



MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL TECHNICAL UNIVERSITY "KHARKIV POLYTECHNIC INSTITUTE"

CURRICULUM

educational and professional program

APPROVED BY

Rector NTU "KhPI"

for the training first (bachelor's) level

(level of higher education)

Yevgen SOKOL

by specialty

Cybersecurity

in the field of
knowledge

F Information technologies

(code and name of the field of knowledge)

Bachelor of Cybersecurity
and information
protection

- **F5** Cybersecurity and information protection

Qualification

Period of study 3 years 10 months

" ____ " 2026 y.

Form of study full-time

on the basis of complete secondary education

I. Schedule of education process

Course	September				October				November				December				January				February				March				April				May				June				July				August								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
I	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	3	C	C	C	K	K	K	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	3	C	C	C	K	K	K	K	K	K	K	K
II	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	3	C	C	C	K	K	K	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	3	C	C	C	K	K	K	K	K	K	K	K	
III	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	3	C	C	C	K	K	K	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	3	C	C	C	K	K	K	K	K	K	K	K	
IV	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	3	C	C	C	K	K	K	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	C	C	A	A									

Notation:

Theoretical training
3 Score week
C Examination session

Theoretical and practical training
Π Practice

A Protection of the control work

K Vacations

II. Consolidated budget time (in weeks)

Course	Theoretical study	Exam Session	Practice	Attestation	Preparation of qualification work	Vacation	Total
I	32	8				12	52
II	32	8				12	52
III	28	8	4			12	52
IV	28	6	4	2		3	43
Total	120	30	8	2	39	199	

III. Practice

Type of practice	Duration (in weeks)	Semester
Practice		
Industrial	4	6
Technological	4	8

IV. Attestation

Certification form	Semester
Defense of qualification work	
Preparation for the Unified State Examination	8
Unified state qualification exam	8

