

Документ подписан простой электронной подписью

Информация о владельце:

ФИО: Порохня Андрей Алексеевич

Должность: И.о. директора института перспективной инженерии

Дата подписания: 22.10.2026 13:25:38

Уникальный программный ключ:

990bea3aeec48c23bd8699e48288f8d1960c600

MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION
Federal State Autonomous Educational Institution
higher education
NORTH CAUCASIAN FEDERAL UNIVERSITY

I APPROVED BY

Acting director of the institute
advanced engineering

Ph.D. tech. Sciences, Associate Professor
A.A. Porokhnya

WORKING PROGRAM OF THE DISCIPLINE
Personal Data Protection in AI Systems

Direction of training	11.03.02 Infocommunication technologies and communication systems
Profile	Intelligent Data Processing in Infocommunication Systems and Networks
Year of commencement of studies	2026
Form of study	full-time
Implemented in a semester	4

Developed by

Associate Professor of the Department of Digital,
robotic systems and electronics
Institute of Advanced Engineering
Ph.D. tech. Sciences , Associate Professor
Shayakhmetov O.Kh.

1. The purpose and objectives of mastering the discipline (module)

The goal of the course "Personal Data Protection in AI Systems" is to develop a better understanding of the role of secure data storage and use in an information system and to become prepared for information security. The course aims to provide students with basic knowledge in the field of information security for information systems and networks based on modern software, operating systems, and active hardware.

The objectives of the course are to study software and hardware for information protection, methods of analysis and planning of information protection of computer systems, networks and their components, and means of protecting network services.

2. The place of the discipline (module) in the structure of the educational program

The course Personal data protection in AI systems refers to the main part of Block 1, B1.0.26.

3. List of planned learning outcomes for the discipline (module), correlated with the planned learning outcomes for the educational program

Code, formulation of competence	Code, indicator formulation	Planned learning outcomes for the discipline (module), characterizing the stages of formation of competencies, indicators
OPK-3. Capable of applying methods for searching, storing, processing, analyzing, and presenting information from various sources and databases in the required format, while adhering to basic information security requirements.	ID-1 OPK-3 understands the basic principles of information transmission in information and communication systems, the main types of signals used in telecommunication systems, and the specifics of transmitting various signals through channels and paths of telecommunication systems.	Understands and uses the basic principles, protocols, and software cryptographic tools to ensure information security of information and communication systems.
	ID-2 OPK-3 understands the principles, basic algorithms, and devices of digital signal processing; the principles of constructing various types of telecommunication systems and methods of distributing information in communication networks.	Understands the general principles of operation and architecture of hardware, software and firmware of the administered network; channel protocols,
	ID-3 OPK-3 solves data processing problems using computer technology.	Uses software, hardware, and software-hardware tools to protect network devices from unauthorized access .
	ID-4 OPK-3 builds probabilistic models for specific processes and carries out the necessary calculations within the framework of the constructed model.	Connects and configures modern remote access security tools (operating systems and specialized protocols).

	ID-5 ОПК-3 has the methods and skills to ensure information security.	Performs installation of additional software products to ensure the security of information and communication systems.
--	---	--

4. Volume of the academic discipline (module) and forms of control *

Amount of classes: total: 3 credits, 108 academic hours.	OFO, In academic hours
Contact work:	8.00/0
Lectures/including practical training	No
Laboratory work/including practical training	No
Practical classes/including practical training	8:00
Independent work	64.00
Forms of control	
Exam	36.00
Credit	No
Credit with grade	No
Coursework	No

5. The content of the discipline (module), structured by topics (sections) indicating the number of hours and types of classes

No.	Section (topic) of the discipline and brief content	Developed competencies, indicators	full-time education			Independent work, hours	Forms of the current control academic performance
			Lectures	Practical classes	Laboratory work		
1	Topic 1. Basic definitions and criteria for classification of threats. 1. Basic concepts about threats. 2. The most common threats to availability. 3. Main threats to integrity.	ОПК-3 ID-1 ОПК-3 understands the basic principles of information transmission in information and communication systems, the		2		16	interview

