

STATE BORDER GUARD SERVICE OF UKRAINE
Bohdan Khmelnytskyi National Academy of the State Border Guard
Service of Ukraine

APPROVED BY THE ACADEMIC COUNCIL
OF THE ACADEMY
Head of the Academic Council
major-general _____ Oleksandr LUTSKYI
(protocol №__ of «__» _____ 20__)

EDUCATIONAL PROGRAM
“Telecommunications and radio engineering ”

the first (bachelor’s) level of higher education

Specialty 172 “Telecommunications and radio engineering”

Branch of knowledge 17 “Electronics and telecommunications”

Qualification: “State Border Security”

Professional qualification: “Bachelor of Telecommunications and Radio Engineering”

Specialization: “Tactical level officer of the State Border Guard Service of Ukraine”

The educational program comes into force on 01.08.2021

Rector of the National Academy
of the State Border Guard Service of Ukraine

major- general

Oleksandr LUTSKYI
(order № __ of «__» _____ 20__)

Khmelnytskyi 2020

Educational and professional program DEVELOPED**Project group leader**

colonel IVAN CHESANOVSKYI

Members of the project group

professor IVAN KATERYNCHUK

colonel ROMAN RACHOK

colonel MYKOLA NEMESH

Educational and professional program INTRODUCED**Department:** *Telecommunication and information systems*

Protocol of _____ 20__ . № _____

Head of the department

colonel IVAN CHESANOVSKYI

Educational and professional program AGREED

Scientific Board of Operational and Service Support Faculty

Protocol from _____ 20__ № _____

Head of the Faculty Scientific Board

colonel Ihor POCHOKALIN

Head of the educational department

colonel Andrii SOROKA

« _____ » _____ 20__

PREFACE

Developed by a working group consisting of:

1. **Chesanovskyi Ivan Ivanovych** - Candidate of Technical Sciences, Associate Professor, Chief of the Department of Telecommunication and Information Systems of Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine (guarantor of the educational program).
2. **Katerynychuk Ivan Stepanovych** - Laureate of the State Prize of Ukraine in the field of science and technology, Honoured Worker of Education of Ukraine, Doctor of Technical Sciences, Professor, Professor of Telecommunications and Information Systems of Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine (member of the project group).
3. **Rachok Roman Vasyliovych** – Doctor of Technical Sciences, Associate Professor, Professor of the Department of Telecommunication and Information Systems of Bohdan i National Academy of the State Border Guard Service of Ukraine (member of the project group).
4. **Nemesh Mykola Ivanovych** - Head of the Informatization Department of the Communications and Information Systems Department of Administration of the State Border Guard Service of Ukraine (member of the project group).

Reviews-responses of external stakeholders provided:

1. **Luschyk Mykola Ivanovych** – Deputy Director, Head of the Department of Armaments and Engineering and Technical Support of the Administration of the State Border Guard Service of Ukraine, Candidate of Technical Sciences.
2. **Fihura Oleh Volodymyrovych**, - Deputy Director, –Head of the Professional Training and Organization of Educational Activities Department of the Personnel Directorate of the Administration of the State Border Guard Service of Ukraine, the Candidate of Pedagogical Sciences, Associate Professor.

Profile
educational program in the specialty
172 "Telecommunications and radio engineering"

1. General information	
Full name of the higher educational institution and structural unit	Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine. Department of Telecommunication and information systems
Higher education degree and title of qualification in the original language	Bachelor of Telecommunications and Radio Engineering. Tactical level officer.
The official name of the program	Telecommunications and radio engineering.
Type of diploma and scope of the program	Single, 240 ECTS credits, 3 years 10 months of study.
Availability of accreditation	Accredited
Cycle / level	NRC of Ukraine - level 7, FQ-EHEA - 1 cycle, EQF-LLL - level 6.
Prerequisites	Complete general secondary, professional (vocational), professional pre-higher education.
Language (s) of instruction	Ukrainian
Term of the educational program	Accreditation 2025.
Internet address of the permanent placement of the educational program	https://nadpsu.edu.ua/osvita/osvitni-proekty/osvitno-profesijni-prohramy/
2. The purpose of the educational program	
<p>Training of specialists in the field of telecommunications and radio engineering, able to solve specialized problems in the design and operation of communications, telecommunications systems and networks with employment in the State Border Guard Service of Ukraine.</p> <p>Providing academic education in the field of telecommunications and radio engineering for further study.</p> <p>Training of tactical officers who are competent in the management of communications units and are personally responsible for their actions and are capable of further training with a high level of autonomy.</p>	
3. Characteristics of the educational program	
Subject area (field of knowledge, specialty, specialization)	Field of knowledge - 17 "Electronics and Telecommunications". Specialty - 172 "Telecommunications and Radio Engineering".
Orientation of the educational program	The educational program is focused on the formation of professional competencies of specialists in the field of telecommunications and radio engineering, aimed at the ability to solve specialized problems of design and operation of telecommunications systems, as well as competencies needed to solve urgent border protection problems at the tactical level.
The main focus of the educational program and specialization	Emphasis is placed on modern information and communication technologies and modern software and hardware of information and communication and telecommunication systems, as well as on the principles, methods and means of ensuring the specified performance characteristics and properties of information and

