1. THE EDUCATIONAL PROGRAMME PROFILE

1 – GENERAL INFORMATION	
Full name of a HEI and a structural unit	State University of Trade and Economics Faculty of Information Technology Department of Software Engineering and Cybersecurity
Higher Education Level and qualification name in the original language	Second (Master's) Cycle Qualification – Master's Degree in software engineering
Field of Knowledge	F Information Technology
Subject Area	F2 Software Engineering
Educational programme official name	Software Engineering
Restrictions on Modes of Study	There are no restrictions
Compliance with the Higher Education Standard of the Ministry of Education and Science of Ukraine	Complies with the Higher Education Standard of the Ministry of Education and Science of Ukraine (Order No. 1424 dated 17 of November.2020)
Diploma type and the Educational programme scope	Master's Degree Diploma, single, 90 ECTS credits, training period - 1 year 4 months
Accreditation Availability	Specialty accreditation certificate No. 3590, valid until 12/23/2024, issued by the National Agency for Quality Assurance in Education.
Higher Education Cycle/Level	National Qualification Frameworks of Ukraine – level 7, FQ-EHEA – the second cycle, EQF-LLL –level 7
Prerequisites for Admission to the Educational Programme	Bachelor's degree (NQF level 6) or higher level
Language(s) of training	Ukrainian
Programme validity period	Until the approval of the new edition of the educational programme
Internet address for permanent placement of the Educational programme description	https://knute.edu.ua/
2 – THE PURPOSE OF THE EDUCATIONAL PROGRAMME	
Formation of specialists able to solve complex non-standard tasks and problems of research and innovation in the field of software engineering	
3 –EDUCATIONAL PROGRAMME CHARACTERISTICS	
Subject Area	- ***Object of study and activity***: processes of software development, modification, analysis, quality assurance, implementation and maintenance. - ***Learning objectives:*** training of specialists who are able to solve complex tasks and problems in the development, quality assurance, implementation and maintenance of software tools, which involves research and/or innovation and is characterised by uncertainty of conditions and requirements. - ***Theoretical content of the subject area:*** basic mathematical, informatics, linguistic, and economic concepts of software development and maintenance and quality assurance.

	- ***Methods, techniques and technologies***: methods of analysis and modeling of the applied field, identification of information needs, classification and analysis of data for software design; methods of developing software requirements; methods of analysis and construction of software models; methods of design, construction, integration, testing and verification of software; methods of modifying software components and data; models and methods of reliability and quality in software engineering; methods of software project management - ***Tools and equipment***: software, hardware, and cloud-based tools to support software engineering processes.
Educational Programme Orientation	Educational and professional; applied.
The Main Focus of the Educational Programme	Specialised education in the field of study "Information Technology", subject area "Software Engineering". The emphasis is on the specialist's ability to carry out research and innovation activities in the real conditions of industrial software production. Keywords: functional programming, logic programming, biometric authentication technologies; GRID technologies; multimedia systems design; telecommunication network security.
Educational Programme Features	Integration of professional training in software engineering with innovative activities, focus on the implementation of real software projects.
4 – EMPLOYABILITY AND FURTHER EDUCATION OPPORTUNITIES FOR GRADUATES	
Employability	Graduates of this educational programme can work as specialists in the design, development, and testing of software in the field of information technology and hold the following primary positions according to the classification of professions DK 003:2010: 213 Professionals in the field of computing (computerization) 2132 Professionals in the field of programming 2132.2 Computer program developers 312 Technical specialists in the field of computing 3121 Programming technicians 2132.2 Software engineer 2132.2 Programmer (database) 2132.2 Application programmer 2132. 2 System Programmer 3121 Programming Technician 3121 Information Technology Specialist 3121 Computer Graphics (Design) Specialist 3121 Software Development and Testing Specialist 3121 Computer Programming Specialist 2447 Project and Program Management Professionals.
Further Education Opportunities	Opportunity to continue education at the third (educational and scientific) cycle of higher education. Acquisition of additional qualifications within the adult education system."
5 – TEACHING AND ASSESSMENT	
Teaching and learning	A balanced combination of classroom studies (lectures, discussions, seminars, small group workshops, independent work with information sources, and teacher consultations), distance learning, and independent work based on problem-based, interactive learning and self-study.