	4. Main threats to privacy. Practical Lesson #1: Aes Symmetric Encryption Standard Rijndael.	main types of signals used in telecommunication systems, and the specifics of transmitting various signals through channels and paths of telecommunication systems. ID-2 OPK-3 understands the principles, basic algorithms, and devices of digital signal processing; the principles of constructing various types of telecommunication systems and methods of distributing information in communication networks.					
2	Topic 2. Computer systems security. 1. Traditional approach to the analysis of information security problems. 2. Object-oriented approach is a promising principle for analyzing information security issues. Practical Lesson #2. Researching various methods of protecting personal data using key mining.	OPK-3. ID-3 OPK-3 solves data processing problems using computer technology. ID-4 OPK-3 builds probabilistic models for specific processes and carries out the necessary calculations within the framework of the constructed model. ID-5 OPK-3 has the methods and skills to ensure information security		2		16	interview
3	Topic 3. Basic software and hardware measures to ensure information security.	OPK-3 ID-4 OPK-3 builds probabilistic models for specific processes and carries		2		16	interview

	Basic software and hardware measures to ensure information security. 1. Basic concepts of the software and hardware level of information security. 2. Features of modern information systems that are essential for ensuring information security. 3. Security system architecture. Practical lesson #3. Generation of prime numbers used in asymmetric encryption systems.	out the necessary calculations within the framework of the constructed model. ID-5_{OPK-3} has the methods and skills to ensure information security					
4	Topic 4. Cryptographic protection of information. 1. Basic principles of cryptographic information protection. 2. Hardware and software cryptographic means of information protection. Practical lesson #6. Electronic digital signature.	OPK-3 ID-4_{OPK-3} builds probabilistic models for specific processes and carries out the necessary calculations within the framework of the constructed model. ID-5_{OPK-3} has the methods and skills to ensure information security		2		16	interview
	EXAM					36.00	
	TOTAL for the semester			8:00	-	100.00	

6. Fund of assessment tools for the discipline (module)

The assessment toolkit (AST) for a course (module) is based on a list of mastered competencies with associated indicators. The AST provides objective monitoring of the achievement of planned learning outcomes. The AST includes:

- description of indicators and criteria for assessing competencies at various stages of their formation, description of assessment scales;
- methodological materials that define the procedures for assessing knowledge, skills, abilities and (or) work experience that characterize the stages of competencies formation (included in the methodological guidelines for those types of work that are provided for by the curriculum and provide for the assessment of the development of competencies);
- standard assessment tools necessary for assessing knowledge, skills and the level of development of competencies.

FOS is an appendix to this discipline (module) program.

7. Methodological guidelines for students on mastering the discipline

When starting work, each student should take into account the following provisions.

The discipline (module) is structured on a thematic principle, each topic is a logically complete section.

Practical classes are aimed at acquiring practical experience in the relevant subject area.

Students' independent work is aimed at independent study of additional material, preparation for practical and laboratory classes, and completion of all types of independent work.

To successfully master the discipline, it is necessary complete all types of independent work using the recommended sources of information.

8. Educational, methodological and informational support of the discipline

8.1. List of basic and additional literature required for mastering the discipline (module)

8.1.1. List of main literature:

1. Prokhorova O.V. Information security and information protection Electronic resource / Prokhorova O.V. - 2nd ed., corrected. - St. Petersburg: Lan, 2020. - 124 p. - ISBN 978-5-8114-4404-5, unlimited copies.

2. Shan'gin V.F. Information security and information protection [Electronic resource] / V.F. Shan'gin. - Electronic text data. - Saratov: Profobrazovanie, 2017. - 702 p. - 978-5-4488-0070-2. - Access mode: <http://www.iprbookshop.ru/63594.html>, unlimited copies.