	<p>communication networks and telecommunication systems in special conditions.</p> <p>Key words (by specialty): telecommunication systems, radio engineering, design, operation, automated control systems, radio engineering systems, electronics, circuitry, modeling.</p> <p>Keywords (for the MIC block): operational and service activities, border protection unit, protection of the state border and sovereign rights of Ukraine in its exclusive (maritime) economic zone.</p>
Peculiarities of the program	Implemented in an active research environment, focused on the implementation of real projects of specialized application, provides practical training in border guard bodies and units.
4. Suitability of graduates to employment and further training	
Suitability for employment	<p>Primary positions of officers of communication and informatization units of the State Border Guard Service of Ukraine (other military formations formed in accordance with the laws of Ukraine), according to the VOS: 1203003, 1215003, 5311003, 1210003, 3006003, 5302003 according to the Order of the Head of the State Border Guard Service of Ukraine dated September 25, 2007 № 751 Confidential "On approval of lists of military accounting specialties and levels of education of officers of the State Border Guard Service of Ukraine".</p> <p>Types of economic activity according to the classifier DK 009: 2010: Section J, section 61, which includes activities in the areas of wired, wireless and satellite telecommunications and other telecommunications activities.</p>
Further training	Opportunity to continue training in the programs of the second cycle of higher education (NQF - level 8, FQ-EHEA - second cycle, EQF-LLL - level 7) with obtaining the professional qualification of operational and tactical level officer.
5. Teaching and assessment	
Teaching and assessment	<p>Passive (explanatory-illustrative) and active (problem-based, interactive, design, information-computer self-developing) learning technologies - according to the dominant methods and techniques.</p> <p>Technologies of collective and integrative learning - by organizational forms. Technologies of positional and contextual learning, technology of cooperation - in the orientation of pedagogical interaction.</p>
Оцінювання	<p>Forms of control: oral and written questioning, tests (including computer testing), field training defense, reports for individual tasks, different kinds tests, exams, certification.</p> <p>Assessment of academic achievement is carried out:</p> <ul style="list-style-type: none"> - current control - on a four-point scale ("excellent", "good", "satisfactory", "unsatisfactory"), verbal scale ("credited", "not credited"); - final control - on the national four-point scale ("excellent", "good", "satisfactory", "unsatisfactory"), ECTS scale ("A", "B", "C", "D", "E", "FX »,« F »); 100-point scale; verbal scale ("credited", "not credited").

Form of certification of applicants for higher education	Certification of higher education seekers is carried out in the form of public defense of the Bachelor's qualification work. The scope and structure of work is set by the academy. The work is checked for plagiarism in accordance with the procedure defined by the system of quality assurance of educational activities and the quality of higher education. The defense of the qualification work takes place in public at the meeting of the examination commission. Additionally, a comprehensive qualifying examination of military-applied direction is provided.
6. Program competencies	
6.1. Integral competence	
IC-1	Ability to solve specialized problems and practical problems in the field of telecommunications and radio engineering, characterized by complexity and uncertainty of conditions.
6.2. General competencies	
GC-1	Ability to abstract thinking, analysis and synthesis.
GC-2	Ability to apply knowledge in practical situations.
GC-3	Ability to plan and manage time.
GC-4	Knowledge and understanding of the subject area, understanding of professional activity.
GC-5	Ability to communicate in the state language both orally and in writing.
GC-6	Ability to work in a team.
GC-7	Ability to learn and master modern knowledge.
GC-8	Ability to identify, pose and solve problems.
GC-9	Safe activity skills.
GC-10	The desire to preserve the environment.
GC-11	The ability to exercise their 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-12	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 a healthy lifestyle.
6.3. Special (professional, subject) competencies	
6.3.1. Professional competencies of the specialty	
SC-1	The ability to understand the essence and significance of information in the development of the modern information society.
SC-2	Ability to solve standard tasks of professional activity on the basis of information and bibliographic culture with the use of information and communication technologies and taking into account the basic requirements of information security.
SC-3	Ability to use basic methods and means of obtaining, transmitting, processing and storing information.
SC-4	Ability to perform computer modeling of devices, systems and processes using universal application packages.
SC-5	Ability to use regulatory and legal documentation relating to information and telecommunications networks, telecommunications and radio systems (laws of Ukraine, technical regulations, international and national standards, recommendations of the International Telecommunication Union, etc.) to solve professional problems.
SC-6	Ability to perform instrumental measurements in information and

