BORYS GRINCHENKO KYIV UNIVERSITY

"APPROVED"
By the decision of the Academic Council of
the Borys Grinchenko Kyiv University on
November 25, 2021, Protocol № 10

Chairman of the Academic Council, Rector
_____ Viktor OGNEVIUK

EDUCATIONAL PROFESSIONAL PROGRAM

123.00.01 Computer Engineering

first (bachelor's) level of higher education

Field of knowledge:	12 Information technologies
Specialty:	123 Computer Engineering
Qualification:	Bachelor of Computer Engineering

Put into operation since 01.09.2022
(order since 25.11.2021 № ____)

Kyiv – 2021

LETTER OF AGREEMENT
educational and professional program "Computer Engineering" of the first (bachelor's) level of higher education

Department of Information and Cyber Security
named after Professor Volodymyr Buriachok
Protocol since 09.11. 2021 № 12
Head of Department _____ PAVLO SKLADANNYI

Academic Council of the Faculty of Information Technology and Management
Protocol since 17.11. 2021 № 10
Chairman of the Academic Council _____ ALLA MYKHATSKA

Scientific and methodical center of standardization and quality of education
Manager _____ OLHA LEONTIEVA ___.___. 2021 p.

Vice-rector for scientific-methodical and educational work
_____ OLEKSII ZHYLTSOV ___.___. 2021 p.

PREFACE

Educational and professional program "Computer Engineering" is developed on the basis of the Law of Ukraine "On Higher Education" and the Standard of Higher Education of Ukraine in the field of knowledge 12 Information Technology specialty 123 "Computer Engineering" for the first (bachelor's) level of higher education MES of Ukraine dated November 19, 2018 № 1262.

DEVELOPED by the working group in the composition:

SKLADANNYI P.M. – Candidate of Technical Sciences, Head of the Department of Information and Cyber Security named after Professor Volodymyr Buryachko (guarantor of the educational program).

PLATONENKO A.V. – Candidate of Technical Sciences, Associate Professor of the Department of Information and Cyber Security named after Professor Volodymyr Buryachko

SOKOLOV V.Y. – Candidate of Technical Sciences, Associate Professor of the Department of Information and Cyber Security named after Professor Volodymyr Buryachko

YASKEVYCH V.H. – Candidate of Technical Sciences, Associate Professor of Computer Science and Mathematics.

TKACHENKO V.H. – Leading Systems Analyst of the Information Technology Directorate of PJSC Vodafone Ukraine (by agreement).

EXTERNAL REVIEWERS:

BONDARCHUK ANDRII PETROVYCH –Doctor of Technical Sciences, Professor, Director of the Educational and Scientific Institute of Information Technologies of the State University of Telecommunications.

LAKHNO VALERII ANATOLIIOVYCH – Doctor of Technical Sciences, Professor, Head of the Department of Computer Systems, Networks and Cyber Security of the National University of Life and Environmental Sciences of Ukraine.

REVIEWS OF EMPLOYERS 'REPRESENTATIVES:

MAZUR OLEKSANDR ANATOLIIOVYCH – Leading Engineer of Information and Telecommunication Systems of the Network and Services Management Department of PJSC Kyivstar.

SKITER IHOR SEMENOVYCH – Candidate of Physical and Mathematical Sciences, Associate Professor, Senior Research Fellow at the Institute of Nuclear Power Plant Safety.

