

Ministry of Education and Science of Ukraine
State Higher Educational Institution
"Ukrainian State Chemical Technology University"

Rector SHEI USCTU
_____A.A. Pivovarov
«_____»_____2018

EDUCATIONAL-PROFESSIONAL PROGRAM
«Computer Engineering»

The second (master's) level
(name of the level of higher education)

Master
(name of the degree to be assigned)

BRANCH OF KNOWLEDGE _____ 12 Information Technology
(cipher and name of the field of knowledge)

SPECIALTY _____ 123 Computer Engineering
(the code and the name of the specialty)

Approved at the meeting of the
Academic Council SHEI USCTU
From «_____»_____2018.
protocol №_____

Dnipro
2018

Letter of approval

EDUCATIONAL PROFESSIONAL PROGRAM

Higher education level	The second (master's) level
Branch of knowledge	12 Information Technology
Specialty	123 Computer Engineering
Specialization	Computer Engineering
«AGREED»	«DEVELOPERS»
<p>The first vice-rector, the head of the scientific and methodical council of the SHEI USCTU</p> <p style="text-align: center;"><u>Goleus V.I.</u> (signature) (surname and initials)</p> <p>„_____” _____ 2018</p>	<p>Project team leader</p> <p style="text-align: center;"><u>Kosolap A.I.</u> (signature) (surname and initials)</p> <p>„_____” _____ 2018</p>
<p>Head of the NSC</p> <p style="text-align: center;"><u>Smotraev R.V.</u> (signature) (surname and initials)</p> <p>„_____” _____ 2018</p>	<p>Project team members</p> <p style="text-align: center;"><u>Volkova S.A.</u> (signature) (surname and initials)</p> <p>„_____” _____ 2018</p>
<p>Scientific-methodical department</p> <p style="text-align: center;"><u>Fomenko G.V.</u> (signature) (surname and initials)</p> <p>„_____” _____ 2018</p>	<p style="text-align: center;"><u>Nasonova S.S.</u> (signature) (surname and initials)</p> <p>„_____” _____ 2018</p>
<p>Dean of the Faculty KN and I</p> <p style="text-align: center;"><u>Levchuk I.L.</u> (signature) (surname and initials)</p> <p>„_____” _____ 2018</p>	
<p>Head of Department</p> <p style="text-align: center;"><u>Kosolap A.I.</u> (signature) (surname and initials)</p> <p>„_____” _____ 2018</p>	<p>The _____ educational-professional program was granted by the order of the rector № _____ of «_____» _____ 2018.</p>

I. PROFILE OF THE EDUCATIONAL PROFESSIONAL PROGRAM OF MASTER from the specialty "Computer Engineering"

Program profile (general information)	
Full name of the qualification in the original language	Degree in higher education Master in specialty "Computer Engineering"
The official name of the educational program	Educational-professional program "Computer Engineering"
Type of diploma and volume of educational program	Master's degree in computer engineering, unitary (double, common in the presence of relevant contracts, training programs); 90 ECTS credits
Full name of higher education institution awarding qualification	State Higher Educational Institution "Ukrainian State Chemical Technology University"
Accrediting organization	Accreditation Commission of Ukraine (DUU "Educational and Methodological Center for Quality of Education"). DESTINY.
Period of accreditation	Accredited in 2014 Series ND-IV, №0471213 dated June 3, 2014, the validity period of the certificate of accreditation until 2019
Cycle / Level	NRC Ukraine - level 7, FQ-EHEA - second cycle, EQF-LLL - 7 level
Prerequisites	The first (bachelor's) level
Language (s) of teaching	Ukrainian language
A	
The purpose of the educational program	
The purpose of the educational program	To provide students with the knowledge, skills and understanding in the field of information technology, in particular, computer engineering, which enable them to perform original research and work independently in production.
B	
Characteristics of the educational program	
Subject area (branch of knowledge, specialty)	Branch of Knowledge 12- Information Technologies: specialty 123- computer engineering
The main focus of the program and specialization	The emphasis is on modeling, optimizing, designing, developing and maintaining computer systems and networks, their hardware and software.
Program orientation	The research line is scientifically oriented, the teaching and applied line are practically oriented.
Features and differences	The program is scientifically or practically oriented, which defines the type of practice (module 1 or module 2 is selected in the cycle of vocational training courses).

