

RATIFIED

Rector

« 11 » 2023 Andrei D. Karol

Registration No. 25142

CURRICULUM

for foreign students

Speciality: 7-06-0533-08 Cybersecurity

Profiling: Cybersecurity Technologies, Hardware and Software

Degree: Master of Science

Period of Study: 2 years

Form of Education: full-time

I. Schedule of the educational process

II. Summary (in weeks)

Y E A R S	September				October				November				December				January				February				March				April				May				June				July				August				Academic Studies	Exams	Internship	Research	Master's Thesis	Vacation	Total					
	1	8	15	22	29	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16	23	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13	20	27								3	10	17	24	
	7	14	21	28	05	12	19	26	02	9	16	23	30	7	14	21	28	04	11	18	25	01	8	15	22	01	8	15	22	29	05	12	19	26	03	10	17	24	31	7	14	21	28	05	12	19	26	02								9	16	23	31	
I								16						:	:	:	:	=	=	=	=	=	=	=	=							16					:	:	:	:	=	=	=	=	=	=	=	=	=	=	32	8					12	52		
II								17						:	:	:	:	=	X	X	X	X	X	X	X	X	X	X	X	X	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	17	3	8	12	1	2	43	
																																																						49	11	8	12	1	14	95

Legend: ☐ — Academic Studies ☒ — Internship ☐ — Defense of the Thesis  
☐ — Exams ☐ — Master's Thesis Research ☐ — Vacation