The educational program has been put into operation 01.09.2022

Updated:

Date viewed				
Signature				
Name of the guarantor				

I. Profile of the educational and professional program 123.00.01 Computer Engineering

1 – General information	
Full name of the institution of higher education and structural unit	Borys Grinchenko Kyiv University Faculty of Information Technology and Management
Level of higher education	The first (bachelor's) level
Degree of higher education	Bachelor
Field of knowledge	12 Information Technology
Specialty	123 Computer Engineering
Educational program	Educational and professional program "Computer Engineering"
Qualification	Bachelor of Computer Engineering
Qualification in diploma	degree of higher education - Bachelor specialty - Computer Engineering Educational Program - Computer Engineering
Form of study	Institutional (full-time)
Language (s) of instruction	Ukrainian language. Some educational components are taught in English.
Cycle / level	NQF of Ukraine – level 6, FQ-EHEA – first cycle, EQF-LLL – level 6;
Type of diploma and scope of educational programs	Bachelor's degree, singular Volume of EP on the basis of complete general secondary education - 240 ECTS credits, term of study - 3 years 10 months. Scope of EP: - on the basis of the degree of "junior bachelor" (educational qualification level "junior specialist") obtained within the previous educational program of junior bachelor (junior specialist) by recognizing and recalculating ECTS credits can be reduced by no more than 120 credits. - On the basis of the degree "professional junior bachelor" the University has the right to recognize and re-credit no more than 60 ECTS credits received under the previous educational program of professional higher education. Admission on the basis of the degrees "Junior Bachelor", "Professional Junior Bachelor" or educational qualification level "Junior Specialist" is based on the results of external independent evaluation in the manner prescribed by law.
Prerequisites	Availability of complete general secondary education.

Availability of accreditation	National Agency for Quality Assurance in Higher Education, Ukraine. The deadline for submitting the program for accreditation is 2026.
Internet address of the permanent post of the description of the educational program	http://kubg.edu.ua/informatsiya/vstupnikam/napryami-pidgotovki/

2 - The purpose of the educational program

Training a competitive telecommunications and information technology specialist by providing in-depth training in in-depth theoretical and practical knowledge, skills and abilities in computer engineering sufficient to effectively solve the problems of designing, configuring, building computer systems and networks, and aimed at the applied implementation of the mission of service to man, community, society.

3 - Characteristics of the educational program

Characteristics of the educational program	**Objects of study and professional activity:** - software and hardware (hardware, software, reconfigurational, system and application software) of computers and computer systems of universal and special purpose, including stationary, mobile, embedded, distributed, etc., local, global computer networks and networks of the Internet, cyberphysical, SMART systems, the Internet of Things, IT infrastructures, interfaces and protocols of interaction of their components; - information processes, technologies, ways, methods and systems of automated and automatic design; commissioning, production and operation, design documentation, standards, procedures and tools to support the life cycle management of these software and hardware; - methods and techniques of information processing, mathematical models of computational processes, computational technologies, including high-performance, parallel, distributed, mobile, web-based and cloud, green (energy efficient), secure, autonomous, adaptive, intelligent, smart, etc., architecture and organization of the functioning of the relevant software and hardware. **Learning objectives:** training of specialists capable of solving complex specialized problems and practical problems during professional activity in the field of computer science or training, which involves the application of theories and methods of computer engineering and is characterized by complexity and uncertainty of conditions. **Theoretical content of the subject area:** concepts, concepts, principles, methods, software and technologies and technologies for the creation, use and maintenance of computer systems and networks, embedded and distributed computing. **Methods, techniques and technologies** (which must be mastered by the applicant for higher education for practical application): methods of automated design of software and hardware of computer systems and their components, methods of mathematical and computer modeling, information technology, technology development technologies, network, mobile and cloud computing technologies. **Tools and equipment** (objects / objects, devices and devices that the applicant learns to use and use): computer equipment, measuring

	instruments, software and hardware automation and design automation systems.
Program structure	The ratio of the volume of mandatory (general and professional) and selective components of the OP: **Obligatory part (180 ECTS credits, 75%):** disciplines aimed at the formation of general competencies (37 credits) and special (professional) competencies (122 credits). The share of industrial and undergraduate practice is 8% (15 credits), certification (6 credits). **Elective part (60 credits, 25%):** disciplines of free choice
4 – Suitability of graduates for employment	
Suitability for employment	Graduates can work in the public and private sectors of Kyiv, Ukraine and the European Union in the following areas: administration of Windows / Linux, network equipment and technologies TCP / IP, DNS, DHCP, SSL / TLS, etc .; application of software, client-server and cloud technologies, creation of technical, design and operational documentation of computer systems and networks. According to the National Classification of Occupations DK 003: 2010, specialists who have received education in the educational program "Computer Engineering" can hold such primary positions as: 2131 Professional in the field of computer systems.
Further training	Education at the second (master's) level of higher education. Acquisition of additional qualifications in the system of postgraduate education.

