



«APPROVED»
Decision of the Academic Council
NPJSC «KazNRTU»
named after K.Satbayev
dated 06.03.2025 Minutes № 10

WORKING CURRICULUM

Academic year

2025-2026 (Autumn, Spring)

Group of educational programs

B058 - "IT security"

Educational program

6B06301 - "Information Security"

The awarded academic degree

Bachelor of information and communications technologies

Form and duration of study

full time - 4 years

Discipline code	Name of disciplines	Block	Cycle	Total ECTS credits	Total hours	lek/lab/pr Contact hours	in hours SIS (including TSIS)	Form of control	Allocation of face-to-face training based on courses and semesters								Prerequisites	
									1 course		2 course		3 course		4 course			
									1 sem	2 sem	3 sem	4 sem	5 sem	6 sem	7 sem	8 sem		
CYCLE OF GENERAL EDUCATION DISCIPLINES (GED)																		
M-1. Module of language training																		
LNG108	Foreign language		GED, RC	5	150	0/0/45	105	E	5									
LNG104	Kazakh (russian) language		GED, RC	5	150	0/0/45	105	E	5									
LNG108	Foreign language		GED, RC	5	150	0/0/45	105	E		5								
LNG104	Kazakh (russian) language		GED, RC	5	150	0/0/45	105	E		5								
M-1. Module of language training																		
KFK101	Physical culture I		GED, RC	2	60	0/0/30	30	E	2									
KFK102	Physical culture II		GED, RC	2	60	0/0/30	30	E		2								
KFK103	Physical culture III		GED, RC	2	60	0/0/30	30	E			2							
KFK104	Physical culture IV		GED, RC	2	60	0/0/30	30	E				2						
M-3. Module of information technology																		
CSE677	Information and communication technology		GED, RC	5	150	30/15/0	105	E				5						
M-4. Module of socio-cultural development																		
HUM137	History of Kazakhstan		GED, RC	5	150	15/0/30	105	GE	5									
HUM132	Philosophy		GED, RC	5	150	15/0/30	105	E			5							
HUM120	Module of socio-political knowledge (sociology, political science)		GED, RC	3	90	15/0/15	60	E			3							
HUM136	Fundamentals of anti-corruption culture and law	1	GED, CCH	5	150	30/0/15	105	E			5							
MNG489	Fundamentals of economics and entrepreneurship	1	GED, CCH	5	150	30/0/15	105	E			5							
CHE656	Ecology and life safety	1	GED, CCH	5	150	30/0/15	105	E			5							
MNG564	Basics of Financial Literacy	1	GED, CCH	5	150	30/0/15	105	E			5							
HUM134	Module of socio-political knowledge (cultural studies, psychology)		GED, RC	5	150	30/0/15	105	E				5						
CYCLE OF BASIC DISCIPLINES (BD)																		
M-6. Module of physical and mathematical training																		
MAT101	Mathematics I		BD, UC	5	150	15/0/30	105	E	5									
PHY111	Physics I		BD, UC	5	150	15/15/15	105	E	5									
PHY112	Physics II		BD, UC	5	150	15/15/15	105	E		5								PHY111
MAT102	Mathematics II		BD, UC	5	150	15/0/30	105	E		5								MAT101
MAT103	Mathematics III		BD, UC	5	150	15/0/30	105	E			5							MAT102

M-7. Module of basic training

SEC114	Introduction to specialty		BD, UC	5	150	30/15/0	105	E	5								
CSE554	Algorithmization and programming basics		BD, UC	4	120	15/15/15	75	E		4							
AAP173	Practical training		BD, UC	2				R		2							
CSE603	Discrete Mathematics		BD, UC	5	150	30/0/15	105	E			5						MAT102, CSE616
CSE827	Introduction to Web Programming		BD, UC	5	150	15/15/15	105	E			5						
CSE122	Computer Networks		BD, UC	5	150	15/15/15	105	E				5					CSE677
SEC118	Information basis of information protection		BD, UC	5	150	30/0/15	105	E				5					SEC114
SEC100	Operating System Security		BD, UC	5	150	15/15/15	105	E				5					
CSE536	Computer graphics		BD, UC	5	150	15/15/15	105	E					5				
ELC500	Microelectronics		BD, UC	5	150	30/15/0	105	E					5				
SEC181	Basics of cryptographic protection of information		BD, UC	5	150	15/15/15	105	E					5				
SEC188	Designing secure Web-based applications	1	BD, CCH	5	150	15/15/15	105	E					5				SEC114, CSE662
CSE551	Capstone project 1	1	BD, CCH	5	150	0/0/45	105	E					5				
CSE817	IC Configuration	1	BD, CCH	5	150	15/15/15	105	E					5				
MNG562	Legal regulation of intellectual property	1	BD, CCH	5	150	30/0/15	105	E					5				
CSE879	Inclusive education	1	BD, CCH	5	150	15/30/0	105	E					5				
CSE877	Java technologies		BD, UC	5	150	15/15/15	105	E						5			
SEC180	Digital Circuitry		BD, UC	5	150	15/15/15	105	E						5			
SEC187	Digital Device Design		BD, UC	5	150	30/0/15	105	E						5			SEC114, SEC180
CSE818	Introduction to Blockchain		BD, UC	4	120	15/15/15	75	E							4		
CSE549	Architecture of computer systems		BD, UC	5	150	30/0/15	105	E							5		
CSE809	Designing and protecting server databases		BD, UC	5	150	30/15/0	105	E							5		
SEC510	The basics of students' research work	1	BD, CCH	5	150	15/15/15	105	E							5		
SEC532	Capstone project 2	1	BD, CCH	5	150	0/0/45	105	E							5		
CSE530	IC Programming	1	BD, CCH	5	150	15/15/15	105	E							5		
MNG563	Fundamentals of sustainable development and ESG projects in Kazakhstan	1	BD, CCH	5	150	30/0/15	105	E							5		

