



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)

Halyna TYMCHENKO

by specialty

F5

Cybersecurity and information protection

Qualification

Bachelor of Cybersecurity
and information
protection

Period of study

3 years 10 months

on the basis of complete secondary education

"07" July 2020

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	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	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	Π	Π	Π	Π	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	Π	Π	Π	Π	C	C	A	A										

Notation:



T Theoretical training
3 Score week
C Examination session



Π 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
Industrial	4	6
Technological	4	8

IV. Attestation

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

CURRICULUM №	KH-1125i
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)	25
Responsible for information, phone number	Serhii YEVSEIEV, 095-360-66-13

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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		
				exam.	offset	
1	2	3	4	5	6	7
1	Obligatory educational components	162	4860,0			67,50%
1.1	General training	56	1680,0			23,33%
ЗП 1	History and culture of Ukraine	4	120,0	1		310
ЗП 2	Foreign Language	4	120,0	7	6	275
ЗП 3	Ukrainian as a foreign language	12	360,0	8	3 - 7	273
ЗП 4	Physics	4	120,0	1		168
ЗП 5	Fundamentals of humanitarian and philosophical knowledge in professional activity	4	120,0	3		307
ЗП 6	Higher mathematics	6	180,0		1	324
ЗП 7	Higher mathematics	5	150,0	2		324
ЗП 8	Language of professional training	10	300,0	2	1	275
ЗП	Physical education	7	210,0		1, 2, 3	302
1.2	Professional training	106	3180,0			44,17%
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	3	90,0	1		328
СП 4	Legal regulation of cybersecurity	4	120,0		2	328
СП 5	Algorithms and data structures	5	150,0	2		328
СП 6	Physical bases of technical intelligence means	4	120,0		2	328
СП 7	Information security of the state	4	120,0		2	328
СП 8	Fundamentals of social engineering	4	120,0		3	328
СП 9	Mathematical foundations of cryptology	4	120,0	3		328
СП 10	Programming technologies	5	150,0	3		328
СП 11	Computer networks	4	120,0	3		328
СП 12	Operating system architecture and security	6	180,0	4		328
СП 13	Programming tools	6	180,0	4		328
СП 14	Basics of cryptographic protection	6	180,0		4	328
СП 15	Fundamentals of building and protecting microprocessor systems	4	120,0	5		328
СП 16	Fundamentals of mathematical modelling of security systems	4	120,0	5		328
СП 17	Basics of steganographic information protection	5	150,0	5		328
СП 18	Security in information and communication systems	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	5	150,0	7		328
СП 22	Comprehensive training	5	150,0		8	328
СП 23	GeOSINT reconnaissance	4	120,0		8	328
СП 24	Machine learning basics for cybersecurity	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*	3	90,0	8		1,25%
4	Optional educational components	63	1890,0			26,25%
4.1	Specialized training	23	690,0			9,58%
4.1.1	Profiled package of educational components 01 "Artificial Intelligence in Security Systems"	23	690,0			
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	4	120,0	6		328
БП1.5	Genetic algorithms	4	120,0	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"	23	690,0			
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	4	120,0	6		328
БП2.5	Protecting critical infrastructure facilities	4	120,0	7		328
БП2.6	Organising document management with restricted access	3	90,0	8		328
БП2.7	Administration of information protection systems	3	90,0	8		328
4.1.3	Profiled package of educational components в 03 "Innovation Campus"	23	690,0			
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	4	120,0	6		328
БП3.5	Architecture of corporate information systems	4	120,0	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			44,44%
ОКБП 1	ОК ББ ПК 1	4	120,0		3	777
ОКБП 2	ОК ББ ПК 2	4	120,0		4	777
ОКБП 3	ОК ББ ПК 3	4	120,0		5	777
ОКБП 4	ОК ББ ПК 4	4	120,0		6	777
ОКБП 5	ОК ББ ПК 5	4	120,0		6	777
ОКБП 6	ОК ББ ПК 6	4	120,0		7	777
ОКБП 7	ОК ББ ПК 7	4	120,0		7	777
4.3	Educational components of the free choice of the university-wide catalog	12	360,0			19,05%
ОКБ3 1	ОК ББ ЗП 1	4	120,0		5	777
ОКБ3 2	ОК ББ ЗП 2	4	120,0		6	777
ОКБ3 3	ОК ББ ЗП 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																		
											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	Classroom hours	ECTS credits	Classroom hours	ECTS credits	Classroom hours	ECTS credits		Classroom hours
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				162	4860,0	2100,0	720,0	700,0	680,0	2760,0	24,0	30	25,0	30	21,0	26	17,0	20	15,0	19	8,0	8	12,0	14	15,0	15		
1.1	General training				56	1680,0	792,0	144,0		648,0	888,0	17,0	20	12,0	13	8,0	9	2,0	2	2,0	2	4,0	4	4,0	4	2,0	2		
3П 1	History and culture of Ukraine	1		A	4	120,0	48,0	16,0		32,0	72,0	3,0	4															310	
3П 2	Foreign Language	7	6		4	120,0	56,0			56,0	64,0										2,0	2	2,0	2				275	
3П 3	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	273	
3П 4	Physics	1		C	4	120,0	48,0	32,0		16,0	72,0	3,0	4															168	
3П 5	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	
3П 6	Higher mathematics		1	C	6	180,0	80,0	32,0		48	100,0	5,0	6															324	
3П 7	Higher mathematics	2		A	5	150,0	80,0	48,0		32,0	70,0			5	5													324	
3П 8	Language of professional training	2	1	A	10	300,0	144,0			144,0	156,0	4,0	4	5	6													275	
3П	Physical education		1, 2, 3		7	210,0	112,0			112,0	98,0	2,0	2	2,0	2	3,0	3											302	
1.2	Professional training				106	3180,0	1308,0	576,0	700,0	32,0	1872,0	7,0	10	13,0	17	13,0	17	15,0	18	13,0	17	4,0	4	8,0	10	13,0	13		
СП 1	Introduction to the specialty. Introductory practice		1		3	90,0	32,0	16,0		16,0	58,0	2,0	3															328	
СП 2	Basics of programming	1			4	120,0	48,0	16,0	32,0		72,0	3,0	4															328	
СП 3	Information and coding theory	1			3	90,0	32,0	16,0	16,0		58,0	2,0	3															328	
СП 4	Legal regulation of cybersecurity		2		4	120,0	48,0	32,0		16,0	72,0			3,0	4													328	
СП 5	Algorithms and data structures	2			5	150,0	64,0	32,0	32,0		86,0			4,0	5													328	
СП 6	Physical bases of technical intelligence means		2		4	120,0	48,0	16,0	32,0		72,0			3,0	4													328	
СП 7	Information security of the state		2		4	120,0	48,0	16,0	32,0		72,0			3,0	4													328	
СП 8	Fundamentals of social engineering		3		4	120,0	48,0	16,0	32,0		72,0					3,0	4											328	
СП 9	Mathematical foundations of cryptology	3			4	120,0	48,0	16,0	32,0		72,0					3,0	4											328	
СП 10	Programming technologies	3			5	150,0	64,0	32,0	32,0		86,0					4,0	5											328	
СП 11	Computer networks	3		CP	4	120,0	48,0	16,0	32,0		72,0					3,0	4											328	
СП 12	Operating system architecture and security	4			6	180,0	80,0	32,0	48,0		100,0							5,0	6									328	
СП 13	Programming tools	4			6	180,0	80,0	32,0	48,0		100,0							5,0	6									328	
СП 14	Basics of cryptographic protection		4		6	180,0	80,0	32,0	48,0		100,0							5,0	6									328	
СП 15	Fundamentals of building and protecting microprocessor systems	5			4	120,0	48,0	16,0	32,0		72,0									3,0	4							328	
СП 16	Fundamentals of mathematical modelling of security systems	5			4	120,0	48,0	16,0	32,0		72,0									3,0	4							328	
СП 17	Basics of steganographic information protection	5			5	150,0	64,0	32,0	32,0		86,0									4,0	5							328	

