

**"Kazakh National Research Technical University after K. I. Satpayev"
Institute of Cybernetics and Information Technology
The department of "Cybersecurity, processing and storage of information"**

**Educational program
CURRICULUM PROGRAM**

**7M06108 - «MANAGEMENT INFORMATION SYSTEMS»
Master (in the information and communication technology)
Profile direction (duration 1,5 year)**

1st Edition
in accordance with the Higher Education 2018 SES

Almaty 2020


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The program is drawn up and signed by the parties:
by KazNRTU after K. I. Satpayev:

Director of the Institute of Cybernetics and
Information Technology, PhD

1. Head of the department "Cybersecurity, processing and
Storage Information "(CPST)
Candidate of Technical Sciences



3. The Chairman of the educational-methodical group
CPST the department, doctor of technical sciences, professor  D.N. Shukaev

Employers:

1. Developer LLP «Solly», Master of Engineering, A. Azhenov

From the university partner:

- 1 International University of Information Technologies
- 2 Almaty University of Energy and Communications
- 3 National Aviation University, Ukraine

Approved at the meeting of Educational and Methodological Council of Kazakh National Research Technical University after K. I. Satpayev. The protocol №3 from 15.12.2020.

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1. Requirements to the level of training of students

Qualifications and competences

In accordance with the National Qualifications Framework (NQF) Approval of the minutes from the March 16, 2016 the Republican tripartite commission on social partnership and regulation of social and labor relations

This educational programs that focus on training with the award of the degree of "Master degree" in the relevant specialty. This educational program (OP) aims to prepare graduate students for information systems.

National Qualifications Framework has eight skill levels, which corresponds to the European Qualifications Framework and the levels of education as defined by the Law of the Republic of Kazakhstan dated July 27, 2007 "On education". Eight recommended levels are described in the form of learning outcomes. The document contained general requirements for the qualification of undergraduates, who for experts in the field of information systems are described below.

Qualifications for NRC:

This educational program is at the 7th level of a national qualifications framework.

The professional competence of the NRC:

The knowledge gained after the completion of the educational program should provide a conceptual level in the field of information systems and technologies to generate new applied knowledge of the subject area.

Skills and abilities should ensure autonomy in determining the purpose of professional activities and the selection of appropriate methods and means to achieve them, including a student innovation in the field of information systems and technologies.

Personal and professional competence a student must be appropriate for the adoption of the strategy division of activities, as well as in decision-making and accountability at the departmental level, related to information systems and technologies.

Ways to achieve specified qualifications should be determined by an active professional position of a student, based on his professional knowledge and skills in the field of information systems, its creativity and the development of knowledge and skills of the art, including training master's degree and / or experience.

The branch frame qualifications (ORK). Information and communication technologies, developed on the basis of the national qualifications framework, is the basic document for the development of educational programs for the training of specialists in the field of information systems and technologies. This JWC approved minutes of the meeting Industry Commission in the sphere of information, informatization, communication and telecommunication of December 20, 2016 number 1.

Basic regulations within which the professional activity of the ICT industry:

1) Decree of the President of the Republic of Kazakhstan from February 1, 2010 № 922 "On the Strategic Development Plan of Kazakhstan till 2020";

2) The Law of the Republic of Kazakhstan "On informatization" of November 24, 2015 № 418-V SAM;

developed by:	Considered: a meeting of the Institute of FF	Approved: KazNRTU	Page 3 of 25
---------------	--	-------------------	--------------

3) Law of the Republic of Kazakhstan "On Telecommunications" dated July 5, 2004 № 567;

4) Law of the Republic of Kazakhstan dated January 7, 2003 № 370 "On e-document and electronic digital signature";

5) of the Republic of Kazakhstan President's Decree of January 8, 2013 № 464 "On State Program" Information Kazakhstan - 2020 "and the introduction of amendments in the Republic of Kazakhstan President's Decree of March 19, 2010 № 957" On approval of the list of state programs ";

6) Resolution of the Republic of Kazakhstan dated June 16, 2016 № 353 "Some questions of the Ministry of Information and Communications of the Republic of Kazakhstan."

