NPJSC "Kazakh National Research Technical University named after K. Satpayev"
Institute of Cybernetics and Information Technology
Department of Cybersecurity, Information Processing and Storage

CURRICULUM PROGRAM

7M06111 - «COMPREHENSIVE INFORMATION SECURITY SUPPORT»
Master of Engineering and Technology
Profile training (1)

1st edition
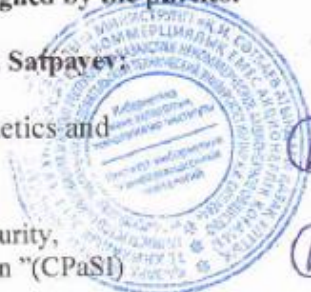in accordance with the State Educational Standard of Higher Education 2018

Almaty 2020

Qualification:
Level 7 of the National Qualifications Framework:

Professional competence: Comprehensive information security, Information security audit,
Organization of information security systems.

Brief description of the program:

1 Purpose of the educational program: The purpose of the educational program is to train highly qualified specialists for all spheres of production in Kazakhstan and the public sector, including enterprises and organizations of large (corporate), medium and small businesses, where there are needs in solving problems related to ensuring the protection and security of information using modern information and communication technologies.

The educational program "Comprehensive Information Security" is developed on the basis of the main regulatory documents:

- The Law of the Republic of Kazakhstan "On Education" dated July 27, 2007 No. 319-III with amendments and additions dated October 24, 2011 No. 487-VI ЗРК;

- Rules for organizing the educational process on credit technology of education, approved by the Order of the Minister of the Ministry of Education and Science of the Republic of Kazakhstan No. 152 dated April 20, 2011 (the last changes were introduced by the Order of the Minister of the Ministry of Education and Science of the Republic of Kazakhstan No. 90 dated January 28, 2016);

- State compulsory education standard for all levels of education, order No. 604 dated 31.10.2018 and order No. 180 dated 05.05.2020.

- National qualifications framework. Approved by the protocol of March 16, 2016 by the Republican Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations;

- Sectoral Qualifications Framework (SQF). Approved by the protocol of November 17, 2016 No. 12-03-333 of the Sectoral Commission on Social Partnership and Regulation of Social and Labor Relations in the Electric Power Industry;

- Typical curriculum 6M100200 - Information security systems, approved by the Order of the Minister of the Ministry of Education and Science of the Republic of Kazakhstan No. 425 dated 05.07.2016

- Recommendation of the International Association for Computing Machinery (ACM) Curriculum in Computer Science (CC2005 series).

The master of the educational program "Integrated information security" is focused on the independent determination of the goal of professional activity and the choice of adequate methods and means of achieving them, the implementation of scientific, innovative activities to obtain new knowledge. In addition, it is focused on the organization, design, development, management and audit of systems for the protection and security of information for applied purposes for all sectors of the economy, government organizations and other areas of activity.

The educational program was developed on the basis of an analysis of the labor functions of an information security administrator, an information security auditor, an information security engineer, declared in professional standards.

Representatives of Kazakhstani companies and associations, specialists of departmental structures in the field of protection and security participated in the development of the educational program.

The objectives and content of the EP are given in section 9 "Description of disciplines".

In case of successful completion of the full course, the master is awarded a master of technical sciences in the educational program "Integrated information security."

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2 Types of work. According to the classifier of occupations of the NK RK 01-2017, paragraph 133, graduates of this specialty can hold positions as heads (managers) of departments for information communication technologies and information. Master students who have successfully completed the course of study can work in the following specialties:

- Head of Information Security Department;
- IS auditor;
- Analyst on IS incident response;
- Virus analyst;
- Web Vulnerability Auditor.

3 Objects of professional activity

The effectiveness of any organization today is determined by its information and communication processes and the organization of the information security system. The task of the undergraduate is to participate in the organization, creation, design, operation and development of information security of an organization, which will ensure high efficiency of enterprise process management.

PASSPORT OF THE EDUCATIONAL PROGRAM

1 Scope and content of the program

The term of study in the master's program is determined by the amount of acquired academic credits Upon mastering the established amount of academic credits and achieving the expected learning outcomes for obtaining a master's degree, the master's educational program is considered fully mastered.

The planning of the content of education, the method of organizing and conducting the educational process is carried out by the university and the scientific organization independently on the basis of the credit technology of education.

The master's degree in the profile direction implements educational programs of postgraduate education for the training of management personnel with in-depth professional training.