C	Ability to work and study
Ability to work	Jobs in high-tech companies, enterprises; teachers of educational institutions of different levels of education, scientists in research organizations, research centers, laboratories.
Further training	Education at the third educational level for doctoral programs in the field of information technologies.
D	Teaching style and teaching methods
Approaches to teaching and learning	Combination of lectures, practical and seminar classes, experimental research in laboratories, writing course projects or works, self-study, preparation of qualifying work.
Methods of evaluation	Written and oral examinations, credits, presentations, defense of master's qualification work.
E	Program competencies
Integral competence (IC)	<i>Magister (Level 7): Ability to solve standard tasks and problems in a given field of professional activity or in a learning process that involves research and / or innovation and is characterized by uncertainty of conditions and requirements</i>
General Competence (GC)	<i>GC-1. Ability to think, analyze and synthesize.</i> <i>GC-2. Ability to apply knowledge in practical situations.</i> <i>GC-3. Knowledge and understanding of the subject area and understanding of the profession.</i> <i>GC 4. Ability to communicate in the native language both verbally and in writing.</i> <i>GC-5. Ability to communicate in a foreign language.</i> <i>GC-6. Ability to use information and communication technologies.</i> <i>GC-7. Ability to conduct research at the appropriate level.</i> <i>GC-8. Ability to search, process and analyze information from various sources.</i> <i>GC-9. Ability to generate new ideas and solutions to problems, to combine and experiment, to originality, constructiveness, cost-effectiveness and simple solutions.</i> <i>GC-10. Ability to identify, put and solve problems.</i> <i>GC-11. Ability to work in an international context.</i> <i>GC-12. Ability to design and manage projects.</i> <i>GC-13. Determination and persistence on the tasks and duties taken.</i> <i>GC-14. The desire to save the environment.</i> <i>GC-15. Ability to organize the work of the production unit in accordance with the requirements of safety of life and safety</i>
Special (Professional) Competence (SC)	<i>SC-1. Ability to apply knowledge and understanding of computer engineering to solve qualitative and quantitative problems in other areas of knowledge.</i> <i>SC-2. Ability to recognize and analyze new problems and draw up a strategic plan for their solution.</i>

SC-3. Ability to use knowledge, skills and skills from the disciplines of the general training cycle for theoretical mastering of disciplines of professional direction and the decision of practical tasks of information technologies.

SC-4. Competence in the field of planning, designing and implementation of research work, from the stage of recognition of the problem to the evaluation of the results and formulation of conclusions; This includes the ability to select methods and procedures of the appropriate level.

SC-5. Skills to create and explore mathematical and computer models of computing and information processes related to the functioning of objects of professional activity.

SC-6. Ability to plan, design and implement research projects.

SK-7 Ability to design hardware, software and information support of specialized computer systems.

SC-8 Estimating skills, which include aspects such as error analysis, accuracy estimation, and the correct use of measurement units.

SC-9. Ability and use of modern computer and communication methods.

SC-10 Skills to install, configure and maintain system, tool, and application software and information systems.

SC-11. Skills of presentation of scientific materials and arguments in written and oral form for a competent audience.

SC-12. Ability to business communication in the professional field, knowledge of the basics of business communication, teamwork skills.

SC-13 Ability to determine design goals, performance criteria, and limitations on the applicability of computer systems.

SC-14 Ability to analyze, optimize and simulate the complexity of the architecture of computer systems and networks with the application of modern principles of mathematical, software, linguistic, technical and information support construction.

SC-15 Ability to develop design strategies, design goals, performance criteria, applicability limitations, ability to develop new methods and tools for designing computer systems and networks.

SC-16 Knowledge of the basic principles of the construction of computer systems and networks, principles of construction and functioning of their peripheral means.

SC-17. Ability to research and optimize complex computer systems and networks based on mathematical and computer modeling methods.

SC-18 Knowledge of legal bases and legislation of Ukraine in the field of information security.

SC-19. Ability to analyze, theoretically and experimentally explore methods, algorithms, programs of hardware-software complexes and systems.

SC-20 Skills for choosing a strategy for planning the life cycle of the system.