7) State compulsory education standard for all levels of education, order No. 604 dated 31.10.2018 and No. 182 dated 05.05.2020.

According to the Law of the Republic of Kazakhstan "On informatization" of 24th of November 2015 number 18 VZRK, industry and communication technology (ICT) is defined as the branch of the economy associated with the design, production and sale of software, hardware, consumer electronics and its components, as well as provision of information and communication services.

In accordance with the general classification of economic activities of the Republic of Kazakhstan (NCEA), a professional group of ICT industry, pertaining to information systems and technology, include the following economic activities:

1) ICT Manufacturing:

- 58 Publishing:
 - 58.2 Softwarepublishing *
 - 58.21 Thecreationofcomputergames
 - 58.29 EditionOthersoftware

2) ICT services:

- 61 Communication;
 - 61.1 Wiredtelecommunicationsactivities
 - 61.2 Wirelesstelecommunicationsactivities
 - 61.9 Othertelecommunicationsactivities
- 62 Computer programming, consultancy and related services
 - 62.01 The activities in the field of computer programming
 - 62.02 ConsultancyservicesinInformationTechnology
 - 62.03 TheactivitiesComputerfacilitiesmanagement
 - 62.09 Other activities in the field of information technology and computer systems
- 63 Informationserviceactivities;
 - 63.1 Accommodation services and processing of data; Web portals
 - 63.11 Data processing, hosting and other services
 - 63.12 Webportals
- 70 Activities of head offices; advice on the management;
 - 70.2 activitiesManagementconsultancy
- 71 Activity in the architecture, engineering studies, technical testing and analysis;

- 71.1 Activity in architecture and engineering activities and related technical consultancy (information systems and technologies).
 - 77 Rent, rental and leasing;
- 77.3 Rental and lease of other machinery, equipment and tangible goods (for information systems to use Internet services providers and cloud computing)
 - 95 Repair of computers and personal and household goods (for information systems professionals in their capabilities).
 - 95.1 Repair of computers and communication equipment
 - 95.11 Repair of computers and peripheral equipment

According to the 7th level NRC competencies and URC define the professional competence in the sector of information and communication technologies required for specialists in information systems and technology.

The professional competence of the ORK:

Knowledge of the life cycle of the project activities in the field of information systems, the rules of software development, the company's core business processes, personnel management, production, management, psychology of management and information security issues. Knowledge of methodology concepts, strategies, models of functional activity and interaction, ways of setting and system solutions and challenges with the use of advanced scientific approaches, enabling enterprises to achieve development through information technology.

Skills and abilities. Ability to integrate knowledge, deal with the complexities and make judgments based on incomplete or limited information, taking into account the responsibility of the application of these judgments and knowledge. It demonstrates the company's competitiveness analysis skills, considering the trend of the IT market. The ability to recognize changes in the business environment and to determine the strategic direction of the unit and / or enterprise. Implementation of large-scale changes in the sphere of information technologies and systems, as well as management of scientific processes.

Personal and professional competence. Independence:

management (installation and commissioning, production and technology) activities, supposing the creation of the strategy of functioning and development of the enterprise, organization and conditions responsible for the production and sale of individual parts, components, assemblies and equipment. Responsibility: responsible for defining strategy, process management

and activities (including innovation) businesses. The complexity of the analysis and development of solutions to improve the process, the development of new approaches, using a variety of methods.

Ways to achieve. Higher education, practical experience. Postgraduate education experience.

2. Requirements for the content of education

The aim of postgraduate education is to prepare, taking into account the prospects competitive development of highly qualified personnel with high spiritual and moral qualities, capable of independent thinking and providing a progressive science and technology, socio-economic and cultural development of society.

In the post-formation in content as determined according to the basic values SES RK:

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- 1) Kazakhstan patriotism and civic responsibility;
- 2) respect;
- 3) cooperation;
- 4) open.