	telecommunication networks, telecommunication and radio systems.
SC-7	Willingness to monitor compliance and ensure environmental safety.
SC-8	Willingness to promote the introduction of advanced technologies and standards.
SC-9	Ability to accept and develop new equipment in accordance with current regulations.
SC-10	Ability to carry out installation, adjustment, experimental check of working capacity, tests and commissioning of constructions, means and equipment of telecommunications and radio engineering.
SC-11	Ability to draw regulatory documentation (instructions) for operational and maintenance of information and telecommunications networks, telecommunications and radio systems, as well as test programs.
SC-12	Ability to perform work to manage the flow of information and telecommunications networks.
SC-13	Ability to organize and implement measures for labor protection and safety in the operation, maintenance and repair of equipment of information and telecommunications networks, telecommunications and radio systems.
SC-14	Willingness to study scientific and technical information, domestic and foreign experience on the subject of investment (or other) project of telecommunications and radio engineering.
SC-15	Ability to perform calculations in the process of designing structures and means of information and telecommunication networks, telecommunication and radio systems, in accordance with the terms of reference using both standard and self-created methods, techniques and software automation of design.
6.3.2. Professional (military-border guard) competencies	
MC-1	Understanding the system and processes of state border security, models of integrated border management, the functioning of subsystems for building state border protection, methods of using forces and means, evaluating their effectiveness
MC-2	Ability to organize the state border protection in the area of responsibility of the unit, assess its compliance with the projected state of illegal activities and actions of the enemy, perform border control and border service procedures, act as part of border guards, conduct operational and technical measures and investigative actions, coercive measures, plan and organize preventive measures.
MC-3	Understanding the basics of general combat, combat operations of border units, tactics and methods of action of units, issues of organization of combat, resource, engineering and technical support and communication in the unit in different operating conditions and various forms of operational and service actions.
MC-4	Ability to counteract the physical and armed resistance of armed offenders, to endure physical activity without reducing professional performance providing operational and service tasks.
MC-5	Ability to use the regular armament of the unit in the course of operational and service activities and combat missions.
MC-6	Ability to use means of communication and software and hardware, which are in the service of the State Border Guard Service of Ukraine, in the operational and service activities of state border guards.
MC-7	Ability to organize communication in the area of responsibility of the border unit in compliance with all requirements for reliability, security and stability of communication with the use of modern technologies of communication and data transmission.
MC-8	Understanding the process of administration of special software and hardware, installation and configuration of system and application software.
MC-9	Ability to organize and provide operational and technical service at communication nodes in accordance with the requirements of departmental guidelines and orders.