F	<i>Program learning outcomes</i>
Learning outcomes in the cognitive (cognitive) field	<p><i>LCF-1. To determine the ethical implications of scientific research and their implementation.</i></p> <p><i>LCS-2.To determine the areas of adequacy for specific models.</i></p> <p><i>LCF-3. Ability to apply the results of scientific research in the field of computer engineering to create complex hardware and software systems as a high-quality technical product with the help of advanced technological rules, procedures and techniques.</i></p> <p><i>LCF-4. Preparing to use existing and develop new mathematical methods for solving tasks related to the design and use of computer systems and networks.</i></p> <p><i>LCF-5. Ability to investigate the processes occurring in computer systems, networks and their components on the basis of mathematical models and computational methods.</i></p> <p><i>LCF-6. Ability to arrange and conduct experiments according to the given methodology and conduct their analysis, as well as to make a choice of optimal decisions, to prepare reviews, reports and scientific publications.</i></p> <p><i>LCF-7. Ability to analyze and design high-performance computer systems with a different structural organization using the principles of parallel and distributed information processing.</i></p> <p><i>LCF-8. Ability to use means of modern programming languages for creating software products, their ability to apply during program implementation of algorithms for professional tasks.</i></p> <p><i>.LCF-9. Ability to identify elements of computer circuitry.</i></p> <p><i>LCF-10. To develop requirements and specifications of components of information systems and objects of professional activity.</i></p> <p><i>LCF-11.To adjust the instructions in the case of a small manufacturing company research to improve the quality of production control.</i></p> <p><i>RCS-12.To design informational support (logical and physical structure of databases) of information systems.</i></p> <p><i>LCF-13.To establish restrictions on the applicability of computer systems.</i></p> <p><i>LCS-14.To evaluate system performance criteria.</i></p> <p><i>LCF-15 To develop specifications for computer equipment, communications and maintenance.</i></p> <p><i>LCF-16. Ability to work with normative legal acts and patent documents at the registration and submission of materials for the application for an industrial property object (invention, utility model, industrial design, mark for goods and services), as well as licenses for the use of the invention</i></p>
Learning outcomes in the value-motivational sphere	<p><i>RTMS-1. To meet the requirements of professional ethics in the workplace.</i></p> <p><i>RTMS-2.To participate in discussing the results of various types of work (research, search, design, etc.).</i></p> <p><i>RTMS-3.To show a desire to work independently.</i></p>

	<p><i>RTMS-4.To ask questions in discussions with colleagues and lecturers.</i></p> <p><i>RTMS-5.To demonstrate the acquired professional skills in creating scientific and project documentation.</i></p> <p><i>RTMC-6.To organize safety precautions in the workplace.</i></p> <p><i>RTMS-7.To collaborate with colleagues in related fields to achieve research or project objectives.</i></p>
<p>Results of training in the psychomotor sphere</p>	<p><i>RTPS-1. To design an information model of an object to demonstrate the principles of its work.</i></p> <p><i>RTPS-2. Repeatedly reproduce the results of experiments to obtain reliable values and calculate the error of the experiment.</i></p> <p><i>RTPS-3.To combine different research methods to determine the value of the studied parameters.</i></p> <p><i>RTPS-4.To maintain safety precautions in the workplace.</i></p>

II. DETERMINATION OF TRAINING DISCIPLINES / MODULES, which will ensure achievement of the planned results of training and forms of certification of higher education applicants for the educational program in accordance with the standard of higher education

Table 1. Distribution of the content of the educational-professional program in terms of training cycles and form of final control