Requirements to key competences of graduates of master's profile according to the SES must RK:

1) to have an idea:

- on current trends in the development of scientific knowledge;
- about actual methodological and philosophical problems of natural (social, humanitarian, economic) sciences;
- the contradictions and the socio-economic impacts of globalization;

2) to know:

- the methodology of scientific knowledge;
- the main driving forces of change in the economic structure;
- characteristics and rules of investment cooperation;
- at least one foreign language at a professional level, allowing to carry out scientific research and practical activities;

3) be able to:

- to apply scientific methods of knowledge in professional activity;
- is a critical analysis of existing concepts, theories and approaches to the study of processes and phenomena;
- to integrate the knowledge gained within the various disciplines, to use them for the solution of analytical and managerial tasks in new unfamiliar conditions;
- to conduct microeconomic analysis of economic activity of the enterprise and to use its results in the management of the enterprise;
- to put into practice new approaches to marketing and management organization;
- to make decisions in complex and non-standard situations in the field of organization and management of the economic activity of the enterprise (company);
- to put into practice the norms of legislation of the Republic of Kazakhstan in the field of regulation of economic relations;
- creative thinking and creative approach to solving new problems and situations;
- to carry out information and analytical and informational bibliographic work with attraction of modern information technologies;
- to generalize the results of experimental research and analysis in the form of a master's thesis, article, report, policy brief, etc.;

4) have the skills to:

- solutions of standard scientific and professional tasks;
- scientific analysis and solution of practical problems in the organization and management economic activities of organizations and enterprises;
- research in the field of management and marketing issues and use the results to improve business management practices;
- professional communication and cross-cultural communication;

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- oratory, the correct and logical registration of the thoughts orally and in writing;
- expansion and deepening of knowledge necessary for daily professional activities and continuing education in doctoral studies;

- the use of information and computer technologies in the sphere of professional activity;

5) be competent:

- in the field of research methodology in the specialty;
- in the field of contemporary problems of the world economy and participation of national economies into global economic processes;

- in organizing and managing the activities of the enterprise;

- in the implementation of industrial relations with various organizations, including the Civil Service bodies;

- in how to ensure continuous updating of knowledge and the expansion of professional skills and abilities.

Requirements to experimental and research work of a student:

Experimental research in profile master's degree should:

- 1) correspond to the basic problems of specialty, which is protected by master's thesis (Master's Project);

- 2) based on the latest achievements of science, technology and production, and contain specific practical recommendations, independent solutions of administrative problems;

- 3) performed with the use of advanced information technology;

- 4) contain experimental research (methodical, practical) sections of the main protective position.

to logistical requirements:

University that implements educational graduate programs should have the material and technical base (classroom fund, computer rooms, laboratories, instrumentation, stock materials), corresponding to the current sanitation rules and to ensure that all kinds of theoretical and practical training, provided by the curriculum and the effective implementation of scientific research and experimental and research work of a student.

to the training and methodological support requirements:

- 1) educational methods and information support of the educational process should guarantee the possibility of a qualitative development of graduate education graduate programs;

- 2) an educational program should provide free access to international information networks, electronic databases, library collections, computer technologies, educational and methodical and scientific literature;

- 3) the library fund and provision of educational literature on electronic and magnetic carriers must meet the requirements for licensing of educational activities.

the organization of practical requirements:

educational program graduate profile includes research practice - at the place of performance of the thesis.

Research practice undergraduates held to familiarize with the latest theoretical, methodological and technological achievements of domestic and foreign science, modern methods of scientific research, processing and interpretation of experimental data.

3. Passport of the educational program

Education Master's program is structured on the principle of modular training. Structure educational master program is formed of various kinds of academic and scientific work defining education content.

Education Master's program includes:

- 1) theoretical studies, including the study of basic and majors cycles;
- 2) practical training for undergraduates: a different kind of practice, professional training;
- 3) experimental research work, including implementation of the master's thesis - for profile magistracy;
- 4) the intermediate and the final certification.

Brief description of the program:

Objectives: The main purpose of the educational program is to train highly - qualified specialists in all spheres of the national economy of Kazakhstan and the public sector, including businesses and organizations large (corporate), medium and small businesses, which have a need for solving the resulting problem, storage, processing, analysis, presentation and transmitting information using modern information and communication technology. The educational program also aims to prepare teaching staff for higher education.

