

BACHELOR'S PROGRAMME IN INFORMATION SYSTEMS AND TECHNOLOGIES

TRACK OF DEVELOPMENT, SUPPORT AND SECURITY OF INFORMATION TECHNOLOGIES

FUNDAMENTAL COMPONENT

History

<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> the culture of thinking, the ability to generalize, analyze and perceive information, to set a goal and choose ways to achieve it, the ability to speak and write logically, correctly and clearly the readiness to cooperate with colleagues, to work in a team, the knowledge of principles and methods of small groups management and organization the ability to apply learning, training and self-control methods and means for intellectual development, cultural enrichment, professional competence, health maintenance, moral and physical self-improvement 	<p><i>To understand:</i></p> <ul style="list-style-type: none"> basic methods of data collection and analysis, ways of formalizing the goals and methods of achieving it; specifics of teamwork, methods of organizing and managing small teams; methods and means of knowledge, learning and self-control for intellectual development, to raise the cultural level; significance of humanistic values for the preservation and development of modern civilization; 	<p>Lectures: 18 h Tutorial 4 h Solving problem sets 0 h Situational workshops 0 h Laboratory workshops 0 h Trainings 8 h Didactic games 8 h Individual work 34 h Examination/<u>test</u> 0 h Total hours 72 h Credits: 2 credits</p>	<p>Assessment: Didactic games - 16 points; Training– 20 points; Essay – 28 points; Test tasks – 18 points; Graded assessment – 18 points Total:100</p>
	<p><i>To be able:</i></p> <ul style="list-style-type: none"> to analyze, synthesize, and to receive the information; to establish a goal and formulate the task of achieving it; to competently and convincingly express own views, to debate; to communicate with colleagues; to acquire new knowledge for intellectual development, raise the cultural level; to comprehend happening in terms of the values of humanistic values for the preservation and development of modern civilization; 		
	<p><i>To obtain:</i></p> <ul style="list-style-type: none"> culture of thinking; 		

<ul style="list-style-type: none"> the awareness of the importance of humanistic values for modern civilization preservation and development, the willingness to bear moral responsibilities towards natural environment, society, people around and him/herself the knowledge of his/her rights and duties as a citizen, the ability to use the existing legislation and other legal documents in his/her activities, to demonstrate the readiness and desire to improve and develop the society on the principles of humanism, freedom and democracy 	<ul style="list-style-type: none"> skills of public speaking, argumentation and lead the discussion; methods of team work and cooperation; skills of independent acquisition of new knowledge and skills for intellectual development, to raise the cultural level; skills of understanding what is happening in terms of the values of humanistic values for the preservation and development of modern civilization. 																						
Philosophy																							
<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> the culture of thinking, the ability to generalize, analyze and perceive information, to set a goal and choose ways to 	<p>To understand:</p> <ul style="list-style-type: none"> specifics and importance of ethical and aesthetic values in human life; the role of philosophy in understanding and solving the urgent problems of modern civilization; main movements of philosophy; main problems of modern philosophy <p>To be able:</p> <ul style="list-style-type: none"> apply the main achievements of modern philosophy in own professional activities; 	<table border="0"> <tr><td>Lectures:</td><td>19 h</td></tr> <tr><td>Tutorial</td><td>13 h</td></tr> <tr><td>Solving problem sets</td><td>0 h</td></tr> <tr><td>Situational workshops</td><td>0 h</td></tr> <tr><td>Workshops</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>0 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>6 h</td></tr> <tr><td>Individual work</td><td>70 h</td></tr> <tr><td><u>Examination/test</u></td><td>36 h</td></tr> </table>	Lectures:	19 h	Tutorial	13 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	0 h	Trainings	0 h	Didactic games	6 h	Individual work	70 h	<u>Examination/test</u>	36 h	<p>Assessment:</p> <p>Didactic games - 20 points; Speech and discussion – 30 points; Abstract – 50 points; Total:100</p>
Lectures:	19 h																						
Tutorial	13 h																						
Solving problem sets	0 h																						
Situational workshops	0 h																						
Workshops	0 h																						
Laboratory workshops	0 h																						
Trainings	0 h																						
Didactic games	6 h																						
Individual work	70 h																						
<u>Examination/test</u>	36 h																						

<p>achieve it, the ability to speak and write logically, correctly and clearly</p> <ul style="list-style-type: none"> • the readiness to cooperate with colleagues, to work in a team, the knowledge of principles and methods of small groups management and organization • the understanding of social importance of his/her future profession, the ability to be highly motivated to perform his/her professional activities • the ability to analyze socially significant problems and processes, the ability to put into practice methods of humanitarian, environmental, social and economic sciences in various types of professional and social activities • the knowledge of his/her rights and duties as a citizen, the ability to use the existing legislation and other legal documents in his/her activities, to demonstrate the readiness and desire to improve and develop the society on the principles of humanism, freedom and democracy 	<ul style="list-style-type: none"> • systematically analyze, synthesize information, formulate own goals and find the ways to achieve them; use a variety of resources in the educational process • independently search for answers on the problems of philosophical knowledge. • substantively reproduce information on certain philosophical issues; • reconstruct the content of the basic theories and concepts of philosophy; <p>To obtain:</p> <ul style="list-style-type: none"> • skills of reasoning leading of the discussion in the field of the humanities; • skills of independent work with key sources of philosophy; • analytical skills and systematic approach to understanding the social, cultural, human existence. 	<p>Total hours Credits:</p>	<p>144 h credits</p>
--	---	---	--

Foreign language

A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:

- the culture of thinking, the ability to generalize, analyze and perceive information, to set a goal and choose ways to achieve it, the ability to speak and write logically, correctly and clearly
- the ability to analyze socially significant problems and processes, the ability to put into practice methods of humanitarian, environmental, social and economic sciences in various types of professional and social activities
- the ability to apply learning, training and self-control methods and means for intellectual development, cultural enrichment, professional competence, health maintenance, moral and physical self-improvement

To understand:

- models of professional communication on the basis of value orientations.
- aspects of the language, the rules of speech, nonverbal behavior, professional terms in English and Russian languages.
- methods and features of the analysis and synthesis of information, the major ways of expressing semantic, communicative and structural continuity between the parts of speech.
- common moral and legal norms of social interaction, the main cultural and historical realities, rules of etiquette.
- common the moral and legal norms of social interaction, the main cultural and historical realities, rules of etiquette.
- basic and supplementary vocabulary
- expressions and phraseological units learned within the course

To be able:

- to flexibly use tactics and strategies of conflict-free communication,
- to work with the cultural texts to recognize the realities of transliteration: place names, surnames, customs, etc.
- to flexibly use tactics and strategies of conflict-free communication.
- To critically evaluate the level of own qualifications and skills to choose the right way and self-development tools.
- To work in a team, to show respect to the

Lectures:	0 h
Tutorial	140 h
Solving problem sets	0 h
Situational workshops	0 h
Workshops	0 h
Laboratory workshops	0 h
Trainings	66 h
Didactic games	12 h
Individual work	70 h
<u>Examination/test</u>	36 h
Total hours	324 h
Credits:	9 credits

Assessment:

Didactic games - 90 points;
 Speech and discussion– 60 points;
 Essay – 45 points;
 Library research paperwork – 30 points;
 Presentations – 75 points
 Tests – 100 points;
Total:400

<ul style="list-style-type: none"> the ability to critically evaluate his/her own strengths and weaknesses, to outline ways and choose the means to develop the strengths and to address the weaknesses the awareness of the importance of humanistic values for modern civilization preservation and development, the willingness to bear moral responsibilities towards natural environment, society, people around and him/herself the ability to communicate in oral, written, and electronic forms in the state language, the knowledge of a foreign language is necessary too 	<p>people, the willingness to take responsibility for the maintenance of trust partnerships</p> <ul style="list-style-type: none"> To work in a team, to show respect to the people, the willingness to take responsibility for the maintenance of trust partnerships. To understand the native monologue and dialogue speech in direct communication and in record; to carry on a conversation on any of the topics studied. <p>To obtain:</p> <ul style="list-style-type: none"> terminology base on the studied subjects, integrative tolerance (tolerance of other people's way of life, customs): speech means, ability to avoid categorical judgments. speech means, ability to avoid categorical judgments ability to consistently use all available ways and means of self-development ability to analyze the situation in communication and focus on the interlocutors ability to analyze the situation in communication and focus on the interlocutors unrehearsed monolog speech as a message or report unrehearsed dialog (interview, conversation, discussion). 												
Life safety													
<p>A graduate who has mastered the bachelor's degree program must possess the following</p>	<p>To understand:</p> <ul style="list-style-type: none"> health and safety basics health and safety framework. ways to achieve sustainable development <p>To be able:</p>	<table border="0"> <tr> <td>Lectures:</td> <td>18 h</td> </tr> <tr> <td>Tutorial</td> <td>0 h</td> </tr> <tr> <td>Solving problem sets</td> <td>20 h</td> </tr> <tr> <td>Situational workshops</td> <td>0 h</td> </tr> <tr> <td>Workshops</td> <td>0 h</td> </tr> </table>	Lectures:	18 h	Tutorial	0 h	Solving problem sets	20 h	Situational workshops	0 h	Workshops	0 h	<p>Assessment:</p> <p>Test tasks - 40 points; Solving problem sets. – 60 points; Total:100</p>
Lectures:	18 h												
Tutorial	0 h												
Solving problem sets	20 h												
Situational workshops	0 h												
Workshops	0 h												

<p>general cultural skills:</p> <ul style="list-style-type: none"> the awareness of the importance of humanistic values for modern civilization preservation and development, the willingness to bear moral responsibilities towards natural environment, society, people around and him/herself the ability to use means of independent and methodologically correct techniques of physical education and health promotion, the readiness to achieve a proper level of physical fitness to ensure full-fledged social and professional activity <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to calculate how to provide safe living conditions 	<ul style="list-style-type: none"> To estimate safe living conditions To estimate safe living conditions To generally exercise an assessment of human impact on the environment, taking into account the specifics of the climatic conditions; <p>To obtain:</p> <ul style="list-style-type: none"> basic methods of protection of industrial workers and the public from the possible consequences of accidents, catastrophes and natural disasters. basic methods of protection of industrial workers and the public from the possible consequences of accidents, catastrophes and natural disasters. methods of selecting a rational way to reduce the impact on the environment. 	<p>Laboratory workshops 0 h Trainings 0 h Didactic games 0 h Individual work 34 h Examination/test 0 h Total hours 72 h Credits: 2 credits</p>	
--	---	--	--

<ul style="list-style-type: none"> the ability to use knowledge of the basic laws of the biosphere functioning and the principles of rational nature management to meet professional challenges 																											
Legal mechanisms in the field of information systems and technologies																											
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the broad general training (basic knowledge) for solving practical tasks in the field of information systems and technologies the ability to use the basic natural science in his/her professional activity, to apply methods of mathematical analysis and modeling, as well as theoretical and experimental research <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the</p>	<p>To understand:</p> <ul style="list-style-type: none"> the basics and methods of social, humanitarian and economic sciences in addressing social and professional problems; ability to analyze socially significant problems and processes. the most important industries and stages of development of humanitarian and socio-economic knowledge, basic scientific schools, directions, concepts, sources of human knowledge; modern Russian jurisprudence, basics of law enforcement practice <p>To be able:</p> <ul style="list-style-type: none"> to analyze received information; to organize and substantiate the knowledge gained in the study of this discipline. To analyze the current regulations and their practical application; To confident use of legal concepts and categories of state and legal phenomena; To apply the normative legal acts in the resolution of specific situations. To express own points of view; To engage in dialogue, business dispute; To disciplined approach <p>To obtain:</p>	<table border="0"> <tr> <td>Lectures:</td> <td style="text-align: right;">18 h</td> </tr> <tr> <td>Tutorial</td> <td style="text-align: right;">20 h</td> </tr> <tr> <td>Solving problem sets</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Situational workshops</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Workshops</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Trainings</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Didactic games</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Individual work</td> <td style="text-align: right;">70 h</td> </tr> <tr> <td>Examination/test</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Total hours</td> <td style="text-align: right;">108h</td> </tr> <tr> <td>Credits:</td> <td style="text-align: right;">3 credits</td> </tr> </table>	Lectures:	18 h	Tutorial	20 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	0 h	Trainings	0 h	Didactic games	0 h	Individual work	70 h	Examination/test	0 h	Total hours	108h	Credits:	3 credits	<p>Assessment:</p> <p>Speech and discussion - 40 points; Solving problem sets. – 60 points; Total:100</p>
Lectures:	18 h																										
Tutorial	20 h																										
Solving problem sets	0 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	0 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	70 h																										
Examination/test	0 h																										
Total hours	108h																										
Credits:	3 credits																										

<p>bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to certify the project according to the quality standards 	<ul style="list-style-type: none"> ability to synthesize, analyze and perceive information; skills of self-development and application of new knowledge. skills of rights application and execution of duties; methods of research in the professional field; ability to establish goals and choosing the ways to achieve them. 		
Economics			
<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> the ability to find organizational and managerial decisions in unusual situations and willingness to bear responsibility for them the ability to analyze socially significant problems and processes, the ability to put into practice methods of humanitarian, environmental, social and economic sciences in various types of professional and social activities the ability to critically 	<p>To understand:</p> <ul style="list-style-type: none"> fundamentals and techniques of economics and management, their reflection and enforcement in the Russian legislation; main categories of microeconomics and behavior patterns of households, firms and markets; main categories of macroeconomics, necessity and forms of state regulation of the national economy; main categories of the global economy, the basic mechanisms and forms of international economic cooperation. 	<p>Lectures: 18 h Tutorial 38 h Solving problem sets 0 h Situational workshops 0 h Workshops 0 h Laboratory workshops 0 h Trainings 0 h Didactic games 0 h Individual work 52 h Examination/test 0 h Total hours 108h Credits: 3 credits</p>	<p>Assessment: Solving problem sets- 50 points; Situational workshops – 30 points; Speeches – 10 points Library research paperwork -10 points Total:100</p>
	<p>To be able:</p> <ul style="list-style-type: none"> to analyze the information received; to individual study of lecture material, textbooks, manuals, scientific literature, periodicals, Internet resources; to identify patterns of behavior of economic agents on micro-, macro- and global market on the basis of a verbal description of the economic situation; 		