The content of the Master's degree program consists of:

1) theoretical training, including the study of cycles of basic and major disciplines;

2) practical training of undergraduates: various types of practices, scientific or professional internships;

3) experimental research work, including the implementation of a master's project - for a specialized master's program;

4) final certification.

The volume and structure of the educational program of the master's degree in the educational program "Comprehensive information security" in the profile direction is presented in the working curriculum (section 4.).

The working curriculum (RUP) corresponds to the qualifications and competencies of the educational program "Integrated information security."

The content of the educational program corresponds to the described goals and competencies for the educational program.

Objectives of the educational program:

Training of highly qualified specialists who are able to solve the following tasks:

- planning of work on audit of information security;
- organizational support of information security audit;
- analysis of the current state of security of the IS audit object;
- identification and elimination of vulnerabilities;
- monitoring and investigation of information security incidents;
- development of a model of threats to information security in enterprises;
- development of technical specifications for the creation of an information security system

2 Requirements for applicants

The previous level of education of applicants is higher professional education (bachelor's degree). The applicant must have a diploma of the established sample and confirm the level of knowledge of the English language with a certificate or diplomas of the established sample.

The procedure for the admission of citizens to the magistracy is established in accordance with the "Standard rules for admission to training in educational institutions that implement educational programs of postgraduate education."

At the "entrance", a master's student must have all the prerequisites necessary for mastering the corresponding educational master's program. The list of required prerequisites is determined by the higher education institution independently.

In the absence of the necessary prerequisites, the master student is allowed to master them on a paid basis.

3 Requirements for completing studies and obtaining a diploma

Awarded degree / qualifications: A graduate of this educational program is awarded a master's degree in engineering and technology in the educational program "Integrated information security."

A graduate who has mastered master's programs must have the following general professional competencies:

- the ability to independently acquire, comprehend, structure and use new knowledge and skills in professional activities, develop their innovative abilities in the field of information and communication technologies and information security;

- the ability to independently formulate research goals, establish a sequence for solving professional problems in the field of information security;

- the ability to apply in practice the knowledge of fundamental and applied disciplines that determine the focus (profile) of the master's program;

- the ability to professionally choose and creatively use modern scientific and technical equipment for solving scientific and practical problems;

- the ability to critically analyze, represent, defend, discuss and disseminate the results of their professional activities;

- possession of the skills of drawing up and preparing scientific and technical documentation, scientific reports, reviews, reports and articles;

- willingness to lead a team in the field of their professional activities, tolerantly perceiving social, ethnic, confessional and cultural differences;

- readiness for communication in oral and written forms in a foreign language to solve problems of professional activity.

A graduate who has mastered the master's program must have professional competencies corresponding to the types of professional activities that the master's program is focused on:

- *production activities:*

- the ability to independently carry out production, field and laboratory and interpretation work in solving practical problems;

- the ability to professionally operate modern field and laboratory equipment and instruments in the field of the mastered master's program;

- the ability to use modern methods of processing and interpreting complex information to solve production problems;

- *project activities:*

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- the ability to independently compose and present projects of research and development work in the field of information security;

- readiness to design complex research and development work in solving professional problems;

- organizational and management activities:

- the willingness to use the practical skills of organizing and managing research and development work in solving professional problems;

- readiness for the practical use of regulatory documents in the planning and organization of scientific and industrial work in the field of information security;

When developing a master's program, all general cultural and general professional competencies, as well as professional competencies related to those types of professional activities that the master's program is focused on, are included in the set of required results of mastering the master's program.

4 Working curriculum of the educational program
4.1. Study period 1 year

Working curriculum of the educational program
Education program: 7M**06111- «Comprehensive information security support»**

Duration of training: 1 years
Academic degree: Master of Engineering and Technology

year of study	Code	Name of course	Component	Credits ECTS	Credits ME	lecture/ laboratory/ practice/ IWS	Prerequisites	Code	Name of course	Component	Credits ECTS	Credits ME	lecture/ laboratory/ practice/ IWS	Prerequisites
1			**1 semester**							**2 semester**				
	LNG 202	Foreign language (professional)	BD IC	6	3	0/0/3/3		AAP207	Experimental and research work of the undergraduate, including the performance of the master's thesis	MSE RW	13			
	HUM 204	Management psychology	BD IC	4	2	1/0/1/2		AAP248	Internship	PS	7			
	MNG 274	Management	PS CC	6	3	2/0/1/3		ECA205	Registration and defense of the master's thesis (RaDMT)	FA	12			
		Elective	BD CC	4	2									
		Elective	PS CC	6	3									
		Elective	PS CC	6	3									
		Elective	PS CC	6	3									
								AAP221						
		In total		**38**					**In total**		**32**			
									In all		**70**			

