> <p>KC4: The ability to apply the knowledge of pedagogy and psychology of higher education in their teaching activities, and interactive teaching methods.</p> <p>KC5: The ability to speak a foreign language at a professional level, which allows conducting research and teaching special disciplines in universities.</p> <p>KC6: The ability to select and develop methods for analyzing objects of professional activity based on general trends in the development of software engineering.</p> <p>KC7: The ability to apply the obtained theoretical and practical knowledge in solving practical problems in the field of ICT, successfully carry out managerial and research activities.</p> <p>KC8: The ability to independently formulate the subject area of a software project, determine the requirements and expectations of the end user, draw up a phased development plan and develop documentation for software and its components.</p> <p>KC9: The ability to carry out system analysis to solve complex technical problems and apply the results of the analysis to the greatest optimization of the software development process.</p> <p>KC10: The ability to apply effective methods in project management, distribute tasks and manage a team of developers.</p> <p>KC11: The ability to develop software architectures with a high level of continuity and quality of complex software development using advanced ICT solutions.</p> <p>KC12: The ability to conduct analysis to solve complex software (technical) problems and ensure the implementation of the most optimal solutions for debugging software.</p> <p>KC13: The ability to introduce innovative methods and improvements that enhance the competitiveness and effectiveness of software at all stages of the software product life cycle.</p> <p>KC14: The ability to optimize the software development process.</p> <p>KC15: The ability to summarize the results of research and analytical work in the form of a dissertation, a scientific article and reports at scientific and technical conferences, a report, an analytical note, etc.</p>
13	Learning outcomes	<p>LO1: Formulate and solve problems arising in the course of research activities that require in-depth professional knowledge.</p> <p>LO2: Apply data analysis methods to solve various problems of data analysis and analytical processing.</p> <p>LO3: Apply methodological and methodological knowledge in the conduct of scientific research,</p>

		<p>pedagogical and educational work.</p> <p>LO4: Apply psychological methods and means of improving the effectiveness and quality of education in the learning process.</p> <p>LO5: To have a foreign language at a professional level, allowing to conduct research and teach special subjects in universities.</p> <p>LO6: Simulate and design complex systems.</p> <p>LO7: Apply quantitative methods and techniques to develop effective solutions to problems.</p> <p>LO8: Create a database for efficient storage and data management for various big organizations, government agencies, etc.</p> <p>LO9: Manage the team in the software development process.</p> <p>LO10: Select standards, methods, technologies, tools and hardware for software maintenance work.</p>
14	Form of study	Full-time
15	Language of instruction	English
16	Number of credits	120 ECTS credits
17	Awarded academic degree	Master
18	Availability of application to the license for the direction of training	License number 0064060, date of application issue 19 th of March, 2019
19	Accreditation of EP	Yes
	Name of accreditation body	ASIIN, Germany, https://www.asiin.de/en/
	Duration of accreditation	07.12.2018- 30.09.2024
20	Information about the courses	<p>1 Basic disciplines (BD) – 35 credits</p> <p>1.1 University component – 20 credits</p> <p>1.2 Electives – 15 credits</p> <p>2 Profession disciplines (PD) – 53 credits</p> <p>2.1 University component – 22 credits</p> <p>2.2 Electives – 20 credits</p> <p>2.3 Research practice – 11 credits</p> <p>3. Masters research work, including internships and master dissertations – 24 credits</p> <p>4. Final attestation – 8 credits</p>
21	Professional Standard for EP	Testing Web and multimedia applications, Software development, Development of artificial intelligence applications, Software testing
22	Developer(s) and authors of the Educational Program	<p>JSC "International University of Information Technologies", Department of Computer Engineering:</p> <p>- Chinibaeva T. T., PhD, assistant professor</p> <p>- Mukhanov S.B., PhD, assistant professor</p>
23	Atlas of new professions	Blockchain-technologist, Devops engineer, Developer universal ai, Product-manager
24	Regional standard	Not provided

4.2 Matrix of correlation of learning outcomes of the educational program with competencies

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
KK1	V		V			V				
KK2							V			
KK3								V	V	
KK4			V	V						
KK5					V					
KK6						V				
KK7							V	V	V	
KK8	V	V	V			V	V			
KK9		V				V				
KK10						V			V	V
KK11						V	V			V
KK12	V					V		V		
KK13								V		
KK14						V			V	
KK15							V			