<p>evaluate his/her own strengths and weaknesses, to outline ways and choose the means to develop the strengths and to address the weaknesses</p>	<ul style="list-style-type: none"> to independently develop applied economic knowledge needed to work in specific areas <p>To obtain:</p> <ul style="list-style-type: none"> skills of analysis of the market competitive environment to determine the behavior of households, business and the state. skills to identify the scientific essence of microeconomic problems at the household level, business or market; 																										
Discrete mathematics																											
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the ability to use the basic natural science in his/her professional activity, to apply methods of mathematical analysis and modeling, as well as theoretical and experimental research <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to carry out 	<p>To understand:</p> <ul style="list-style-type: none"> mathematical basis of computer science. basics of basis mathematical knowledge <p>To be able:</p> <ul style="list-style-type: none"> to apply acquired theoretical knowledge in programming. use basic mathematical knowledge in computer science <p>To obtain:</p> <ul style="list-style-type: none"> mathematical tools of the discipline. skills and the basics of mathematical knowledge 	<table border="0"> <tr><td>Lectures:</td><td>18 h</td></tr> <tr><td>Tutorial</td><td>0 h</td></tr> <tr><td>Solving problem sets</td><td>38 h</td></tr> <tr><td>Situational workshops</td><td>0 h</td></tr> <tr><td>Workshops</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>0 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Individual work</td><td>88 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>144 h</td></tr> <tr><td>Credits:</td><td>4 credits</td></tr> </table>	Lectures:	18 h	Tutorial	0 h	Solving problem sets	38 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	0 h	Trainings	0 h	Didactic games	0 h	Individual work	88 h	Examination/test	0 h	Total hours	144 h	Credits:	4 credits	<p>Assessment: Solving problem sets- 100 points; Total:100</p>
Lectures:	18 h																										
Tutorial	0 h																										
Solving problem sets	38 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	0 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	88 h																										
Examination/test	0 h																										
Total hours	144 h																										
Credits:	4 credits																										

processes and systems simulation <ul style="list-style-type: none"> the ability to calculate the economic efficiency 																											
Computer science																											
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the broad general training (basic knowledge) for solving practical tasks in the field of information systems and technologies the understanding of essence and significance of information in modern information society development and the compliance with the basic requirements for information security, including state secrets protection the ability to use modern computer information retrieval technologies to solve the assigned task, to critically analyze this information, and to justify the ideas and approaches taken to solve this task 	<p>To understand:</p> <ul style="list-style-type: none"> the basic properties of information, its extent, forms, methods of encoding and conversion; methods of collection, refinement and storage of information; basics of computer architecture; concepts and properties of information technology and information systems; tasks of system and application software; the concepts of networking technology; characteristics and properties of the information society; role of information in developed information society; problems and means to ensure the safety and security of information resources; 	<table border="0"> <tr><td>Lectures:</td><td style="text-align: right;">20 h</td></tr> <tr><td>Tutorial</td><td style="text-align: right;">14 h</td></tr> <tr><td>Solving problem sets</td><td style="text-align: right;">12 h</td></tr> <tr><td>Situational workshops</td><td style="text-align: right;">0 h</td></tr> <tr><td>Workshops</td><td style="text-align: right;">0 h</td></tr> <tr><td>Laboratory workshops</td><td style="text-align: right;">20 h</td></tr> <tr><td>Trainings</td><td style="text-align: right;">0 h</td></tr> <tr><td>Didactic games</td><td style="text-align: right;">0 h</td></tr> <tr><td>Individual work</td><td style="text-align: right;">78 h</td></tr> <tr><td><u>Examination/test</u></td><td style="text-align: right;">36 h</td></tr> <tr><td>Total hours</td><td style="text-align: right;">180 h</td></tr> <tr><td>Credits:</td><td style="text-align: right;">5 credits</td></tr> </table>	Lectures:	20 h	Tutorial	14 h	Solving problem sets	12 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	20 h	Trainings	0 h	Didactic games	0 h	Individual work	78 h	<u>Examination/test</u>	36 h	Total hours	180 h	Credits:	5 credits	<p>Assessment:</p> <p>Solving problem sets- 30 points; Laboratory workshop – 30 points; Essay presentation – 20 points Tests -20 points Total:100</p>
Lectures:	20 h																										
Tutorial	14 h																										
Solving problem sets	12 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	20 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	78 h																										
<u>Examination/test</u>	36 h																										
Total hours	180 h																										
Credits:	5 credits																										
	<p>To be able:</p> <ul style="list-style-type: none"> to apply the abovementioned knowledge to solve specific problems; to assess the risks and threats to information security, including the protection of official secrets; 																										
	<p>To obtain:</p> <ul style="list-style-type: none"> application skills of general-purpose software to solve specific tasks. skills to hold an information security events. 																										

Mathematics

A graduate who has mastered the bachelor's degree program must possess the following general professional skills:

- the ability to use the basic natural science in his/her professional activity, to apply methods of mathematical analysis and modeling, as well as theoretical and experimental research

A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused

- the ability to carry out processes and systems simulation
- the ability to calculate how to provide safe living conditions
- the ability to calculate the economic efficiency

To understand:

- basic concepts and methods of mathematical analysis and linear algebra,
- basic concepts and methods of the theory of differential equations
- basic concepts and algorithms of standard numerical methods for solving mathematical problems.

To be able:

- apply mathematical methods in solving professional problems of high complexity
- solve general tasks of the main sections of the course, using the methods of mathematical analysis.

To obtain:

- methods of development of a mathematical model of professional tasks.
- methods of meaningful interpretation of the results

Lectures:	38 h
Tutorial	0 h
Solving problem sets	38 h
Situational workshops	0 h
Workshops	0 h
Laboratory workshops	0 h
Trainings	0 h
Didactic games	0 h
Individual work	68 h
<u>Examination/test</u>	36 h
Total hours	180 h
Credits:	5 credits

Assessment:

Solving problem sets- 40 points;
Graded assessment – 60 points;

Total:100

Technology of programming

A graduate who has mastered the bachelor's degree program must possess the following general professional skills:

- the ability to use the basic natural science in his/her professional activity, to apply methods of mathematical analysis and modeling, as well as theoretical and experimental research
- the understanding of essence and significance of information in modern information society development and the compliance with the basic requirements for information security, including state secrets protection
- the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task

A graduate who has mastered the bachelor's degree program must possess the professional

To understand:

- basic algorithm types and their usage to solve computational, business and other kinds of applied problems; basic data structures, methods of their presentation and processing;
- programming environment in the algorithmic language C; principles of programme development;
- software development potential; basic guidelines and demands of software design; possibilities, advantages and disadvantages of different programming systems applied when solving economic problems in automated economic information handling systems;
- graphic methods of algorithm description;
- basic ways of algorithm construction and programming in C language;
- principles of autonomous and integral adjustment and testing of simple programmes;
- technological process of problem preparation and solution on PC;

To be able:

- to choose and give proof of the choice of project solutions on types of information systems support;
- to develop algorithms of data processing Solving problem sets;
- to programme data processing problems; to work out a programme testing project;
- to test and adjust programmes;

To obtain:

Lectures:	18 h
Tutorial	0 h
Solving problem sets	20 h
Situational workshops	0 h
Workshops	0 h
Laboratory workshops	20 h
Trainings	0 h
Didactic games	0 h
Individual work	50 h
<u>Examination/test</u>	36 h
Total hours	144 h
Credits:	4 credits

Assessment:

Solving problem sets- 40 points;
Laboratory workshop – 60 points;
Total:100

<p>skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to carry out technical designing • the ability to develop, coordinate and produce all types of project documentation • the ability to compile operation instructions for information systems 	<ul style="list-style-type: none"> • up-to-date operating systems. • forecasting of information systems and technologies development; • elaboration of new methods and means of information systems engineering. • information and communication technologies. 		
Content management of organization			
<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> • the readiness to cooperate with colleagues, to work in a team, the knowledge of principles and methods of small groups management and organization • the ability to communicate in oral, written, and electronic forms in the state language, the knowledge of a foreign language is necessary too 	<p>To understand:</p> <ul style="list-style-type: none"> • basic types of algorithms and their application to solve computational problems; up-to-date technologies of document flow and content management, • guidelines of electronic document flow organization, • document flow standards, • documents' functions in management, • possibilities of creating and processing documents with modern toolboxes, • possibilities of storing information and searching documents with modern toolboxes, 	<p>Lectures: 18 h Tutorial 0 h Solving problem sets 0 h Situational workshops 0 h Workshops 0 h Laboratory workshops 38 h Trainings 0 h Didactic games 0 h Individual work 52 h Examination/test 0 h Total hours 108 h Credits: 3 credits</p>	<p>Assessment: Laboratory workshop – 70 points; Essay - 12 points; Library research paperwork -18 points; Total:100</p>
	<p>To be able:</p> <ul style="list-style-type: none"> • to define tasks of document flow automation, • to provide evidence for the necessity of automated document flow at an institution, 		

<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p>	<ul style="list-style-type: none"> • to apply means of information security in content management, • to define electronic filing structure; • to define composition of documents' formats and patterns. 		
<ul style="list-style-type: none"> • the understanding of essence and significance of information in modern information society development and the compliance with the basic requirements for information security, including state secrets protection • the ability to use modern computer information retrieval technologies to solve the assigned task, to critically analyze this information, and to justify the ideas and approaches taken to solve this task 	<p>To obtain:</p> <ul style="list-style-type: none"> • skills of building up document flow schemes, • skills of describing enterprise's business processes, • skills of creating document paths, skills of creating electronic documents in accordance with the national standards, • skills of creating safe document flow, skills of using PC in order to create and process documents, • skills of creating electronic filing. 		
<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to arrange the received results as 			

<p>presentations, scientific and technical reports, articles and lectures at scientific and technical conferences</p>																											
Algebra and Theory of Number																											
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the ability to use the basic natural science in his/her professional activity, to apply methods of mathematical analysis and modeling, as well as theoretical and experimental research <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to carry out processes and systems simulation the ability to develop means of implementing information technologies 	<p>To understand:</p> <ul style="list-style-type: none"> mathematical basis of computer science; basics of fundamental mathematical knowledge; <p>To be able:</p> <ul style="list-style-type: none"> to apply acquired theoretical knowledge in the study of professional disciplines of the course; to use basic mathematical knowledge in computer science; <p>To obtain:</p> <ul style="list-style-type: none"> mathematical tools of the discipline; skills to apply the basic rules of linear algebra and theory of numbers in the professional activity. 	<table border="0"> <tr> <td>Lectures:</td> <td style="text-align: right;">38 h</td> </tr> <tr> <td>Tutorial</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Solving problem sets</td> <td style="text-align: right;">38 h</td> </tr> <tr> <td>Situational workshops</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Workshops</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Trainings</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Didactic games</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Individual work</td> <td style="text-align: right;">104 h</td> </tr> <tr> <td>Examination/test</td> <td style="text-align: right;">36 h</td> </tr> <tr> <td>Total hours</td> <td style="text-align: right;">216 h</td> </tr> <tr> <td>Credits:</td> <td style="text-align: right;">6 credits</td> </tr> </table>	Lectures:	38 h	Tutorial	0 h	Solving problem sets	38 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	0 h	Trainings	0 h	Didactic games	0 h	Individual work	104 h	Examination/test	36 h	Total hours	216 h	Credits:	6 credits	<p>Assessment: Solving problem sets- 100 points; Total:100</p>
Lectures:	38 h																										
Tutorial	0 h																										
Solving problem sets	38 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	0 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	104 h																										
Examination/test	36 h																										
Total hours	216 h																										
Credits:	6 credits																										

(methodical, information, mathematical, algorithmic, technical and software)			
Theory of probability and mathematical statistics			
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the ability to use the basic natural science in his/her professional activity, to apply methods of mathematical analysis and modeling, as well as theoretical and experimental research <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to carry out processes and systems simulation the ability to calculate the economic efficiency 	<p>To understand:</p> <ul style="list-style-type: none"> basic concepts and methods of the probability theory and mathematical statistics. 	<p>Lectures: 38 h Tutorial 0 h Solving problem sets 38 h Situational workshops 0 h Workshops 0 h Laboratory workshops 0 h Trainings 0 h Didactic games 0 h Individual work 68 h <u>Examination</u>/test 36 h Total hours 180 h Credits: 5 credits</p>	<p>Assessment: Solving problem sets- 100 points Total:100;</p>
	<p>To be able:</p> <ul style="list-style-type: none"> to use mathematical methods in technical applications; to build probability models for specific processes; to make necessary calculations within the framework of the created model. <p>To obtain:</p> <ul style="list-style-type: none"> probability theory methods. methods of analytical and numerical solution of probabilistic and statistical problems, skills of applying basic ways of experimental data processing. 		
Information and analytical systems			