СП 18	Security in information and communication systems		5		4	120,0	48,0	32,0	16,0		72,0								3,0	4								328
СП 19	Web application development	6		CP	4	120,0	48,0	24,0	24,0		72,0									4,0	4							328
СП 20	Information security systems	7			5	150,0	64,0	32,0	32,0		86,0											4,0	5					328
СП 21	Web security	7		CP	5	150,0	64,0	32,0	32,0		86,0											4,0	5					328
СП 22	Comprehensive training		8	A	5	150,0	60,0	24,0	36,0		90,0													5,0	5			328
СП 23	GeOSINT reconnaissance		8		4	120,0	48,0	24,0	24,0		72,0													4,0	4			328
СП 24	Machine learning basics for cybersecurity		8		4	120,0	48,0	24,0	24,0		72,0													4,0	4			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			3	90,0					90,0																3	328
4	Optional educational components				63	1890,0	744,0	168,0	240,0		1146,0					3,0	4	7,0	10	8,0	11	16,0	16	12,0	16	6,0	6	
4.1	Specialized training				23	690,0	264,0	112,0	152,0		426,0						4,0	6	2,0	3	4,0	4	3,0	4	6,0	6		
4.1.1	Profiled package of educational components 01 "Artificial Intelligence in Security Systems"				23	690,0	264,0	112,0	152,0		426,0						4,0	6	2,0	3	4,0	4	3,0	4	6,0	6		
БП1.1	Ethical hacking	4			3	90,0	32,0	16,0	16,0		58,0						2,0	3										328
БП1.2	Date of mining	4			3	90,0	32,0	16,0	16,0		58,0						2,0	3										328
БП1.3	Mathematical foundations of artificial intelligence	5			3	90,0	32,0	16,0	16,0		58,0								2,0	3								328
БП1.4	Python for artificial intelligence and machine learning	6			4	120,0	48,0	24,0	24,0		72,0										4,0	4						328
БП1.5	Genetic algorithms	7			4	120,0	48,0	16,0	32,0		72,0												3,0	4				328
БП1.6	Python for internet things	8			3	90,0	36,0	12,0	24,0		54,0													3,0	3			328
БП1.7	Systems engineering	8			3	90,0	36,0	12,0	24,0		54,0													3,0	3			328
4.1.2	Profiled package of educational components 02 "Blockchain technology and security of banking systems"				23	690,0	264,0	112,0	152,0		426,0						4,0	6	2,0	3	4,0	4	3,0	4	6,0	6		
БП2.1	Decentralised systems	4			3	90,0	32,0	16,0	16,0		58,0						2,0	3										328
БП2.2	Risk management	4			3	90,0	32,0	16,0	16,0		58,0						2,0	3										328
БП2.3	Blockchain: basics and application examples	5			3	90,0	32,0	16,0	16,0		58,0								2,0	3								328
БП2.4	Security of banking systems	6			4	120,0	48,0	24,0	24,0		72,0										4,0	4						328
БП2.5	Protecting critical infrastructure facilities	7			4	120,0	48,0	16,0	32,0		72,0												3,0	4				328
БП2.6	Organising document management with restricted access	8			3	90,0	36,0	12,0	24,0		54,0														3,0	3		328
БП2.7	Administration of information protection systems	8			3	90,0	36,0	12,0	24,0		54,0														3,0	3		328
4.1.3	Profiled package of educational components 03 "Innovation Campus"				23	690,0	264,0	112,0	152,0		426,0						4,0	6	2,0	3	4,0	4	3,0	4	6,0	6		
БП3.1	Basics of cybersecurity	4			3	90,0	32,0	16,0	16,0		58,0						2,0	3										328
БП3.2	Development of corporate information systems (part 1)	4			3	90,0	32,0	16,0	16,0		58,0						2,0	3										328
БП3.3	Development of corporate information systems (part 2)	5			3	90,0	32,0	16,0	16,0		58,0								2,0	3								328
БП3.4	Databases for corporate information systems	6			4	120,0	48,0	24,0	24,0		72,0										4,0	4						328
БП3.5	Architecture of corporate information systems	7			4	120,0	48,0	16,0	32,0		72,0												3,0	4				328
БП3.6	Security and audit of wireless and mobile networks	8			3	90,0	36,0	12,0	24,0		54,0														3,0	3		328
БП3.7	Protecting critical infrastructure facilities	8			3	90,0	36,0	12,0	24,0		54,0														3,0	3		328