No p/p	Subjects	Loans	Hours	Sem este	Tetra mestr	Final control
1. COMPULSORY PART						
1.1. General training cycle (generates general competencies)						
1.1.1	Intellectual Property	2,0	60	2	4	credit
1.1.2	Psychology and methods of teaching specialty disciplines in high school	2,0	60	2	3	credit
1.1.3	Foreign language (in professional orientation)	4,0	120	2	3, 4	Diff. credit
1.1.4	Labor protection in the industry	2,0	60	1	2	exam
1.1.5	Civil Protection	1,5	45	1	1	credit
1.1.6	Methodology and organization of scientific research	4,0	90	1	1	Diff. credit
1.1.7	Physical culture (out of loans)					
	TOTAL BY Cycle 1.1	14,5	435			
1.2. Cycle of professional training (forms special (professional) competence)						
1.2.1	Algorithmization and programming	8,0	240	1,2	1,2,3,4	diff. credit
1.2.2	Computer logic	9,0	270	1,2	1,2,3,4	exam
1.2.3	Computer Architecture	7,0	210	4	7,8	exam
1.2.4	Computer circuitry	7,0	210	4	7,8	exam
1.2.5	System programming	8,0	240	3,4	5,6,7,8	exam
1.2.6	System software	8,0	240	5,6	7-10	exam
1.2.7	Technologies of designing computer system	5,0	150	6	11,12	exam
1.2.8	Computer systems	9	270	5,6	9-12	exam

1.2.9	Computer networks	6,0	180	5	9,10	exam
1.2.10	Parallel and distributed computing	6,0	180	7,8	13,14, 15	exam
1.2.11	Organization of databases and knowledge	4,0	120	3	5,6	credit
1.2.12	Information protection in computer systems	4,0	120	7	13,14	exam
1.2.13	Software Engineering	6,0	180	7,8	13,14, 15	exam
1.2.14	Life Safety	2	60	1	2	credit
1.2.15	Basics of labor protection	3,0	90	8	15	exam
1.2.16	Pre-diploma and Production Practice	6,0	180	8	16	diff. credit
1.2.17	Preparation of qualifying bachelor's work and state attestation (SA)	9,0	270	8	16	SA
	TOTAL BY Cycle 1.2	107,0	3210			
1.2. Cycle of professional training (forms special (professional) competence)						
1.2.1	Optimal design of computer system	6,0	210	2	3,4	exam
1.2.2	Research and design of embedded computer systems	4,5	135	1	1,2	credit
1.2.3	Robotics	5,0	150	2	3,4	exam
1.2.4	Preparation of qualification master's work and state certification	24,5	675			Yes
	TOTAL BY Cycle 2.1	40,0	1200			
	MANDATORY PART WITH TOTAL	54,5	1635			
2. CHECK PART						
2.1. General training cycle (generates general competencies)						
2.2. Cycle of professional training (forms special (professional) competence)						
2.2.1	Research of Computer Systems of Artificial Intelligence	6,0	180	1	1, 2	exam
2.2.2	Internet technology	5,0	150	1	1, 2	exam
2.2.3	Digital processing of signals and images	8,0	240	1	1, 2	exam., Course work
2.2.4	Programming in language Java	6,0	180	2	3, 4	exam

2.2.5	One of the modules	10,5	315			
Module 1						
	Research practice	6	180			diff. credit
	Present practice	4,5	135			diff. credit
Module 2						
	Research practice	6	180			diff. credit
	Pre-diploma practice	4,5	135			diff. credit
	TOTAL BY Cycle 2.2	35,5	1065			
	CURRENT PART WITH TIME	35,5	1065,0			
	TOTAL VOLUME	90,0	2700			

Table 2. Generalized distribution of the content of educational and professional program by groups of components (disciplines) and training cycles

№ p/p	Training cycle	Educational load of the applicant of higher education (credits /%)		
		Compulsory components of an educational and professional program	Elective components of the educational-professional program	Total for the whole period of study
1.	General training cycle (generates general competencies)	14,5 / 16	-	14,5 / 16
2.	Cycle of professional training (forms special (professional) competence)	40/ 45	35,5 / 39	75,5 / 84
Total for the whole period of study		151,5 / 67	54,5 / 61	35,5 / 39

Table 3. List of disciplines of the educational-professional program of preparation of applicants for education of the second(Magister's) level, ECTS credits in training periods for training cycles, and a list of formed competencies and learning outcomes