M-8. Module of professional activity

CSE826	Pentest Tools and Ethical Hacking	2	BD, CCH	5	150	30/15/0	105	E									5
CSE550	Vulnerability identification and analysis	2	BD, CCH	5	150	30/15/0	105	E									5
CSE831	Fundamentals of Artificial Intelligence	2	BD, CCH	5	150	15/0/30	105	E									5

CYCLE OF PROFILE DISCIPLINES (PD)

M-7. Module of basic training

SEC185	Security of networking technologies	1	PD, CCH	5	150	30/15/0	105	E							5		CSE122, SEC100
SEC199	Mathematics of cryptography	1	PD, CCH	5	150	30/0/15	105	E							5		
SEC151	The organization of microprocessor systems	1	PD, CCH	5	150	15/15/15	105	E							5		SEC180, SEC187
CSE819	Decentralized applications	1	PD, CCH	5	150	15/15/15	105	E							5		

M-8. Module of professional activity

AAP408	Industrial practice I		PD, UC	3				R					3				
SEC189	Organization and securing databases		PD, UC	5	150	15/0/30	105	E					5				
CSE806	Information security and object-oriented programming		PD, UC	5	150	15/15/15	105	E					5				
CSE546	Technologies of protection of computer information		PD, UC	4	120	30/0/15	75	E						4			
AAP187	Industrial internship II		PD, UC	2				R						2			
CSE825	Python for solving information security problems		PD, UC	4	120	30/15/0	75	E							4		
CSE824	Socio-legal aspects of information security and computer forensics		PD, UC	5	150	30/0/15	105	E							5		
CSE411	System and Network Administration	1	PD, CCH	5	150	30/15/0	105	E							5		CSE122, SEC185

SEC190	Cryptographic Information Security Systems	1	PD, CCH	5	150	15/15/15	105	E								5		
SEC152	Microcontrollers	1	PD, CCH	5	150	30/0/15	105	E								5		SEC151
CSE820	Introduction to web3	1	PD, CCH	5	150	15/15/15	105	E								5		
CSE805	Biometrics and neural networks		PD, UC	4	120	15/15/15	75	E								4		
SEC535	Cloud Technology Security		PD, UC	4	120	30/15/0	75	E								4		
SEC176	Intrusion Prevention Systems	1	PD, CCH	5	150	30/15/0	105	E								5		SEC184, SEC191
SEC169	Standardization and certification of cryptographic tools	1	PD, CCH	5	150	30/0/15	105	E								5		SEC181
SEC142	Technical means and methods of information protection	1	PD, CCH	5	150	30/0/15	105	E								5		SEC114, SEC180
CSE821	Smart contract architecture	1	PD, CCH	5	150	15/15/15	105	E								5		
SEC175	Internet of things security	3	PD, CCH	5	150	30/15/0	105	E								5		CSE122, SEC185
SEC170	Designing cryptographic information security systems	3	PD, CCH	5	150	15/15/15	105	E								5		SEC181, SEC190
SEC166	Organization and management of information security service	3	PD, CCH	5	150	30/0/15	105	E								5		SEC114, SEC184
CSE822	Blockchain Business Models	3	PD, CCH	5	150	15/15/15	105	E								5		
M-9. Module of final attestation																		
ECA103	Final examination		FA	8												8		
Additional type of training (ATT)																		
AAP500	Military training																	
Total based on UNIVERSITY:										32	28	30	30	30	30	29	31	
										60		60		60		60		

Number of credits for the entire period of study

Cycle code	Cycles of disciplines	Credits			
		Required component (RC)	University component (UC)	Component of choice (CCH)	Total
GED	Cycle of general education disciplines	51	0	5	56
BD	Cycle of basic disciplines	0	105	15	120
PD	Cycle of profile disciplines	0	36	20	56
Total for theoretical training:		51	141	40	232
FA	Final attestation				8
TOTAL:					240

Decision of the Educational and Methodological Council of KazNRTU named after K.Satpayev. Minutes № 3 dated 20.12.2024

Decision of the Academic Council of the Institute. Minutes № 4 dated 22.11.2024

Signed:

Governing Board member - Vice-Rector for Academic Affairs

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Approved:

Vice Provost on academic development

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____ Acknowledged ____