4.3 Information about courses

№	Наименование дисциплины	Краткое описание дисциплины	Кол-во кредитов	Prerequisites	Postrequisites	Формируемые компетенции (коды)
Basic disciplines						
University component						
1.	History and philosophy of science	English Language is a compulsory component of the program offered to the 1st-year IITU Master's students. It is a one-semester practical course that tailors the English language program to the Master's students' professional/research needs. During the course the Master's students will work on an individual project and a research portfolio. By the end of the course, students will organize and present research portfolio.	4	history	-	PC1, 2, 3 LO3
2.	High School of Pedagogy	The objectives of mastering the discipline "Higher education pedagogy" are - provide knowledge about educational management process for teaching in higher education, to give an idea of the main categories of pedagogy, about the place, role and significance of pedagogy higher education in the system of human sciences and in practical activity teacher, to form an understanding of the basic principles of modern pedagogy and methodological approaches to solving pedagogical problems high school.	4	-	-	PC4 LO3
3.	Psychology of management	The purpose of the course is a fundamental study of modern interpretations of the subject and the main categories of psychological science; work with psychological mechanisms of management and the laws of interpersonal interaction in the conditions of professional activity; substantiation of the	4	-	practice	PC4 LO4

		relevance of psychological knowledge in solving practical issues in human life; development of systemic, creative thinking of the future specialist, research culture and the need for continuous self-education and self-development.				
4.	Foreign language (professional)	English Language is a compulsory component of the program offered to the 1st-year IITU Master's students. It is a one-semester practical course that tailors the English language program to the Master's students' professional/research needs. During the course the Master's students will work on an individual project and a research portfolio. By the end of the course, students will organize and present research portfolio.	4	psychology	-	PC5 LO5
5.	Teaching practice	Teaching practice is a type of practical activity of undergraduates, including the teaching of special disciplines, the organization of educational activities of students, scientific and methodological work on the subject, obtaining skills in the work of a teacher.	4	Higher education pedagogy	-	PC3, 4 LO3
Basic disciplines						
Electives						
6.	Decision Support Systems	The aim of this course is to introduce master students to the concepts, processes of predictive modeling and their practical use, and to the field of prescriptive analytics, which is used to make decisions based on data. In addition, the course is designed to use data and models in real-life decision-making scenarios in manufacturing, supply chain, finance, HR, and more. Using practical examples, this course teaches how to transform a problem scenario into a mathematical model that can be solved, to get the best results for your business.	5	Computer Networking, Linux Basics, and Database Administration	-	PC6, 7, 8 LO10
7.	DevOps	This course examines the key concepts and principles of DevOps, organizational factors and automation tools in the development of software products in this way. After completing this course, master students will be able to synchronize the stages of software product development, QA, automate tasks, and apply a methodology that helps automate workflows, which will increase the speed and productivity of developers, testers and system administrators..	5	Algorithms and data structures	Machine learning and computer statistics	PC6, 7, 8 LO8
8.	Parallel Computing	This course covers parallel computing methods applied to the main computational algorithms, advanced software packages for parallel computing, as well as big data processing and large-scale modeling problems in various sciences and fields of activity are considered.	5	Algorithms in graph theory	-	PC11, 12 LO7
Profession disciplines						
University component						
9.	Theory and Technology of Blockchain	The purpose of this course is to introduce master students to blockchain technology, its capabilities and prospects. The course examines the mathematical, cryptographic foundations and the use of this technology for solving applied problems (smart contracts, supply chain management, digital signatures and algorithms for their verification).	4	Fundamentals of research	-	PC6, 7, 8 LO6, LO7
10.	Research methodology	The study of types of scientific research, the methodology of scientific knowledge, research, the formation of conclusions and conclusions, writing scientific articles and reports at the conference, summarizing the results of research work in a dissertation, its structure and content.	4	Frontend technologies and backend technologies	-	PC1, 9 LO1, LO3
11.	Software Development	The purpose of this course is to teach master students to analyze and design software, manage a team in the software	5	-	-	PC6, 7, 8