Training cycles	Criteria of competencies	Criteria for learning outcomes	List of disciplines	ECTS Loans
1	2	3	4	5
1.1.-2.1. General training cycle (generates general competencies)	GC-2, GC-4, GC-5, GC-6, GC-7, GC-8, GC-9, GC-10, GC-11, GC-12, GC-13, SC-1, SC-3, SC-5, SC-6, SC-7, SC-9, SC-11, SC-12, SC-14, SC-18, SC-19.	LCF-1, LCF-2, LCF-3, LCF-6, LCF-10, LCF-11, LCF-15, LCF-16, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-7.	1.1.1. Intellectual Property	3,0
	GC-1, GC-2, GC-3, GC-4, GC-5, GC-6, GC-7, GC-8, GC-10, GC-11, GC-13, GC-15, SC-1, SC-3, SC-8, SC-9, SC-11, SC-12, SC-18.	LCF-1, LCF-2, LCF-3, LCF-6, LCF-10, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-7	1.1.2. Psychology and methods of teaching specialty disciplines in high school	3,0
	GC-1, GC-2, GC-3, GC-4, GC-5, GC-6, GC-8, GC-11, GC-13, SC-1, SC-9, SC-12	LCF-8, LCF-16, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-7	1.1.3. Foreign language in professional direction	4,0
	GC-1, GC-2, GC-3, GC-4, GC-6, GC-8, GC-10, GC-11, GC-12, GC-13, GC-	LCF-3, LCF-10, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5,	1.1.4. Occupational Health	2,0

	14, GC-15, SC-1, SC-2, SC-3, SC-9, SC-11, SC-12, SC-18	RTMS-6, RTMS-7		
	GC-2, GC-3, GC-4, GC-6, GC-10, GC-13, GC-14, GC-15, SC-1, SC-2, SC-3, SC-9, SC-10, SC-12, SC-18	LCF-1, LCF-2, LCF-9, RTMS-4, RTMS-6	1.1.5. Civil Protection	8,0
	GC-2, GC-3, GC-4, GC-6, GC-9, GC-10, GC-13, GC-14, GC-15, SC-1, SC-2, SC-4, SC-5, SC-6, SC-9, SC-13, SC-14, SC-15, SC-17, SC-18, SC-19.	LCF-1, LCF-2, LCF-3, LCF-4, LCF-6, LCF-7, LCF-10, LCF-11, LCF-12, LCF-13, LCF-14, LCF-15, LCF-16, RTMS-1, RTMS-3, RTMS-4, RTMS-5, RTMS-6, RTMS-7, RTPS-1.	1.1.6. Methodology and organization of scientific research	3,0
			1.1.7. Physical education (extracurricular discipline)	
			TOTAL 1.1	14,5
1.2 — 2.1. Cycle of professional training (forms special (professional) competence)	GC-1, GC-2, GC-3, GC-4, GC-6, GC-7, GC-8, GC-9, GC-10, GC-12, GC-13, GC-14, GC-15, SC-1, SC-2, SC-3, SC-4, SC-5, SC-6, SC-7, SC-8, SC-9, SC-11, SC-12, SC-13, SC-14, SC-15, SC-17, SC-19, SC-	LCF-1, LCF-2, LCF-3, LCF-4, LCF-5, LCF-6, LCF-7, LCF-8, LCF-9, LCF-10, LCF-11, LCF-12, LCF-13, LCF-14, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-6,	1.2.1. Optimal design of computer systems	6,0

	20	RTMS-7, RTPS-1, RTPS-2, RTPS-3, RTPS-4		
	GC-1, GC-2, GC-3, GC-4, GC-5, GC-6, GC-9, 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	LCF-1, LCF-2, LCF-3, LCF-5, LCF-7, LCF-8, LCF-9, LCF-12, LCF-13, LCF-14, LCF-15, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-6, RTMS-7, RTPS-1, RTPS-2, RTPS-3, RTPS-4	1.2.2. Research and design of embedded computer systems	4,5
	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, GC-14, GC-15, SC-1, SC-2, SC-3, SC-4, SC-5, SC-7, SC-9, SC-10, SC-11, SC-12, SC-14, SC-15	LCF-1, LCF-2, LCF-3, LCF-4, LCF-5, LCF-7, LCF-8, LCF-9, LCF-10, LCF-12, LCF-13, LCF-14, LCF-15, RTPS-1, RTPS-4	1.2.3. Robotics	5,0
	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, GC-14, GC-15, 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,	LCF-1, LCF-2, LCF-3, LCF-4, LCF-5, LCF-6, LCF-7, LCF-8, LCF-9, LCF-10, LCF-11, LCF-12, LCF-13, LCF-14, LCF-15, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5,	1.2.4. Preparation of qualification master's work and state certification	24,5