<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the ability to use the basic natural science in his/her professional activity, to apply methods of mathematical analysis and modeling, as well as theoretical and experimental research the ability to use modern computer information retrieval technologies to solve the assigned task, to critically analyze this information, and to justify the ideas and approaches taken to solve this task <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to collect and analyze scientific and technical information, domestic and foreign 	<p>To understand:</p> <ul style="list-style-type: none"> basic methods and technologies of analysis of economic and managed information: OLAP-technologies and Data Mining technologies; elements and structure of information environment of an enterprise; general structure and working principles of information and analytical system; <p>To be able:</p> <ul style="list-style-type: none"> to choose and use the necessary methods and programme means of analysis and preparation of information for decision support; to understand the composition of the data necessary for analysis; to make reports in the course of OLAP-analysis; <p>To obtain:</p> <ul style="list-style-type: none"> skills of analyzing information with tools of mass usage (Excel, Mathcad and others); skills of getting the necessary information to carry out OLAP-analysis; skills of creating different types of reports, data visualization; OLAP-analysis skills, forecasting skills. 	<table> <tr> <td>Lectures:</td> <td>19 h</td> </tr> <tr> <td>Tutorial</td> <td>0 h</td> </tr> <tr> <td>Solving problem sets</td> <td>0 h</td> </tr> <tr> <td>Situational workshops</td> <td>0 h</td> </tr> <tr> <td>Workshops</td> <td>0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td>19 h</td> </tr> <tr> <td>Trainings</td> <td>0 h</td> </tr> <tr> <td>Didactic games</td> <td>0 h</td> </tr> <tr> <td>Individual work</td> <td>70 h</td> </tr> <tr> <td>Examination/test</td> <td>0 h</td> </tr> <tr> <td>Total hours</td> <td>108 h</td> </tr> <tr> <td>Credits:</td> <td>3 credits</td> </tr> </table>	Lectures:	19 h	Tutorial	0 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	19 h	Trainings	0 h	Didactic games	0 h	Individual work	70 h	Examination/test	0 h	Total hours	108 h	Credits:	3 credits	<p>Assessment:</p> <p>Laboratory workshop - 80 points; Essay – 12 points Library research paperwork -8 points; Total:100</p>
Lectures:	19 h																										
Tutorial	0 h																										
Solving problem sets	0 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	19 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	70 h																										
Examination/test	0 h																										
Total hours	108 h																										
Credits:	3 credits																										

<p>experience on the subject of research</p> <ul style="list-style-type: none"> the ability to use mathematical methods of processing, analyzing and synthesizing the professional research results 			
Theory of Information Processes and Systems			
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the broad general training (basic knowledge) for solving practical tasks in the field of information systems and technologies <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to conduct a pre-project survey of the design object, a system analysis of the subject area and their interrelationships 	<p>To understand:</p> <ul style="list-style-type: none"> possibilities and standards of functional modelling of information systems basic concepts and definitions of functional modelling of information systems basic types of formal structures principles of composing mathematical model of decision making purpose and properties of network model of planning and management 	<p>Lectures: 38 h Tutorial 0 h Solving problem sets 0 h Situational workshops 0 h Workshops 0 h Laboratory workshops 38 h Trainings 0 h Didactic games 0 h Individual work 68 h Examination/test 0 h Total hours 144 h</p>	<p>Assessment: Laboratory workshop - 91 points; Essay – 9 points Total:100</p>
	<p>To be able:</p> <ul style="list-style-type: none"> to build up decision making models; to determine general properties and indexes; to decompose system; to apply approach based on decomposition of goals; to build aim tree; to build up modelling algorithms; to apply special means of defining properties of planning and management network model. 	<p>Total hours 144 h Credits: 4 credits</p>	
	<p>To obtain:</p> <ul style="list-style-type: none"> skills of appliance of quantitative models of decision making under risk and uncertainty; skills of description of behavior and 		

<ul style="list-style-type: none"> the ability to carry out technical designing the ability to select source data for designing 	<p>formalized presentation of system status;</p> <ul style="list-style-type: none"> skills of forming mathematical models based on generally applied standards; skills of mathematical description of processes using graph and analytical models; skills of collecting and processing review results; skills of presentation and documenting the results of synthesis and decomposition of information systems. 																										
Architecture of Information systems																											
<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to carry out technical designing the ability to carry out detailed designing the ability to select source data for designing the ability to carry out processes and systems simulation the ability to calculate the economic efficiency 	<p>To understand:</p> <ul style="list-style-type: none"> Basic general methods and laws of creating and implementing of information technology schemes; basic data models and their structure; application environment model as a total of interacting objects; method of calculation of economic effectiveness of the inserted project; physical projecting and programming; reference functional characteristics of information systems. 	<table> <tr><td>Lectures:</td><td>38 h</td></tr> <tr><td>Tutorial</td><td>0 h</td></tr> <tr><td>Solving problem sets</td><td>0 h</td></tr> <tr><td>Situational workshops</td><td>0 h</td></tr> <tr><td>Workshops</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>38 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Individual work</td><td>68 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>144 h</td></tr> <tr><td>Credits:</td><td>4 credits</td></tr> </table>	Lectures:	38 h	Tutorial	0 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Individual work	68 h	Examination/test	0 h	Total hours	144 h	Credits:	4 credits	<p>Assessment:</p> <p>Laboratory workshop - 80 points; Essay – 10 points; Test - 10 points; Total:100</p>
Lectures:	38 h																										
Tutorial	0 h																										
Solving problem sets	0 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	38 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	68 h																										
Examination/test	0 h																										
Total hours	144 h																										
Credits:	4 credits																										
<p>To be able:</p> <ul style="list-style-type: none"> to apply methods and means of information systems engineering; to use notions describing different aspects of data; to jointly model data and their processing; to evaluate efficiency of information and functional processes; to work out and adjust programmes, to fill in 																											

	<p>data base;</p> <p>To obtain:</p> <ul style="list-style-type: none"> • basic methods, means and technologies of creating technical documents for information system; • methods of detecting cores and attributes of application environment; • object decomposition skills, skills of dividing systems into interacting objects and elements; • methods and skills of evaluating parameters and cost of automation of information processes; • skills of composing work manuals for staff, skills of working draft documents handling. • methods of evaluation of information system correspondence to quality criteria. 																										
Data management																											
<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to conduct a pre-project survey of the design object, a system analysis of the subject area and their interrelationships • the ability to select source data for designing 	<p>To understand:</p> <ul style="list-style-type: none"> • basic concepts of documents handling and creating SUBD data bases schemes; • means and methods of analysis and description of the application environment; • basic principles of building up data bases, data banks and data base management systems; • types of data bases, data banks and data base management systems; • methods of calculation of economic effectiveness of implemented project. <p>To be able:</p> <ul style="list-style-type: none"> • to make scripts for creating data bases and data base diagrams; • to create logical model of data base of application environment; 	<table border="0"> <tr><td>Lectures:</td><td>38 h</td></tr> <tr><td>Tutorial</td><td>0 h</td></tr> <tr><td>Solving problem sets</td><td>0 h</td></tr> <tr><td>Situational workshops</td><td>0 h</td></tr> <tr><td>Workshops</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>57 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Individual work</td><td>86 h</td></tr> <tr><td>Examination/test</td><td>36 h</td></tr> <tr><td>Total hours</td><td>216 h</td></tr> <tr><td>Credits:</td><td>6 credits</td></tr> </table>	Lectures:	38 h	Tutorial	0 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	57 h	Trainings	0 h	Didactic games	0 h	Individual work	86 h	Examination/test	36 h	Total hours	216 h	Credits:	6 credits	<p>Assessment:</p> <p>Laboratory workshop - 70 points; Essay – 10 points Test - 20 points; Total:100</p>
Lectures:	38 h																										
Tutorial	0 h																										
Solving problem sets	0 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	57 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	86 h																										
Examination/test	36 h																										
Total hours	216 h																										
Credits:	6 credits																										

<ul style="list-style-type: none"> the ability to develop means of implementing information technologies (methodical, information, mathematical, algorithmic, technical and software) the willingness to participate in setting and conduct of experimental research the ability to justify the accuracy of the chosen model, by comparing the experimental data results and the solutions obtained 	<ul style="list-style-type: none"> to work our various information structures by means of up-to-date SUBD; to use notions and concepts describing aspects of data base theory; to evaluate effectiveness of information and functional processes. <p>To obtain:</p> <ul style="list-style-type: none"> technology of creating data bases scripts in different SUBD; SUBD tools to be able to create logical models of data base; making SQL – inquiries over data selection and handling. methods of detecting cores and attributes of application environment; methods and techniques of evaluation of parameters and cost of information processes automation. 																										
Calculation hardware																											
<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to evaluate reliability and performance of the design object the ability to use 	<p>To understand:</p> <ul style="list-style-type: none"> unfavourable factors leading to components' failure and ways of undercutting this influence; operating principles of uninterruptible power supply systems; power saving technologies of appliance of IT equipment; basic concepts, principles, laws and methods of storage, processing and release of information by IT equipment; purpose, components, operating principles and technical characteristics of components and remote facilities; 	<table border="0"> <tr><td>Lectures:</td><td>38 h</td></tr> <tr><td>Tutorial</td><td>0 h</td></tr> <tr><td>Solving problem sets</td><td>0 h</td></tr> <tr><td>Situational workshops</td><td>0 h</td></tr> <tr><td>Workshops</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>38 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Individual work</td><td>68 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>144 h</td></tr> <tr><td>Credits:</td><td>4 credits</td></tr> </table>	Lectures:	38 h	Tutorial	0 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Individual work	68 h	Examination/test	0 h	Total hours	144 h	Credits:	4 credits	<p>Assessment:</p> <p>Laboratory workshop - 90 points; Essay – 5 points Library research paperwork - 5 points; Total:100</p>
Lectures:	38 h																										
Tutorial	0 h																										
Solving problem sets	0 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	38 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	68 h																										
Examination/test	0 h																										
Total hours	144 h																										
Credits:	4 credits																										

<p>knowledge of the basic laws of the biosphere functioning and the principles of rational nature management to meet professional challenges</p> <ul style="list-style-type: none"> the ability to build an information system from off-the-shelf components the ability to apply the basic techniques and methods of establishment documentation and drawings and their reading with the use of hardware and software components of information systems the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task 	<ul style="list-style-type: none"> interface of IT equipment. <p>To be able:</p> <ul style="list-style-type: none"> to form a set of technical devices capable of meeting requirements of energy saving, safety, usability, serviceability and other criteria; to detect compatibility of hardware and software; to deal with technical documentation on components and remote facilities. <p>To obtain:</p> <ul style="list-style-type: none"> skills of selection, installation and exploitation of equipment according to client's requirements and safety, usability, serviceability and other criteria. skills of selection, installation and exploitation of components and remote facilities skills of assembling PC from components, substitution of PC components; skills of setting the best possible hardware configuration in conformity with the problem. 		
Information Security and Data Protection			
<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> the knowledge of his/her rights and duties as a citizen, 	<p>To understand:</p> <ul style="list-style-type: none"> basic legal concepts and acts of the Russian Federation in information protection area; legal rules and licensing standards in protection of commercial and state secrets and certification of information protection means; guideline documents on evaluation of computing systems protection; 	<p>Lectures: 38 h Tutorial 0 h Solving problem sets 0 h Situational workshops 0 h Workshops 0 h Laboratory workshops 57 h Trainings 0 h Didactic games 0 h</p>	<p>Assessment: Laboratory workshop - 80 points; Library research paperwork - 20 points; Total:100</p>

<p>the ability to use the existing legislation and other legal documents in his/her activities, to demonstrate the readiness and desire to improve and develop the society on the principles of humanism, freedom and democracy</p> <p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the understanding of essence and significance of information in modern information society development and the compliance with the basic requirements for information security, including state secrets protection the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task 	<ul style="list-style-type: none"> basic governing documents providing secrecy order (confidentiality) at an enterprise; basic terms and concepts of information security courses of providing information security; actions which may lead to illegal seizing of information; types of secrets as objects of protection; components and levels of information security system information protection procedure; main dispositions of information security politics; main requirements to information protection system; classification of means that provide information security and protection; correlation of threats and adequate means of providing information security and protection; physical channels of information leakage and corresponding ways of protection; methods of analysis of effectiveness of information security and protection systems; information protection, up-to-date problems and terms; basic organizational and administrative measures to guarantee information protection model security service structure, its main aims and functions of its officials. 	<p>Individual work 86 h</p> <p>Examination/test 36 h</p> <p>Total hours 216 h</p> <p>Credits: 6 credits</p>	
<p>A graduate who has mastered the bachelor's degree program must possess the professional</p>	<p>To be able:</p> <ul style="list-style-type: none"> to apply legal documents on information security and protection when defining the category of access to information as well as for its 		

<p>skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to ensure security and integrity of these information systems and technologies 	<p>protection;</p> <ul style="list-style-type: none"> to detect vulnerability of an enterprise's information assets; to evaluate the status of information protection; to define the value of each asset; to form requirements to employees' providing information protection; to calculate the amount of losses due to the implementation of threats to information security; to calculate amount of one-time and constant resources directed to information protection; to evaluate expenses on modernization of information security system and pay-off period; to detect groups and content of threats to assets, to organize expertise on correlation, level of threats, vulnerability and actives value. <p>To obtain:</p> <ul style="list-style-type: none"> skills of selection and ranging of an enterprise's actives; skills of working out politics of information security; skills of calculating economical effectiveness of measures directed to modernize information security system; skills of analysis of implementation of information security goals; skills of assessment of threats to assets and evaluation of risks to information security. 		
Infocommunication systems and networks			
<p>A graduate who has mastered</p>	<p>To understand:</p> <ul style="list-style-type: none"> performance of info-communication networks 	<p>Lectures: 38 h Tutorial 0 h</p>	<p>Assessment: Laboratory workshop - 80 points;</p>