	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 of the general institute catalog																											
					28	840,0	336,0				504,0					3,0	4	3,0	4	3,0	4	8,0	8	6,0	8			
OKBП 1	OK BB ПК 1		3		4	120,0	48,0				72,0					3,0	4											777
OKBП 2	OK BB ПК 2		4		4	120,0	48,0				72,0							3,0	4									777
OKBП 3	OK BB ПК 3		5		4	120,0	48,0				72,0									3,0	4							777
OKBП 4	OK BB ПК 4		6		4	120,0	48,0				72,0											4,0	4					777
OKBП 5	OK BB ПК 5		6		4	120,0	48,0				72,0											4,0	4					777
OKBП 6	OK BB ПК 6		7		4	120,0	48,0				72,0													3,0	4			777
OKBП 7	OK BB ПК 7		7		4	120,0	48,0				72,0													3,0	4			777
4.3	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			
OKB3 1	OK BB 3П 1		5		4	120,0	48,0	16,0	32,0		72,0									3,0	4							777
OKB3 2	OK BB 3П 2		6		4	120,0	48,0	24,0	24,0		72,0											4,0	4					777
OKB3 3	OK BB 3П 3		7		4	120,0	48,0	16,0	32,0		72,0													3,0	4			777
Total for education period					240	7200,0	2844,0	888,0	940,0	680,0	4356,0	24,0	30	25,0	30	24,0	30	24,0	30	23,0	30	24,0	30	24,0	30	21,0	30	
Hours per week												24,0		25,0		24,0		24,0		23,0		24,0		24,0		21,0		
Number of exams												4		3		4		4		4		2		4		4		
Number of tests												4		5		4		3		4		6		4		4		
Number of course projects (works)																1						1		1				
Numbers of disciplines per semester												8		8		8		7		8		8		8		8		

