



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

CURRICULUM

educational and professional program

APPROVED BY

Acting Rector of NTU "KPI"

for the training first (bachelor's) level

(level of higher education)

Cybersecurity

in the field of

knowledge

F Information technologies

(code and name of the field of knowledge)

Bachelor of Cybersecurity
and information
protection

by specialty

- F5 Cybersecurity and information protection

Qualification

Period of study

3 years 10 months

on the basis of complete secondary education

'07" July 2026

Form of study

full-time

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	3	C	C	C	K	K	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	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	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	T	T	T	T	T	T	T	T	T	T	T	T	T	T

Notation:



T Theoretical training

3 Score week

C Examination session



TP Theoretical and practical training

P Practice



A Protection of the control work



K Vacations

II. Consolidated budget time (in weeks)

III. Practice

IV. Attestation

Course	Theoretical study	Exam Session	Practice	Attestation	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

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

Certification form	Semester
Defense of qualification work	
Certification exam	
Single state qualification exam	8

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	Andrii TKACHOV, 097-536-44-56

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CURRICULUM CONTENT

training of the first (bachelor's) level:
by specialty

F5

Cybersecurity and information protection

№ 3/n	Name of the educational component	Total number				Departme nt code
		ECTS credits	Hours	Semesters		
1	2	3	4	exam. 5	offset 6	7
1	Obligatory educational components	161	4830,0			67,08%
1.1	General training	58	1740,0			24,17%
3П 1	International Support for the National Resistance	5	150,0		1,4	301
3П 2	The History of Ukrainian Statehood	4	120,0	2		310
3П 3	Foreign Language	4	120,0	8	7	275
3П 4	Ukrainian as a foreign language	12	360,0	8	3 - 7	273
3П 5	Physics	4	120,0	1		168
3П 6	Fundamentals of humanitarian and philosophical knowledge in professional activity	4	120,0	3		307
3П 7	Higher mathematics	5	150,0		1	324
3П 8	Fundamentals of Higher Algebra	6	180,0	2		324
3П 9	Language of professional training	6	180,0	2	1	275
3П	Physical education	8	240,0		1, 2	302
1.2	Professional training	103	3090,0			42,92%
СП 1	Introduction to the specialty. Introductory practice	3	90,0		1	328
СП 2	Basics of programming	4	120,0	1		328
СП 3	Information and coding theory	4	120,0	1		328
СП 4	Legal Regulation of Information Security	3	90,0		2	328
СП 5	Algorithms and data structures	4	120,0		3	328
СП 6	Physical bases of technical intelligence means	3	90,0	2		328
СП 7	Information security of the state	3	90,0		2	328
СП 8	Social Engineering Methods in Cybersecurity	3	90,0	6		328
СП 9	Mathematical foundations of cryptology	4	120,0	3		328
СП 10	Programming technologies	4	120,0	3		328
СП 11	Computer networks	4	120,0	3		328
СП 12	Security of Modern Operating Systems	6	180,0	4		328
СП 13	Cybersecurity Software Development	5	150,0	4		328
СП 14	Basics of cryptographic protection	5	150,0		4	328
СП 15	Fundamentals of Microprocessor System Security	5	150,0	5		328
СП 16	Administration of information protection systems	4	120,0	5		328
СП 17	Basics of steganographic information protection	4	120,0	5		328
СП 18	GeOSINT-reconnaissance	4	120,0		5	328
СП 19	Web application development	4	120,0	6		328
СП 20	Information security systems	5	150,0	7		328
СП 21	Web security	6	180,0	7		328
СП 22	Comprehensive training	4	120,0		8	328
СП 23	Neural Networks	4	120,0		3	328
СП 24	Open Source Intelligence (OSINT)	4	120,0		8	328
2	Professional training	12	360,0			5,00%
ПП 1	Industrial practice*	6	180,0		6	328
ПП 2	Technological practice*	6	180,0		8	328
3	Attestation*	6	180,0	8		2,50%
4	Optional educational components	61	1830,0			25,42%
4.1	Specialized training	21	630,0			8,75%
4.1.1	Profiled package of educational components 01 "Artificial Intelligence in Security Systems"	21	630,0			
БП1.1	Ethical hacking	3	90,0	4		328
БП1.2	Date of mining	3	90,0	4		328
БП1.3	Mathematical foundations of artificial intelligence	3	90,0	5		328
БП1.4	Python for artificial intelligence and machine learning	3	90,0	6		328
БП1.5	Genetic algorithms	3	90,0	7		328
БП1.6	Python for internet things	3	90,0	8		328
БП1.7	Systems engineering	3	90,0	8		328
4.1.2	Profiled package of educational components 02 "Blockchain technology and security of banking systems"	21	630,0			
БП2.1	Decentralised systems	3	90,0	4		328
БП2.2	Risk management	3	90,0	4		328
БП2.3	Blockchain: basics and application examples	3	90,0	5		328
БП2.4	Security of banking systems	3	90,0	6		328
БП2.5	Protecting critical infrastructure facilities	3	90,0	7		328
БП2.6	Organising document management with restricted access	3	90,0	8		328
БП2.7	DevOps Security	3	90,0	8		328
4.1.3	Profiled package of educational components в 03 "Innovation Campus"	21	630,0			
БП3.1	Basics of cybersecurity	3	90,0	4		328
БП3.2	Development of corporate information systems (part 1)	3	90,0	4		328
БП3.3	Development of corporate information systems (part 2)	3	90,0	5		328
БП3.4	Databases for corporate information systems	3	90,0	6		328
БП3.5	Architecture of corporate information systems	3	90,0	7		328
БП3.6	Security and audit of wireless and mobile networks	3	90,0	8		328
БП3.7	Protecting critical infrastructure facilities	3	90,0	8		328
4.2	Educational components of free choice of professional training of the general institute catalog	28	840,0			45,90%
ОКВП 1	ОК ВВ ПК 1	4	120,0		3	777
ОКВП 2	ОК ВВ ПК 2	4	120,0		4	777
ОКВП 3	ОК ВВ ПК 3	4	120,0		5	777
ОКВП 4	ОК ВВ ПК 4	4	120,0		6	777
ОКВП 5	ОК ВВ ПК 5	4	120,0		6	777
ОКВП 6	ОК ВВ ПК 6	4	120,0		7	777
ОКВП 7	ОК ВВ ПК 7	4	120,0		7	777
4.3	Educational components of the free choice of the university-wide catalog	12	360,0			19,67%
ОКВ3 1	ОК ВВ 3П 1	4	120,0		5	777
ОКВ3 2	ОК ВВ 3П 2	4	120,0		6	777
ОКВ3 3	ОК ВВ 3П 3	4	120,0		7	777
	Total for education period	240	7200,0			