<p>the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to evaluate reliability and performance of the design object • the ability to maintain the operability of information systems and technologies due to specified functional characteristics and in compliance with quality criteria • the ability to ensure security and integrity of these information systems and technologies • the ability to build an information system from off-the-shelf components 	<ul style="list-style-type: none"> • criteria of info-communication networks quality of service • indicators of reliability of info-communication networks • indicator of effectiveness of info-communication networks; • classification of the info-communication networks • topology info-communication networks • technical arrangement and spheres of application of info-communication networks of different types and configurations; • information resources of infocommunication networks • infocommunication networks software and hardware • OSI model • IEEE 802 model • Protocols of infocommunication networks • network services infocommunication networks • functional profiles • principles of distributed data processing and distributed computing • software and hardware security tools of info-communication networks 	<table> <tr><td>Solving problem sets</td><td>0 h</td></tr> <tr><td>Situational workshops</td><td>0 h</td></tr> <tr><td>Workshops</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>57 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Individual work</td><td>49 h</td></tr> <tr><td><u>Examination/test</u></td><td>36 h</td></tr> <tr><td>Total hours</td><td>180 h</td></tr> <tr><td>Credits:</td><td>5 credits</td></tr> </table>	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	57 h	Trainings	0 h	Didactic games	0 h	Individual work	49 h	<u>Examination/test</u>	36 h	Total hours	180 h	Credits:	5 credits	<p>Library research paperwork - 10 points; Essay – 10 points; Total:100</p>
Solving problem sets	0 h																						
Situational workshops	0 h																						
Workshops	0 h																						
Laboratory workshops	57 h																						
Trainings	0 h																						
Didactic games	0 h																						
Individual work	49 h																						
<u>Examination/test</u>	36 h																						
Total hours	180 h																						
Credits:	5 credits																						
	<p>To be able:</p> <ul style="list-style-type: none"> • to collect information on the configuration of network hardware and software and used resources • to obtain information on network resources engaged by other users; • to determine the list and specifications of communication equipment to establish a local area 																						

	<p>network (LAN) based on the established task;</p> <ul style="list-style-type: none"> • to determine the list and specifications of servers, workstations and peripheral equipment to create a local area network (LAN); • to determine the type, physical channel, access method, architecture and other parameters of the LAN on the basis of the established task; • to configure an operating system to work in a LAN • to configure the operating system to work on the Internet • to manage user accounts; • to manage user access policies to information resources • to remotely control a PC • to configure blocking of inbound / outbound connections • to customize the blocking of applications launch; <p>assess the level of PC security on a network</p>		
	<p>To obtain:</p> <ul style="list-style-type: none"> • skills of performance analysis of a PC working in a network • skills to identify "bottlenecks" in data processing by a PC operating on the network • skills of topology development of local area network • skills to define the class, the type and the main technical elements by the provided topology of local area network • skills of network administration • skills of network performance monitoring • skills to analyze network traffic 		

	<ul style="list-style-type: none"> skills of operating system configuration for safe operation of the network 		
Methods and instruments of information systems and technologies design			
<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to conduct a pre-project survey of the design object, a system analysis of the subject area and their interrelationships the ability to carry out technical designing the ability to certify the project according to the quality standards the ability to design basic and applied information technologies the willingness to participate in setting and conduct of experimental research 	<p>To understand:</p> <ul style="list-style-type: none"> means and methods of analysis; main systemic design solutions; physical design and programming; basic data model and its organization; domain model as a complex of interacting objects; the concept of system reliability; basic quality standards; methodic of calculation of economic efficiency of the project being implemented; main features of subsystems provided by different vendors; ready IS components available on the software market; features of design object domain 	<p>Lectures: 38 h Tutorial 0 h Solving problem sets 0 h Situational workshops 0 h Workshops 0 h Laboratory workshops 76 h Trainings 0 h Didactic games 0 h Individual work 66 h <u>Examination/test</u> 36 h Total hours 216 h Credits: 6 credits</p>	<p>Assessment: Laboratory workshop - 60 points; Essay – 40 points; Course project – 100 points Total:100</p>
	<p>To be able:</p> <ul style="list-style-type: none"> analyze and describe the information and functional processes of the subject area; establish objectives of created IS and define the its performed functions; develop and customize programs, to fill databases; use the conceptual apparatus describing the various aspects of the data; jointly model data and processes of their processing; analyze the reliability and quality of the implementation of the system created; 		

	<ul style="list-style-type: none"> • hold the project certification; • assess the effectiveness of organized informational and functional processes; • choose ready components to assemble functional processes of the subject area; • adapt applications to changing operating conditions. 		
	<p>To obtain:</p> <ul style="list-style-type: none"> • choice of the type, method, development technology and application of domain models. • update and change of the organizational structure. • issue of work instructions to personnel, documentation drafting of project documentation. • methodology for the identification of subject-matter and attributes of the domain. • object decomposition, splitting the system into interacting objects and components. • choice of methodology for assessing the reliability and the performance of the design object • methodic of quality evaluation of the project • methodology and technology of valuation and parametric assessment of automating options of information processes. • procedure of IS implementation to pilot or commercial operation; • methodic of price / quality choice of components. • methodic of IS support and modernization. 		
Big Data Technologies			
A graduate who has mastered	To understand:	Lectures: 38 h	Assessment:

<p>the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> the ability to apply learning, training and self-control methods and means for intellectual development, cultural enrichment, professional competence, health maintenance, moral and physical self-improvement <p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the broad general training (basic knowledge) for solving practical tasks in the field of information systems and technologies the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task <p>A graduate who has mastered the bachelor's degree program must possess the professional</p>	<ul style="list-style-type: none"> Big Data application fields; sources and features of types of processing of different types of information; main problems in processing large amounts of information, which is resource-consuming to process and to store using conventional methods; basic concepts Big Data; concepts, types and specifics of Big Data processing; infrastructure for Big Data, its current state, practices and perspectives. <p>To be able:</p> <ul style="list-style-type: none"> to establish task of processing information; to offer methods for the processing of information of different types in solving practical problems in the field of information systems and technologies; to use the integrated platform to store and analyze Big Data; to propose a new approach and advanced tools for processing Bigdata <p>To obtain:</p> <ul style="list-style-type: none"> analytical skills and systematic approach to understanding contemporary problems concerning processing of Big Data; different ways of processing of all kinds of information; different methods of searching and processing of information of various kinds with the use of modern computer technology in accordance with the ideas and approaches to resolving the problem. 	<table> <tr><td>Tutorial</td><td>0 h</td></tr> <tr><td>Solving problem sets</td><td>0 h</td></tr> <tr><td>Situational workshops</td><td>0 h</td></tr> <tr><td>Workshops</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>57 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Individual work</td><td>49 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>144 h</td></tr> <tr><td>Credits:</td><td>4 credits</td></tr> </table>	Tutorial	0 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	57 h	Trainings	0 h	Didactic games	0 h	Individual work	49 h	Examination/test	0 h	Total hours	144 h	Credits:	4 credits	<p>Laboratory workshop - 50 points; Library research paperwork – 50 points; Total:100</p>
Tutorial	0 h																								
Solving problem sets	0 h																								
Situational workshops	0 h																								
Workshops	0 h																								
Laboratory workshops	57 h																								
Trainings	0 h																								
Didactic games	0 h																								
Individual work	49 h																								
Examination/test	0 h																								
Total hours	144 h																								
Credits:	4 credits																								

<p>skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to use mathematical methods of processing, analyzing and synthesizing the professional research results • the ability to adapt applications to changing operational modalities 			
Intelligent systems tools			
<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> • the ability to communicate in oral, written, and electronic forms in the state language, the knowledge of a foreign language is necessary too <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the</p>	<p>To understand:</p> <ul style="list-style-type: none"> • basic methods of knowledge formalization in the social, humanitarian and environmental sciences; • specifics of projects realization in knowledge based systems, principles of justification of feasibility of the expert system; • principles and methods of models developing and their use; • methods of estimation of economic efficiency during development and exploitation of intelligent systems 	<p>Lectures: 19 h Tutorial 0 h Solving problem sets 0 h Situational workshops 0 h Workshops 0 h Laboratory workshops 38 h Trainings 0 h Didactic games 0 h Individual work 87 h Examination/test 0 h Total hours 144 h Credits: 4 credits</p>	<p>Assessment: Laboratory workshop - 50 points; Library research paperwork – 20 points; Essay – 15 points Presentation – 10 points Abstract – 5 points Total:100</p>
	<p>To be able:</p> <ul style="list-style-type: none"> • to create mathematical, visual and verbal models in the sphere of humanitarian, environmental, social and economic sciences; • to formulate specific features of the project, based on knowledge, formulate goals and 		

<p>bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to conduct a pre-project survey of the design object, a system analysis of the subject area and their interrelationships the ability to carry out processes and systems simulation the ability to calculate the economic efficiency 	<p>objectives of the project;</p> <ul style="list-style-type: none"> to formulate a specific problem using the rules of formal languages and frames; evaluate the economical efficiency of intelligent systems <p>To obtain:</p> <ul style="list-style-type: none"> intelligent systems analysis skills to extract useful knowledge and apply it in practice; skills of analysis of subject area of the project; skills of expert systems usage for the analysis of the subject area of the project; assessment skills of the economic efficiency of systems based on knowledge. 																										
Information systems tools																											
<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to carry out processes and systems simulation the ability to calculate the economic efficiency the ability to develop means for computer-aided information technologies 	<p>To understand:</p> <ul style="list-style-type: none"> basic models of data and their organization order and specifics of the processing of economic information system of economical documentation domain model as a complex of interacting objects methods, tools, and languages used to describe the domain models types of operational costs, indicators of cost-effectiveness automated IS design based on UML standards and enterprise architecture design methodology IS life cycle standards Standards of Systems Engineering IS design and architecture implementation 	<table> <tr><td>Lectures:</td><td>38 h</td></tr> <tr><td>Tutorial</td><td>0 h</td></tr> <tr><td>Solving problem sets</td><td>0 h</td></tr> <tr><td>Situational workshops</td><td>0 h</td></tr> <tr><td>Workshops</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>38 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Individual work</td><td>104 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>180 h</td></tr> <tr><td>Credits:</td><td>5 credits</td></tr> </table>	Lectures:	38 h	Tutorial	0 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Individual work	104 h	Examination/test	0 h	Total hours	180 h	Credits:	5 credits	<p>Assessment:</p> <p>Laboratory workshop - 90 points; Library research paperwork – 10 points; Total:100</p>
Lectures:	38 h																										
Tutorial	0 h																										
Solving problem sets	0 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	38 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	104 h																										
Examination/test	0 h																										
Total hours	180 h																										
Credits:	5 credits																										

<p>design</p> <ul style="list-style-type: none"> • the ability to compile operation instructions for information systems • the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task 	<p>tools</p> <ul style="list-style-type: none"> • information threats to a company • risks to an enterprise • the vulnerability of enterprise information assets • business model of a company • models of business potential of a company 		
	<p>To be able:</p> <ul style="list-style-type: none"> • to calculate the actual costs of the project and its comparison with a preliminary estimate; • to develop basic UML diagrams in accordance with the problem to solve; • to analyze and choose the design tools and IS architecture implementation; • to apply life cycle standards of IS and systems engineering • to analyze and choose the standards and methodology of enterprise architecture design • to identify information threats and risks, to determine the measures for their reduction and elimination in relation to the process of design and implementation of enterprise architecture • to develop and adapt the business model • to develop and adapt the models of business-potential of a company • to identify directions for company development • to use models to analyze various change options of business processes 		
	<p>To obtain:</p> <ul style="list-style-type: none"> • information and functional processes of the subject area; • convert skills of information messages to a 		

	<p>formatted and table views;</p> <ul style="list-style-type: none"> • formation of the complex of documentation in accordance with the task, using object decomposition, system partition by interacting objects and components; • skills to prepare a project feasibility report; • presentation skills of an IS in the form of a complex UML diagrams and appropriate update of IS; • management skills of the project of enterprise architecture development and implementation; • development of documentation for enterprise architecture • designing skills for enterprise architecture to meet the requirements to security and data integrity • updating skills to models describing the enterprise architecture, in accordance with changing conditions 		
--	--	--	--

Physical Education

<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> • the ability to apply learning, training and self-control methods and means for intellectual development, cultural enrichment, professional competence, health maintenance, moral 	<p>To understand:</p> <ul style="list-style-type: none"> • the essence, significance and function of physical culture in modern society; • the impact of health systems of physical education to improve health, phenotype of the student, prevention of bad habits; • simple means of monitoring and evaluation of the physical condition, physical development and physical preparedness. <p>To be able:</p> <ul style="list-style-type: none"> • to use the acquired knowledge to improve health in daily life; 	<table border="0"> <tr><td>Lectures:</td><td>38 h</td></tr> <tr><td>Tutorial</td><td>0 h</td></tr> <tr><td>Solving problem sets</td><td>0 h</td></tr> <tr><td>Situational workshops</td><td>0 h</td></tr> <tr><td>Workshops</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>0 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Individual work</td><td>34 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>72 h</td></tr> <tr><td>Credits:</td><td>2 credits</td></tr> </table>	Lectures:	38 h	Tutorial	0 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	0 h	Trainings	0 h	Didactic games	0 h	Individual work	34 h	Examination/test	0 h	Total hours	72 h	Credits:	2 credits	<p>Assessment:</p> <p>Abstract - 56 points;</p> <p>Library research paperwork – 44 points;</p> <p>Total:100</p>
Lectures:	38 h																										
Tutorial	0 h																										
Solving problem sets	0 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	0 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	34 h																										
Examination/test	0 h																										
Total hours	72 h																										
Credits:	2 credits																										