5 – Teaching and assessment	
Teaching and learning	The educational process is based on the principles of: student-centered, personality-oriented learning, competence, system-integrative approaches, research-based learning. Teaching is carried out in the form of: lectures, seminars, practical classes, laboratory work. Independent work is provided (performance of individual tasks, defense of course work;); consultations with teachers; internships; writing a dissertation. E-learning for individual educational components, group project work, mentoring of practitioners, training in practical training centers are being introduced. Encouraging self-study of higher education students and organizing group work in order to acquire team skills роботи та самостійного пошуку вирішення проблеми, зокрема, під час розв'язування практичних кейсів. The use of elements of non-formal education in the study of individual modules of disciplines on educational online platforms and in participation in scientific conferences, congresses, webinars, master classes of professional orientation.
Evaluation	Accumulative point-rating system, which provides for the assessment of students for all types of classroom and extracurricular educational activities in the form of incoming, intermediate, final (semester) assessment, as well as certification. Entrance assessment (testing), intermediate / modular assessment (oral examination, written quises / computer testing, etc.), final semester

	assessment (tests, exams in oral, written (testing), combined forms, defense of term papers, defense of practice reports), certification (defense of qualification work). Assessment of higher education students is in accordance with the Unified system of assessment of academic achievement of students of Borys Grinchenko Kyiv University
6 - List of competencies	
Integral competence	Ability to solve complex specialized problems and practical problems during professional activities in the field of computer science or training, which involves the use of theories and methods of computer engineering and is characterized by complexity and uncertainty of conditions.
General competencies (GC)	**GC 1** Ability to abstract thinking, analysis and synthesis.
	GC 2 Ability to learn and master modern knowledge.
	GC 3 Ability to apply knowledge in practical situations.
	GC 4 Ability to communicate in the state language both orally and in writing.
	GC 5 Ability to communicate in a foreign language.
	GC 6 Interpersonal skills.
	GC 7 Ability to identify, pose and solve problems.
	GC 8 Ability to work in a team.
	GC 9 Ability to exercise one's rights and responsibilities as a member of society, to realize the values of civil (free democratic) society and the need for its sustainable development, the rule of law, human and civil rights and freedoms in Ukraine.
	GC 10 Ability to preserve and increase moral, cultural, scientific values and achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, techniques and technologies. active recreation and healthy living.
Special (professional, subject) competencies (SC)	**SC 1** Ability to apply the legal and regulatory framework, as well as national and international requirements, practices and standards in order to carry out professional activities in the field of computer engineering.
	SC 2 Ability to use modern methods and programming languages to develop algorithmic and software.
	SC 3 Ability to create system and application software for computer systems and networks.
	SC 4 Ability to protect information processed in computer and cyberphysical systems and networks in order to implement the established information security policy.
	SC 5 Ability to use design automation tools and systems to develop components of computer systems and networks, Internet applications, cyberphysical systems, etc..