	Management and Reengineering	development process, determine and evaluate the degree of responsibility of project team members.				LO9
12.	Advanced Programming	The aim of this course is to learn advanced programming techniques, it covers algorithm design techniques such as divide and conquer, dynamic programming and greedy algorithms, undecidability (NP-completeness) and the use of linear/integer programming to solve optimization problems. In addition, the course also covers additional topics related to data structures.	4	Web technologies	-	PC8, 9 LO6, LO8
13.	Project Management in IT	Familiarization of undergraduates with the theoretical and practical foundations of project management in the field of information technology, as well as development teams, development of practical skills in preparing and managing projects, training in the ability to communicate with the team to achieve productive activities.	5	-	-	PC8, 10, 11 LO9
Profession disciplines						
Electives						
14.	Machine learning and computer statistics	The course includes topics such as supervised learning (linear learning models, neural networks, reference vector machines); teaching without a teacher (clustering, reduction of dimension); learning theory (CV theory; large fields). It discusses modern areas of application of machine learning, such as robotic control, data mining, autonomous navigation, speech recognition, as well as text and web data processing.	5	-	-	PC11, 15 LO1, LO6
	Natural language processing	The basics of automatic processing of texts written in a natural language are considered. It is supposed to use ready-made applications for linguistic analysis, consider the principles of their work, as well as familiarity with the basic mathematical models that underlie modern computer linguistics.		-	-	PC11, 14 LO5, LO6, LO7
	Implementation and Operation of Basic Enterprise Network Technologies	The course is aimed at obtaining undergraduate knowledge and the acquisition of the skills necessary to configure, troubleshoot and manage wired and wireless networks of the enterprise. The course also discusses the principles of security in the enterprise network.		Introduction to Machine Learning	Machine learning and computer statistics	PC6, 7, 8 LO6
15.	Geographic Information Systems	The course introduces students to the basic ways of organizing, storing and modeling spatial data. The content of the discipline also covers a range of issues related to automated mapping and the use of geoinformation technologies in making management decisions.	5	Introduction to Machine Learning	-	PC6, 7, 8 LO6, LO7
	Computer vision	Introduction to computer vision, image and video analysis for the recognition, reconstruction and modeling of objects in a three-dimensional world. The basics of image formation, camera image geometry, detection and comparison of characteristics, image classification, deep learning using neural networks are considered.		Linux Basics	-	PC11, 14 LO2, LO6, LO7
	Implementing Cisco Enterprise Advanced Routing and Services	The course is aimed at obtaining undergraduates knowledge and the acquisition of the skills necessary for installing, configuring, operating and troubleshooting a corporate network. The course addresses advanced routing technologies and infrastructure.		-	-	PC6, 7, 8 LO6, LO7
16.	Web data analysis	Studying web data mining methods for solving various problems of analytical processing, creating models for analyzing structured and semi-structured web data.	5	Introduction to Machine	-	PC6, 7, 8

				e Learnin g		LO2, LO7
	Corporate Networks Design	The course is aimed at gaining knowledge and acquiring skills necessary for designing a corporate network, including modern solutions for addressing and routing. It covers concepts such as modern corporate networks, WANs, security services, network services, and SDA with software access.		-	-	PC6, 7, 8 LO4, LO6, LO7
	Public speaking	The art of public speaking includes the knowledge and skills of a speaker in preparing and delivering a public speech: the ability to select material, the art of constructing a speech in order to have a certain impact on listeners, the ability to prove and refute, the ability to convince; speech skill. This course examines the purpose and characteristics of public speech, ways and methods of argumentation, speech means of logic and the impact of speech, ethics of the speaker's speech behavior. Recommendations are given on the choice and use of language tools and the prevention of speech errors.		-	-	PC8, 9, 13 LO4
17.	IoT and artificial intelligence	The aim of this course is to teach master students advanced artificial intelligence methods that can be useful for industrial automation, environmental assessment, as well as for human-computer interaction, etc.	5	-	-	PC11, 14 LO2, LO7
	Enterprise Linux in Corporate Networks	The course aims to study the administration of the Linux operating system. Attention is focused on the fundamental concepts of Linux and its main tasks. It discusses the application of the command line concept and enterprise level tools.		-	-	PC6, 7, 8 LO6, LO7
	Effective communicatio n	The purpose of this course is to form the basic knowledge, skills and practical skills of using modern communication strategies as a mechanism for building communication links. The course includes mastering the techniques of interaction and influence that allow you to adequately respond to the situation, communicate freely and effectively, interact effectively with people, use various behaviors, holistically understand your own and common interests, set priorities and make choices.				PC8, 9, 13 LO1, LO4
	Research practice	Acquaintance with the latest theoretical, methodological and technological achievements of domestic and foreign science, with modern methods of scientific research, processing and interpretation of experimental data.	11			