<p>and physical self-improvement</p> <ul style="list-style-type: none"> the ability to critically evaluate his/her own strengths and weaknesses, to outline ways and choose the means to develop the strengths and to address the weaknesses the ability to use means of independent and methodologically correct techniques of physical education and health promotion, the readiness to achieve a proper level of physical fitness to ensure full-fledged social and professional activity 	<ul style="list-style-type: none"> to individually choose recreational activities aimed to improvement of physical abilities; to use the acquired knowledge to improve performance in future professional activity; <p>To obtain:</p> <ul style="list-style-type: none"> organization skills of individual physical exercise in daily activities; skills of drawing up individual activities schedule with the aim to increase physical endurance; organization skills for independent physical exercise in daily life to ensure full scope social and professional activity. 		
--	---	--	--

VARIABLE COMPONENT

Bitmap graphics

<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the ability to apply the basic techniques and methods of establishing documentation and drawings and their reading with the use of hardware and software components of information systems <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to collect and analyze scientific and 	<p>To understand:</p> <ul style="list-style-type: none"> on the methods of digitizing bitmaps; about the color space and color models; about the color profiles of the equipment; main stages of the process of working with graphic information when working on a design project; basic principles of working with raster graphics. about the principles of operation and characteristics of graphic information input and output devices; on the prospects of the development of information tools used to work with graphic documents; how to organize graphic information; on the methods of digitizing bitmaps. <p>To be able:</p> <ul style="list-style-type: none"> to edit the original digital image; to create and modify bitmap; to create a special image effects. To collect and process acquired information; To visualize acquired data in the form of graphic information; To create business documents. 	<table> <tr><td>Lectures:</td><td>19 h</td></tr> <tr><td>Tutorial</td><td>0 h</td></tr> <tr><td>Solving problem sets</td><td>0 h</td></tr> <tr><td>Situational workshops</td><td>0 h</td></tr> <tr><td>Workshops</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>19 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Individual work</td><td>70 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>108 h</td></tr> <tr><td>Credits:</td><td>3 credits</td></tr> </table>	Lectures:	19 h	Tutorial	0 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	19 h	Trainings	0 h	Didactic games	0 h	Individual work	70 h	Examination/test	0 h	Total hours	108 h	Credits:	3 credits	<p>Assessment: Laboratory workshop - 100 points; Total:100</p>
Lectures:	19 h																										
Tutorial	0 h																										
Solving problem sets	0 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	19 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	70 h																										
Examination/test	0 h																										
Total hours	108 h																										
Credits:	3 credits																										

<p>technical information, domestic and foreign experience on the subject of research</p> <ul style="list-style-type: none"> the ability to arrange the received results as presentations, scientific and technical reports, articles and lectures at scientific and technical conferences the ability to apply the basic techniques and methods of establishment documentation and drawings and their reading with the use of hardware and software components of information systems 	<p>To obtain:</p> <ul style="list-style-type: none"> skills of PC using for documents creating, processing and storage. preparation of computer graphic images, descriptions of business processes of business graphics, skills of working on graphic projects. 		
---	--	--	--

Information Technologies

<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> the understanding of social importance of his/her future profession, the ability 	<p>To understand:</p> <ul style="list-style-type: none"> computer classification by principle of operation working principles of analog, digital and hybrid computers computer classification by its computing power technical features and applications of super-computers and mainframes 	<p>Lectures:</p> <table border="0"> <tr><td>Tutorial</td><td>19 h</td></tr> <tr><td>Solving problem sets</td><td>0 h</td></tr> <tr><td>Situational workshops</td><td>0 h</td></tr> <tr><td>Workshops</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>0 h</td></tr> <tr><td>Trainings</td><td>19 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Individual work</td><td>70 h</td></tr> <tr><td><u>Examination/test</u></td><td>36 h</td></tr> </table>	Tutorial	19 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	0 h	Trainings	19 h	Didactic games	0 h	Individual work	70 h	<u>Examination/test</u>	36 h	<p>Assessment:</p> <p>Laboratory workshop - 80 points; Essay – 10 points; Library research paperwork – 10 points; Total:100</p>
Tutorial	19 h																				
Solving problem sets	0 h																				
Situational workshops	0 h																				
Workshops	0 h																				
Laboratory workshops	0 h																				
Trainings	19 h																				
Didactic games	0 h																				
Individual work	70 h																				
<u>Examination/test</u>	36 h																				

<p>to be highly motivated to perform his/her professional activities</p> <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to install and to support the software and to set up the hardware to input the information systems in experimental operation and production the ability to build an information system from off-the-shelf components 	<ul style="list-style-type: none"> basic concepts, principles, rules and methods of information storage, processing and output by computer means designation, structure, principles of operation, and the technical parameters of the PC components; computer interface devices. classification of parallel computing systems classification of modems list of the main communications equipment <p>To be able:</p> <ul style="list-style-type: none"> to identify the type of computing system by its description; to identify organization need in computers of appropriate types and grades; to determine compatibility of hardware and software; to work with the technical documentation for components and peripherals; to determine the type of computer with regard to the task; to formulate requirements to a computing system with regard to the task. <p>To obtain:</p> <ul style="list-style-type: none"> skills of acquisition, analysis and presentation of information about modern computers of various types and classes skills of choosing, installation and operation 	<p>Total hours 144 h Credits: 4 credits</p>	
--	---	--	--

	<p>of the system unit case, processors, motherboards and RAM modules</p> <ul style="list-style-type: none"> • skills of formation of the complex hardware compatibility when building a PC system unit; • skills to determine the optimal configuration of a PC with regard the problem to be solved. • skills of developing the base technical architecture of the organization 																										
Basics of programming at C ++																											
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the broad general training (basic knowledge) for solving practical tasks in the field of information systems and technologies • the understanding of essence and significance of information in modern information society development and the compliance with the basic requirements for information security, 	<p>To understand:</p> <ul style="list-style-type: none"> • technological and functional standards. • modern models and methods for assessing the quality and reliability during the design. • design and debugging software. • methods of analysis of application field on conceptual, logical, mathematical and algorithmic levels. • methods and means of information security. <p>To be able:</p> <ul style="list-style-type: none"> • to predict the development of information systems and technologies. • To make and justify the choice of design decisions on the types of information systems. • To documentarily fix the building processes of information systems at all stages of the life cycle, to conduct a survey of organizations to form requirements to the information system. 	<table border="0"> <tr> <td>Lectures:</td> <td style="text-align: right;">38 h</td> </tr> <tr> <td>Tutorial</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Solving problem sets</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Situational workshops</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Workshops</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td style="text-align: right;">38 h</td> </tr> <tr> <td>Trainings</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Didactic games</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Individual work</td> <td style="text-align: right;">68 h</td> </tr> <tr> <td>Examination/test</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Total hours</td> <td style="text-align: right;">144 h</td> </tr> <tr> <td>Credits:</td> <td style="text-align: right;">4 credits</td> </tr> </table>	Lectures:	38 h	Tutorial	0 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Individual work	68 h	Examination/test	0 h	Total hours	144 h	Credits:	4 credits	<p>Assessment: Laboratory workshop - 100 points; Total:100</p>
Lectures:	38 h																										
Tutorial	0 h																										
Solving problem sets	0 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	38 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	68 h																										
Examination/test	0 h																										
Total hours	144 h																										
Credits:	4 credits																										

<p>including state secrets protection</p> <ul style="list-style-type: none"> the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to carry out technical designing the ability to carry out detailed designing 	<ul style="list-style-type: none"> To participate in the re-engineering of application and information processes, to apply basic information processing algorithms to solution of application tasks. <p>To obtain:</p> <ul style="list-style-type: none"> forecasting the development of information systems and technologies. development of new methods and tools for the design of information systems. modern operation environments. technologies for information and communication. complexes of automation of application tasks solutions. 		
<i>E-Portal Development</i>			
<p>A graduate who has mastered the bachelor's degree program must possess the following</p>	<p>To understand:</p> <ul style="list-style-type: none"> scope of the course "electronic portal Development", its main topics, basic concepts and definitions; basics of software supported programming in 	<p>Lectures: 38 h Tutorial 0 h Solving problem sets 0 h Situational workshops 0 h Workshops 0 h</p>	<p>Assessment: Laboratory workshop - 100 points; Total:100</p>

<p>general professional skills:</p> <ul style="list-style-type: none"> the broad general training (basic knowledge) for solving practical tasks in the field of information systems and technologies the ability to use modern computer information retrieval technologies to solve the assigned task, to critically analyze this information, and to justify the ideas and approaches taken to solve this task the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's</p>	<p>modern web-technologies.</p> <ul style="list-style-type: none"> modern representations in the Internet, their place and role in the Internet; basics of building of complex web-portals; basics of software supported programming in modern web-technologies. problems and directions of development of modern web-based technologies; problems and directions of development of software used in web-technologies; basic methods and means of computer-aided design tools, used in software; basics of JavaScript; software architecture of Internet resources; principle of the browser work with HTML-pages; 	<p>Laboratory workshops 38 h Trainings 0 h Didactic games 0 h Individual work 68 h Examination/test 36 h Total hours 180 h Credits: 5 credits</p>	
<p>To be able:</p> <ul style="list-style-type: none"> to formulate objectives for the development of web-portals; to use the specialized literature of the studied discipline. To orientate in the modern web-technologies and its capabilities and prospects of development; To process the data with support of the software used in modern web-technologies; To justify the choice of technologies for creating web-applications To formulate the requirements to software and hardware required for the stable 			

<p>program is focused</p> <ul style="list-style-type: none"> the ability to collect and analyze scientific and technical information, domestic and foreign experience on the subject of research 	<p>operation of the application;</p> <ul style="list-style-type: none"> To choose means and methods to solve specific problems; <p>To obtain:</p> <ul style="list-style-type: none"> use of HTML primitives. use of CSS table properties; skills to create and modify websites in accordance with modern standards. design client-side forms of Internet applications simple JavaScript code creation and editing skills. 		
<p>Vector graphics</p>			
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the ability to apply the basic techniques and methods of establishing documentation and drawings and their reading with the use of hardware and software components of information systems <p>A graduate who has</p>	<p>To understand:</p> <ul style="list-style-type: none"> Mathematical methods of work with vector graphics; Specifics of charts drawing in vector graphic editors. stages of computer supported creation and processing of project components of various types of graphic design (advertising products, branding, packaging, printed materials, websites). <p>To be able:</p> <ul style="list-style-type: none"> to collect and process the information; to visualize the data in the form of business graphics to visualize own creative projects of graphic designs 	<p>Lectures: 19 h Tutorial 0 h Solving problem sets 0 h Situational workshops 0 h Workshops 0 h Laboratory workshops 38 h Trainings 0 h Didactic games 0 h Individual work 87 h Examination/test 0 h Total hours 144 h Credits: 4 credits</p>	<p>Assessment: Laboratory workshop - 100 points; Total:100</p>

mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused

- the ability to collect and analyze scientific and technical information, domestic and foreign experience on the subject of research
- the ability to arrange the received results as presentations, scientific and technical reports, articles and lectures at scientific and technical conferences
- the ability to apply the basic techniques and methods of establishment documentation and drawings and their reading with the use of hardware and software components of information systems

To obtain:

- acquiring of computer graphic images,
- descriptions of business processes of business graphics,
- work on the graphic projects using the tools for creating illustrations, multimedia and interactive applications, business graphics;
- to apply technologies of single-layout publications.