№ з/н	Name of the educational component	Total number				Departme nt code	
		ECTS credits	Hours	Semesters			
				exam.	offset		
1	2	3	4	5	6	7	
1	Mandatory educational components	159,0	4770,0			66,25%	
1.1	General training	53,0	1590,0			22,08%	
GT 1	History and culture of Ukraine	4,0	120,0	1		310	
GT 2	Foreign Language	4,0	120,0	8	7	275	
GT 3	Ukrainian as a foreign language	12,0	360,0	8	3 - 7	273	
GT 4	Physics	4,0	120,0	1		168	
GT 5	Fundamentals of humanitarian and philosophical knowledge in professional activity	4,0	120,0	3		307	
GT 6	Higher mathematics	6,0	180,0		1	324	
GT 7	Fundamentals of Higher Algebra	5,0	150,0	2		324	
GT 8	Language of professional training	10,0	300,0	2	1	275	
GT	Physical education	4,0	120,0		1 - 2	302	
1.2	Special (professional) training	106,0	3180,0			44,17%	
ST 1	Introduction to the specialty. Introductory practice	3,0	90,0		1	328	
ST 2	Basics of programming	4,0	120,0	1		328	
ST 3	Information and coding theory	3,0	90,0	1		328	
ST 4	Legal Regulation of Information Security	4,0	120,0		2	328	
ST 5	Algorithms and data structures	5,0	150,0	2		328	
ST 6	Physical bases of technical intelligence means	5,0	150,0		2	328	
ST 7	Information security of the state	3,0	90,0		2	328	
ST 8	Social Engineering Methods in Cybersecurity	4,0	120,0		3	328	
ST 9	Mathematical foundations of cryptology	4,0	120,0	3		328	
ST 10	Programming technologies	5,0	150,0	3		328	
ST 11	Computer networks	4,0	120,0	3		328	
ST 12	Security of Modern Operating Systems	6,0	180,0	4		328	
ST 13	Cybersecurity Software Development	6,0	180,0	4		328	
ST 14	Basics of cryptographic protection	6,0	180,0		4	328	
ST 15	Fundamentals of Microprocessor System Security	4,0	120,0	5		328	
ST 16	Mathematical Modeling of Security Systems	4,0	120,0	5		328	
ST 17	Basics of steganographic information protection	5,0	150,0	5		328	
ST 18	DevOps Security	4,0	120,0		5	328	
ST 19	Web application development	6,0	180,0	6		328	
ST 20	Integrated information security systems	5,0	150,0	7		328	
ST 21	Web security	5,0	150,0	7		328	
ST 22	Comprehensive training	4,0	120,0		8	328	
ST 23	Neural Networks	4,0	120,0		8	328	
ST 24	Open Source Intelligence (OSINT)	3,0	90,0		8	328	
2	Practical training	12,0	360,0			5,00%	
PT 1	Industrial practice*	6,0	180,0		6	328	
PT 2	Technological practice*	6,0	180,0		8	328	
3	Attestation*	3,0	90,0			1,25%	
4	Optional educational components	66,0	1980,0			27,50%	
4.1	Specialized training	23,0	690,0			9,58%	
4.1.1	Profiled package of educational components 01 "Artificial Intelligence in Security Systems"	23,0	690,0			KH-1126i	
EC 1.1	Ethical hacking	3,0	90,0	4		328	
EC 1.2	Date of mining	3,0	90,0	4		328	
EC 1.3	Mathematical foundations of artificial intelligence	3,0	90,0	5		328	
EC 1.4	Python for artificial intelligence and machine learning	4,0	120,0	6		328	
EC 1.5	Genetic algorithms	4,0	120,0	7		328	
EC 1.6	Python for internet things	3,0	90,0	8		328	
EC 1.7	Systems engineering	3,0	90,0	8		328	
4.1.2	Profiled package of educational components 02 "Blockchain technology and security of banking systems"	23,0	690,0			KH-1126i	
EC 2.1	Decentralised systems	3,0	90,0	4		328	
EC 2.2	Risk management	3,0	90,0	4		328	
EC 2.3	Blockchain: basics and application examples	3,0	90,0	5		328	
EC 2.4	Security of banking systems	4,0	120,0	6		328	
EC 2.5	Protecting critical infrastructure facilities	4,0	120,0	7		328	
EC 2.6	Organising document management with restricted access	3,0	90,0	8		328	
EC 2.7	Security in social networks	3,0	90,0	8		328	
4.1.3	Profiled package of educational components n.03 "Innovation Campus"	23,0	690,0			KH-1126i	
EC 3.1	Basics of cybersecurity	3,0	90,0	4		328	
EC 3.2	Development of corporate information systems (part 1)	3,0	90,0	4		328	
EC 3.3	Development of corporate information systems (part 2)	3,0	90,0	5		328	
EC 3.4	Databases for corporate information systems	4,0	120,0	6		328	
EC 3.5	Architecture of corporate information systems	4,0	120,0	7		328	
EC 3.6	Security and audit of wireless and mobile networks	3,0	90,0	8		328	
EC 3.7	Protecting critical infrastructure facilities	3,0	90,0	8		328	
4.2	Educational components of free choice of professional training of the general institute catalog	28,0	840,0			42,42%	
ECPT 1	EC FC PT 1	4,0	120,0		3	777	
ECPT 2	EC FC PT 2	4,0	120,0		4	777	
ECPT 3	EC FC PT 3	4,0	120,0		5	777	
ECPT 4	EC FC PT 4	4,0	120,0		6	777	
ECPT 5	EC FC PT 5	4,0	120,0		6	777	
ECPT 6	EC FC PT 6	4,0	120,0		7	777	
ECPT 7	EC FC PT 7	4,0	120,0		7	777	
4.3	Educational components of free choice of general training	12,0	360,0			18,18%	
ECGT 1	EC FC GT 1	4,0	120,0		5	777	
ECGT 2	EC FC GT 2	4,0	120,0		6	777	
ECGT 3	EC FC GT 3	4,0	120,0		7	777	
4.4	Educational components of special university choice	3,0	90,0			4,55%	
ECSUC	ECSUC	3,0	90,0		3	777	
Total for education period		240,0	7200,0			KH-1126i	