Types of work: According to the Classification of Occupations Tax Code of RK 01-2017, paragraph 133 graduates of this specialty may hold positions as managers (control) units of information and communication technologies and information as well as high school teachers. Graduate students who successfully complete the course can work in the following specialties:

- Project Manager;
- Head of the project portfolio;
- ICT auditor;
- Analyst response incidents of information security;
- Viral analyst;
- Auditor web vulnerabilities;

Objects of professional activity: The effectiveness of any organization today is determined by its information and communication processes. The objective of a student is involved in the creation, operation and development of the organization's information system, which will provide high efficiency of these processes.

The scope and content of the program: Duration of study in the magistracy determined by the volume of assimilated academic credit. During the development of a set volume of academic credits and achievement of the expected learning outcomes for the master's degree graduate education program is considered to be fully mastered.

Planning of educational content, method and organization of educational process is carried institution of higher education and scientific organization independently on the basis of credit technology.

Master's core area implements educational programs of postgraduate education in the training of managerial personnel with in-depth training.

Education Master's program includes:

- 1) The theoretical training including learning base (DB) and majors cycles (PD);
- 2) practical training for undergraduates: Research Practice;
- 3) research work undergraduates (NIRM), including implementation of the master's thesis;
- 4) the intermediate and the final certification (IA).

Working curriculum (RUE) should correspond competence and qualifications described in Section 1.5 and the volume and content described in Table 1.

The content of the educational program must correspond to the above-described goals and competences defined in relevant documents, NRC, ORK, GOSORK. [1-3] In accordance with SES RK educational program content determined standard curriculum (tuples) and working curriculum (RUP). model curriculum template presented in Appendix 1. The RUP is made for one academic year on the basis of tuples. RUP for the current school year with an academic load description is presented in Appendix 2. Description of disciplines of the educational program presented in Annex 3.

2. Requirements for applicants

BACKGROUND formation applicants - higher professional education (undergraduate). The applicant must have a diploma, a standard form and confirm the level of English language proficiency certificate or certificates of the established sample.

The order of reception of citizens in magistracy is established in accordance "Typical rules of admission to educational organizations that implement education programs of postgraduate education."

Formation of a contingent master's degree, is carried out by placing the state educational order for training in the profile, as well as tuition at their own expense of citizens and other sources. Citizens of the Republic of Kazakhstan State ensures the provision of the right to receive on a competitive basis in accordance with the state educational order free post-graduate education, if education at this level for the first time they get.

On the "input" master student must have all the prerequisites needed for the development of appropriate educational graduate programs. The list of necessary prerequisites determined by higher education institution independently.

In the absence of the necessary prerequisites undergraduates allowed them to learn on a fee basis.

3. Requirements for the completion of training and a diploma

Upon completion of training a graduate must meet the qualifications and expertise relevant to the NRC, JWC and SES RK described in section 1.

The final result of the experimental research work of a student is a master's thesis (Master's project). The main results of the master's thesis must be published graduate profile

graduate at least one publication in a scientific journal and / or materials of the scientific-practical (scientific-theoretical) conference.

Requirements for the content and design of the master's thesis (Master's project), their preparation and protection are determined by the university itself.

Master's thesis must always be checked for plagiarism, rules and procedures of which are determined by higher education institution independently.

awarded academic degree/ Qualifications: Graduates of this educational program is assigned an academic degree "Master of Engineering" in core area "Information Systems".

4. Working curriculum of the educational program

4.1. Duration of training 1.5 years

Education program: 7M06108-- «Management of information systems»