Information projects

<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> the ability to find organizational and managerial decisions in unusual situations and willingness to bear responsibility for them <p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the ability to use modern computer information retrieval technologies to solve the assigned task, to critically analyze this information, and to justify the ideas and approaches taken to solve this task <p>A graduate who has mastered the bachelor's degree program must</p>	<p>To understand:</p> <ul style="list-style-type: none"> set of tools for the development of projects, methods of their acquisition. principles of project feasibility justification, methods and assessment tools, composition and structure project reference terms, specifics of information project planning; <p>To be able:</p> <ul style="list-style-type: none"> to justify necessary set of tools for the planning, development and organization of the project communications. To formulate the features of the particular project. justify the choice of standard and technology of a project development. <p>To obtain:</p> <ul style="list-style-type: none"> skills of planning and tracking of a project progress using the project management tools. analysis skills of the scope of implementation of the project, development of project requirements, evaluation of the project skills of preparation of project design terms of reference, development project development schedule, preparation of project documentation 	<table style="width: 100%; border-collapse: collapse;"> <tr> <td>Lectures:</td> <td style="text-align: right;">38 h</td> </tr> <tr> <td>Tutorial</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Solving problem sets</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Situational workshops</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Workshops</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td style="text-align: right;">38 h</td> </tr> <tr> <td>Trainings</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Didactic games</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Individual work</td> <td style="text-align: right;">68 h</td> </tr> <tr> <td>Examination/test</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Total hours</td> <td style="text-align: right;">144 h</td> </tr> <tr> <td>Credits:</td> <td style="text-align: right;">4 credits</td> </tr> </table>	Lectures:	38 h	Tutorial	0 h	Solving problem sets	0 h	Situational workshops	0 h	Workshops	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Individual work	68 h	Examination/test	0 h	Total hours	144 h	Credits:	4 credits	<p>Assessment:</p> <p>Laboratory workshop - 80 points; Essay – 12 points; Library research paperwork – 8 points; Total:100</p>
Lectures:	38 h																										
Tutorial	0 h																										
Solving problem sets	0 h																										
Situational workshops	0 h																										
Workshops	0 h																										
Laboratory workshops	38 h																										
Trainings	0 h																										
Didactic games	0 h																										
Individual work	68 h																										
Examination/test	0 h																										
Total hours	144 h																										
Credits:	4 credits																										

<p>possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to conduct a pre-project survey of the design object, a system analysis of the subject area and their interrelationships • the ability to certify the project according to the quality standards • the ability to develop, coordinate and produce all types of project documentation 			
---	--	--	--

Project management software

<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> • the readiness to cooperate with colleagues, to work in a team, the knowledge 	<p>Know:</p> <ul style="list-style-type: none"> • project management principles and automation options for project activities • capabilities of existing software on the project management systems market • IT project management peculiarities and its information support. <p>To be able :</p> <ul style="list-style-type: none"> • to formulate specific features of the project 	<p>Lectures: 16 h Tutorial 0 h Practical exercises lessons 0 h Case studies 0 h Workshop 0 h Laboratory workshop 16 h Trainings 0 h Didactic games 0 h Self-guided work 40 h Examination/test 0 h</p>	<p>Assessment:</p> <p>Laboratory workshops - 70 points; Essay – 10 points; Research – 20 points; Total: 100</p>
--	--	---	--

<p>of principles and methods of small groups management and organization</p> <p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the broad general training (basic knowledge) for solving practical tasks in the field of information systems and technologies the ability to use modern computer information retrieval technologies to solve the assigned task, to critically analyze this information, and to justify the ideas and approaches taken to solve this task 	<p>and justify the need for automation project activities</p> <ul style="list-style-type: none"> to justify the need for the implementation of automated project management systems to improve the enterprises efficiency on the project activities to justify the choice of a particular software package for project management depending on the enterprises requirements <p><i>To obtain:</i></p> <ul style="list-style-type: none"> skills to use tools for managing the project participants proficiency in the use of specific software for the project management automation of different functions (Microsoft Project and others) skills to select an automated project management system in compliance with the request 	<p>Total hours 72 h Credits: 2 credits</p>	
--	---	---	--

VARIABLE COMPONENT: ELECTIVE COURSES

Physical Culture and Sports (elective courses)

<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> the ability to apply learning, training and self-control methods and means for intellectual development, cultural enrichment, professional competence, health maintenance, moral and physical self-improvement the ability to critically evaluate his/her own strengths and weaknesses, to outline ways and choose the means to develop the strengths and to address the weaknesses the ability to use means of independent and methodologically correct techniques of physical education and health 	<p>To understand:</p> <ul style="list-style-type: none"> the nature, meaning and function of physical culture in modern society; the impact on health systems of physical education to improve the health, the phenotype of the student, the prevention of bad habits; easy monitoring and evaluation of the physical condition, physical development and physical preparedness 	<p>Lectures: 0 h Tutorials 0 h Practical exercises lessons 0 h Case studies 0 h Workshop 0 h Laboratory workshops 0 h Trainings 328 h Didactic games 0 h Self-guided work 0 h Examination/test 0 h Total hours 328 h Credits: 0 credits</p>	<p>Assessment: Control exercises to evaluate the physical preparedness of students – 410 points; Test – 290 points; Total: 700</p>
	<p>To be able :</p> <ul style="list-style-type: none"> To use the acquired knowledge to promote health in their daily lives To individually make a choice of recreational activities aimed to improve the physical abilities To use the knowledge acquired to improve performance in the future professional activity 		
	<p>To obtain:</p> <ul style="list-style-type: none"> skills of the independent organization of physical exercise in daily activities. skills of setting up individual schedules of activities aimed at increasing physical endurance skills of the independent organization of 		

<p>promotion, the readiness to achieve a proper level of physical fitness to ensure full-fledged social and professional activity</p>	<p>physical exercise in daily activities to ensure full social and professional activities</p>																										
<p><i>Development of interactive applications for WEB-sites</i></p>																											
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> the broad general training (basic knowledge) for solving practical tasks in the field of information systems and technologies the understanding of essence and significance of information in modern information society development and the compliance with the basic requirements for information security, including state secrets protection <p>A graduate who has mastered the bachelor's degree program must</p>	<p><i>To understand:</i></p> <ul style="list-style-type: none"> technological and functional standards. modern models and methods for assessing the quality and reliability during the design. methods of analysis applied in the conceptual, logical, mathematical and algorithmic levels sphere. methods and means of information security. <p><i>To be able :</i></p> <ul style="list-style-type: none"> to develop new methods and tools for the design of information systems. To forecast the development of information systems and technologies. To document the processes of creation of information systems at all stages of the life cycle, do an organization research, formulate requirements for the information system. To participate in the re-engineering of application solution and information processes, apply some basic algorithms of information processing to the solution of application tasks. <p><i>To obtain:</i></p> <ul style="list-style-type: none"> forecasting skills in the development of 	<table> <tr> <td>Lectures:</td> <td>38 h</td> </tr> <tr> <td>Tutorials</td> <td>0 h</td> </tr> <tr> <td>Practical exercises lessons</td> <td>0 h</td> </tr> <tr> <td>Case studies</td> <td>0 h</td> </tr> <tr> <td>Workshop</td> <td>0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td>38 h</td> </tr> <tr> <td>Trainings</td> <td>0 h</td> </tr> <tr> <td>Didactic games</td> <td>0 h</td> </tr> <tr> <td>Self-guided work</td> <td>104 h</td> </tr> <tr> <td>Examination/test</td> <td>0 h</td> </tr> <tr> <td>Total hours</td> <td>180 h</td> </tr> <tr> <td>Credits:</td> <td>5 credits</td> </tr> </table>	Lectures:	38 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Self-guided work	104 h	Examination/test	0 h	Total hours	180 h	Credits:	5 credits	<p>Assessment: Laboratory workshop – 100 points; Total: 100</p>
Lectures:	38 h																										
Tutorials	0 h																										
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	38 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	104 h																										
Examination/test	0 h																										
Total hours	180 h																										
Credits:	5 credits																										

<p>possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to carry out technical designing • the ability to carry out detailed designing • the ability to adapt applications to changing operational modalities 	<p>information systems and technologies.</p> <ul style="list-style-type: none"> • skills in the development of new methods and tools for information systems • skills in information and communication technologies. • skills in complexes of automation solutions applications. 																										
<p><i>Technology management of IT - companies</i></p>																											
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the broad general training (basic knowledge) for solving practical tasks in the field of information systems and technologies • the ability to use the basic natural science in his/her professional activity, to apply 	<p>To understand:</p> <ul style="list-style-type: none"> • characteristics of the process management organization at companies engaged with IT, • development tasks, implementation and software maintenance, • development issues, implementation and software support. • international and Russian standards of software development process and quality assurance. • methods of successful risk management, • modern methods of software development • composition tools for software development. • methods and tools for analysis of the subject, 	<table border="0"> <tr><td>Lectures:</td><td>38 h</td></tr> <tr><td>Tutorials</td><td>0 h</td></tr> <tr><td>Practical exercises lessons</td><td>0 h</td></tr> <tr><td>Case studies</td><td>0 h</td></tr> <tr><td>Workshop</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>38 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Self-guided work</td><td>104 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>180 h</td></tr> <tr><td>Credits:</td><td>5 credits</td></tr> </table>	Lectures:	38 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Self-guided work	104 h	Examination/test	0 h	Total hours	180 h	Credits:	5 credits	<p>Assessment:</p> <p>Laboratory workshop – 76 points; Essay – 16 points; Researches – 8 points; Total: 100</p>
Lectures:	38 h																										
Tutorials	0 h																										
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	38 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	104 h																										
Examination/test	0 h																										
Total hours	180 h																										
Credits:	5 credits																										

<p>methods of mathematical analysis and modeling, as well as theoretical and experimental research</p> <ul style="list-style-type: none"> the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to conduct a pre-project survey of the design object, a system analysis of the subject area and their interrelationships the ability to compile operation instructions for information systems 	<ul style="list-style-type: none"> methods of statement reasoning of the project implementation, composition and scheme of reference task on the development of the project. <p>To be able :</p> <ul style="list-style-type: none"> to describe the current projects in information technology sphere, to identify the stages of information systems development, to justify the choice of the standard software development, to identify the risk assessment method, to justify the need for a set of tools for planning, design and project organization of communications in accordance with the chosen methodology to formulate specific features of the project, to justify the composition of the necessary documentation accompanying the process of developing, implementing and maintaining software. <p>To obtain:</p> <ul style="list-style-type: none"> skills to manage the software development process, skills to manage the software implementation process, skills to use in the development of IS standards. risk analysis skills at different stages of the life cycle of IS 		
---	--	--	--

	<ul style="list-style-type: none"> • skills to use tools that support the project processes, implementation and software maintenance. • domain implementation analysis skills project • the requirements skills to the developing project, the project evaluation, • conduct business negotiations skills with client and presentations, • technical project preparation skills to the project development, • preparation skills in project documentation. 																										
Functional programming																											
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the ability to use the basic natural science in his/her professional activity, to apply methods of mathematical analysis and modeling, as well as theoretical and experimental research • the ability to select and evaluate the way information systems and devices 	<p>To understand:</p> <ul style="list-style-type: none"> • the basic methods of algorithms and programs machine development, data structures used to represent the model of information objects; • basic machine algorithms and specifications of their complexity for common tasks; • methods for evaluating the accuracy of the results, verification tools and modeling languages • current trends in the development of computer science, computer engineering and computer technology; • algorithms and technology to develop programs, debugging techniques and solving problems on computers in different modes, the 	<table> <tr><td>Lectures:</td><td>38 h</td></tr> <tr><td>Tutorials</td><td>0 h</td></tr> <tr><td>Practical exercises lessons</td><td>0 h</td></tr> <tr><td>Case studies</td><td>0 h</td></tr> <tr><td>Workshop</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>38 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Self-guided work</td><td>68 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>144 h</td></tr> <tr><td>Credits:</td><td>4 credits</td></tr> </table>	Lectures:	38 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Self-guided work	68 h	Examination/test	0 h	Total hours	144 h	Credits:	4 credits	<p>Assessment: Laboratory workshop – 100 points; Total: 100</p>
Lectures:	38 h																										
Tutorials	0 h																										
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	38 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	68 h																										
Examination/test	0 h																										
Total hours	144 h																										
Credits:	4 credits																										

<p>(software, hardware or hardware-software) are implemented to solve the task</p> <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to develop means for computer-aided information technologies design 	<p>base for object-oriented programming approach</p> <p><i>To be able :</i></p> <ul style="list-style-type: none"> to conduct a preliminary assessment of the effectiveness of the designed algorithms and data structures; to evaluate the accuracy of the results, verification and modeling languages. to apply the methods of mathematical logic and algorithms theory to solve practical problems; to choose the best in the particular circumstances basic data structures and algorithms for the organization and control of complex information structures; to conduct a preliminary assessment of the effectiveness of the designed algorithms and data structures. <p><i>To obtain:</i></p> <ul style="list-style-type: none"> choice skills of mathematical methods and implementation of software solutions for specific tasks; Design and implementation of data collection based on the concept of an abstract type ddata. Programming skills and debugging at least one of the procedural algorithmic high-level programming languages; skills of documentary support software development; co-operation with colleagues, teamwork, management and organization of the performers in the production of software products 		
--	--	--	--

Hypertext and Multimedia IT

<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the broad general training (basic knowledge) for solving practical tasks in the field of information systems and technologies • the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to carry out 	<p>To understand:</p> <ul style="list-style-type: none"> • methods of the use of multimedia technologies, ways to improve the presentation of the multimedia information in information systems; • forms and methods of multimedia information storage transmission; • international standards of character codes and their application in modern information systems; development of modern three-dimensional graphics; • content management in mobile networks; • the use of audio, video, tactile and scent in information systems • criteria for selecting combinations of multimedia technologies • the nature of the perceived human environment <hr/> <p>To be able :</p> <ul style="list-style-type: none"> • To propose a set of multimedia methods for their use to solve practical problems in information systems and technologies • to evaluate the quality of presentation of multimedia information in information systems; integrate animation and video in IS • to modulate different applications using the capabilities of different multimedia methods <hr/> <p>To obtain:</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td>Lectures:</td> <td style="text-align: right;">38 h</td> </tr> <tr> <td>Tutorials</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Practical exercises lessons</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Case studies</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Workshop</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td style="text-align: right;">38 h</td> </tr> <tr> <td>Trainings</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Didactic games</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Self-guided work</td> <td style="text-align: right;">68 h</td> </tr> <tr> <td>Examination/test</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Total hours</td> <td style="text-align: right;">144 h</td> </tr> <tr> <td>Credits:</td> <td style="text-align: right;">4 credits</td> </tr> </table>	Lectures:	38 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Self-guided work	68 h	Examination/test	0 h	Total hours	144 h	Credits:	4 credits	<p>Assessment:</p> <p>Laboratory workshop – 69 points; Essay – 15 points; Presentations – 16 points; Total: 100</p>
Lectures:	38 h																										
Tutorials	0 h																										
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	38 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	68 h																										
Examination/test	0 h																										
Total hours	144 h																										
Credits:	4 credits																										