	SC 6 Ability to design, implement and maintain computer systems and networks of various types and purposes.
	SC 7 Ability to use and implement new technologies, including smart, mobile, green and secure computing technologies, to participate in the modernization and reconstruction of computer systems and networks, various embedded and distributed applications, in particular to improve their efficiency.
	SC 8 Willingness to participate in the implementation of computer systems and networks, their commissioning at facilities for various purposes.
	SC 9 Ability to systematically administer, use, adapt and operate existing information technologies and systems.
	SC 10 Ability to organize workplaces, their technical equipment, placement of computer equipment, use of organizational, technical, algorithmic and other methods and means of information protection.
	SC 11 Ability to draw up the results obtained in the form of presentations, scientific and technical reports.
	SC 12 Ability to identify, classify and describe the work of software and hardware, computer and cyberphysical systems, networks and their components through the use of analytical and modeling methods.
	SC 13 Ability to solve problems in the field of computer and information technology, to determine the limitations of these technologies.
	SC 14 Ability to design systems and their components taking into account all aspects of their life cycle and objectives, including the creation, configuration, operation, maintenance and disposal.
	SC 15 Ability to argue the choice of methods for solving specialized problems, critically evaluate the results, justify and defend decisions.
	SC 16 Ability to restore the normal functioning of computer and SMART-systems.
7 – Normative content of training of higher education seekers, formulated in terms of learning outcomes	
LO 1 Know and understand the scientific principles that underlie the operation of computer tools, systems and networks.	
LO 2 Have skills in experimentation, data collection and modeling in computer systems.	
LO 3 To be aware of modern technologies in the sphere of computer engineering.	
LO 4 Know and understand the impact of technical solutions in social, economic, social and environmental contexts.	
LO 5 Have knowledge of the basics of economics and project management.	
LO 6 Be able to apply knowledge to identify, formulate and solve technical problems of the specialty, using methods that are most suitable for achieving goals.	
LO 7 Be able to solve problems of analysis and synthesis of tools specific to the specialty.	
LO 8 Be able to think systematically and apply creative abilities to the formation of new ideas.	
LO 9 Be able to apply knowledge of technical characteristics, design features, purpose and rules of operation of software and hardware of computer systems and networks to solve technical problems of the specialty.	

LO 10 Be able to develop software for embedded and distributed applications, mobile and hybrid systems, calculate, operate, typical for the specialty equipment.
LO 11 Be able to search for information in various sources to solve problems of computer engineering.
LO 12 Be able to work effectively both individually and as a team.
LO 13 Be able to identify, classify and describe the operation of computer systems and their components.
LO 14 Be able to combine theory and practice, as well as make decisions and develop strategies for solving problems of the specialty, taking into account universal values, social, state and industrial interests.
LO 15 Be able to perform experimental research on professional topics.
LO 16 Be able to evaluate the results obtained and defend the decisions made with arguments.
LO 17 Communicate orally and in writing on professional issues in Ukrainian and one of the foreign languages (English).
LO 18 Use information technology for effective communication at the professional and social levels.
LO 19 Ability to adapt to new situations, justify, make and implement decisions within its competence.
LO 20 Realize the need for lifelong learning in order to deepen the acquired and acquire new professional knowledge, improve creative thinking.
LO 21 Perform work efficiently and achieve the set goal in compliance with the requirements of professional ethics.
LO 22 Ensure the configuration and operation of resource and process monitoring systems in computer and SMART systems.
LO 23 Interpret the results of special measurements using technical means, control the characteristics of computer and SMART-systems in accordance with the requirements of regulatory documents.
LO 24 Analyze the effectiveness of systems for detecting and combating unauthorized access to resources and processes in computer and SMART-systems and networks.
LO 25 Create and implement business projects, as well as ensure business continuity.
LO 26 Know the personal and social principles of maintaining and promoting individual health.

8 – Resource support for program implementation	
Staffing	The staffing of the educational and professional program consists of the teaching staff of the Department of Information and Cyber Security named after Professor Volodymyr Buryachko and the Department of Computer Science and Mathematics. In accordance with their competence and experience, the teaching staff of other departments of the university is involved in teaching certain disciplines. EPP provides for the broad participation of practitioners who correspond to the direction of the program, which strengthens the synergistic link between theoretical and practical training. The staffing of the EP meets the requirements set by the Licensing Conditions for Educational Activities.
Logistics	Teaching disciplines are carried out in classrooms of general and special purpose.