	Code	Name of disciplines	Credits	Lec/lab/prac/IWS	Semester
BD Choice component - 4 credits					
	SEC244	Security of Virtualization and Cloud Systems	4	1/1/0/2	1
	SEC 238	Steganographic methods of information protection	4	1/0/1/2	1
		Total	**4**		
PS CC Choice component - 18 credits					
	SEC215	Organization of information security systems	6	1/1/1/3	1
	SEC214	Organization of protection and safety of a database		2/0/1/3	1
	CSE720	Cybercrime and computer forensics	6	2/1/0/3	1
	SEC245	Risk management in cyber security	6	2/0/1/3	1
	SEC239	Analytical data warehouses and OLAP technologies	6	1/1/1/3	1
		Total	**18**		

MODULAR CURRICULUM

Education program: 7M06111- «Comprehensive information security support»

Form of study: daytime   Duration of training: 1 years   *Academic degree: Master of Engineering and Technology*

The cycle	code	Name of disciplines	Semester	Acad. credits	lec.	lab.	prac	IWS	Type of control	Chair
Profile training module										
Basic disciplines (BD)										
University component										
BD	LNG202	Foreign language (professional)	1	6	0	0	3	3	Exam	EL
BD	MNG274	Management	1	6	2	0	1	3	Exam	SECPM
BD	HUM204	Management psychology	1	4	1	0	1	2	Exam	SECPM
Choice component (BD) (4 credits)										
Security and project management module										
BD	SEC244	Security of Virtualization and Cloud Systems	1	4	1	1	0	2	Exam	CIPaS
BD	SEC 238	Steganographic methods of information protection	1	4	1	0	1	2	Exam	CIPaS
Major disciplines (MD)										
Choice component (CC) (18 credits)										
Module of the information security management system and information security assurance										
MD	SEC215	Organization of information security systems	1	6	1	1	1	3	Exam	CIPaS
MD	SEC214	Organization of protection and safety of a database	1	6	2	0	1	3	Exam	CIPaS
MD	CSE720	Cybercrime and computer forensics	1	6	2	1	0	3	Exam	CIPaS
MD	SEC245	Risk management in cyber security	1	6	2	0	1	3	Exam	CIPaS
MD	SEC239	Analytical data warehouses and OLAP technologies	1	6	1	1	1	3	Exam	CIPaS
Practice-oriented module										
MD	AAP248	Internship	2	7					Report	
Research Module										
MSERW	AAP207	Experimental and research work of the undergraduate, including the performance of the master's thesis	2	13					Report	
Module of final attestation (12 credits)										
FA	ECA220	Registration and defense of the master's thesis	2	12					Defense of dissertation	
			Total	**70**						

5 Descriptors of the level and amount of knowledge, abilities, skills and competencies

The requirements for the level of preparation of a master's student are determined on the basis of the Dublin descriptors of the second level of higher education (master's) and reflect the acquired competencies, expressed in the achieved learning outcomes.

Learning outcomes are formulated both at the level of the entire educational program of the master's program, and at the level of individual modules or academic discipline.

Descriptors reflect learning outcomes that characterize the student's abilities:

1) demonstrate developing knowledge and understanding in the studied field of information technology and information security;

2) apply at a professional level their knowledge, understanding and ability to solve problems in a new environment, in a broader interdisciplinary context;

3) collect and interpret information to form judgments, taking into account social, ethical and scientific considerations;

4) clearly and unambiguously communicate information, ideas, conclusions, problems and solutions, both to specialists and non-specialists;

5) learning skills necessary for independent continuation of further education in the studied field of information technology and information security.

6 Competences to complete the training

6.1 Requirements for key competencies of graduates of a specialized master's program must:

1) have an idea:

- about the current state of the economic, political, legal, cultural and technological environment of the world business partnership;

- on the organization of strategic enterprise management, innovation management, leadership theories;

- on the main financial and economic problems of the functioning of enterprises;

- about professional competence in the field of information protection and security;

- about database protection technologies;

- about the means and methods of security of modern operating systems;

- about big data analysis.

2) know:

- the main driving forces behind changes in the structure of the economy;

- features and rules of investment cooperation;

- at least one foreign language at a professional level, allowing for scientific research and practical activities;

- IS standards and IT security assessment criteria;

- organization of IP networks, structure of IP packets and IP protocols;

- internal organization of OS information carriers;

- methods and means of storing key information and encryption;

- types and principles of authentication;

- requirements for firewalls and intrusion detection systems;

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- database protection technologies and methods for designing secure databases;
- organization of the database protection and security system.