<p>processes and systems simulation</p>	<ul style="list-style-type: none"> • a use of technology multimedia information as content • multimedia element selection skills to implement information systems and devices • skills of gathering and combining of different methods in a single application 		
<p>Software development technologies for mobile devices</p>			
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p>	<p>To understand:</p> <ul style="list-style-type: none"> • methods of design and developing software for mobile devices; • forming up, structure and methods of work with the tools that support the development of software for mobile devices; • the main topics of software metrology, construction base, design and use of tools for measuring the characteristics and parameters of the programs, program systems and complexes. <p>To be able :</p> <ul style="list-style-type: none"> • to apply the methods of design and software manufacturing, constructing principles, structures and techniques for working with tools that support the development of software for mobile devices; • to apply the main topics of software metrology, construction base, design and use of tools for measuring the characteristics and parameters of the programs, program systems and complexes. <p>To obtain:</p> <ul style="list-style-type: none"> • skills to implement software engineering methods using tools that support the creation of 	<p>Lectures: 38 h Tutorials 0 h Practical exercises lessons 0 h Case studies 0 h Workshop 0 h Laboratory workshops 38 h Trainings 0 h Didactic games 0 h Self-guided work 68 h Examination/test 0 h Total hours 144 h Credits: 4 credits</p>	<p>Assessment: Laboratory workshop – 100 points; Total: 100</p>

<ul style="list-style-type: none"> • the ability to carry out technical designing • the ability to evaluate reliability and performance of the design object 	<p>programs for mobile devices;</p> <ul style="list-style-type: none"> • skills in the organization of work in teams of software developers. • skills to create mobile applications with the persistence of different ways. 																										
Systems Modeling																											
<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to carry out processes and systems simulation • the willingness to participate in setting and conduct of experimental research • the ability to justify the accuracy of the chosen model, by comparing the experimental data results and the solutions obtained • the ability to use 	<p>To understand:</p> <ul style="list-style-type: none"> • the possibility of modeling methodology and complexes. • types of mathematical models and methods for their solution used in the study and design of information s. • methods of generating random value with arbitrary distribution law. • sample tasks for fixing plans od modeling experiments <p>To be able :</p> <ul style="list-style-type: none"> • to collect data and formalize the model • to create simulation models with the ability to dynamic manage and account priorities. • To create software models in the Visual Studio package. • to generate data for modeling, plan studies on models, carry out the processing and analysis of modeling results. <p>To obtain:</p> <ul style="list-style-type: none"> • skills of development tools and software s application. • skills to run simulation models in different 	<table border="0"> <tr><td>Lectures:</td><td>38 h</td></tr> <tr><td>Tutorials</td><td>0 h</td></tr> <tr><td>Practical exercises lessons</td><td>0 h</td></tr> <tr><td>Case studies</td><td>0 h</td></tr> <tr><td>Workshop</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>38 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Self-guided work</td><td>68 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>144 h</td></tr> <tr><td>Credits:</td><td>4 credits</td></tr> </table>	Lectures:	38 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Self-guided work	68 h	Examination/test	0 h	Total hours	144 h	Credits:	4 credits	<p>Assessment:</p> <p>Laboratory workshop – 90 points; Essay – 10 points; Total: 100</p>
Lectures:	38 h																										
Tutorials	0 h																										
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	38 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	68 h																										
Examination/test	0 h																										
Total hours	144 h																										
Credits:	4 credits																										

<p>mathematical methods of processing, analyzing and synthesizing the professional research results</p>	<p>modes and with drive control</p> <ul style="list-style-type: none"> • skills to develop software simulation of random numbers based on the histogram of observation and the inverse function • skills to work with CASE-tools and software of processing results 		
<p>Administrative decision making methods</p>			
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the ability to use the basic natural science in his/her professional activity, to apply methods of mathematical analysis and modeling, as well as theoretical and experimental research • the ability to use modern computer information retrieval technologies to solve the assigned task, to critically analyze this information, and to justify the ideas and approaches taken to solve this task <p>A graduate who has mastered the bachelor's</p>	<p>To understand:</p> <ul style="list-style-type: none"> • basic mathematical model of decision-making. • basic methods and software for processing and analysis of economic and management information. • conditions for the adoption of effective and high-quality management decisions <p>To be able :</p> <ul style="list-style-type: none"> • to solve typical mathematical problems used in management decisions; • to use mathematical language and mathematical symbols while building the organizational and management models. • To use MS Excel and Decision Support Systems in the construction process of information analysis and management decisions. • to formulate a goal component of management decision-making process. <p>To obtain:</p> <ul style="list-style-type: none"> • mathematical, statistical and quantitative methods for solving typical organizational and administrative tasks. 	<p>Lectures: 19 h Tutorials 0 h Practical exercises lessons 19 h Case studies 0 h Workshop 0 h Laboratory workshops 0 h Trainings 0 h Didactic games 0 h Self-guided work 70 h Examination/test 0 h Total hours 108 h Credits: 3 credits</p>	<p>Assessment: Case studies – 30 points; Practical exercises lessons – 70 points; Total: 100</p>

<p>degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to use mathematical methods of processing, analyzing and synthesizing the professional research results 	<ul style="list-style-type: none"> • analysis tools, embedded MS Excel and Decision Support Systems • the basic principles of building control management decision-making process. 																										
<p><i>CASE-technologies and CASE-means</i></p>																											
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the ability to use modern computer information retrieval technologies to solve the assigned task, to critically analyze this information, and to justify the ideas and approaches taken to solve this 	<p><i>To understand:</i></p> <ul style="list-style-type: none"> • basic design stages and models of software information systems life cycle; • methods and technologies for designing information systems and requirements • methods of structural analysis and design: functional modeling, data modeling, data flow modeling; • base of object-oriented design methodology systems. • methods of organization and management of the project with the use of CASE-tools; • aids software support of information systems 	<table border="0"> <tr><td>Lectures:</td><td>19 h</td></tr> <tr><td>Tutorials</td><td>0 h</td></tr> <tr><td>Practical exercises lessons</td><td>19 h</td></tr> <tr><td>Case studies</td><td>0 h</td></tr> <tr><td>Workshop</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>0 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Self-guided work</td><td>70 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>108 h</td></tr> <tr><td>Credits:</td><td>3 credits</td></tr> </table>	Lectures:	19 h	Tutorials	0 h	Practical exercises lessons	19 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	0 h	Trainings	0 h	Didactic games	0 h	Self-guided work	70 h	Examination/test	0 h	Total hours	108 h	Credits:	3 credits	<p>Assessment: Practical exercises lessons – 100 points; Total: 100</p>
Lectures:	19 h																										
Tutorials	0 h																										
Practical exercises lessons	19 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	0 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	70 h																										
Examination/test	0 h																										
Total hours	108 h																										
Credits:	3 credits																										

<p>task</p> <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to carry out processes and systems simulation • the ability to develop means of implementing information technologies (methodical, information, mathematical, algorithmic, technical and software) 	<p>life cycle, testing and documentation</p> <p><i>To be able :</i></p> <ul style="list-style-type: none"> • To analyze the subject area to identify information needs and under their consideration formulate the requirements for the projected information systems. • to solve the problem of choosing the design methodology while constructing the complex information systems; • to create a working atmosphere for the user; • to use comparative analysis and the choice of tools for designing information systems. <p><i>To obtain:</i></p> <ul style="list-style-type: none"> • skills to work with the tools domain modeling, application and information processes. • charting skills taking into account standards IDEF0, IDEF1X, UML. • skills development process documentation. 		
3D graphics			
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the ability to apply the basic techniques and methods of 	<p><i>To understand:</i></p> <ul style="list-style-type: none"> • About graphic editors modeling of three-dimensional images; • about the base of three-dimensional graphics; • Basics of modeling objects; • Main stages of the developing process and the creation of three-dimensional scenes; • How to withdraw the three-dimensional image 	<p>Lectures: 19 h</p> <p>Tutorials 0 h</p> <p>Practical exercises lessons 0 h</p> <p>Case studies 0 h</p> <p>Workshop 0 h</p> <p>Laboratory workshops 19 h</p> <p>Trainings 0 h</p> <p>Didactic games 0 h</p>	<p>Assessment:</p> <p>Laboratory workshop – 100 points;</p> <p>Total: 100</p>

<p>establishmenting documentation and drawings and their reading with the use of hardware and software components of information systems</p> <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to design basic and applied information technologies • the ability to collect and analyze scientific and technical information, domestic and foreign experience on the subject of research • the ability to arrange the received results as presentations, scientific and technical reports, articles and lectures at scientific and technical conferences 	<p>to be printed.</p> <ul style="list-style-type: none"> • About the base of work and characteristics of input and output devices for graphic information; • About the future of the development of information tools used when working with graphic documents; • About how to organize your graphics. • About the base of operation and characteristics of input and output devices for graphic information; • About the future of the development of information tools used when working with three-dimensional models in graphic documents; • About the final output for print of three-dimensional models. <p>To be able :</p> <ul style="list-style-type: none"> • To use a variety of methods and modeling approaches in creating computer models; • To create three-dimensional objects; • To create textures for modeling objects. • To collect and process the information; • To visualize the data in the form of graphic information. • To collect and process the information; • To create business documents. <p>To obtain:</p> <ul style="list-style-type: none"> • PC usage skills for creating, processing and storage of documents; • obtaining skills of computer graphics. • obtaining skills of computer graphics, 	<p>Self-guided work 70 h Examination/test 0 h Total hours 108 h Credits: 3 credits</p>	
---	--	---	--

	<ul style="list-style-type: none"> • describe the skills of business - processes business graphics, • skills to provide information in the form of three-dimensional projections; • skills of graphic projects. Skills to produce computer graphics, • describe the skills of business - processes through business graphics, • skills to work on graphic projects with the use of advanced imaging technology. 																										
<i>Mobile devices programming on Netcompact Framework platform</i>																											
<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the</p>	<p><i>To understand:</i></p> <ul style="list-style-type: none"> • ways to protect .NET Compact Framework application using different technologies • implementation of Microsoft .NET Compact Framework ASP.NET; • how to use the objects of Trace and Debug, provided by Visual Studio .NET • using embedded tools to access the data presented in the Visual Studio .NET; <p><i>To be able :</i></p> <ul style="list-style-type: none"> • to create project Compact Framework .NET using MS Visual Studio .NET; • to automation of programming provided by the study VS.Net environment. • To add to the project components and elements of control. • To create projects for solutions for mobile platforms and other tasks; 	<table border="0"> <tr><td>Lectures:</td><td>19 h</td></tr> <tr><td>Tutorials</td><td>0 h</td></tr> <tr><td>Practical exercises lessons</td><td>0 h</td></tr> <tr><td>Case studies</td><td>0 h</td></tr> <tr><td>Workshop</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>19 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Self-guided work</td><td>70 h</td></tr> <tr><td>Examination/test</td><td>0 h</td></tr> <tr><td>Total hours</td><td>108 h</td></tr> <tr><td>Credits:</td><td>3 credits</td></tr> </table>	Lectures:	19 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	19 h	Trainings	0 h	Didactic games	0 h	Self-guided work	70 h	Examination/test	0 h	Total hours	108 h	Credits:	3 credits	<p>Assessment: Laboratory workshop – 100 points; Total: 100</p>
Lectures:	19 h																										
Tutorials	0 h																										
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	19 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	70 h																										
Examination/test	0 h																										
Total hours	108 h																										
Credits:	3 credits																										

<p>type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to carry out technical designing • the ability to design basic and applied information technologies • the ability to justify the accuracy of the chosen model, by comparing the experimental data results and the solutions obtained 	<p>To obtain:</p> <ul style="list-style-type: none"> • setting skills and the use of mobile applications on the .NET Compact Framework; • skills to create a mobile application on the .NET Compact Framework; • skills to create mobile applications with persistence in different ways; the skills to provide information in the form of three-dimensional projections; • skills of software development using object-oriented paradigm. 		
<p><i>Collective application development</i></p>			
<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> • the ability to find organizational and managerial decisions in unusual situations and willingness to bear responsibility for them • the ability to analyze socially significant problems 	<p>To understand:</p> <ul style="list-style-type: none"> • main integrated elements of developing software. • automated software development tools; • stages of the project certification; • basic certification standards software; <p>To be able :</p> <ul style="list-style-type: none"> • To develop the concept of implementation of the software components of the functional specifications; • To control the performance of the developed architectural solutions in the implementation of software components. • To evaluate the software and IS components 	<p>Lectures: 19 h Tutorials 0 h Practical exercises lessons 0 h Case studies 0 h Workshop 0 h Laboratory workshops 38 h Trainings 0 h Didactic games 0 h Self-guided work 51 h Examination/test 36 h Total hours 144 h Credits: 4 credits</p>	<p>Assessment: Laboratory workshop – 100 points; Total: 100</p>

<p>and processes, the ability to put into practice methods of humanitarian, environmental, social and economic sciences in various types of professional and social activities</p> <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to certify the project according to the quality standards • the ability to develop means for computer-aided information technologies design • the ability to adapt applications to changing operational modalities 	<p>undergoing certification;</p> <p>To obtain:</p> <ul style="list-style-type: none"> • skills of cooperation with colleagues, teamwork, management and organization of the performers in the production of software products. • programming and debugging skills to at least one of the procedural algorithmic high-level programming languages; • Methods and means of certification of information systems, taking into account the functional components of the specification. 		
<p><i>Information channels management in an organization</i></p>			
<p>A graduate who has</p>	<p>To understand:</p> <ul style="list-style-type: none"> • basic methods of knowledge formalization in 	<p>Lectures: 19 h Tutorials 0 h</p>	<p>Assessment: Laboratory workshop – 80 points;</p>