Form of study: daytime

Duration of training: 1.5 years

Academic degree: *Magister of Engineering and Technology*

year of study	Code	Name of course	Component	Credits		lecture/ laboratory/ practice/ IWS	Prerequisites	Code	Name of course	Component	Credits		lecture/ laboratory/ practice/ IWS	Prerequisites
				ECTS	ME						ECTS	ME		
1	1 semester							2 semester						
	LNG202	Foreign language (professional)	BD IC	6	2	0/0/3/3		Elective	BD CC	4				
	MNG274	Management	BD IC	6	3	2/0/1/3		Elective	PS CC	6				
	HUM204	Management psychology	BD IC	4		1/0/1/2		Elective	PS CC	6				
		Elective	PS CC	6	3			Elective	PS CC	6				
		Elective	BD CC	6	3			Elective	PS CC	6				
								Elective	PS CC	6				
								AAP 242	Master's student scientific research, including an internship and a master's thesis	MSSR	4			
		In total		28				In total		38				
2	3 semester							4 semester						
	AAP 246	Internship	PS	9										
	ECA 205	Registration and defense of the master's thesis (RaDMT)	FA	12										
	AAP 242	Master's student scientific research, including an internship and a master's thesis	MSSR	14										
		In total		35				In all		101				

ELECTIVE DISCIPLINE CATALOG

Educational program

Education program: 7M06108- «Management of information systems»

BD Choice component - 10 credits					
	Code	Name of disciplines	Credits	Lec/lab/prac/IWS	Semester
	CSE749	Methods and means of protection in Operating systems	6	1/1/1/3	1
	CSE272	Projectmanagementin IT	6	2/0/1/3	1
	SEC234	OLAP andDataWarehousing	4	1/0/1/3	2
	CSE219	Theory and practice of statistics	4	1/0/1/3	2
		Total	10		
PS CC Choice component - 36 credits					
	SEC210	Methods of cryptology and means of information protection	6	2/1/0/3	1
	CSE125	Managementof IS	6	2/0/1/3	1
	CSE714	Data Management in Information Systems	6	2/1/0/3	2
	SEC232	BusinessIntelligence	6	2/0/1/3	2
	SEC242	Geographic information systems	6	1/1/1/3	2
	SEC235	Statistical Methods in Applied Computer Science	6	2/1/0/3	3
	SEC246	Big Data and Data Analysis	6	2/1/0/3	3
	SEC243	Intellectual methods of data processing	6	1/0/2/3	3
	CSE746	MachineLearning&DeepLearning	6	2/0/1/3	3
		Total	36		

MODULAR CURRICULUM

Education program: 7M06108- «**Management of information systems**»

Form of study: daytime Duration of training: 1,5 years

*Academic degree: Magister of
Engineering and Technology*

Theycycle	code	Nameofdisciplines	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) (10 credits)										
IP management and artificial intelligence methods module										
BD	CSE749	Methods and means of protection in Operating systems	1	6	1	0	1	2	Exam	CIPaS
BD	CSE272	Project management in IT	1	6	1	1	1	3	Exam	SE
BD	SEC234	OLAP and Data Warehousing	2	4	1	0	1	2	Exam	CIPaS
BD	CSE219	Theory and practice of statistics	2	4	1	0	1	2	Exam	CIPaS
Majordisciplines (MD)										
Choice component (CC) (36 credits)										
Control and data processing module										
MD	SEC210	Methods of cryptology and means of information protection	1	6	2	1	0	3	Exam	CIPaS
MD	CSE125	Management of IS	1	6	2	1	0	3	Exam	CIPaS
MD	CSE714	Data Management in Information Systems	2	6	2	0	1	3	Exam	CIPaS
MD	SEC232	Business Intelligence	2	6	2	0	1	3	Exam	CIPaS
MD	SEC242	Geographic information systems	2	6	1	1	1	3	Exam	CIPaS
MD	SEC235	Statistical Methods in Applied Computer Science	2	6	2	1	0	3	Exam	CIPaS
MD	SEC246	Big Data and Data Analysis	2	6	2	1	0	3	Exam	CIPaS
MD	SEC243	Intellectual methods of data processing	2	6	1	0	2	3	Exam	CIPaS
MD	CSE746	Machine Learning & Deep Learning	2	6	2	0	1	3	Exam	SE
Practice-oriented module										
MD	AAP246	Internship	3	9					Report	
Research Module (24 credits)										



MSER W	AAP221	Experimental and research work of the undergraduate, including the performance of the master's thesis	2	4					Report	
MSER W	AAP220	Experimental and research work of the undergraduate, including the performance of the master's thesis	3	14					Report	
Module of final attestation (12 credits)										
FA	ECA206	Registration and defense of a master's project	3	12					Defense of dissertation	
Total			101							

5th descriptors and level of knowledge, skills and competences

The level of training a student are determined based on requirements Dublin descriptors second level higher education (Master) and reflect mastered competence expressed in progress of learning.