Assessment	The assessment of students' learning outcomes is carried out in accordance with the Regulations on Assessment of Undergraduate and Postgraduate Students' Learning Outcomes at SUTE and includes the following control measures: current and final examinations, and certification. Current control is carried out during practical/laboratory classes and based on the results of independent work. It involves the assessment of students' theoretical training during seminars and acquired practical skills during laboratory/practical work. Final control is a control measure that involves establishing the compliance (measurement, evaluation) of the learning outcomes obtained by a person with the requirements of the Educational programme in terms of the relevant educational component, which is carried out at the university in the form of a credit and an exam. Students' learning outcomes at SUTE are assessed on a 100-point scale, where: 60-100 points – learning outcomes that entitle the student to obtain ECTS credits; 0-59 points – unsatisfactory learning outcomes that do not entitle the student to obtain ECTS credits.
6 - PROGRAMME COMPETENCES	
Integral competence	Ability to solve complex tasks and problems in a particular field of professional activity or in the process of study, which involves research and/or innovation and is characterised by uncertainty of conditions and requirements.
General competences (GC)	GC01 Ability to think abstractly, analyse and synthesize. GC02 Ability to communicate in a foreign language both orally and in writing. GC03 Ability to conduct research at the appropriate level. GC04 Ability to communicate with representatives of other professional groups of different levels (with experts from other fields of knowledge/types of economic activity). GC05 Ability to generate new ideas (creativity).
Special (professional, subject-specific) competences (SC)	SC01 Ability to generate new ideas (creativity). SC02 Ability to develop and implement scientific and/or applied projects in the field of software engineering. SC03 Ability to design software architecture, model the processes of functioning of individual subsystems and modules. SC04 Ability to develop and implement new competitive ideas in software engineering. SC05 Ability to develop, analyse and apply specifications, standards, rules and guidelines in the field of software engineering. SC06 Ability to effectively manage financial, human, technical and other project resources in the field of software engineering. SC07 Ability to critically reflect on problems in the field of information technology and within the field of study, integrate relevant knowledge and solve complex problems in broad or multidisciplinary contexts. SC08 Ability to develop and coordinate processes, stages and iterations of the software life cycle based on the application of modern software development models, methods and technologies.

	SC09 Ability to ensure the quality of software.
7 –PROGRAMME LEARNING OUTCOMES	
	PLO01 Know and apply modern professional standards and other regulatory documents on software engineering PLO02 Evaluate and select effective methods and models for the development, implementation, and maintenance of software and management of relevant processes at all stages of the life cycle. PLO03 Build and research models of information processes in the applied field. PLO04 Identify information needs and classify data for software design. PLO05 Develop, analyse, justify and systematise software requirements. PLO06 Develop and evaluate software design strategies; justify, analyse and evaluate design options in terms of the quality of the final software product, resource constraints and other factors. PLO07 Analyse, evaluate and apply modern software and hardware platforms at the system level to solve complex software engineering problems. PLO08 Develop and modify software architecture to meet customer requirements. PLO09 Reasonably choose paradigms and programming languages for software development; apply in practice modern software development tools. PLO10 Modify existing and develop new algorithmic solutions for detailed software design. PLO11 Ensure quality at all stages of the software life cycle, including the use of relevant models and evaluation methods, as well as automated software testing and verification tools. PLO12 Make effective organizational and managerial decisions in the face of uncertainty and changing requirements, compare alternatives, and assess risks. PLO13 Configure software, manage its changes and development of software documentation at all stages of the life cycle. PLOO14 Forecast the development of software systems and information technologies. PLO15 Perform software reengineering in accordance with customer requirements. PLO16 Plan, organize and perform testing, verification and validation of software. PLO17 Collect, analyse, evaluate information necessary for solving scientific and applied problems using scientific and technical literature, databases and other sources.
8 – RESOURCE SUPPORT FOR PROGRAMME IMPLEMENTATION	
Staffing	Fully complies with the licensing requirements for educational activities. The educational programme “Software Engineering” is implemented by academic staff with scientific degrees and/or academic titles who meet the requirements of the current legislation of Ukraine and have a sufficient level of scientific and professional qualifications. Practitioners, representatives of professional associations and foreign partners are also involved in the educational process. All academic staff undergo training/professional development every five years.

