

**ODESSA I.I. MECHNYKOV NATIONAL UNIVERSITY**  
**FACULTY OF MATHEMATICS, PHYSICS AND INFORMATION TECHNOLOGIES**  
**DEPARTMENT OF MATHEMATICAL SUPPORT OF COMPUTER SYSTEMS**

**Syllabus of the course "Design of the complex information protection systems"**

<b>Amount</b>	total number: 3.5 credits; hours-105; content modules-2
<b>Semester</b>	autumn
<b>Days, Time, Place</b>	according to the class schedule
<b>Teacher</b>	Iryna Shpinareva, PhD (Physics and Mathematics), Associate Professor of the Department of Mathematical Support of Computer Systems
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<b>Workplace</b>	department of mathematical support of computer systems
<b>Consultations</b>	face-to-face consultations: Tuesday from 3:00 p.m. to 4:00 p.m online consultations: ZOOM (link is generated at the beginning of classes)

**COMMUNICATION**

Communication with students will be carried out by e-mail, in the classroom or via ZOOM.

**COURSE ABSTRACT**

**Subject** the study of the course is the methods and means of the integrated information protection system (ICSI).

**Course prerequisites**

The course material is based on previously acquired knowledge, practical skills and skills of topics and areas related to information protection technology, cryptography, computer networks, and high-level programming languages.

**Post-requisites of the course**

This course is the basis for mastering the following disciplines of the educational and professional master's training program in specialty 126 "Information systems and technologies»: "Pre-diploma practice", "Diploma design", disciplines of the training line "Mathematical support of computer systems".

**Purpose** of the course is the formation of:

- systemic knowledge of methods and means of a comprehensive information protection system (ICSI), principles of organization and stages of development of an ISCI, threats to information security; concept of security policy of KSZI;
- practical skills in the application of modern software and hardware tools for the design of KSZI.

**Course content**

The course examines the methods and tools of the integrated information protection system (CIS); principles of organization and stages of development of CSZ, definition and regulatory consolidation of the structure of information protection, regarding the definition of objects of protection, classification of attacks and methods of countering attacks, analysis and assessment of threats to information security; development of security policy of CSZI, development of CSZI model, network shielding technologies, attack detection systems, methods of building virtual private networks, methods of wireless network protection, methods and means of auditing the security level of information systems.

## EXPECTED RESULTS

As a result of studying the course, the student must

**know:** basic theoretical provisions, methods of designing complex information protection systems using modern hardware and software tools and protection methods.

**be able:** determine the main threats to information protection systems, personnel, and information resources and formulate requirements for protection against these threats, apply protection mechanisms implemented in software and hardware complexes, with the aim of building CSZI.

### ***Competencies that the student receives as a result of studying the course:***

- the ability to develop and apply ICT necessary for solving strategic and current tasks;
- the ability to design information systems taking into account the specifics of their purpose, incomplete/insufficient information and conflicting requirements;
- the ability to manage information risks based on the concept of information security;
- the ability to provide analysis, implementation and support of complex information protection systems (complexes of regulatory, organizational and technical means and methods, procedures, practical techniques, etc.).

### ***Learning outcomes: upon completion of the course, the student will have the skills to:***

- make effective decisions on the problems of information infrastructure development, creation and application of IT;
- ensure high-quality cyber protection of ICT, plan, organize, implement and monitor the functioning of information protection systems.

## FORMS AND METHODS OF TEACHING

The course will be taught in the form of lectures (16 hours) and laboratory classes (16 hours), organization of students' independent work (73 hours).

The main training of students is carried out in lectures and laboratory classes, but to a large extent it relies on independent study of the material by full-time students during the semester.

During the teaching of the course, the following teaching methods are used: verbal (lecture, explanation); face-to-face (Power Point presentation); laboratory works; work with literary sources (independent work of students)