Learning outcomes are formulated at the level of the entire educational program of magistracy, and at the level of individual modules or academic discipline.

Descriptors reflect the learning outcomes that characterize the ability of the student:

1) Demonstrate developing knowledge and understanding in the study of information technology and systems, based on advanced knowledge of this area, the development and (or) the application of the ideas in the context of research;

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

3) the collection and interpretation of the information for forming judgments given social, ethical and scientific considerations;

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

5) learning skills necessary for independent continuation of further education in the field of information technologies and systems.

B - Basic knowledge and skills

B1 - The ability to understand relevant methodical, methodological and philosophical problems of the world and the professional domain;

B2 - The ability to communicate and search and exchange of information on the profile of activity in the global computer systems, networks, library funds and other sources of information in a foreign language. Skills design the official documentation on the different forms and types of international cooperation

P - Professional competence:

P1 - To understand the methodologies, models, methods, development tools and design of information systems.

P2 - building skills of information security in the IP. Skills assessment IC reliability.

P3 - understand the issues of project management in IT:

P4 - Skills development of scientific research. Skills system analysis and synthesis information systems. Skills systematization of scientific research. Skills in writing scientific papers.

P5 - Skills knowledge processing expert systems, the ability to use of methods of artificial intelligence. Skills of designing intelligent systems

P6 - be able to analyze data for management decision-making.

About - human, social and ethical competence

O1 honesty, truthfulness, openness;

O2 -Communicability;

O3 - creativity and activity.

C - Special and managerial competence:

C1 - Ability to manage a team, take responsibility in decision-making;

C2 - To increase your level of qualification and the educational level of the staff;

C3 - The ability to predict the evolution of the situation.

7. The Diploma by standard ECTS

The application is developed by the standards of the European Commission, the Council of Europe and UNESCO / CEPES. This document is only for academic recognition and is not an official confirmation of the education document. Without higher education diploma is not valid. The purpose of the European filling applications - providing sufficient data about the owner of the diploma obtained the qualification to them, the level of qualifications, the content of the training program, the results of the functional purpose of qualification, as well as information on the national education system. The application model, according to which the translation will be carried out evaluations using the European system of transfers credits (ECTS).

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

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8 Description of disciplines

English (professional)

CODE - LNG202

CREDIT - 6

GOAL AND OBJECTIVES OF THE COURSE

With this course you will learn the specific terminology, you can read specialized literature, obtain necessary knowledge for effective oral and written communication in a foreign language in their professional activities.

BRIEF DESCRIPTION OF THE COURSE

During the training, students are taught a foreign language, including the possession of specialized vocabulary necessary for effective oral and written communication in a foreign language in their professional activities. Practices and methods of development of language skills required in the learning process include: case method, role-plays, dialogues, discussions, presentations, job listening, working in pairs or in groups, performing various writing assignments, tasks and grammatical explanations.

Knowledge, skills, skills to complete the course

As a result of the development of the discipline a student to expand occupational lexical vocabulary, have the skills of effective communication in a professional environment, the ability to properly express thoughts in speech and writing, to understand the specific terminology and read the specialized literature.

Infrastructure Information Systems

CODE -CSE250

CREDIT -6

Prerequisite - no

GOAL AND OBJECTIVES OF THE COURSE

The purpose of discipline is the development of design skills and support of information systems infrastructure.

BRIEF DESCRIPTION OF THE COURSE

components of the infrastructure of information systems. Especially infrastructure development of information systems. infrastructure component: operators and developers of information systems. infrastructure components: hardware and communication equipment information systems. infrastructure components: hardware and software systems. Properties of information systems: scalability, interoperability. Improving information systems infrastructure.

Knowledge, skills, skills to complete the course

As a result of studying the discipline undergraduates receive professional competence in the design and support of information systems infrastructure.