Material and technical support	Fully complies with the Licensing Requirements for Educational Activities. For the convenience of higher education students, there is a corporate distance learning system and an automated educational process management system called 'MIA: Education'. The university has modern computer classrooms with specialised software, a Business Simulation Training and Research Centre and a Smart Library. All conditions for the education of persons with disabilities have been created. SUTE social infrastructure is available.
Information and educational-methodological support	An ECTS Information Package is developed for each educational programme at the university. Each student can view and create his/her individual plan, view the curriculum, grades obtained in disciplines, class schedule, and communicate with participants in the educational process through a personal account in the MIA: Education automated information system. Course summaries, course outlines, syllabi and assessment criteria for educational components are posted on the corporate distance learning platform. The university's electronic repository provides full-text access to SUTE scientific and educational literature, manuscripts of qualification works and theses for obtaining academic degrees. For the convenience of higher education students, the university has developed a Catalogue of Academic Disciplines, according to which students have the right to choose elective educational components.
9 – ACADEMIC MOBILITY	
National credit mobility	National credit mobility is implemented within the framework of memoranda of cooperation concluded between SUTE and other higher education institutions (research institutions) in Ukraine under the law.
International credit mobility	The University has concluded cooperation agreements between SUTE and foreign higher education institutions, which provide for partner exchange and training of students under international programs and projects within the framework of the Erasmus+ programme. The University has concluded cooperation agreements between SUTE and foreign higher education institutions, within the framework of which partner exchange and student training under international programmes and projects within the framework of the Erasmus+ programme is carried out. Organisation of credit mobility (except for the 1st year) for bachelors. mobility agreement between SUTE and the Slovak University of Technology (Bratislava): Erasmus+ Learning Agreement Student Mobility for Studies International Mobility (KA171) The academic mobility agreement is valid from 2024 to 2027.
Foreign higher education students training	It is carried out in accordance with the requirements of the current legislation.