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

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

Vice-rector for scientific and pedagogical work

name of the institute

Gennadiy KHRYPUNOV

signature

name

Director of the Institute of Computer Science
and Information Technology

name of the institute

Mykhailo GODLEVSKYI

signature

name

Guarantor of the academic program
"Cybersecurity"

program name

signature

Serhii YEVSEIEV

name

Head of the Cybersecurity Department

department name

signature

Serhii YEVSEIEV

name

* Practices and certification are conducted by graduating departments

signature

List 1 - Educational components of the free choice of a student of specialised 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																				
							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	Освітні компоненти вільного вибору студента профільної підготовки																																										
ВДП 1	Legal regulation of information security		3		4	120,0	48,0	32,0		16,0	72,0					3,0	4															328											
ВДП 2	Intellectual property of security systems		3		4	120,0	48,0	32,0		16,0	72,0					3,0	4															328											
ВДП 3	Design templates		3		4	120,0	48,0	32,0	16,0		72,0					3,0	4															328											
ВДП 4	Methods and technologies of information warfare		4		4	120,0	48,0	32,0	16,0		72,0							3,0	4													328											
ВДП 5	Protecting e-commerce and multiservice systems		4		4	120,0	48,0	32,0	16,0		72,0							3,0	4													328											
ВДП 6	Databases with SQL and Python		4		4	120,0	48,0	32,0	16,0		72,0							3,0	4													328											
ВДП 7	Security at DEVOPS		5		4	120,0	48,0	32,0	16,0		72,0									3,0	4											328											
ВДП 8	Fundamentals of planning and administration of information resource access services		5		4	120,0	48,0	32,0	16,0		72,0										3,0	4										328											
ВДП 9	Risk theory in cybersecurity		5		4	120,0	48,0	32,0	16,0		72,0									3,0	4											328											
ВДП 10	Cryptanalysis methods		6		4	120,0	48,0	24,0	24,0		72,0											4,0	4									328											
ВДП 11	Internet science. Navigation in complex systems		6		4	120,0	48,0	24,0	24,0		72,0											4,0	4									328											
ВДП 12	Development of server applications (Java Spring Boot)		6		4	120,0	48,0	24,0	24,0		72,0											4,0	4									328											
ВДП 13	Neural networks		6		4	120,0	48,0	24,0	24,0		72,0											4,0	4									328											
ВДП 14	Cloud security		6		4	120,0	48,0	24,0	24,0		72,0											4,0	4									328											
ВДП 15	Testing mobile applications		6		4	120,0	48,0	24,0	24,0		72,0											4,0	4									328											
ВДП 16	Administering UNIX-like systems		7		4	120,0	48,0	32,0	16,0		72,0															3,0	4					328											
ВДП 17	Organisational support for information security		7		4	120,0	48,0	32,0	16,0		72,0															3,0	4					328											
ВДП 18	IT project management and security		7		4	120,0	48,0	32,0	16,0		72,0															3,0	4					328											
ВДП 19	Security and audit of wireless and mobile networks		7		4	120,0	48,0	32,0	16,0		72,0															3,0	4					328											
ВДП 20	Business intelligence		7		4	120,0	48,0	32,0	16,0		72,0															3,0	4					328											
ВДП 21	Evolutionary programming		7		4	120,0	48,0	32,0	16,0		72,0															3,0	4					328											