MC-10	Ability to organize the operation of means, systems and complexes of communication and automation, knowledge of the basic regulations of preventive and remedial measures in the system of technical operation of means and structures of communication.
7. Program learning outcomes	
7.1. Program learning outcomes in the specialty	
PLO-1	Analyze, argue, make decisions in solving specialized problems and practical problems of telecommunications and radio engineering, which are characterized by complexity and incomplete definition of conditions.
PLO-2	Apply the results of personal search and analysis of information to solve qualitative and quantitative problems of a similar type in information and communication networks, telecommunications and radio systems.
PLO-3	To determine and apply in professional activity test methods of information and telecommunication networks, telecommunication and radio systems for compliance with the requirements of domestic and international regulations.
PLO-4	Explain the results of the measurements in terms of their significance and relate them to the relevant theory.
PLO-5	Skills of evaluation, interpretation and synthesis of information and data.
PLO-6	To adapt to the changing technologies of information and communication networks, telecommunication and radio systems.
PLO-7	Competently apply the terminology of telecommunications and radio engineering.
PLO-8	Describe the principles and procedures used in telecommunications systems, information and telecommunications networks and radio engineering.
PLO-9	Analyze and evaluate the effectiveness of design methods for information and telecommunications networks, telecommunications and radio systems.
PLO-10	Communicate on professional issues, including oral and written communication in the state language and one of the common European languages (English, German, Italian, French, Spanish).
PLO-11	Apply interpersonal skills to interact with other people and involve them in teamwork.
PLO-12	Tolerantly accept and apply ethical norms of behavior towards other people.
PLO-13	Application of basic and applied sciences for analysis and development of processes occurring in telecommunication and radio systems.
PLO-14	Application of basic and applied sciences for analysis and development of processes occurring in telecommunication and radio systems.
PLO-15	Application of understanding of means of automation of design and technical operation of telecommunication and radio engineering systems in professional activity.
PLO-16	Applying an understanding of the basics of metrology and standardization in the field of telecommunications and radio engineering in professional activities.
PLO-17	Understanding and compliance with domestic and international regulations on the development, implementation and maintenance of information and telecommunications networks, telecommunications and radio systems.
PLO-18	Find, evaluate, and use information from a variety of sources to solve professional problems, including reproducing information through electronic search.
PLO-19	Carry out standard tests of information and communication networks, telecommunication and radio engineering systems for compliance with the requirements of domestic and international regulations
PLO-20	Explain the principles of construction and operation of hardware and software systems of control and maintenance systems for the development, analysis and

	operation of information and telecommunications networks, telecommunications and radio systems.
PLO-21	Ensure reliable and high-quality operation of information and communication networks, telecommunication and radio systems.
PLO-22	Monitor the technical condition of information and communication networks, telecommunications and radio systems in the process of their technical operation in order to identify deterioration in the quality of operation or failures, and its systematic fixation by documentation.
PLO-23	Ability to install software for telecommunications and radio systems, to participate in the creation of application software for elements of telecommunications and info communication systems.
PLO-24	Ability to design, including circuit-technically new (to modernize existing) elements (modules, blocks, units) of telecommunication and radio engineering systems, television and radio broadcasting systems, etc.
7.2. Program Learning Outcomes professional (Military-border)	
MLO-1	Ability to perform procedures of border control and border service, law enforcement activities in different conditions, to develop relevant documentation, reports, to draw up procedural documents.
MLO-2	Manage general military and border guard units in the course of daily and operational activities, combat operations in different conditions.
MLO-3	To organize the complex functioning of subsystems for the construction of state border protection, to apply forces and means in different conditions, all types of combat, resource and engineering support.
MLO-4	To apply the regular armament of the unit, to perform receptions with weapons and fire tasks from small arms in the amount determined by the Shooting Course in the State Border Guard Service of Ukraine.
MLO-5	Perform personal safety and physical training, use special tools to the extent specified by law, the Instruction on personal security in the State Border Guard Service of Ukraine, the Instruction on physical training in the State Border Guard Service of Ukraine.
MLO-6	Apply the provisions of regulations on border issues in service activities.
MLO-7	Be able to organize communication in the area of responsibility of the border guard unit in compliance with all requirements for reliability, security and stability of communication with the use of modern technologies of communication and data transmission.
MLO-8	Have the skills to administer special software and hardware, installation and configuration of system and application software.
MLO-9	Have the skills to organize operational and technical service at stationary and field communication nodes of the SBGS in accordance with the requirements of agency guidelines and orders.
MLO-10	Have the skills to ensure the security of communication and data transmission, the ability to monitor compliance with the requirements of communication security.
8. Resource support for program implementation	
Staffing	To implement the educational program at the Faculty of Engineering created the Department of Telecommunication and Information systems; communications, automation and cybersecurity; general scientific disciplines; engineering support of the state border protection. These departments are staffed by research and teaching staff with degrees and academic titles, as well as highly qualified specialists. The Department of Telecommunication and Information systems is responsible for training of applicants for higher education in this specialty.