3) be able to:

- critically analyze existing concepts, theories and approaches to the study of processes and phenomena;
- integrate the knowledge gained in different disciplines, use it to solve analytical and managerial problems in new unfamiliar conditions;
- conduct a microeconomic analysis of the economic activity of the enterprise and use its results in the management of the enterprise;
- to apply in practice new approaches to the organization of marketing and management;
- to make decisions in difficult and non-standard situations in the field of organization and management of economic activities of an enterprise (firm);
- to apply in practice the norms of the legislation of the Republic of Kazakhstan in the field of regulation of economic relations;
- think creatively and be creative in solving new problems and situations;
- to carry out information-analytical and information-bibliographic work with the involvement of modern information technologies;
- to summarize the results of experimental research and analytical work in the form of a master's thesis, article, report, analytical note, etc.
- work with firewalls and intrusion detection systems;
- apply database protection technologies and secure database design methods;
- to organize a system of protection and safety of the database;

4) have skills:

- solutions to standard professional tasks;
- professional communication and intercultural communication;
- oratory, correct and logical design of your thoughts in oral and written form;
- expanding and deepening the knowledge required for daily professional activities and continuing education in doctoral studies;
- use of information and computer technologies in the field of professional activity;
- organization and protection of database security;
- conducting an information security audit;
- identifying threats and counteracting them;
- assessing information security risks.

5) be competent:

- in the field of contemporary problems of the world economy and the participation of national economies in world economic processes;
- in the organization and management of the enterprise;
- in the implementation of industrial relations with various organizations, including public service bodies;
- in the organization of information security systems;
- in conducting information security audit;
- in ensuring the information security of the organization;
- in ways to ensure constant updating of knowledge, expanding professional skills and abilities.

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- B1 - knowledge of the basic methods, methods of digital diagnostics, the main operational characteristics of the technological equipment of mining, metallurgical and oil and gas production;

- B2 - understanding of the nature and significance of the relationship of production processes and their impact on the operational efficiency of trouble-free use of technological equipment of mining, metallurgical and oil and gas production, allowing rational use of natural resources, non-waste technology and reduce the negative impact on the environment;

- B3 - the ability to solve non-standard tasks of choosing a rational way to restore parts of mining, metallurgical and oil and gas production using innovative repair technologies.

- P - Professional competencies, including in accordance with the requirements of industry professional standards, providing deep theoretical knowledge and practical skills in the field of solid minerals and hydrocarbons development technology.

- P1 - A wide range of theoretical and practical knowledge in the professional field, digital technical diagnostics of the equipment of a complex for the production of mining metallurgical and oil and gas machines and equipment, taking into account industrial and environmental safety.

- P2 - Determine the main organizational issues for the repair work.

- P3 - Skills of developing technological maps of restoration processes and improving the wear resistance of parts, practical skills in drafting design and technical documentation; practical skills of checking the compliance of the developed process with the requirements of standards, technical specifications and other regulatory documents.

- P4 - Digital systems for designing technological machines and equipment, modern digital developments and the main directions of development of digital designing and designing technological machines, as well as with the technological preparation of their production.

- P5 - Digital methods for predicting the technical condition and reliability of objects, studying the fundamentals of the theory of diagnosis, studying the basic concepts, techniques and innovative methods for diagnosing the technical condition of parts, mechanisms and products.

- P6 - Formation of knowledge, skills and abilities on energy efficiency and energy saving in the mining, metallurgical and oil and gas industries based on equipment and automation and control technologies, mastering knowledge in the field of energy saving, mastering the principles and methods of energy saving as a set of measures or actions taken to ensure efficient use of energy resources and process equipment during their operation.

- P7 - Skills of installation work with the use of innovative methods and control of the technical condition (welding, rolling, basic plumbing, adjustment and adjustment work), drawing up report forms and regime maps, digital calculation of optimal parameters, operating modes of the equipment.

- P8 - Features of innovative design and basic layout schemes, methodology for selecting and calculating rational parameters of operation of mechanical, hydraulic and pneumatic drives of technological machines;

- O - Universal, social and ethical competences:

-    O1 - Understanding and disclosing the connection between philosophy and science, highlighting the philosophical problems of science and scientific knowledge, the main stages of the history of science, the leading concepts of the philosophy of science, modern problems of the development of scientific and technical reality;

- O2 - To possess knowledge of the English language for their current academic research and increase the effectiveness of their work in the field of project management;

- O3 - Learning the basics of education management, management of global educational processes, analysis and selection of strategic initiatives, the project as a

- strategy for managing the development of an educational institution / organization ..