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	including				S e m e s t e r s																		
								Lectures	Laboratory works	Practical studies		1	2	3	4	5	6	7	8											
												Number of weeks in the semester																		
												20		20		20		20		20		20		20		20				
												Classroom m hours	ECTS credits	Classroom m hours	ECTS credits	Classroom m hours	ECTS credits	Classroom m hours	ECTS credits	Classroom m hours	ECTS credits	Classroom m hours	ECTS credits	Classroom m hours	ECTS credits	Classroom m 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		
1	Obligatory educational components				161	4830,0	2028,0	628,0	704,0	696,0	2802,0	23,0	30	23,0	30	20,0	26	17,0	20	15,0	19	9,0	9	13,0	15	12,0	12			
1.1	General training				58	1740,0	776,0	112,0		664,0	964,0	15,0	19	14,0	17	5,0	6	4,0	4	2,0	2	2,0	2	4,0	4	4,0	4			
ЗП 1	International Support for the National Resistance		1,4		5	150,0	64,0			64,0	86,0	2,0	3					2,0	2									301		
ЗП 2	The History of Ukrainian Statehood	2		A	4	120,0	48,0	16,0		32,0	72,0				3,0	4									2,0	2	2,0	2	310	
ЗП 3	Foreign Language	8	7		4	120,0	56,0			56,0	64,0														2,0	2	2,0	2	275	
ЗП 4	Ukrainian as a foreign language	8	3 - 7	A	12	360,0	176,0			176,0	184,0					2,0	2	2,0	2	2,0	2	2,0	2	2,0	2	2,0	2	2,0	273	
ЗП 5	Physics	1		C	4	120,0	48,0	16,0		32,0	72,0	3,0	4																168	
ЗП 6	Fundamentals of humanitarian and philosophical knowledge in professional activity	3		A	4	120,0	48,0	16,0		32,0	72,0					3,0	4												307	
ЗП 7	Higher mathematics		1	C	5	150,0	64,0	32,0		32	86,0	4,0	5																324	
ЗП 8	Fundamentals of Higher Algebra	2		A	6	180,0	80,0	32,0		48,0	100,0					5,0	6												324	
ЗП 9	Language of professional training	2	1	A	6	180,0	64,0			64,0	116,0	2,0	3	2,0	3														275	
ЗП	Physical education		1, 2		8	240,0	128,0			128,0	112,0	4,0	4	4,0	4														302	
1.2	Professional training				103	3090,0	1252,0	516,0	704,0	32,0	1838,0	8,0	11	9,0	13	15,0	20	13,0	16	13,0	17	7,0	7	9,0	11	8,0	8			
СП 1	Introduction to the specialty. Introductory practice		1		3	90,0	32,0	16		16	58,0	2	3																328	
СП 2	Basics of programming	1			4	120,0	48,0	16	32		72,0	3	4																328	
СП 3	Information and coding theory	1			4	120,0	48,0	16	32		72,0	3	4																328	
СП 4	Legal Regulation of Information Security		2		3	90,0	32,0	16		16	58,0				2	3													328	
СП 5	Algorithms and data structures		3		4	120,0	48,0	16	32		72,0					3	4												328	
СП 6	Physical bases of technical intelligence means	2			3	90,0	32,0	16	16		58,0				2	3													328	
СП 7	Information security of the state		2		3	90,0	32,0	16	16		58,0				2	3													328	
СП 8	Social Engineering Methods in Cybersecurity	6			3	90,0	36,0	12	24		54,0										3	3							328	
СП 9	Mathematical foundations of cryptology	3			4	120,0	48,0	16	32		72,0					3	4												328	
СП 10	Programming technologies	3			4	120,0	48,0	16	32		72,0					3	4												328	
СП 11	Computer networks	3		CP	4	120,0	48,0	16	32		72,0					3	4												328	
СП 12	Security of Modern Operating Systems	4			6	180,0	80,0	32	48		100,0							5	6										328	
СП 13	Cybersecurity Software Development	4			5	150,0	64,0	32	32		86,0							4	5										328	
СП 14	Basics of cryptographic protection		4		5	150,0	64,0	32	32		86,0							4	5										328	
СП 15	Fundamentals of Microprocessor System Security	5			5	150,0	64,0	32	32		86,0									4	5								328	
СП 16	Administration of information protection systems	5			4	120,0	48,0	16	32		72,0									3	4								328	
СП 17	Basics of steganographic information protection	5			4	120,0	48,0	16	32		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
СП 18	GeOSINT-reconnaissance		5		4	120,0	48,0	16	32		72,0									3	4							328