	Participation in the educational process of specialists of other educational and scientific institutions, establishments and organizations on the basis of concluded in the framework of international and interuniversity cooperation agreements / memoranda / protocols, as well as representatives of the relevant level of state border guards, regional administrations, State Border Guard Service Of Ukraine.
Material and technical support	Material and technical support meets the regulatory requirements for educational activities in the higher world. Provision of training facilities (including specialized classrooms and training laboratories), computer workstations, multimedia equipment meets the needs. All the necessary social and household infrastructure is available: libraries with reading rooms, canteens, a center of culture and leisure, a conference hall, sports halls and playgrounds, a medical and sanitary part. Provision of higher education students with dormitories 100%.
Information, educational and methodical support	All educational components are secured with information and methodological materials, including electronic educational and methodical complexes in the modular learning environment system.
9. Academic mobility	
National credit mobility	The existence of bilateral agreements between higher educational institutions of Ukraine ensures national credit mobility. Credits received at other universities of Ukraine may be credited, provided that their acquired competencies correspond.
International credit mobility	In the framework of cooperation with the European Agency for the Protection of the External Borders of the Member States of the European Union Frontex, and on the basis of joint agreements between the NASBGS and partner universities.
Training of foreign students obtaining higher education	It is provided in case of conclusion of international agreements with observance of information security procedures.

2. List of components of the educational program and their logical sequence

2.1. List of components of the educational program

Code EC	Component of the educational program (academic disciplines, courseworks (projects), practices, qualification work)	Number of credits	Form of final control
1	2	3	4
Mandatory educational components			
EC 01	History of Ukraine and Ukrainian culture	5	Exam
EC 02	Ukrainian language for specific purposes	4	Differentiated credit
EC 03	Sociology, ethics, aesthetics and religious studies	3	Differentiated credit
EC 04	Physics	7	Exam
EC 05	Higher mathematics	10	Exam
EC 06	Philosophy	4	Differentiated credit
EC 07	Life safety and environmental safety	4	Differentiated credit
EC 08	Science of law	3	Credit
EC 09	Foreign language for specific purposes	15	Exam
EC 10	Computer Science	3	Differentiated credit
EC 11	Engineering graphics	3	Credit
EC 12	Electro-radio measurement	3	Differentiated credit
EC 13	Theory of electric circuits	5	Exam
EC	Automated design systems	3	Differentiated credit
EC 15	Fundamentals of circuitry	4	Differentiated credit
	Course project		Defense
EC 16	Digital technology and microprocessors	5	Exam
	Course project		Defense
EC 17	Theory of electrical communication	4	Exam
EC 18	Ultra-high frequency devices and antennas	4	Exam
EC 19	Modeling Systems	3	Differentiated credit
EC 20	Transceivers and communication systems	4	Differentiated credit
EC 21	Switching and subscriber access systems	3	Differentiated credit
EC 22	Mobile communication systems	3	Differentiated credit
EC 23	Information protection in telecommunication systems and networks	4	Differentiated credit

Code EC	Component of the educational program (academic disciplines, courseworks (projects), practices, qualification work)	Number of credits	Form of final control
1	2	3	4
EC 24	Metrology, standardization and certification	3	Differentiated credit
EC 25	Operation and Technical Support	4	Differentiated credit
EC 26	Qualification work	3	Public defense
EC 15	Practical training (part 2)	4	Defense
The total amount of educational components		120	
Components for Special Purposes (military border component)			
EC 27	Border Guard Service	8	Exam
EC 28	Border Control	6	Differentiated credit
EC 29	General Tactics	16	Exam
EC 30	Physical education, personal security and the use of force	9	Exam
EC 31	Fire training	9	Exam
EC 32	Border guard engineering support	3	Differentiated credit
EC 33	Information and telecommunication systems of border guard units	4	Exam
EC 34	Communication systems and complexes of state border guard bodies	4	Differentiated credit
EC 35	Comprehensive qualification military-applied exam	1	Complex exam
The total amount of professional educational components		60	
Total amount of core component		180	
Selective educational components			
	Selective EC 2 semester	6	According to EPD
	Selective EC 4 semester	14	According to EPD
	Selective EC 5 semester	6	According to EPD
	Selective EC 6 semester	16	According to EPD
	Selective EC 7 semester	9	According to EPD
	Selective EC 8 semester	9	According to EPD
Total amount of selective educational component		60	
TOTAL AMOUNT OF EDUCATIONAL PROGRAM		240	

3. Form of Certification of Applicants for Higher Education

Certification of graduates of the educational program in the specialty 172 "Telecommunications and Radio Engineering" is carried out in the form of public defense of a bachelor's thesis (project) and a comprehensive qualifying examination of military-applied direction according to the curriculum. It ends with the issuance of a standard document on assigning a Bachelor's degree with the qualification of Bachelor of Telecommunications and Radio Engineering and professional qualification of Tactical Level Officer of the State Border Guard Service of Ukraine.

Certification is carried out openly and publicly. The term of certification is determined by the curriculum and schedule of the educational process.