	SC-15, SC-16, SC-17, SC-18, SC-19, SC-20.	RTMS-6, RTMS-7, RTPS-1, RTPS-2, RTPS-3, RTPS-4.		
	GC-1, GC-2, GC-3, GC-4, GC-5, GC-6, GC-8, GC-9, GC-10, GC-13, GC-14, GC-15, SC-1, SC-2, SC-3, SC-4, SC-5, SC-9, SC-10, SC-11, SC-15, SC-17, SC-19, SC-20	LCF-1, LCF-2, LCF-3, LCF-4, LCF-5, LCF-6, LCF-7, LCF-8, LCF-9, LCF-12, LCF-13, LCF-14, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-6, RTMS-7, RTPS-1, RTPS-2, RTPS-3, RTPS-4	2.2.1. Research of Computer Systems of Artificial Intelligence	6,0
	GC-1, GC-2, GC-3, GC-4, GC-5, GC-6, GC-7, GC-8, GC-9, GC-10, GC-13, GC-14, GC-15, 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	LCF-1, LCF-2, LCF-3, LCF-5, LCF-6, LCF-7, LCF-9, LCF-10, LCF-12, LCF-13, LCF-14, LCF-15, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-6, RTMS-7, RTPS-1, RTPS-2, RTPS-3, RTPS-4	2.2.2. Internet- technology	5,0
	GC-1, GC-2, GC-3, GC-4, GC-5, GC-6, GC-7, GC-8, GC-9, GC-10, GC-13, GC-14, GC-15, SC-2, SC-3, SC-4, SC-5, SC-6, SC-	LCF-1, LCF-2, LCF-5, LCF-10, LCF-11, LCF-12, LCF-13, LCF-14, LCF-15, RTMS-1, RTMS-2, RTMS-3,	2.2.3. Digital processing of signals and images	8,0

	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	RTMS-4, RTMS-5, RTMS-6, RTMS-7, RTPS-1, RTPS-2, RTPS-3, RTPS-4		
	GC-1, GC-2, GC-3, GC-4, GC-5, GC-6, GC-7, GC-8, GC-9, GC-10, GC-13, GC-14, GC-15, 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	LCF-1, LCF-2, LCF-7, LCF-8, LCF-10, LCF-11, LCF-12, LCF-13, LCF-14, LCF-15, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-6, RTMS-7, RTPS-1, RTPS-2, RTPS-3, RTPS-4	2.2.4. Programming in language Java	6,0
			2.2.5. One of the modules	10,5
			Module 1	
	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, GC-14, GC-15, 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.	LCF-1, LCF-2, LCF-3, LCF-4, LCF-5, LCF-6, LCF-7, LCF-8, LCF-9, LCF-10, LCF-11, LCF-12, LCF-13, LCF-14, LCF-15, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-6, RTMS-7, RTPS-1, RTPS-2, RTPS-3, RTPS-4.	Research practice	
	GC-1, GC-2, GC-3, GC-4,	LCF-1, LCF-2, LCF-7,	Present practice	

GC-5, GC-6, GC-7, GC-13, SC-1, SC-9, SC-11, SC-12	LCF-8, LCF-12, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-6, RTMS-7, RTPS-4		
		Module 2	
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, GC-14, GC-15, 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.	LCF-1, LCF-2, LCF-3, LCF-4, LCF-5, LCF-6, LCF-7, LCF-8, LCF-9, LCF-10, LCF-11, LCF-12, LCF-13, LCF-14, LCF-15, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-6, RTMS-7, RTPS-1, RTPS-2, RTPS-3, RTPS-4.	Research practice	
GC-1, GC-2, GC-3, GC-6, GC-8, GC-10, GC-11, GC-12, GC-13, GC-14, GC-15, SC-1, SC-2, SC-4, SC-5, SC-6, SC-8, SC-9, SC-12, SC-13, SC-18, SC-19, SC-20	LCF-1, LCF-2, LCF-7, LCF-8, LCF-12, LCF-13, LCF-14, LCF-15, RTMS-1, RTMS-2, RTMS-3, RTMS-4, RTMS-5, RTMS-6, RTMS-7, RTPS-1, RTPS-2, RTPS-3, RTPS-4	Pre-Degree Industrial Practice	
		TOTAL 1.2-2.1	75,5