3. Nesterov S.A. Fundamentals of Information Security [Electronic resource]: study guide / Nesterov S.A. - Electronic text data. - St. Petersburg: Peter the Great St. Petersburg Polytechnic University, 2014. - 322 p. - 978-5-7422-4331-1. - Access mode: <http://www.iprbookshop.ru/43960.html>, unlimited copies.

8.2. List of educational and methodological support for independent work of students in a discipline (module)

1. Information Security and Information Protection Electronic resource / Minzov A.S., Bobyleva S.V., Osipov P.A., Popov A.A.: practical training. - Dubna: Dubna State University, 2020. - 85 p. - Recommended by the Educational and Methodological Council of Dubna University as a practical training for students studying in the areas of training "System Analysis and Management", "Applied Informatics", "Applied Mathematics and Informatics (Master's program)". - ISBN 978-5-89847-608-3, unlimited copies.

2. Sagdeev K.M. Physical foundations of information security: textbook: Field of study 10.03.01 - Information security. Bachelor's degree / K. M. Sagdeev, V. I. Petrenko, A. F. Chipiga; North-Caucasian Federal University. - Stavropol: SKFU, 2015. - 394 p., unlimited copies.

3. Shan'gin V.F. Computer information protection. Effective methods and means [Electronic resource] / V.F. Shan'gin. - Electronic text data. - Saratov: Pro-fobrazovanie, 2017. - 544 p. - 978-5-4488-0074-0. - Access mode: <http://www.iprbookshop.ru/63592.html>, unlimited copies.

4. Shayakhmetov O.Kh. Information security: a textbook. - Stavropol: SKFU Publishing House, 2022. - 372 p. [electronic version]. - unlimited copies.

8.3. List of resources of the information and telecommunications network "Internet" required for mastering the discipline (module)

National Open University INTUIT / Website. - <http://www.intuit.ru/>

www.biblioclub.ru - Electronic library system "University Library Online"

www.fstec.ru – Website of the Federal Service for Technical and Export Control of Russia

www.eLibrary.ru - Scientific Electronic Library

www.iprbookshop.ru - IPRbooks Electronic Library System

<https://elibrary.ru/> - Official website of the scientific electronic library.

9. List of information technologies used in the implementation of the educational process in the discipline (module), including a list of software and information reference systems

Lectures are delivered using computers and multimedia presentations. During seminars and practical classes, students present presentations they prepared during their independent work hours.

Information reference systems:

Information and reference and information and legal systems used in the study of the discipline:

1	Single-window access to educational resources: [portal]. URL: http://window.edu.ru/
2	National Open University INTUIT. URL: http://www.intuit.ru/

Software:

1	Alt Workstation 10
2	Alt Workstation K
3	Alt "Server"
4	Office suite - P7-Office

10. Description of the material and technical base necessary for the implementation of the educational process in the discipline (module)

	A classroom for conducting classes, equipped with multimedia equipment and technical teaching aids.
Practical classes	A classroom equipped with equipment and technical teaching aids for presenting educational information: - magnetic marker board 1-element 120x240; - Epson short-throw multimedia projector with wall mount; - 15 workstations consisting of: computer - Lenovo Idea Centre all-in-one computer ((i5-3330s-2.7/ RAM 4Gb/HDD 1Tb; video card 615M/DVD/key-board/mouse. Connection to the Internet, access to the university's corporate network.
Independent work	A room for independent student work equipped with computers and the ability to connect to the Internet and access the university's electronic information and educational environment.
Practical training	It is carried out in the structural divisions of the university and (or) in organizations operating in the profile of the relevant educational program, including its structural division

11. Features of mastering the discipline (module) by persons with disabilities

Students with disabilities are provided with special textbooks, teaching aids and didactic materials, special technical teaching aids for collective and individual use, the services of an assistant (helper) who provides students with the necessary technical assistance, as well as the services of sign language interpreters and tactile sign language interpreters.