CURRICULUM №	KH-1126i
Form of study and more	i
Institute code	320
Short name of the institute	KH
Number of the educational program	11
Name of the educational program	Cybersecurity
Code of the field of knowledge	F
Industry name	Information technologies
Specialty code	F5
Name of the specialty	Cybersecurity and information protection
Level of higher education:	first (bachelor's) level
Qualifications:	Bachelor of Cybersecurity and information protection
Year (last 2 digits)	26
Responsible for information, phone number	Serhii YEVSEIEV, 095-360-66-13

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V. EDUCATION PROCESS PLAN

Code in accordance with the EPP	Name of academic discipline	Semester distribution			Number of ECTS credits	Number of hours					Distribution of classroom hours per a week and ECTS credits per a semester												Department				
		Exams	Tests	Individual tasks		Total amount	Classroom			Independent work	I course		II course		III course		IV course										
						Total	Lectures	Laboratory works	Practical studies		1	2	3	4	5	6	7	8	Semesters								
											16	16	16	16	16	16	12	16	16	Classroo m hours	Classroo m hours	Classroo m hours	Department				
											ECTS credits	ECTS credits	ECTS credits	ECTS credits	ECTS credits	ECTS credits	ECTS credits	ECTS credits	ECTS credits	ECTS credits	ECTS credits	ECTS credits					
											13	14	15	16	17	18	19	20	21	ECTS credits	ECTS credits	ECTS credits	ECTS credits				
											23	24	25	26	27	28	29	30	31	ECTS credits	ECTS credits	ECTS credits	ECTS credits				
											20	21	22	23	24	25	26	27	28	ECTS credits	ECTS credits	ECTS credits	ECTS credits				
1	Mandatory educational components				159,0	4770,0	2052,0	736,0	684,0	632,0	2718,0	24,0	30,0	25,0	30,0	18,0	23,0	17,0	20,0	15,0	19,0	8,0	8,0	12,0	14,0	15,0	15,0
1.1	General training				53,0	1590,0	744,0	144,0		600,0	846,0	17,0	20,0	12,0	13,0	5,0	6,0	2,0	2,0	2,0	2,0	2,0	2,0	4,0	4,0	4,0	4,0
GT 1	History and culture of Ukraine	1		A	4,0	120,0	48,0	16,0		32,0	72,0	3	4														310
GT 2	Foreign Language	8	7		4,0	120,0	56,0			56,0	64,0												2	2	2	2	275
GT 3	Ukrainian as a foreign language	8	3 - 7	A	12,0	360,0	176,0			176,0	184,0					2	2	2	2	2	2	2	2	2	2	2	273
GT 4	Physics	1		C	4,0	120,0	48,0	32,0		16,0	72,0	3	4													168	
GT 5	Fundamentals of humanitarian and philosophical knowledge in professional activity	3		A	4,0	120,0	48,0	16,0		32,0	72,0					3	4									307	
GT 6	Higher mathematics		1	C	6,0	180,0	80,0	32,0		48	100,0	5	6													324	
GT 7	Fundamentals of Higher Algebra	2		A	5,0	150,0	80,0	48,0		32,0	70,0			5	5											324	
GT 8	Language of professional training	2	1	A	10,0	300,0	144,0			144,0	156,0	4	4	5	6											275	
GT	Physical education		1 - 2		4,0	120,0	64,0			64,0	56,0	2,0	2,0	2,0	2,0											302	
1.2	Special (professional) training				106,0	3180,0	1308,0	592,0	684,0	32,0	1872,0	7,0	10,0	13,0	13,0	17,0	17,0	15,0	18,0	13,0	17,0	6,0	6,0	8,0	10,0	11,0	11,0
ST 1	Introduction to the specialty. Introductory practice		1		3,0	90,0	32,0	16		16	58,0	2	3														328