			TOTAL	90,0
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Table 4. Matrix of conformity of program competences to educational components

The code of the discipline for the curricula	1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.1.6	1.2.1	1.2.2	1.2.3	1.2.4	2.2.1	2.2.2	2.2.3	2.2.4	2.2.5 Module 1		2.2.5 Module 2	
															Research practice	Present practice	Research practice	Pre-Degree Industrial Practice
INT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC-14				+	+	+	+	+		+	+	+	+	+	+		+	+
GC-15		+		+	+	+	+		+	+	+	+	+	+	+		+	+
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							+	+		+	+	+	+	+	+		+	+

**Table 5. Matrix providing programmatic learning outcomes for relevant components
Educational-professional program**

The code of the discipline for the curricula	1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.1.6	1.2.1	1.2.2	1.2.3	1.2.4	2.2.1	2.2.2	2.2.3	2.2.4	2.2.5 Module 1		2.2.5 Module 2	
															Research practice	Present practice	Research practice	Pre-Degree Industrial Practice
<i>LCF-1.</i>	+	+			+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>LCF-2.</i>	+	+				+	+	+	+	+	+	+	+	+	+	+	+	+
<i>LCF-3.</i>	+	+		+	+	+	+	+	+	+	+	+	+		+		+	
<i>LCF-4.</i>						+	+		+	+	+				+		+	
<i>LCF-5.</i>							+	+	+	+	+	+	+	+	+		+	
<i>LCF-6.</i>	+	+				+	+			+	+	+			+		+	
<i>LCF-7.</i>						+	+	+	+	+	+	+	+	+	+	+	+	+
<i>LCF-8.</i>			+				+	+	+	+	+		+	+	+	+	+	+
<i>LCF-9.</i>					+		+	+	+	+	+	+						
<i>LCF-10.</i>	+	+		+		+	+		+	+		+	+	+			+	
<i>LCF-11.</i>	+					+	+			+			+	+	+		+	
<i>LCF-12.</i>						+	+	+	+	+	+	+	+	+	+	+	+	+
<i>LCF-13.</i>						+	+	+	+	+	+	+	+	+	+		+	+
<i>LCF-14.</i>						+	+	+	+	+	+	+	+	+	+	+	+	+
<i>LCF-15.</i>	+					+		+	+	+		+	+	+	+	+	+	+
<i>LCF-16.</i>	+		+			+				+								

<i>RTMS-1.</i>	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+
<i>RTMS-2.</i>	+	+	+	+			+	+	+		+	+	+	+	+	+	+	+
<i>RTMS-3.</i>	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+
<i>RTMS-4.</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>RTMS-5.</i>	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+
<i>RTMS-6.</i>				+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>RTMS-7.</i>	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+
<i>RTPS-1.</i>						+	+	+	+	+	+	+		+	+		+	+
<i>RTPS-2.</i>							+	+		+	+	+		+	+		+	+
<i>RTPS-3.</i>							+	+		+	+	+		+	+		+	+
<i>RTPS-4.</i>							+	+	+	+	+	+	+	+	+	+	+	+

III - FORMS OF APPLICATION OF HIGHER EDUCATION BUILDERS

<p>Forms of certification of applicants for higher education</p>	<p>A mandatory form of state certification establishes the implementation and protection of qualifying (diploma) works (projects).</p> <p>The system of competencies and learning outcomes indicated in sections IV and V are issued to the state attestation.</p> <p>The main means of objective control of the degree of achievement of the ultimate goals of education and training of bachelors is the technology for the implementation and protection of qualifying (diploma) works (projects) defined in the following documents: Regulation on EC, Methodological guidelines for the implementation of qualification (diploma) projects (works)</p>
<p>Requirements for final qualification work (in the presence)</p>	<p>Requirements for the final qualification work are set out in the Methodological Guidelines for the implementation of qualification (diploma) projects (works).</p> <p>The final qualification work is accompanied by a review by the supervisor and a reviewer's review, which is based on verification of the completeness of the tasks, the quality of work in general and its verification of plagiarism.</p>
<p>Requirements for the certification / single state qualification exam (exams) (in the presence)</p>	
<p>Requirements for public security (demonstrations) (in the presence)</p>	<p>Requirements for public security are formulated in the Regulation on EC and methodological guidelines for the implementation of qualification (diploma) projects (works).</p>