III. Curriculum

№ п/п	The name of the module, academic discipline, course project (course work)	Exams	End-of-term test	Academic hours					Semesters												Competence Code	
				Total	Total in class	As follows:				I year						II year						
						Lectures	Laboratory work	Workshops	Seminar classes	1 semester, 16 weeks			2 semester, 16 weeks			3 semester, 17 weeks			4 semester			
										Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class	Credits	Total	Total in class		Credits
1.	State Component			954	392	184	144		64	414	172	12	540	220	15							
1.1	Module «Management of Information Security»																				UC-1-5	
1.1.1	Management of Information Security	1		90	40	24			16	90	40	3									DPC-1	
1.1.2	Situational Analysis and Decision-Making Models	2		108	44	20	24						108	44	3						DPC-2	
1.1.3	Information Systems Security Assessment and Audit		2	108	44	20	24						108	44	3						DPC-3	
1.2	Module «Security of Information and Communication Technologies and Systems»																				UC-1-5, DPC-4,5	
1.2.1	Cyberphysical Systems and their Safety	1		108	44	20	24			108	44	3										
1.2.2	Network and Telecommunication Security	1		108	44	20	24			108	44	3										
1.2.3	Operating System Security		2	108	44	20	24						108	44	3							
1.3	Module «Organizational and Legal Support for Cybersecurity»																				UC-1-5	
1.3.1	Organizational and Legal Measures for Ensuring Information Security	1		108	44	20			24	108	44	3									DPC-7	
1.3.2	Cybercrime and Social Engineering	2		108	44	20			24				108	44	3						DPC-6	
1.3.3	Computer Security Software and Hardware Tools		2	108	44	20	24						108	44	3						DPC-8	
2.	Higher Education Institution Component			2146	680	296	248		136	612	216	18	504	166	15	1030	298	30				
2.1	Module «Modern Information and Communication Technologies»																				DPC-4,5	
2.1.1	Telecommunications Systems		1	108	48	24	24			108	48	3									SC-1	
2.1.2	Internet of Everything		1	108	44	20	16		8	108	44	3									SC-2	
2.1.3	Database Security		1	108	44	20	24			108	44	3									SC-3	
2.1.4	Virtualization and Cloud Security		2	108	44	20	24						108	44	3							
2.1.5	Industrial Networks / Wireless Networks		2	108	42	18	24						108	42	3						SC-4 / SC-5	
2.1.6	Automatic Control Systems / Reliability of Complex Systems		2	90	36	20	16						90	36	3						SC-6 / SC-7	
2.2	Module «Methods and Tools for Cybersecurity»																					
2.2.1	Functional Safety	3		90	40	16	24									90	40	3			DPC-1, SC-8	
2.2.2	Anti-Malware Technologies	3		108	44	16	28									108	44	3			SC-9	
2.2.3	Information Security Hardware / High-Load System Development		3	108	52	20	32									108	52	3			SC-10 / SC-11	
2.2.4	Electromagnetic Compatibility and Protection Against Information Leakage Through Technical Channels / Intelligent Information Security Systems		3	198	66	30	36									198	66	6			SC-13 / SC-14	
2.3	Module «Soft Skills»																					
2.3.1	Methodology and Technology of Research Activities		1	108	24	12			12	108	24	3									UC-1	
2.3.2	Team Building and Leadership Skills				24	12			12		24										UC-4,7	
2.3.3	Document Management				20	8			12				108	20	3						UC-4	
2.3.4	Business Communications		2	108	24	12			12					24							UC-4,7	
2.3.5	Business Economics and Management		3	108	48	24			24							108	48	3			UC-5,6	
2.3.6	Risk Management and Business Continuity Assurance		3	108	48	24			24							108	48	3			UC-5,6	
2.4	Module «Research activities»																				UC-1,2	
2.4.1	Research on the Subject of Master's Thesis		1,2,3	490						90		3	90		3	310		9				
2.4.2	Scientific Seminar «Actual Issues of Cybersecurity»		1	90	32				32	90	32	3										
2.5	Optional Subjects			/432	/280			/280		/108	/70	/3	/108	/70	/3	/108	/70	/3	108	/70	/3	
2.5.1	Russian as a Foreign Language <sup>1</sup>	/4	/1,2,3	/216	/140			/280		/108	/70	/3	/108	/70	/3	/108	/70	/3	108	/70	/3	UC-3
2.6	Series of Disciplines for Candidate Exams and Additional Training			/338	/218	/66	/24	/96	/32	/206	/138	/2	/132	/80	/7							
2.6.1	Philosophy and Methodology of Science <sup>2</sup>	/2		/124	/72	/40			/32	/62	/40		/62	/32	/3						UC-1	
2.6.2	Foreign Language <sup>2</sup>	/2		/142	/96			/96		/72	/48		/70	/48	/4						UC-3	
2.6.3	Information Technologies: Basics <sup>2</sup>		/1	/72	/50	/26	/24			/72	/50	/2									UC-2	
Number of Hours				3100	1072	480	392		200	1026	388	30	1044	386	30	1030	298	30				
Number of Hours per Week										24			24			18						
Number of Exams				11						4			4			3						
Number of End-of-term tests				16						6			6			4						



IV. Internship				V. Research			VI. Final Certification
Internship Title	Semester	Weeks	Credits	Semester	Weeks	Credits	Master's Thesis
Research	4	8	12	4	12	18	