- C - Special and managerial competencies:

- C1 - Independent management and control of labor processes in the framework of the strategy, policies and objectives of the organization, discussion of the problem, arguing the conclusions and competent handling of information;

- C2 - Know and possess basic management functions (decision making, organization, motivation, control) and methods for their implementation;

- C3 - To have organizational skills, to be able to create mobile working groups to fulfill their goals and to be able to manage such a group, to be able to protect their rights and require them to perform their duties.

6.2 Requirements for the experimental research work of a master student in a specialized master's program:

1) corresponds to the profile of the master's educational program, according to which the master's project is carried out and defended;

2) is based on modern achievements of science, technology and production and contains specific practical recommendations, independent solutions to management problems;

3) performed using advanced information technologies;

4) contains experimental and research (methodological, practical) sections on the main protected provisions.

6.3 Requirements for organizing practices:

The educational program of the profile master's degree includes industrial practice in the PD cycle.

Industrial practice in the PD cycle is carried out with the aim of consolidating the theoretical knowledge gained in the learning process, acquiring practical skills, competencies and experience of professional activity in the taught educational program of the magistracy, as well as mastering advanced experience.

7 ECTS Diploma Supplement

The application is developed according to the standards of the European Commission, Council of Europe and UNESCO / CEPES. This document is for academic recognition only and does not constitute official proof of education. Without a diploma of higher education is not valid. The purpose of completing the European application is to provide sufficient

information about the diploma holder, the qualifications obtained by him, the level of this qualification, the content of the training program, the results, the functional purpose of the qualification, as well as information about the national education system. In the application model, which will be used for the transfer of estimates, the European system of transfer or credit transfer (ECTS) is used.

The European Diploma Supplement provides an opportunity to continue education in foreign universities, as well as to confirm national higher education for foreign employers. When traveling abroad for professional recognition will require additional legalization of the diploma of education. The European Diploma Supplement is completed in English upon individual request and is issued free of charge.

8 List of modules and learning outcomes
EP - Comprehensive information security
Qualification: Master of Engineering Science

Name module	Professional competence	Disciplines forming the module
Humanitarian module	master the techniques of discussion and dialogue, possess the skills of communication and creativity in their professional activities. Be competent in management psychology and project management.	Project Management (Management Psychology
Information protection and Security module	To Be able to assess the security of network operating systems. It is safe to use modern virtualization technologies. Be able to determine the steganographic stability of systems, apply software products in steganography and organize visual attacks on steganosystems.	Security of virtualization systems and cloud technologies, Steganographic methods of information protection
Module of the information security management system and information security assurance	Know and apply methods and tools for conducting an information security audit and assessing the risk of information security. Be able to organize a database protection and security system and apply database protection technologies. Be able to organize comprehensive information security and protection. Be competent in the detection of cybercrime and computer forensics.	Organization of protection and security of databases, Organization of information security systems. Risk management in cyber security, Analytical data warehouses and OLAP technologies, Cybercrime and computer forensics
Practice-oriented module	Getting professional skills. Ability to generate new ideas. Practice in performing research in a professional field, in ways to ensure a constant update of knowledge, expanding professional skills and abilities. Ability to carry out information-analytical and information-bibliographic work with the involvement of information technology. Application of	Professional practice

	theoretical knowledge to develop and present your own conclusions when solving production problems in the IT sector. Ability to make decisions in difficult and non-standard situations in the field of organization and management of the enterprise.	
Final certification module	Systematization and generalization of knowledge gained during master's studies for the successful completion of a comprehensive exam. Learning skill that allows you to continue learning largely independently and autonomously. Registration of the results of research and analytical work in the form of scientific articles, reports, analytical reports, dissertation. Ability to communicate their conclusions and the knowledge used to formulate them to specialists and non-specialists. Studying scientific and technical information, domestic and foreign experience in the field of IT technologies for its creative understanding and development of the correct solution to its scientific and technical or production problem.	Registration and defense of a master's thesis

9 Description of disciplines

Foreign language (professional)
Professional English for Project Managers
CODE – LNG202
CREDIT – 6
PREREQUISITES –Academic English, Business English, IELTS 5.0-5.5

PURPOSE AND OBJECTIVES OF THE COURSE
The aim of the course is to develop students' knowledge of the English language for their ongoing academic research and improve their performance in the field of project management.