Development of a database in an environment Microsoft SQL Server

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CODESEC241

CREDIT - 6

Prerequisite - no

GOAL AND OBJECTIVES OF THE COURSE

The purpose of discipline

The purpose of teaching is to study the development of methods, multi-user database administration encountered and used in the development of modern computer systems of information processing and management.

discipline tasks

Mastering the techniques and methodology of design and development of multi-user database in the development of computer systems for information processing and management.

BRIEF DESCRIPTION OF THE COURSE

Contents includes a client / server database technology, methods of creating multi-user database and its objects, query optimization, enterprise data storage and analysis technology, analytical model processing in the DBMS.

Knowledge, skills, skills to complete the course

As a result of the discipline you need to know:

- state and development trends of modern database;
- current models of representation and methods of data processing;
- methods of constructing multi-user database.

As a result of studying the discipline should be able to:

- design the information domain model;
- be able to use multi-user database management techniques;
- use modern database for database processing.

Information systems

CODE - CSE139

CREDIT - 6

Prerequisite - no

GOAL AND OBJECTIVES OF THE COURSE

The purpose of discipline "Design of Information Systems" is the development of terminology, standards, methodologies and techniques of designing enterprise information systems.

Objectives of the course - consolidation of practical skills acquired in previous courses for the design of enterprise information systems.

BRIEF DESCRIPTION OF THE COURSE

In the discipline of "Design of Information Systems" examines the theoretical and practical aspects of the use of standards, methodologies and techniques for designing information systems companies. The lecture course discusses the features of the architecture of enterprise information system, basic approaches and design standards ensure that all types of information systems, including mathematical, technical, software, information, organizational, legal, linguistic and ergonomic.

Knowledge, skills, skills to complete the course
undergraduate

must know:

- the basic concepts and terminology of the design of information systems;
- basic standards, methodology and design techniques;

should be able to:

- analyze existing enterprise management system and offer solutions for modernization based on modern information technologies.

Analysis, Modeling and information systems

CODE -CSE202

CREDIT - 6

Prerequisite - mathematics, probability theory and statistics

OBJECT AND PROBLEM OF THE COURSE The study of the principles and methods of modeling stochastic parameters and processes of complex systems and analyzing their functioning

BRIEF DESCRIPTION OF THE COURSE

Methods of generating random events, and one-dimensional vector of random variables used in the identification and analysis of information processes. Methods and algorithms for the simulation of stationary and non-stationary random processes in the design of information systems. Methods for modeling and analysis of ordinary and extraordinary flow of information in information systems.

Knowledge, skills, skills to complete the course

A master's degree as a result of the discipline is to:

- to acquire basic knowledge about the principles of constructing models of systems and processes of their functioning in the basic paradigms of simulation;
- know the typical classes of models and methods of modeling of complex systems, the unit of the Monte-Carlo, the principles of construction of models of processes of complex systems, and methods of algorithmic formalization;
- master tool environment simulation, analysis and design of information systems;
- acquire practical skills for organizing simulation experiments to evaluate the parameters of the system and determine the sensitivity, performance tabular and graphical visualization of results;
- have skills of development models of typical processes and systems for information processing and management.

Models and statistical methods

CODE - CSE212

CREDIT - 6

Prerequisite - MAT 102 Mathematics 3

GOAL AND OBJECTIVES OF THE COURSE

The purpose of discipline is the development of skills of application of models and methods of statistical research data for the design and maintenance of information systems.

BRIEF DESCRIPTION OF THE COURSE

Descriptive analysis of the data. Correlation and variance analysis. Methods for regression analysis, statistical, econometric models. Time series model. Cointegration of time series. Prediction and interpretation of results. Evaluation of the quality of statistical modeling. Complex application of methods and statistical data exploration models.

Knowledge, skills, skills to complete the course

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As a result of studying the discipline undergraduates receive professional competence in the application of models and methods of statistical data research for the design and maintenance of information systems.

Models and methods of decision-making in the IP

CODE -CSE211

CREDIT - 6

Prerequisite - no

GOAL AND OBJECTIVES OF THE COURSE

The purpose of discipline

The purpose of teaching is to study the basics of operations management and decision-making, as well as specific models and methods encountered in the development and use of modern computer information processing and control systems.

discipline tasks

The development of methods and operation management methodology in the design of computer systems for information processing and management.