VIII. Competence Matrix

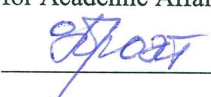
Competence Code	Competence	Module Code, Discipline Code
UC-1	Use the scientific cognition techniques in research activities, to generate and to realize innovative ideas	1.1, 1.2, 1.3, 2.3.1, 2.4, 2.6.1
UC -2	Solve research and innovative problems using advanced information technologies	1.1, 1.2, 1.3, 2.4, 2.6.2
UC -3	Ensure communication, demonstrate leadership skills, be capable of team building and developing strategic goals and objectives	1.1, 1.2, 1.3, 2.3.1, 2.3.2
UC -4	Improve innovation receptivity and innovation skills	1.1, 1.2, 1.3, 2.3.3, 2.3.4
UC -5	Predict the conditions of professional activity and solve professional problems in conditions of uncertainty	1.1, 1.2, 1.3, 2.3.3, 2.3.4
UC -6	Communicate in a foreign language in an academic, scientific, and professional environment for research and innovation activities	2.5.1, 2.6.3
UC -7	Apply psychological and pedagogical methods and information and communication technologies in education and management	2.3.1, 2.3.2
DPC-1	Design and implement information security systems and enterprise information security management systems based on international standards	1.1.1, 2.2.1
DPC-2	Identify factors affecting the current state of the information system, analyze their impact, and develop and apply mathematical models for making optimal decisions	1.1.2
DPC-3	Evaluate information systems security in order to identify potential vulnerabilities, assess risks, apply expert, active audit and information security audit methodologies	1.1.3
DPC-4	Develop and apply methods and tools to secure information and communication infrastructures, including computer networks, operating systems, virtual environments, and cloud technologies	1.2, 2.1
DPC-5	Develop and apply methods and tools to ensure the security of cyber-physical systems, industrial networks, Internet of things systems	1.2, 2.1
DPC-6	Use knowledge of current cybercrime trends and methods used by criminals to design organizational, legal, physical, and technical measures to ensure the cybersecurity of protected objects	1.3.2
DPC-7	Apply organizational and legal measures to ensure information security, based on the current regulatory framework and international standards	1.3.1
DPC-8	Mastering the design methods of information security systems and methods for assessing the sensivity of information transmission, storage and processing systems, be able to assess the effectiveness of information security	1.3.3
SC-1	Design and analyze telecommunication networks and systems	2.1.1
SC-2	Explore methods of people processes, data, and things intelligent connection	2.1.2
SC-3	Analyze functional and system database architecture, design and implement secure client-server databases	2.1.3
SC-4	Design networks connecting various sensors, actuators, and industrial controllers	2.1.5
SC-5	Design and deploy wireless networks and services, analyze their performance	2.1.5
SC-6	Design automatic process control systems	2.1.6
SC-7	Apply methods for assessing and predicting the reliability of complex systems	2.1.6
SC-8	Use the principles and basic technologies to provide functional safety of cyber-physical systems	2.2.1
SC-9	Analyze and eliminate software vulnerabilities in information systems, apply software protection tools against malware	2.2.2
SC-10	Determine the element base, use digital and analog microelectronic components when designing information security tools	2.2.3
SC-11	Use scaling, load distribution and information flow techniques, deployment strategies and dynamic expansion to design high-load information systems	2.2.3
SC-13	Develop and apply technical tools and systems to protect information and ensure the electromagnetic compatibility of radio electronic systems	2.2.4
SC-14	Determine the appropriate model of artificial intelligence for intelligence information security systems design	2.2.4

Developed on the basis of the Model Curriculum for the specialty 7-65-0533-08 Cybersecurity, approved on 6 March 2023, registration No 7-06-05-020/np.

<sup>1</sup> – Depending on the level of Russian language proficiency of foreign citizens, the volume of classroom hours may change (increase/decrease (but not less than 140 classroom hours)/exemption from studying the discipline).

<sup>2</sup> – General educational disciplines «Philosophy and Methodology of Science», «Foreign Language», «Information Technologies: Basics» are studied at the choice of a master's student. The study of general education disciplines «Philosophy and Methodology of Science», «Foreign Language» ends by the passing of the candidate exam, the general education discipline «Information Technologies: Basics» – the candidate end-of-term test.

Vice-Rector  
for Academic Affairs and Educational Innovations

  
Alesia G. Prakharenka  
11.04.2023

Academic Affairs Department  
Head

  
Natalia I. Marozava  
11.04.2023

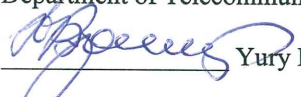
Dean of the Faculty of Radiophysics and Computer Technologies

  
Dmitrii V. Ushakov  
11.04.2023

Expert norm controller

  
Anzhelika V. Kostenevich  
11.04.2023

Department of Telecommunications and Information Technology (IT)

  
Yuri I. Vorotnitsky  
11.04.2023

Recommended for approval by the  
Scientific and Methodological Board of  
Belarusian State University  
Record dated 04 April 2023 No. 6