SHORT DESCRIPTION OF THE COURSE
The course is aimed at building vocabulary and grammar for effective communication in the field of project management and improving reading, writing, listening and speaking skills at the "Intermediate" level. Students are expected to develop their Business English vocabulary and learn grammar structures that are often used in a management context. The course consists of 6 modules. The 3rd module of the course ends with an intermediate test, and the 6th module is followed by a test at the end of the course. The course ends with a final exam. Master students

also need to study independently (MIS). MIS is an independent work of undergraduates under the guidance of a teacher.

KNOWLEDGE, ABILITY, SKILLS TO COMPLETE THE COURSE

Upon successful completion of the course, students are expected to be able to recognize the main idea and message as well as specific details while listening to monologues, dialogues and group discussions in the context of business and management; understand written and spoken English on topics related to management; write management texts (reports, letters, emails, minutes of meetings), following a generally accepted structure with a higher degree of grammatical accuracy and using business words and phrases, talk about various business situations using appropriate business vocabulary and grammatical structures - in pairs and groups discussions, meetings and negotiations.

Management
CODE   MNG274
CREDIT   3
PRE-REQUISIT: The discipline "Project Management" is based on the knowledge gained as a result of studying disciplines in undergraduate courses

PURPOSE AND OBJECTIVES OF THE COURSE

The aim of teaching the discipline "Project Management" is to master the methodology of project management in various fields of activity, to foster a culture adequate to modern project management and information technology, to create conditions for the introduction of new information technologies in the implementation of projects. The course is based on international guidelines for project management (Project Management Body of Knowledge).

SHORT DESCRIPTION OF THE COURSE

The content of the discipline is aimed at studying modern concepts, methods, project management tools in order to apply them in further practical activities of a specialist to solve problems of planning and executing projects.

KNOWLEDGE, ABILITY, SKILLS TO COMPLETE THE COURSE

Be able to:

- prepare documents for the initialization phase of the project, such as a feasibility study, project charter, etc.

- develop and analyze documents related to the planning of project activities, apply various methods of decision support;

- operatively control the execution of work and track the deadlines;
- select personnel, resolve contradictions between team members;
- to manage the risks arising from the implementation of projects.

Knowledge gained during the course:

- Modern standards in the area of project management and their characteristics;
- PMI approach to project management;
- Investment planning;
- Accounting for project risks;
- Methods for optimizing the use of available resources;
- Ways of resolving conflict situations;

- Analysis of actual indicators for timely adjustment of the progress of work.
Skills:
- project management in accordance with modern project management requirements; - apply in the project management process using MS Project software

PSYCHOLOGY OF MANAGEMENT
CODE HUM204
CREDIT – 4
PURPOSE AND OBJECTIVES OF THE COURSE
The main goal of the course is aimed at studying the characteristics of the behavior of individuals and groups of people within organizations; determining psychological and social factors influencing the behavior of workers. Also, great attention will be paid to the issues of internal and external motivation of people.

The main goal of the course is to apply this knowledge to improve the effectiveness of the organization.
SHORT DESCRIPTION OF THE COURSE
The course is designed to provide balanced coverage of all the key elements that make up the discipline. It will briefly review the origins and development of the theory and practice of organizational behavior, followed by a review of the main roles, skills and functions of management with a focus on management effectiveness, illustrated with real-life examples and case studies.
KNOWLEDGE, ABILITY, SKILLS TO COMPLETE THE COURSE
Upon completion of the course, students will know: the basics of individual and group behavior; basic theories of motivation; basic leadership theories; concepts of communication, management of conflicts and stress in the organization.

will be able to define the different roles of leaders in organizations; look at organizations from the point of view of managers; understand how effective management contributes to an effective organization.

Security of virtualization systems and cloud technologies
CODE – SEC244
CREDIT – 4
PREREQUISITES– no
PURPOSE AND OBJECTIVES OF THE COURSE
The purpose of the discipline "Security of virtualization systems and cloud technologies" (BSViOT) is to acquire students professional competencies in the field of virtualization and cloud technologies.

The task of studying the discipline "Security of virtualization systems and cloud technologies" is to master the basic principles of organizing the safe use of virtualization systems and cloud technologies.
SHORT DESCRIPTION OF THE COURSE
The program of the training course "Security of virtualization systems and cloud technologies" is aimed at studying the technological foundations of cloud computing - the

concepts of virtualization and virtualization systems, cloud technology services and ensuring their security and protection.