СП 19	Web application development	6		CP	4	120,0	48,0	24	24		72,0											4	4					328
СП 20	Information security systems	7			5	150,0	64,0	32	32		86,0													4	5			328
СП 21	Web security	7		CP	6	180,0	80,0	32	48		100,0													5	6			328
СП 22	Internet of Things security		2		4	120,0	48,0	16	32		72,0			3	4													328
СП 23	Comprehensive training		8	A	4	120,0	48,0	24	24		72,0															4	4	328
СП 24	Neural Networks		3		4	120,0	48,0	16	32		72,0					3	4											328
СП 25	Open Source Intelligence (OSINT)		8		4	120,0	48,0	24,0	24,0		72,0															4	4,0	328
2	Professional training				12	360,0					360,0												6				6	
ПП 1	Industrial practice*		6		6	180,0					180,0												6					328
ПП 2	Technological practice*		8		6	180,0					180,0																6	328
3	Attestation*	8			6	180,0					180,0																6	
4	Optional educational components				61	1830,0	716,0	284,0	432,0		1114,0					3,0	4	7,0	10	8,0	11	15,0	15	11,0	15	6,0	6	
4.1	Specialized training				21	630,0	236,0	100,0	136,0		394,0								4,0	6	2,0	3	3,0	3	2,0	3	6,0	6
4.1.1	Profiled package of educational components 01 "Artificial Intelligence in Security Systems"				21	630,0	236,0	100,0	136,0		394,0								4,0	6	2,0	3	3,0	3	2,0	3	6,0	6
БП1.1	Ethical hacking	4			3	90,0	32,0	16	16		58,0							2	3									328
БП1.2	Date of mining	4			3	90,0	32,0	16	16		58,0							2	3									328
БП1.3	Mathematical foundations of artificial intelligence	5			3	90,0	32,0	16	16		58,0									2	3							328
БП1.4	Python for artificial intelligence and machine learning	6			3	90,0	36,0	12	24		54,0											3	3					328
БП1.5	Genetic algorithms	7			3	90,0	32,0	16	16		58,0													2	3			328
БП1.6	Python for internet things	8			3	90,0	36,0	12	24		54,0															3	3	328
БП1.7	Systems engineering	8			3	90,0	36,0	12	24		54,0															3	3	328
4.1.2	Profiled package of educational components 02 "Blockchain technology and security of banking systems"				21	630,0	236,0	100,0	136,0		394,0								4,0	6	2,0	3	3,0	3	2,0	3	6,0	6
БП2.1	Decentralised systems	4			3	90,0	32,0	16	16		58,0							2	3									328
БП2.2	Risk management	4			3	90,0	32,0	16	16		58,0							2	3									328
БП2.3	Blockchain: basics and application examples	5			3	90,0	32,0	16	16		58,0									2	3							328
БП2.4	Security of banking systems	6			3	90,0	36,0	12	24		54,0											3	3					328
БП2.5	Protecting critical infrastructure facilities	7			3	90,0	32,0	16	16		58,0													2	3			328
БП2.6	Organising document management with restricted access	8			3	90,0	36,0	12	24		54,0															3	3	328
БП2.7	DevOps Security	8			3	90,0	36,0	12	24		54,0															3	3	328
4.1.3	Profiled package of educational components 03 "Innovation Campus"				21	630,0	236,0	100,0	136,0		394,0								4,0	6	2,0	3	3,0	3	2,0	3	6,0	6
БП3.1	Basics of cybersecurity	4			3	90,0	32,0	16	16		58,0							2	3									328
БП3.2	Development of corporate information systems (part 1)	4			3	90,0	32,0	16	16		58,0							2	3									328
БП3.3	Development of corporate information systems (part 2)	5			3	90,0	32,0	16	16		58,0									2	3							328
БП3.4	Databases for corporate information systems	6			3	90,0	36,0	12	24		54,0											3	3					328
БП3.5	Architecture of corporate information systems	7			3	90,0	32,0	16	16		58,0													2	3			328
БП3.6	Security and audit of wireless and mobile networks	8			3	90,0	36,0	12	24		54,0															3	3	328
БП3.7	Protecting critical infrastructure facilities	8			3	90,0	36,0	12	24		54,0															3	3	328
4.2	Educational components of free choice of professional training of the general institute catalog				28	840,0	336,0	128,0	208,0		504,0					3,0	4	3,0	4	3,0	4	8,0	8	6,0	8			