ST 2	Basics of programming	1			4,0	120,0	48,0	16	32		72,0	3	4													328	
ST 3	Information and coding theory	1			3,0	90,0	32,0	16	16		58,0	2	3													328	
ST 4	Legal Regulation of Information Security	2			4,0	120,0	48,0	32		16	72,0			3	4											328	
ST 5	Algorithms and data structures	2			5,0	150,0	64,0	32	32		86,0			4	5											328	
ST 6	Physical bases of technical intelligence means	2			5,0	150,0	64,0	32	32		86,0			4	5											328	
ST 7	Information security of the state	2			3,0	90,0	32,0	16	16		58,0			2	3											328	
ST 8	Social Engineering Methods in Cybersecurity	3			4,0	120,0	48,0	16	32		72,0			3	4											328	
ST 9	Mathematical foundations of cryptology	3			4,0	120,0	48,0	16	32		72,0			3	4											328	
ST 10	Programming technologies	3			5,0	150,0	64,0	32	32		86,0			4	5											328	
ST 11	Computer networks	3		CP	4,0	120,0	48,0	16	32		72,0			3	4											328	
ST 12	Security of Modern Operating Systems	4			6,0	180,0	80,0	32	48		100,0							5	6							328	
ST 13	Cybersecurity Software Development	4			6,0	180,0	80,0	32	48		100,0						5	6								328	
ST 14	Basics of cryptographic protection	4			6,0	180,0	80,0	32	48		100,0						5	6								328	
ST 15	Fundamentals of Microprocessor System Security	5			4,0	120,0	48,0	16	32		72,0									3	4					328	
ST 16	Mathematical Modeling of Security Systems	5			4,0	120,0	48,0	16	32		72,0									3	4					328	
ST 17	Basics of steganographic information protection	5			5,0	150,0	64,0	32	32		86,0									4	5					328	
ST 18	DevOps Security		5		4,0	120,0	48,0	32	16		72,0									3	4					328	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
ECPT 3	EC FC PT 3		5		4,0	120,0	48,0			72,0										3	4							777	
ECPT 4	EC FC PT 4		6		4,0	120,0	36,0			84,0										3	4							777	
ECPT 5	EC FC PT 5		6		4,0	120,0	36,0			84,0										3	4							777	
ECPT 6	EC FC PT 6		7		4,0	120,0	48,0			72,0												3	4						777
ECPT 7	EC FC PT 7		7		4,0	120,0	48,0			72,0												3	4						777
4.3	Educational components of free choice of general training				12,0	360,0	132,0	44,0	88,0		228,0									3,0	4,0	3,0	4,0	3,0	4,0				
ECGT 1	EC FC GT 1		5		4,0	120,0	48,0	16	32	72,0										3	4							777	
ECGT 2	EC FC GT 2		6		4,0	120,0	36,0	12	24	84,0											3	4						777	
ECGT 3	EC FC GT 3		7		4,0	120,0	48,0	16	32	72,0												3	4						777
4.4	Educational components of special university choice				3,0	90,0	64,0			26,0									4,0	3,0									
ECSUC	ECSUC				3	3,0	90,0	64,0		26,0									4	3								777	
Total for education period				240,0	7200,0	2824,0	892,0	924,0	632,0	4376,0	24,0	30,0	25,0	30,0	25,0	30,0	24,0	30,0	23,0	30,0	21,0	30,0	24,0	30,0	21,0	30,0			
Hours per week														24,0	25,0	25,0	24,0	23,0	21,0	24,0	21,0								
Number of exams														4	3	4	4	4	2	3	4								
Number of tests														4	4	4	3	4	5	5	4								
Number of course projects (works)																	1			1	1								
Numbers of disciplines per semester														8	7	8	7	8	7	8									

Individual tasks	
P	Calculated task
РГ	Calculated and graphic task
РЕ	Report
КП	Course project
KP	Course work