KNOWLEDGE, ABILITY, SKILLS TO COMPLETE THE COURSE

As a result of mastering the discipline, the student must know:
- technologies of virtualization of resources and platforms;
- virtualization systems from leading manufacturers;
- principles of building hypervisors and their vulnerability;
- threats and risks of virtualization systems;
- the main services of cloud technologies IaaS, PaaS and SaaS;
- common attacks on clouds;
be able to:
- install virtualization systems;
- work with cloud services;
- test virtual machines for vulnerability;
- create a virtual encrypted disk;
 have skills:
- creating virtual machines;
- working with applications in a virtual machine;
- the use of cryptographic data protection in the clouds;
- using recommendations from the Cloud Security Alliance to ensure the security of cloud computing.

Steganographic methods of information protection
CODE – SEC 238
CREDIT – 4
PREREQUISITES – no
PURPOSE AND OBJECTIVES OF THE COURSE.

It is the development of the fundamental principles of steganography, which consist in ensuring the secret transmission and storage of confidential data by imperceptibly embedding them in other data transmitted through open channels.

SHORT DESCRIPTION OF THE COURSE

The content of the discipline covers a range of issues related to the protection of information through mathematical transformations using steganographic algorithms and copyright protection algorithms.

KNOWLEDGE, ABILITY, SKILLS TO COMPLETE THE COURSE

As a result of mastering the discipline, the student should know:
- promising areas of development
- - classification of steganographic systems
- principles of construction of digital steganosystems, watermarks and steganosystems of data transmission.
- formats for presenting audio and graphic information in computer steganography systems

Be able to determine the steganographic stability of systems, apply software products in steganography and organize visual attacks on steganosystems.

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Organization of information security systems
CODE – SEC215
CREDIT – 6
PREREQUISITES–no.

PURPOSE AND OBJECTIVES OF THE COURSE

The purpose of the discipline "Organization of information security systems" (ISIB) is the formation of professional knowledge in the field of organization of information security systems at the facility.

The objectives of the discipline are: studying modern trends in international, domestic standards in the field of information security, building information security systems of an organization, developing an effective security policy and program depending on the objects of protection, the degree of its confidentiality, the use of modern methods, means and technologies for ensuring security.

SHORT DESCRIPTION OF THE COURSE

The curriculum program "Organization of information security systems" is aimed at familiarizing students with the basics of organization, construction, information security system, development of a security program and policy, defining objects of protection, forming a model of an intruder, organizing protection at the administrative, procedural levels of information security, conducting risk analysis and their assessment, to select methods, means and technologies of protection depending on the objects of protection, the degree of its confidentiality and the direction of business

KNOWLEDGE, ABILITY, SKILLS TO COMPLETE THE COURSE

As a result of mastering the discipline, the student must have an idea of:
- about the basics of industrial relations and management principles;
- about modern research methods in the field of security;
As a result of mastering the discipline, the student must know:
- modern technologies in the field of information security, methods and means of computer technology and software;
- modern technologies in the field of information security;
- international standard for information security;
- legislative acts of the Republic of Kazakhstan in the field of information security;
- standards and specifications of information security and information protection harmonized in the Republic of Kazakhstan.
As a result of mastering the discipline, the student should be able to:
- create and apply modern technologies in the field of information security;
- apply modern information protection technologies in information security systems;
- manage information security of systems and networks.
Have skills:
- identifying threats and vulnerabilities in the organization's information security system;
- developing the organization's security policy and program;
- ensuring management and control at the administrative and procedural levels of the organization's information security;
- analysis and selection of information protection methods;
- ensuring and assessing the safety of the facility.

Organization of protection and security of databases
CODE – SEC214
CREDIT – 6
PREREQUISITES– no

PURPOSE AND OBJECTIVES OF THE COURSE

The purpose of the discipline "Organization of protection and security of databases" (OZiBD) is the acquisition of professional competencies by students in the field of the organization of comprehensive protection and security of databases (DB).

The task of studying the discipline "Organization of protection and security of databases" is the assimilation of the basic principles of the organization of protection and security systems of database servers and their application.

SHORT DESCRIPTION OF THE COURSE

The program of the training course "Organization of protection and security of databases" is aimed at studying technologies for ensuring the security of databases (DB). The course is devoted to the application of methods and tools for solving practical problems of protection and security of databases.