	Competence development centers are specially equipped with hardware and software, visual and methodical materials, namely: 1) Modeling and Programming Center; 2) Computer Networking Lab; 3) Center for Living Mathematics; 4) Laboratory of embedded systems and 3D modeling; 5) Computer Networking and Cybersecurity Laboratory; 6) Laboratory of Information and Communication Systems Security; 7) Antivirus Protection Laboratory; 8) Center for Research of Information Resources Protection Technologies; 9) Information Asset Security Laboratory; 10) Center for Innovation and Digital Entrepreneurship Providing; 11) Center for Financial Projects; 12) Business Process Reengineering Center. The areas of the premises used in the educational process meet the requirements of accessibility, sanitary norms, requirements of fire safety rules. There are facilities of social and household infrastructure (dining room, cafeterias, assembly halls, sports halls, stadium, sports grounds, medical center, swimming pool, dormitories).
Information and educational and methodological support	− Official website Borys Grinchenko Kyiv University https://kubg.edu.ua/, containing information about educational programs, educational, scientific and educational activities, structural units, admission rules, contacts, etc.; − Digital campus https: //digital.kubg.edu.ua/, containing information on: all digital education services, digital science with access to various platforms; digital management of regulatory bases, registers, document flow; image and leadership; digital space with personal accounts and corporate mail; university infrastructure; − University e-learning system (Moodle); − services for organizing online classes: Google Meet (corporate), Google Chat, Google Hangouts, Google Classroom; − wireless internet access points; − library, reading rooms; − electronic library, repository http://elibrary.kubg.edu.ua/; − access to electronic scientific databases Scopus, Web of Science, EBSCO and other.; − training and working curricula; − schedule of the educational process; − working programs of academic disciplines; − internship programs; − methodical recommendations on writing and registration of term papers, etc.. − methodical recommendations on writing and registration of master's theses, etc..
9 – Academic mobility	
National credit mobility	-
International credit mobility	Agreements have been concluded with student mobility with universities in European countries and within the framework of the Erasmus + KAI

	program. 3 of them: Vilnius University (Lithuania), Constantine the Philosopher University in Nitra (Slovakia), Extremadura University (Spain). University of Silesia in Katowice (Poland), Jan Dlugosz Academy in Czestochowa (Poland), University of Ostrava (Czech Republic), University of Paris-Sorbonne (France), University of Lisbon (Portugal) and others.
Training of foreign applicants for higher education	

II. List of components of the educational and professional program and their logical sequence

2.1. List of educational components EP

Educational component code	Code (№ s/n) of the discipline, practice, course work, certification in the curriculum	Components of the educational program (academic disciplines, term papers / projects, practices, forms of certification)	Number of credits	Form of final control
1	2	3	4	5
Obligatory components of the educational program				
EC 1	GOD.1	University studies (*I-student / Service leadership / Introduction to the specialty*)	4	credit
EC 2	GOD.2	Physical Education	4	credit
EC 3	GOD.3	Foreign Language	15	credit, exam
EC4	GOD.4	Ukrainian studies *(History of Ukrainian culture / Culture of oral and written speech (Ukrainian) / Human rights, citizen of Ukraine)*	6	exam
EC5	GOD.5	Philosophical studies	4	exam
EC6	GOD.6	Group dynamics and business communications	4	credit
EC7	SOD.1	Higher mathematics	11	credit, exam
EC8	SOD.2	Physics	5	exam
EC9	SOD.3	Theory of electric circuits and signals	5	exam
EC10	SOD.4	PC hardware and software	5	credit
EC11	SOD.5	Discrete Math	4	exam
EC12	SOD.6	Programming*(Data Structures and Algorithms / Object Oriented Programming / Python Programming Language)*	10	credit, exam, defence of c/w
EC13	SOD.7	Construction and operation of operating systems	4	credit
EC14	SOD.8	Computer systems architecture	4	exam
EC15	SOD.9	Computer logic	4	credit
EC16	SOD.10	Probability theory and mathematical statistics	4	exam
EC17	SOD.11	Organization of databases	4	exam
EC18	SOD.12	Information law	4	credit
EC19	SOD.13	Component base and elements of circuitry	4	exam
EC20	SOD.14	Computer networks	7	credit, exam, defence of c/w
EC21	SOD.15	Information theory and coding	4	exam
EC22	SOD.16	Computer architecture	4	credit
EC23	SOD.17	System programming	4	exam
EC24	SOD.18	Information protection in computer systems and networks	7	credit, exam, defence of c/w
EC25	SOD.19	Computer systems	4	exam
EC26	SOD.20	Parallel and distributed computing systems	4	credit
EC27	SOD.21	Design and maintenance of computer systems and networks	4	credit
EC28	SOD.22	Software engineering	4	credit
EC29	SOD.23	Computerized control systems	4	exam
EC30	SOD.24	IT project management	4	credit