5 Curriculum of the educational program

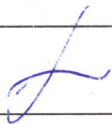
№	Code	Subject	Number of hours						Study language	Result. control	Distribution of credits per semester				
			Total	MSI	WT	MSI	WT	Aud..			Contact hours				
											L	PS	Lab	RW/ERW	1 Number of academic credits
Core subjects															
1	RW7000	The research work of a student, including an internship and implementation of master's thesis	60	0	0	0	60	0	0	0	60	by student's option	r.w.	2	
2	RW7001	The research work of a student, including an internship and implementation of master's thesis (NIRM)	90	0	0	0	90	0	0	0	90	by student's option	r.w.	3	
Catalogue of University disciplines															
3	SPS7003	Psychology of management	120	15	75	30	15	15	0	0	0	by student's option	exam.	4	
4	LAN 7001A	Foreign language (professional)	120	15	75	30	0	30	0	0	0	by student's option	exam.	4	
5	SPS7001	History and philosophy of science	120	15	75	30	15	15	0	0	0	by student's option	exam.	4	
6	SPS7002	High School of Pedagogy	120	15	75	30	15	15	0	0	0	by student's option	exam.	4	
7	SFT7311	Theory and Technology of Blockchain	120	15	75	30	15	0	15	0	0	by student's option	exam.	4	
8	RM7301	Research Methodology	150	15	90	45	15	15	15	0	0	by student's option	exam.	5	
9	SFT7303	Software Development Management and Reengineering	150	15	90	45	15	15	15	0	0	by student's option	exam.	5	
10	SFT7301	Advanced Web-technologies	120	15	75	30	15	0	15	0	0	by student's	exam.	4	

Electives																
															option	
11	SFT7305	DevOps	150	15	90	45	15	15	15	15	0	by student's option	exam.	5		
12	SFT7315	Algorithms in graph theory	150	15	90	45	15	15	15	15	0	by student's option	exam.	5		
13	SFT7307	Geographic Information Systems	180	15	105	60	15	15	15	30	0	by student's option	exam.	6		
14	ANL 7308	Theory of mass service	180	15	105	60	15	15	15	30	0	by student's option	exam.			
15	ANL7311	Generative-adversarial networks	150	15	90	45	15	15	15	15	0	by student's option	exam.		5	
16	ANL7312	Markov chains and decision-making processes	150	15	90	45	15	15	15	15	0	by student's option	exam.			
17	ANL7313	Mathematics for computational sciences	150	15	90	45	15	15	15	15	0	by student's option	exam.			
		Total:	2280	225	1290	765	210	210	195	150				30.0	30.0	0.0

№	Code	Subject	Number of hours										Study language	Result. control	Distribution of credits per semester				
			Total	MSI	WT	MSI	WT	Aud.	Contact hours						1	2	Extra term		
									L	PS	Lab	RW						ERW	TP
Core subjects																			
1	RW7002	The research work of a student, including an internship and implementation of master's thesis	150	0	0	0	150	0	0	0	0	150	0	0	by student's option	r.w.	5		
2	RW7003	The research work of a student, including an internship and implementation of master's thesis	420	0	0	0	420	0	0	0	0	420	0	0	by student's option	r.w.	14		
Catalogue of University disciplines																			
3	PP7301	Teaching practice	120	0	0	0	120	0	0	0	0	0	120	0	by student's option	pract	4		
4	SFT7310	Project Management in IT	180	15	105	60	15	15	30	0	0	0	0	0	by student's option	exam.	6		
5	PP7302	Research practice	240	0	0	0	240	0	0	0	0	0	0	240	by student's option	pract	8		
Electives																			
6	ANL7305	Machine Learning and Computer Statistics	150	15	90	45	15	15	15	15	0	0	0	0	by student's option	exam.	5		
7	ANL7307	Web Data Analysis	150	15	90	45	15	15	15	15	0	0	0	0	by student's option	exam.	5		
8	NET7304	Corporate Networks Design	150	15	90	45	15	15	15	15	0	0	0	0	by student's option	exam.			
9	ANL7314	Quantum computing	150	15	90	45	15	15	15	15	0	0	0	0	by student's option	exam.			
10	SFT7308	IoT and Artificial Intelligence	150	15	90	45	15	15	15	15	0	0	0	0	by	exam.	5		

6 Developer approval sheet

The title of the educational program: 7M06101 «Software Engineering»

№ п/п	Position, degree, last name and initials of a developer of the educational program	Date	Signature	Note
1	PhD, assistant- professor of the «CE» department Chinibayeva T.T.			
2	PhD, assistant- professor of the «CE» department Mukhanov S.B.		