KNOWLEDGE, ABILITY, SKILLS TO COMPLETE THE COURSE

As a result of mastering the discipline, the student must know:
- organization of the database protection and safety system;
- database protection technologies and methods for designing secure databases;
- built-in mechanisms for ensuring database security in database servers;
- be able to:
- to apply in practice the technologies for ensuring the safety and protection of the database;
- to apply in practice the built-in mechanisms of database servers for the protection and security of the database;
 have skills:
- designing secure databases in CASE tools;
 using the SQL language to create, operate and ensure the protection and security of the database;
- the use of cryptographic built-in security tools.

Cybercrime and computer forensics
CODE – SEC240
CREDIT– 6
PREREQUISITE – no

PURPOSE AND OBJECTIVES OF THE COURSE

The aim of the discipline "Cybercrime and computer forensics" is to acquire students professional competencies in the field of cybercrime and cybercrime investigation.

The task of studying the discipline "Cybercrime and computer forensics" is to master the principles of using systems and means of disclosing crimes related to computer information.

BRIEF DESCRIPTION OF THE COURSE

Fundamentals of Forensics (computer forensics, cybercrime investigation) is an applied science about solving crimes related to computer information. The means of conducting digital evidence research and methods of searching, obtaining and securing evidence are being studied.

KNOWLEDGE, SKILLS, SKILLS TO COMPLETE COURSE

As a result of mastering the discipline, the student must know: the basics of Forensics, questions and solutions of computer forensics; tools for researching digital evidence.

be able to:
- conduct investigations;
- explore digital evidence;
- apply modern methods and tools to detect cybercrimes.

Have skills:
- use of modern methods and means of investigation of cybercrimes;
- detection of cybercrimes;
- analysis of digital evidence

Analytical data warehouses and OLAP technologies
CODE – SEC239
CREDIT– 6
PREREQUISITE – no

PURPOSE AND OBJECTIVES OF THE COURSE

Study of the principles of data processing technologies.

BRIEF DESCRIPTION OF THE COURSE

Online analytical processing, or OLAP , is an approach to answering multi-dimensional analytical (MDA) queries swiftly in computing.[1] OLAP is part of the broader category of business intelligence, which also encompasses relational databases, report writing and data mining.[2] Typical applications of OLAP include business reporting for sales, marketing, management reporting, business process management (BPM),[3] budgeting and forecasting, financial reporting and similar areas, with new applications coming up, such as agriculture**.**

Risk management in cybersecurity
CODE – SEC 245
CREDIT – 5
PREREQUISITES–no

PURPOSE AND OBJECTIVES OF THE COURSE

The aim of the discipline "Risk management in cybersecurity" (RMSB) is to acquire students of professional competencies in the field of risk management in cybersecurity.

The objective of the discipline is to acquire theoretical and practical knowledge of information security risk management by students.

SHORT DESCRIPTION OF THE COURSE

The program of the training course "Risk Management in Cybersecurity" is aimed at studying risk management standards, risk assessment tools and their practical application.

KNOWLEDGE, ABILITY, SKILLS TO COMPLETE THE COURSE

As a result of mastering the discipline, the student must know:
- basic concepts of risk in information security (IS);
- risk management standards;
- key issues of analysis and management of information security risks;
- methods for assessing information risks of the company;
- quantitative and qualitative risk measures;
- means of automatic risk assessment (ARA);
- countermeasures to ensure IS mode;
be able to:
- assess risks;
- choose countermeasures to reduce the risk;
- choose countermeasures to avoid risk;
- choose countermeasures to change the nature of the risk;
- use the AOP tools;
have skills:
- risk analysis;
- risk assessment using AOR;
- risk taking.

Master's project defense
CODE – ECA2013
CREDIT –12
The purpose of the master's thesis / project is:
demonstration of the level of scientific / research qualifications of a master student, the ability to independently conduct a scientific search, test the ability to solve specific scientific and practical problems, knowledge of the most general methods and techniques for their solution.
SHORT DESCRIPTION
Master's thesis / project is a final qualifying scientific work, which is a generalization of the results of independent research by a master's student of one of the topical problems of a particular specialty of the corresponding branch of science, which has internal unity and reflects the course and results of the development of the chosen topic.

Master's thesis / project is the result of the research / experimental research work of the master's student, carried out during the entire period of study of the master's student.

The defense of a master's thesis is the final stage of the master's preparation. Master's thesis / project must meet the following requirements:

- the work should conduct research or solve topical problems in the field of information security;

- work should be based on the definition of important scientific problems and their solution;

- decisions must be scientifically grounded and reliable, have internal unity;

- the thesis / project must be written individually.

Content