The acquisition of a discipline (module) by students with disabilities can be organized jointly with other students, as well as in separate groups.

The acquisition of a discipline (module) by students with disabilities is carried out taking into account the characteristics of psychophysical development, individual capabilities and health status.

In order to ensure accessibility of higher education under the educational program for individuals with disabilities, the following is provided when mastering a discipline (module):

1) for persons with visual impairments:

- the presence of an assistant who provides the student with the necessary technical assistance, taking into account individual characteristics (helps to take up a workstation, move around, read and complete assignments, including taking down dictation),
- written assignments, as well as instructions on how to complete them, are written in large print,

- special textbooks, teaching aids and didactic materials (with large print or audio files),
- individual uniform illumination of at least 300 lux,
- if necessary, the student is provided with a magnifying device to complete the assignment;
- 2) for persons with hearing impairments:
 - the presence of an assistant who provides the student with the necessary technical assistance, taking into account individual characteristics (helps to take up a workstation, move around, read and complete assignments, including taking down dictation),
 - the availability of sound amplification equipment for collective use is ensured; if necessary, the student is provided with sound amplification equipment for individual use;
 - is provided with appropriate sound means for reproducing information;
- 3) for persons with disabilities who have musculoskeletal disorders (including severe impairments of the motor functions of the upper limbs or the absence of upper limbs):
 - written assignments are completed on a computer with specialized software or dictated to an assistant;
 - at the student's request, assignments can be completed orally.

12. Features of the implementation of the discipline using distance learning technologies and e-learning

According to Part 1 of Article 16 of Federal Law No. 273-FZ of December 29, 2012, "On Education in the Russian Federation," *e-learning* is defined as the organization of educational activities using information contained in databases and used in the implementation of educational programs, as well as information technologies, technical means, and information and telecommunications networks that facilitate the transmission of said information over communication lines, as well as interaction between students and teaching staff. *Distance learning technologies* are educational technologies implemented primarily using information and telecommunications networks through indirect (remote) interaction between students and teaching staff.

The course may be delivered using distance learning technologies and e-learning, in whole or in part. The components of the course's teaching and methodological kit (the course curriculum, assessment and methodological materials, and assessment forms) implemented using distance learning technologies and e-learning contain instructions for their use.

When organizing educational activities using distance learning technologies and e-learning, asynchronous and synchronous methods of interaction between participants in educational relations may be provided through the Internet information and telecommunications network.

When using distance learning technologies and e-learning, the curriculum for the discipline shall indicate: methods of interaction between participants in educational relations via the Internet (videoconferencing, electronic testing); links to the SKFU electronic information and educational environment, to educational platforms and resources of other organizations that are openly accessible via the Internet; for synchronous learning - the time of online classes and teachers; for asynchronous learning - the authors of online courses.

When organizing midterm assessments using distance learning technologies and e-learning, the Methodological Recommendations for the Application of Technical Means Ensuring the Objectivity of Results during Midterm and State Final Assessments for Higher Education Programs—Bachelor's Degree Programs, Specialist Programs, and Master's Degree Programs Using Distance Learning Technologies—are used (Letter of the Ministry of Education and Science of the Russian Federation dated December 7, 2020, No. MN-19/1573-AN "On the Submission of Methodological Recommendations").

The implementation of the course using e-learning and distance learning technologies is carried out using the electronic information and educational environment of SKFU, to which students have access via the information and telecommunications network "Internet", or using the resources of other organizations, including platforms providing services for video conferencing, online meetings and distance learning (MTS-Link), as well as using the capabilities of social networks for communication between students and teachers.

The educational and methodological support for a discipline implemented using e-learning and distance learning technologies includes a work program, educational and methodological manuals or a course of lectures, methodological instructions for the implementation of various types of educational activities of students provided for by the discipline, and other educational and methodological materials posted in the information and educational environment of SKFU, presented in electronic form.