Approved by the Academic Council of NTU "KhPI"
Protocol №____ from ____ 2026

Vice-rector for scientific and pedagogical work

name of the institute

signature

name

Gennadiy KHRYPUNOV

Guarantor of the academic program
"Cybersecurity"

program name

Serhii YEVSIEIEV

signature name

Director of the Institute of Computer Science
and Information Technology

name of the institute

signature

name

Mykhailo GODLEVSKYI

Head of the Cybersecurity Department

department name

Serhii YEVSIEIEV

signature name

* Practices and certification are conducted by graduating departments

List 2 - Educational components of special university choice

Code in accordance with the EPP	Name of academic discipline	Semester distribution			Number of ECTS credits	Number of hours					Distribution of classroom hours per a week and ECTS credits per a semester												Department						
		Exams	Tests	Individual tasks		Classroom			including		Practical studies	Independent work	I course			II course			III course										
						Total	Lectures	Laboratory works					Semesters		1	2	3	4	5	6	7	8							
		Number of weeks in the semester																											
		16		16		16		16		16		16		16		12		16		12									
		Classroom hours		ECTS credits		Classroom hours		ECTS credits		Classroom hours		ECTS credits		Classroom hours		ECTS credits		Classroom hours		ECTS credits									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
4.4	Educational components of special university choice																												
ECSUC 1	Physical education.	3			3,0	90,0	64,0	32,0		32,0	58,0						4,0	3,0										302	KH-1125i
ECSUC 2	Strength training: modern types	3			3,0	90,0	64,0	32,0		32,0	58,0						4,0	3,0									302	KH-1125i	
ECSUC 3	Health and rehabilitation practices	3			3,0	90,0	64,0	32,0		32,0	58,0						4,0	3,0									302	KH-1125i	
ECSUC 4	Physical training with elements of self-defense	3			3,0	90,0	64,0	32,0		32,0	58,0						4,0	3,0									302	KH-1125i	
ECSUC 5	Health swimming	3			3,0	90,0	64,0	32,0		32,0	58,0						4,0	3,0									302	KH-1125i	

List 1 - Educational components of free choice of professional training

EPP code	Name of academic discipline	Distribution by semesters			Number of hours						Distribution of classroom hours per week and ECTS credits by semesters										Department
		Exams	Credit tests	Individual tasks	Classroom			Individual work			I year		II year		III year		IV year				
					Total	including		lectures	laboratory	practical	16	16	16	16	16	16	16	12	16		
						1															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	29	
4.2	Educational components of free choice of professional training																				
ECPT 1	Legal regulation of information security	3	4,0	120,0	48,0	32,0		16,0	72,0						3,0	4,0					328
ECPT 2	Intellectual property of security systems	3	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 3	Security in Information System Design	3	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 4	Information Warfare Technologies	4	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 5	Protecting e-commerce and multiservice systems	4	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 6	Databases with SQL and Python	4	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 7	Wireless System Security	5	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 8	Fundamentals of planning and administration of information resource access services	5	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 9	Risk theory in cybersecurity	5	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 10	Cryptanalysis methods	6	4,0	120,0	36,0	24,0	12,0	84,0						3,0	4,0						328
ECPT 11	Internet science. Navigation in complex systems	6	4,0	120,0	36,0	24,0	12,0	84,0						3,0	4,0						328
ECPT 12	Development of server applications (Java Spring Boot)	6	4,0	120,0	36,0	24,0	12,0	84,0						3,0	4,0						328
ECPT 13	Technical support of information protection	6	4,0	120,0	36,0	24,0	12,0	84,0						3,0	4,0						328
ECPT 14	Cloud security	6	4,0	120,0	36,0	24,0	12,0	84,0						3,0	4,0						328
ECPT 15	Testing mobile applications	6	4,0	120,0	36,0	24,0	12,0	84,0						3,0	4,0						328
ECPT 16	Administering UNIX-like systems	7	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 17	Organisational support for information security	7	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 18	IT project management and security	7	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 19	Smart Technology. Security	7	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 20	Business intelligence	7	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328
ECPT 21	Evolutionary programming	7	4,0	120,0	48,0	32,0	16,0	72,0						3,0	4,0						328