BRIEF DESCRIPTION OF THE COURSE

Contents includes a mathematical operation control methods, methods for solving nonlinear unconstrained optimization methods for solving nonlinear constrained optimization problems, application of the methods and operation of the methodology in the design of computer systems for information processing and management.

Knowledge, skills, skills to complete the course

As a result of the discipline you need to know:

- to know the state of the subject, its methodology, practical importance, development prospects;

As a result of studying the discipline should be able to:

- be able to build a model of the system or its operation to be performed, set the task of research, apply mathematical methods and computational tools to produce the desired results, analyze these results;

- study have the skills of an operation as a whole, as well as pre quantitatively prove optimality solutions operation management tasks.

MANAGEMENT IN INFORMATION SYSTEMS

CODE - CSE125

CREDIT - 6

prerequisite -Infrastructure Information Systems

GOAL AND OBJECTIVES OF THE COURSE

The purpose of discipline "Management information systems" is the development of terminology, standards, methodologies and management information processes in enterprises.

Objectives of the course - the skills of research and modernization of enterprise information technology management systems.

BRIEF DESCRIPTION OF THE COURSE

In the discipline of "management information systems" deals with the theoretical and practical aspects of the use of information management technology in information systems. The lecture course discusses the features of the terminology infrastructure management systems and provides services, including incident management, problem management, configuration management, change management, release management. We consider such methodologies as ITIL / ITSM, CobIt, MOF, ISO / IEC 20000, Methodology of HP - ITSM Reference Model, model information processes ITPM.

Knowledge, skills, skills to complete the course
undergraduate

must know:

- the basic concepts and terminology of information management;
- basic standards, methodology and methods of management information processes of the enterprise;

should be able to:

- producing analysis of infrastructure and information processes enterprise management system and offer solutions for their optimization.

BIG DATA and data analysis

CODE - SEC246

CREDIT - 6

Prerequisite - Development of a database in an environment Microsoft SQL Server

GOAL AND OBJECTIVES OF THE COURSE

The purpose of discipline «BIG DATA» is the development of terminology, principles of organization and storage technology, transformation and processing of large data analysis, as well as the practical skills of using these technologies.

Objectives of the course - the skills of the use of large research data in information systems to solve practical problems.

BRIEF DESCRIPTION OF THE COURSE

In the discipline of «BIG DATA» The theoretical and practical aspects of using big data technologies in information systems. The lecture course discusses the features of the terminology, trends in the development of infrastructure solutions in Big Data, location data services in enterprise architecture, as well as questions of big data analytics, trends and prospects of development of this technology.

Knowledge, skills, skills to complete the course
undergraduate

must know:

- the basic concepts and terminology of big data;
- the basic principles of the use of large data enterprise architecture;
- the basic methods of analytical processing of large data;

should be able to:

- create programs for analytical processing of large data in the language of R;
- use Hadoop and MapReduce technology when working with large data.

OLAP and Data Warehousing

CODE – SEC234

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.

Data management information systems

CREDIT - 6

Prerequisite - management information systems

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GOAL AND OBJECTIVES OF THE COURSE

The study of data management principles and techniques in information systems, databases and data warehouses.

BRIEF DESCRIPTION OF THE COURSE

Data management principles and techniques in information systems. Transaction management. Ensuring the integrity of the data in the database. concurrency management transactions. The concept of the data warehouse (Data Warehouse). Architecture of data warehouses. Data mining (Data Mining).

Knowledge, skills, skills to complete the course

Expected results - knowledge of data management in information systems, databases and data warehouses.

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.

BREIF 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

1 Requirements to the level of training of students	3
2 Requirements for the content of education	6
3 passport educational program	9
4 Requirements for applicants	10
5 The requirements for completion of training and a diploma	11
6 Working curriculum	12
7 descriptors and level of knowledge, skills and competences	15
8 The Diploma by standard ECTS	16
9 Description of disciplines	17