IV - Requirements for the system of internal quality assurance in higher education

Determined in accordance with European Standards and Recommendations for the Quality of Higher Education (ESG) and Article 16 of the Law of Ukraine "On Higher Education"

Components of the system of internal quality assurance in higher education	Definitions, references and relevant documents
Principles and procedures for ensuring the quality of education	<ul style="list-style-type: none"> - Law of Ukraine "On Higher Education" of 01.07.2014 № 1556-VII; - Provisional provision on the organization of the educational process at the Secondary School of Economics and Management of UDCTU (Order of the Rector of the Secondary School of Economics and Technical University of Udmurt of UDCTMU dated November 30, 2015, No. 290); - Regulations on the diploma with honors from the Dvnz UDKhTU (Order of the Rector of the Dvnz UDKhTU dated 25/02/2016, No. 55); - Regulation on the procedure for the creation and organization of the work of the examination commission at the Secondary School of Economics and Business Administration of Ukraine (Order of the Rector dated 01.04.2015, No. 68); - Regulations on the development of approval and review of working programs of educational disciplines (Order of the Rector of the Dvnz UDKhTU dated 01.12.15, No. 291)
Monitoring and periodic review of educational programs	Annual monitoring of industry and labor market requirements, revision of educational programs, work curricula, work programs of academic disciplines. About approval of the composition of the project groups for the development of educational programs (Order of the Rector of the Dvnz UDKhTU dated March 10, 2016, No. 74)
Annual assessment of higher education applicants	Regulations on the organization of rector's control over the quality of education (Order of the Rector dated March 17, 2014, No. 78)
Annual evaluation of scientific-pedagogical and pedagogical workers of a higher educational	Regulations on the commission of rector's control pedagogical skills of scientific and pedagogical workers of the University (Order of the Rector of the Dvnz UDKhTU dated April 04, 2016, No. 85), Order of application of the rating system for the assessment of the

establishment	<p>activity of scientific and pedagogical workers of the Dvnz UDKhTU (Order of the Rector dated 04.06.2010, No. 209 with changes to the order of 09.06 .0101 p. № 147), The procedure for applying the rating system for the assessment of the activities of the departments and faculties of the Secondary School of Economics and Management of the UkhKhTUU (Order of the Rector dated 04/06/2010, No. 209).</p> <p>Regularly publishing the results of such assessments on the official website of the higher education institution, on information stands and in any other way.</p>
Improvement of qualification of scientific and pedagogical, pedagogical and scientific workers	<p>Raising the qualification of scientific and pedagogical workers is carried out in accordance with the provision approved by the order of the Ministry of Education and Science of Ukraine from 24.01.2013. № 48 and the Regulations on the upgrading of qualifications and internship of pedagogical and scientific-pedagogical workers of the Dvnz UDKhTU (Order of the Rector of the Dvnz UDKhTU dated May 28, 2016, No.105)</p>
The availability of the necessary resources for the organization of the educational process	<p>Educational, methodological, logistical and personnel support corresponds to licensing conditions (CM Decree dated December 30, 2015 № 1187) of educational activity. License Serial AE №636496. Certificates in the field of training and specialties.</p>
Availability of information systems for effective management of the educational process	<p>The temporary provision on the organization of the educational process at the State Pedagogical University of the Udmurt State University of Agriculture (Order of the Rector of the State Pedagogical University of Udmansk UDCTU dated 30.11.2015 № 290) is supported by the Information-analytical control system of the educational process, which consists of subsystems: the Applicant, the Educational process.</p>
Publicity of information about educational programs, degrees of higher education and qualifications	<p>Information about educational programs, degrees in higher education and qualifications is public and fully disclosed on the official web-portal of the university http://udhtu.com.ua</p>
Prevention and Detection of Academic Plagiarism	<p>Verification of the completeness of the tasks, the quality of work in general and its verification for plagiarism is carried out by the teacher - the head of the course or diploma work (project) in the established procedure with the use of the appropriate software.</p>