4. Matrix of correspondence of competencies to program learning outcomes

Program competencies	Educational components																																						
	EC 01	EC 02	EC 03	EC 04	EC 05	EC 06	EC 07	EC 08	EC 09	EC 10	EC 11	EC 12	EC 13	EC 14	EC 15	EC 16	EC 17	EC 18	EC 19	EC 20	EC 21	EC 22	EC 23	EC 24	EC 25	EC 26	EC 27	EC 28	EC 29	EC 30	EC 31	EC 32	EC 33	EC 34	EC 35	EC 15			
General competencies																																							
GC-1	+			+		+	+						+		+																								
GC-2				+	+	+	+	+							+	+		+		+			+		+	+								+	+	+		+	
GC-3																+											+	+	+	+						+		+	
GC-4		+							+			+	+		+	+	+	+		+	+	+	+	+	+	+	+											+	
GC-5		+	+																								+												
GC-6	+		+				+																					+	+	+		+						+	
GC-7	+	+		+	+	+					+		+		+		+										+												
GC-8	+		+	+	+	+				+				+					+					+	+	+	+	+	+	+		+		+		+		+	
GC-9				+			+	+																	+	+	+	+		+	+	+	+		+			+	
GC10						+	+																		+	+	+						+		+				
GC-11	+				+			+																															
GC-12	+		+			+	+	+																														+	
Professional competencies of specialty																																							
SC-1					+	+				+															+														
SC-2	+	+	+			+	+	+	+	+	+		+		+									+	+		+												+
SC-3				+	+					+	+	+				+			+	+																			
SC-4										+			+	+	+	+			+																				
SC-5							+	+				+												+	+	+	+									+	+		+
SC-6				+			+					+	+		+									+	+	+											+	+	
SC-7							+					+													+	+	+										+		
SC-8																+	+	+		+	+	+	+	+	+	+									+	+			

Program competencies	Educational components																																																
	EC 01	EC 02	EC 03	EC 04	EC 05	EC 06	EC 07	EC 08	EC 09	EC 10	EC 11	EC 12	EC 13	EC 14	EC 15	EC 16	EC 17	EC 18	EC 19	EC 20	EC 21	EC 22	EC 23	EC 24	EC 25	EC 26	EC 27	EC 28	EC 29	EC 30	EC 31	EC 32	EC 33	EC 34	EC 35	EC 15													
SC-9							+					+					+			+	+	+	+	+	+	+									+	+													
SC-10							+					+												+	+	+									+	+	+		+										
SC-11							+				+			+										+	+	+	+								+	+	+		+										
SC-12																	+		+		+	+	+													+													
SC-13							+																		+	+	+								+		+		+										
SC-14									+	+						+									+	+	+										+												
SC-15							+						+	+	+									+		+	+								+		+												
Professional Learning Outcomes (Military-border)																																																	
MLO-1	+							+																													+	+				+			+	+			
MLO-2																																									+	+		+	+	+	+	+	
MLO-3																																											+		+	+	+	+	
MLO-4																																											+	+					
MLO-5																																											+	+					
MLO-6																																														+	+	+	+
MLO-7							+	+																	+	+	+																		+	+	+	+	
MLO-8										+															+																					+	+	+	+
MLO-9							+	+																	+	+	+			+	+														+	+	+	+	
MLO-10							+																				+																		+	+	+	+	+

Program learning outcomes	Educational components																																																	
	EC 01	EC 02	EC 03	EC 04	EC 05	EC 06	EC 07	EC 08	EC 09	EC 10	EC 11	EC 12	EC 13	EC 14	EC 15	EC 16	EC 17	EC 18	EC 19	EC 20	EC 21	EC 22	EC 23	EC 24	EC 25	EC 26	EC 27	EC 28	EC 29	EC 30	EC 31	EC 32	EC 33	EC 34	EC 35	EC 15														
PLO-21												+													+	+									+	+	+		+											
PLO-22				+								+			+					+				+	+	+											+	+		+										
PLO-23										+						+			+																					+										
PLO-24											+		+	+	+	+		+			+							+																						
Program Learning Outcomes professional (Military-border)																																																		
MLO-1																																							+	+			+		+	+				
MLO-2																																											+		+	+	+			
MLO-3																																											+	+	+	+	+			
MLO-4																																												+	+					
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MLO-9																																														+	+	+	+	
MLO-10																																															+	+		+

Educational Program Guarantor

Chief of the Department of Telecommunication and Information Systems of Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine

Candidate of Technical Sciences
Colonel

Ivan CHESANOVSKIYI