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
OKBП 1	OK BB ПК 1		3		4	120,0	48,0	16,0	32,0		72,0					3,0	4											777
OKBП 2	OK BB ПК 2		4		4	120,0	48,0	16,0	32,0		72,0							3,0	4									777
OKBП 3	OK BB ПК 3		5		4	120,0	48,0	16,0	32,0		72,0							3,0	4									777
OKBП 4	OK BB ПК 4		6		4	120,0	48,0	16,0	32,0		72,0									3,0	4							777
OKBП 5	OK BB ПК 5		6		4	120,0	48,0	24,0	24,0		72,0											4,0	4					777
OKBП 6	OK BB ПК 6		7		4	120,0	48,0	16,0	32,0		72,0											4,0	4					777
OKBП 7	OK BB ПК 7		7		4	120,0	48,0	16,0	32,0		72,0													3,0	4			777
3	Educational components of the free choice of the university-wide catalog				12	360,0	144,0	56,0	88,0		216,0									3,0	4	4,0	4	3,0	4			777
KB3 1	OK BB ЗП 1		5		4	120,0	48,0	16,0	32,0		72,0									3,0	4							777
KB3 2	OK BB ЗП 2		6		4	120,0	48,0	24,0	24,0		72,0											4,0	4					777
KB3 3	OK BB ЗП 3		7		4	120,0	48,0	16,0	32,0		72,0													3,0	4			777
Total for education period					240	7200,0	2744,0	912,0	1136,0	696,0	4456,0	23,0	30	23,0	30	23,0	30	24,0	30	23,0	30	24,0	30	24,0	30	18,0	30	
Hours per week												23,0		23,0		23,0		24,0		23,0		24,0		24,0		18,0		
Number of exams												3		4		4		4		4		3		3		5		
Number of tests												5		4		4		4		4		5		5		3		
Number of course projects (works)																1						1		1				
Numbers of disciplines per semester												8		8		8		8		8		8		8		8		

Individual tasks	
P	Calculated task
ПГ	Calculated and graphic task
PE	Report
КП	Course project
КР	Course work

Approved by the Academic Council of NTU "KhPI"
Protocol No. 8 from 03 July 2026

Vice-rector of Scientific-and-Pedagogical Work

Gennadiy KHRYPUNOV

Guarantor of the academic program
"Cybersecurity"

Andrii TKACHOV

Director of the Institute of Computer Science
and Information Technology

Mykhailo GODLEVSKIY

Head of the Cybersecurity Department

Serhii YEVSEIEV

* Practices and certification are conducted by graduating departments

List 1 - Educational components of free choice of professional training

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