EC31	SOD.25	Fundamentals of entrepreneurial activity	4	credit
EC32	OP.1	Internship	3	credit
EC33	OP.2	Internship (technological)	6	credit
EC34	OP.3	Pre-diploma practice	6	credit
EC35	OA.1	Preparation of qualifying work	4,5	defence
		Defence of qualification work	1,5	
The total amount of required components			**180**	
Elective components of the EP				
Selection from the Catalog of courses				
EC	ED	Selection of academic disciplines from the Catalog for the appropriate number of credits	60	credit
The total amount of program components			**60**	
TOTAL OF THE EDUCATIONAL PROGRAM			**240**	

2.2. Structural and logical scheme

1 year		2 year		3 year		4 year	
1 semester	*2 semester*	*3semester*	*4 semester*	*5 semester*	*6 semester*	*7 semester*	*8 semester*
Іноземна мова 15 кред.							
University studies 4 cr.	Ukrainian studies 6 cr.	Philosophical studies 4 cr.	Group dynamics and business communications 4 credits.				
Physical education 4 cr.							
Higher mathematics 11 cr.							
	Discrete Math 4 credits.	Probability theory and mathematical statistics 4 credits.					
Physics 5 credits.		Комп'ютерна логіка 4 кред.					
Theory of electric circuits and signals 5 credits.	Computer systems architecture 4 credits.	Construction and operation of operating systems 4 credits.					
PC hardware and software 5 credits.	Organization of databases 4 credits.	Information law 4 credits.					
	Programming 10 credits.			System programming 4 credits.			
			Component base and elements of circuitry 4 credits.	Computer architecture 4 credits.	Parallel and distributed computing systems 4 credits.		
			Computer networks 7 credits.		Computer systems 4 credits.	Computerized control systems 4 credits.	
				Information theory and coding 4 credits.			Fundamentals of entrepreneurial activity 4 credits.
				Information security in computer systems 7 credits.		Software engineering 4 credits.	IT project management 4 credits.
			Internship 3 credits.		Production (technological) practice 6 credits.		.Pre-diploma practice 6 credits.
		Selective components 5 cr	Selective components 10 cr	Selective components 10 cr	Selective components 10 cr	Selective components 15 cr	Selective components 10 cr
							Preparation and defense of qualification work 6 credits.

III. Form of certification of applicants for higher education

Certification of applicants for higher education under the educational-professional program 123.00.01 "Computer Engineering" specialty 123 "Computer Engineering" is carried out in the form of **defense of qualification work.**

Certification is carried out openly and publicly.

Qualification work is aimed at performing analytical and theoretical, system-technical or experimental research of one of the current tasks of the specialty 123 "Computer Engineering", and should contain the results of design, modeling, implementation and testing specified in the task.