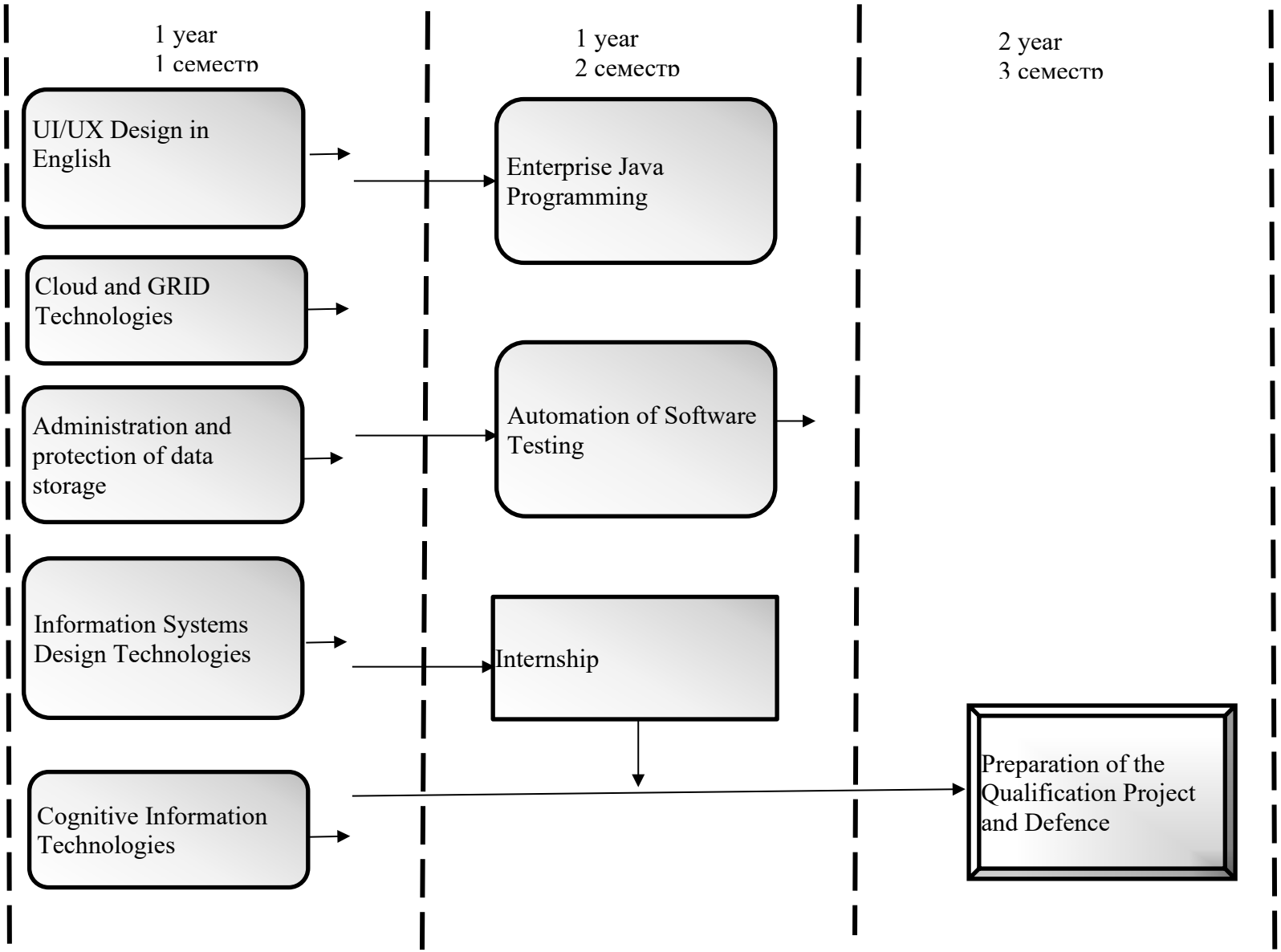
2. LIST OF THE EDUCATIONAL PROGRAMME COMPONENTS AND THEIR LOGICAL SEQUENCE

2.1 LIST OF EP COMPONENTS

Code	Educational programme components	The number of credits	Form of control
1	2	3	
EP Compulsory Components			
CC 1.	UI/UX design in English.	6	Exam
CC 2.	Cloud and GRID technologies	6	Exam
CC 3.	Data warehouse administration and security	6	Exam
CC 4.	Information systems design technologies	6	Exam
CC 5.	Cognitive information technologies	6	Exam
CC 6.	Industrial programming JAVA	7,5	Exam
CC 7.	Software testing automation	6	Exam
CC 8.	Internship	10,5	Credit
CC 9.	Qualification paper preparation and defense	12	Exam
Total Volume of Compulsory Components:		**66**	
EP Elective Components			
EC1.	Educational Component 1		Exam
EC2.	Educational Component 2		Exam
EC3.	Educational Component 3		Exam
EC4.	Educational Component 4		Exam
Total Volume of Elective Components		**24**	
TOTAL EP VOLUME:		**90**	

Higher education students choose their elective disciplines through the personal account of the portal "MIA: Education". Descriptions of the disciplines and their prerequisites are available in the SUTE Catalogue of Disciplines

3.2.2 Structural and logical scheme of EP



3.3. FORMS OF ATTESTATION OF HIGHER EDUCATION STUDENTS

Attestation is carried out in the form of a public defence of a qualification work.

The qualification work should provide for the solution of a complex specialised task or problem in the field of modern marketing, which involves research and/or innovation and is characterised by uncertainty of conditions and requirements.

The qualification work must not contain academic plagiarism, including incorrect textual borrowings, fabrication and falsification. The qualification work must be published on the official website of the higher education institution, its subdivision or placed in its repository.

The publication of qualification papers containing information with restricted access is carried out in accordance with the requirements of the current legislation.

3.4. MATRIX OF CORRESPONDENCE BETWEEN PROGRAM COMPETENCIES AND COMPULSORY COMPONENTS OF THE EDUCATIONAL PROGRAMME

Components / Competencies	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6	CC 7	CC 8	CC 9
GC01	+	+	+	+	+	+	+	+	+
GC02	+	+			+	+	+	+	+
GC03	+	+		+			+	+	+
GC04	+	+	+	+				+	+
GC05	+	+		+	+		+	+	+
SC01				+	+	+	+	+	+
SC02		+		+		+		+	+
SC03				+		+		+	+
SC04		+		+				+	+
SC05				+	+	+		+	+
SC06	+			+			+	+	+
SC07	+	+		+	+		+	+	+
SC08	+		+	+			+	+	+
SC09	+		+			+	+	+	+

5. MATRIX OF CORRELATION BETWEEN PROGRAM LEARNING OUTCOMES AND COMPULSORY COMPONENTS OF THE EDUCATIONAL PROGRAMME

Components / Programme learning outcomes	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6	CC 7	CC 8	CC 9
PLO01	+	+	+	+	+	+	+	+	+
PLO02	+			+		+	+	+	+
PLO03	+			+				+	+
PLO04	+		+	+		+	+	+	+
PLO05	+	+		+				+	+
PLO06	+			+			+	+	+
PLO07		+		+				+	+
PLO08	+			+	+	+		+	+
PLO09						+		+	+
PLO10						+		+	+
PLO11		+		+	+	+	+	+	+
PLO12	+	+		+				+	+
PLO13			+	+		+		+	+
PLO14		+	+	+	+			+	+
PLO15	+		+	+				+	+
PLO16				+			+	+	+
PLO17	+			+	+	+		+	+

LIST OF RECOMMENDED ELECTIVE COMPONENTS

Code	EDUCATIONAL PROGRAMME COMPONENTS	The number of credits
EC 1.	Applications Programming	**6**
EC 2.	Information Technologies in the System of Economic Security of the State	**6**
EC 3.	Fundamentals of Cyber Diplomacy in English	**6**
EC 4.	Designing Multimedia Systems	**6**
EC 5.	Security Technologies for Web Resources	**6**
EC 6.	Software Product Management	**6**