Qualifying work must be checked for plagiarism. Qualification work should not contain academic plagiarism, fabrication, falsification, writing off.

Qualification work is published on the University website (in the repository). Publication of qualification works with limited access is carried out in accordance with the requirements of the legislation.

Implementation of the educational-professional program in full ends with the issuance of a document of the established standard to the graduate.

IV. Matrix of correspondence of program competencies to the components of the educational program

Labels of program competencies and educational components	GOD.01	GOD.02	GOD.03	GOD.04	GOD.05	GOD.06	GOD.01	GOD.02	GOD.03	GOD.04	GOD.05	GOD.06	GOD.07	GOD.08	SOD.09	SOD.10	SOD.11	SOD.12	SOD.13	SOD.14	SOD.15	SOD.16	SOD.17	SOD.18	SOD.19	SOD.20	SOD.21	SOD.22	SOD.23	SOD.24	SOD.25	OP.1	OP.2	OP.3	OA.1
GC 1	+			+	+	+	+	+			+					+															+	+	+	
GC 2	+				+																											+	+	+	
GC 3	+					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 4	+			+	+	+																													
GC 5			+																													+	+	+	
GC 6	+	+				+																						+		+	+	+	+	+	
GC 7	+					+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
GC 8	+	+				+																										+	+		
GC 9	+					+												+																	
GC 10	+	+		+	+	+																													
SC 1	+																	+														+	+	+	+
SC 2												+											+			+		+				+		+	+
SC 3												+											+			+		+				+		+	+
SC 4									+										+					+								+		+	
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SC 8										+			+	+						+					+		+						+	+	+
SC 9										+			+									+					+						+	+	+
SC 10	+					+				+			+	+						+		+		+	+		+					+			+
SC 11	+			+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SC 12							+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+	+	+
SC 13							+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				+	+	+
SC 14																									+		+						+	+	+
SC 15							+				+					+										+							+	+	+
SC 16									+					+					+	+					+		+						+	+	+

V. Matrix for providing learning outcomes with relevant components of the educational program

Labels of program competencies and educational components	GOD.01	GOD.02	GOD.03	GOD.04	GOD.05	GOD.06	SOD.01	SOD.02	SOD.03	SOD.04	SOD.05	SOD.06	SOD.07	SOD.08	SOD.09	SOD.10	SOD.11	SOD.12	SOD.13	SOD.14	SOD.15	SOD.16	SOD.17	SOD.18	SOD.19	SOD.20	SOD.21	SOD.22	SOD.23	SOD.24	SOD.25	OP.1	OP.2	OP.3	OA.1
LO 1	+						+	+	+	+			+				+					+			+		+					+			+
LO 2	+						+	+		+	+	+	+			+							+		+	+	+	+	+			+	+	+	+
LO 3	+									+							+			+					+		+					+			
LO 4	+					+												+										+		+	+	+			
LO 5																		+											+	+	+			+	
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LO 7							+	+	+		+	+				+												+	+			+			+
LO 8	+			+	+	+				+												+				+			+	+			+		
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LO 12	+	+				+														+					+						+	+	+	+	+
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Annex 1- **ELECTIVE PART OF THE EDUCATIONAL PROGRAM**

Exercise by students of the right to free choice of academic disciplines provided for in paragraph 15 of the first part of Article 62 of the Law of Ukraine "On Higher Education" in Borys Grinchenko Kyiv University takes place in accordance with the Regulations on the procedure and conditions for the selection of disciplines by students, approved by the order of the rector from 25.11.2016 № 642.

Selection from the catalog of courses

The choice of disciplines from the list (catalog of courses) for the appropriate number of credits, distributed over the semesters of second and third courses, taking into account their own needs and interests in future professional activities allows students to deepen their knowledge and gain additional general and professional competencies within related specialties. knowledge, get acquainted with the current level of research in other fields of knowledge, expand or deepen knowledge in general competencies.