<p>mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> • the culture of thinking, the ability to generalize, analyze and perceive information, to set a goal and choose ways to achieve it, the ability to speak and write logically, correctly and clearly <p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the ability to use the basic natural science in his/her professional activity, to apply methods of mathematical analysis and modeling, as well as theoretical and experimental research • the understanding of essence and significance of information in modern information society development and the compliance with the basic 	<p>the social, humanitarian and environmental sciences;</p> <ul style="list-style-type: none"> • basic methods of research; • what is the business process, diagram of the business process; • existing types of business processes, the principles of business process reengineering; <p>To be able :</p> <ul style="list-style-type: none"> • To work with the scientific and technical documentation; • to work with mathematical, verbal and graphical models of economic sciences; • to represent the activities of the company as a set of interrelated business processes; • to analysis of the company activity, a systematic analysis of the subject area; <p>To obtain:</p> <ul style="list-style-type: none"> • skills of cooperation with colleagues, teamwork, management and organization skills to document information processes; • information systems processes to describe the skills with a view to their optimization; • skills to describe the organization of information flows; • skills in domain analysis of the project realization. 	<p>Practical exercises lessons 0 h Case studies 0 h Workshop 0 h Laboratory workshops 38 h Trainings 0 h Didactic games 0 h Self-guided work 51 h Examination/test 36 h Total hours 144 h Credits: 4 credits</p>	<p>Notes – 12 points; Essay – 8 points; Total: 100</p>
---	--	---	---

<p>requirements for information security, including state secrets protection</p> <ul style="list-style-type: none"> • the ability to use modern computer information retrieval technologies to solve the assigned task, to critically analyze this information, and to justify the ideas and approaches taken to solve this task 			
---	--	--	--

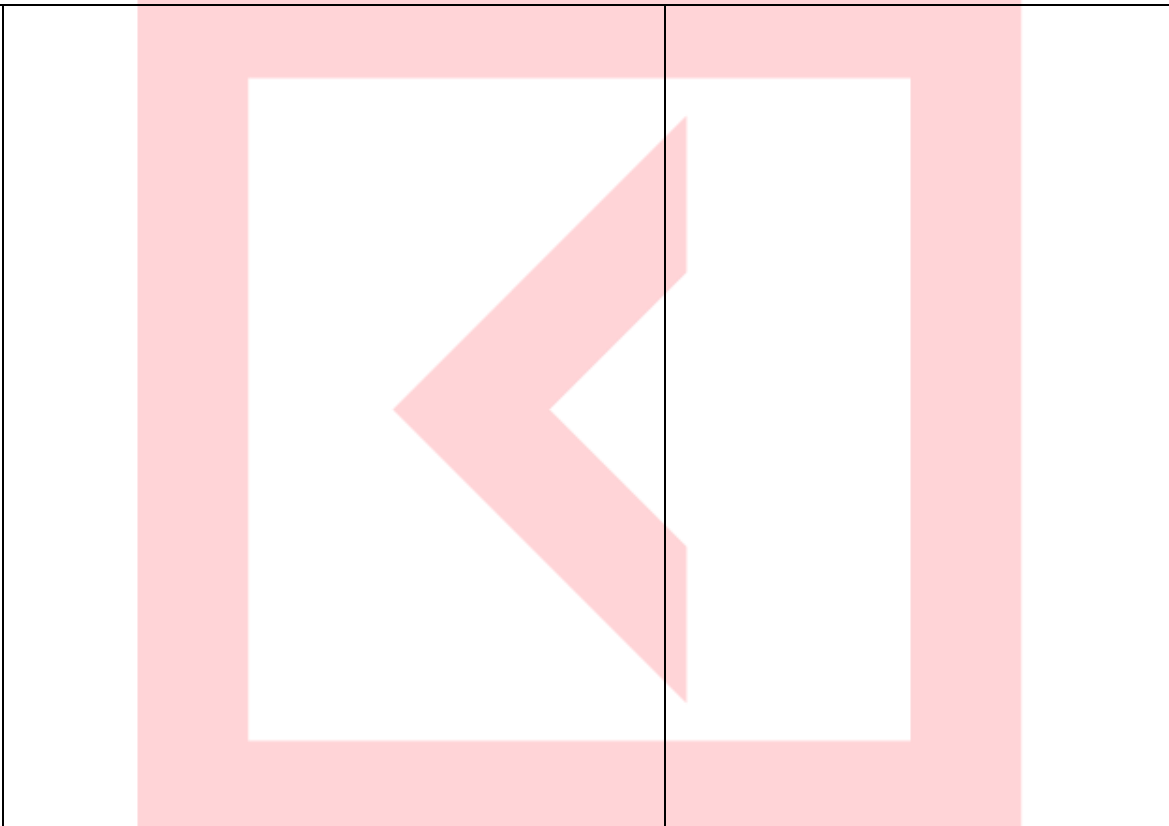
.NET Technologies

<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the ability to apply the basic techniques and methods of establishment documentation and drawings and their reading with the use of hardware and software components of information systems • the ability to use modern computer information 	<p><i>To understand:</i></p> <ul style="list-style-type: none"> • the basic techniques and methods of automation design, production, testing and evaluation of software quality • how to develop server applications using different technologies <hr/> <p><i>To be able :</i></p> <ul style="list-style-type: none"> • To develop new methods and tools for the design of information systems. • to use of modern approaches to the development of Internet applications <hr/> <p><i>To obtain:</i></p> <ul style="list-style-type: none"> • forecasting the development of information systems and technologies. • skills in the development of Internet applications 	<table border="0"> <tr><td>Lectures:</td><td align="right">36 h</td></tr> <tr><td>Tutorials</td><td align="right">0 h</td></tr> <tr><td>Practical exercises lessons</td><td align="right">0 h</td></tr> <tr><td>Case studies</td><td align="right">0 h</td></tr> <tr><td>Workshop</td><td align="right">0 h</td></tr> <tr><td>Laboratory workshops</td><td align="right">36 h</td></tr> <tr><td>Trainings</td><td align="right">0 h</td></tr> <tr><td>Didactic games</td><td align="right">0 h</td></tr> <tr><td>Self-guided work</td><td align="right">72 h</td></tr> <tr><td>Examination/test</td><td align="right">0 h</td></tr> <tr><td>Total hours</td><td align="right">144 h</td></tr> <tr><td>Credits:</td><td align="right">4 credits</td></tr> </table>	Lectures:	36 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	36 h	Trainings	0 h	Didactic games	0 h	Self-guided work	72 h	Examination/test	0 h	Total hours	144 h	Credits:	4 credits	<p>Assessment: Laboratory workshop – 100 points; Total: 100</p>
Lectures:	36 h																										
Tutorials	0 h																										
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	36 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	72 h																										
Examination/test	0 h																										
Total hours	144 h																										
Credits:	4 credits																										

retrieval technologies to solve the assigned task, to critically analyze this information, and to justify the ideas and approaches taken to solve this task

A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused

- the ability to install and to support the software and to set up the hardware to input the information systems in experimental operation and production



Reengineering of Business Process

A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:

- the ability to analyze

To understand:

- basic methods of knowledge formalization in the social, humanitarian and environmental sciences;
- what is the business process, diagram of the business process, imagine activities of the company as a set of interrelated business

Lectures:	36 h
Tutorials	0 h
Practical exercises lessons	0 h
Case studies	0 h
Workshop	0 h
Laboratory workshops	36 h
Trainings	0 h

Assessment:

Laboratory workshop – 50 points;
 Research– 25 points;
 Essay – 25 points;
Total: 100

<p>socially significant problems and processes, the ability to put into practice methods of humanitarian, environmental, social and economic sciences in various types of professional and social activities</p> <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to conduct a pre-project survey of the design object, a system analysis of the subject area and their interrelationships • the ability to carry out processes and systems simulation • the ability to calculate the economic efficiency 	<p>processes, existing types of business processes, the base of business process reengineering</p> <ul style="list-style-type: none"> • base and methods of models formation and their use • methods of calculation of economic efficiency in the reengineering of information systems <p>To be able :</p> <ul style="list-style-type: none"> • To work with mathematical, verbal and graphical models of humanitarian, environmental, social and economic sciences • To analysis of the enterprises activity, systems analysis domain • to describe a model system • to evaluate the cost-effectiveness of systems <p>To obtain:</p> <ul style="list-style-type: none"> • skills in reengineering systems to optimize their activities • skills for domain project analysis • use skills of modeling notations • evaluation skills of economic efficiency systems 	<p>Didactic games 0 h</p> <p>Self-guided work 72 h</p> <p>Examination/test 0 h</p> <p>Total hours 144 h</p> <p>Credits: 4 credits</p>	
<i>E-Commerce</i>			
A graduate who has	To understand:	Lectures: 19 h	Assessment:

<p>mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the ability to use modern computer information retrieval technologies to solve the assigned task, to critically analyze this information, and to justify the ideas and approaches taken to solve this task <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to justify the accuracy of the chosen model, by comparing the experimental data results and the solutions obtained • the ability to arrange the received results as 	<ul style="list-style-type: none"> • definition of "EC sector", classification of information systems, opening up prospects for e-business; • any technical information and development factors that had a direct influence on the traditional commerce, which allowed to form a completely new form of business - e-commerce (EC) and electronic business (EB); • what kind of changes of the basic characteristics of the business will be during the transition to the EC, what are the factors of success of e-business; • the importance of logistics in the construction of the relationship between the consumer and the online store • ways to prevent and monitor risk situations • organizational measures to eliminate risk situations • E-commerce translation steps in a mobile form. • basics of Internet marketing and advertising on the Internet); • the process of non-cash payments, advantages and disadvantages of this method of payment; • Internet advertising technologies, particularly the study of the external factors on the Internet; • rules for placement of text, graphics and photographs on the site; • classification of risks in the EC • methods of fraud in the Internet 	<table border="0"> <tr><td>Tutorials</td><td>0 h</td></tr> <tr><td>Practical exercises lessons</td><td>0 h</td></tr> <tr><td>Case studies</td><td>0 h</td></tr> <tr><td>Workshop</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>38 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Self-guided work</td><td>87 h</td></tr> <tr><td><u>Examination/test</u></td><td>36 h</td></tr> <tr><td>Total hours</td><td>180 h</td></tr> <tr><td>Credits:</td><td>5 credits</td></tr> </table>	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Self-guided work	87 h	<u>Examination/test</u>	36 h	Total hours	180 h	Credits:	5 credits	<p>Laboratory workshop – 100 points; Notes – 12 points; Essay – 8 points; Total: 100</p>
Tutorials	0 h																								
Practical exercises lessons	0 h																								
Case studies	0 h																								
Workshop	0 h																								
Laboratory workshops	38 h																								
Trainings	0 h																								
Didactic games	0 h																								
Self-guided work	87 h																								
<u>Examination/test</u>	36 h																								
Total hours	180 h																								
Credits:	5 credits																								

<p>presentations, scientific and technical reports, articles and lectures at scientific and technical conferences</p>	<ul style="list-style-type: none"> • Methods of protection against cybercrime. <p><i>To be able :</i></p> <ul style="list-style-type: none"> • To use the Internet and web-based services, to carry out the distribution of promotional offers; • To conduct analysis of the market demand (sales) of goods; • to provide commercial and financial transactions on the Internet; • to study offers various advertising platforms for a variety of subject areas; • To highlight the main directions of the monthly (periodic) expenses for the organization of EC applications in different ways. • To allocate subjects and objects of EC, to analyze the activities of companies and highlight the advantages and disadvantages of one or another form of doing business; • To formulate the content of the sales cycle for any type of activity; • To navigate among the possible options for "simple" application of EC; • To define a list of services that are required for the organization of EC application; • to highlight key areas of start-up costs in the organization of the application of EC in various ways; • to Identify and analyze the characteristics of the companies within a given type of activity; • to Highlight features of the companies within the EC; 		
---	---	--	--

	<p>To obtain:</p> <ul style="list-style-type: none"> • skill of searching and processing information, formatting materials; • skill assessment marketplaces, websites, as well as management skills strategy, website development, determination skills of the necessity information systems of EC for a particular Internet project; • skills to identify the advantages and disadvantages of traditional, partly electronic and fully electronic operations; • skills to select the optimal strategy, to exit the company in the EC and the argumentation of this decision; • skills of presentation and valuation of goods; • skills to work with e-mail; • cash management implementation skills via credit card or digital cash, determination skills of the advantages and disadvantages of traditional, partly electronic and fully electronic operations; • skills to select the optimal strategy to exit the company in the EC and the argumentation of this decision; 												
Object-oriented programming													
<p>A graduate who has mastered the bachelor's degree program must possess the professional</p>	<p>To understand:</p> <ul style="list-style-type: none"> • the main principles of object-oriented programs; • methodology for the creation of object-oriented projects and programs; 	<table border="0"> <tr> <td>Lectures:</td> <td>19 h</td> </tr> <tr> <td>Tutorials</td> <td>0 h</td> </tr> <tr> <td>Practical exercises lessons</td> <td>0 h</td> </tr> <tr> <td>Case studies</td> <td>0 h</td> </tr> <tr> <td>Workshop</td> <td>0 h</td> </tr> </table>	Lectures:	19 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	<p>Assessment: Laboratory workshop – 100 points; Total: 100</p>
Lectures:	19 h												
Tutorials	0 h												
Practical exercises lessons	0 h												
Case studies	0 h												
Workshop	0 h												

<p>skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to develop means of implementing information technologies (methodical, information, mathematical, algorithmic, technical and software) • the ability to develop means for computer-aided information technologies design • the ability to install and to support the software and to set up the hardware to input the information systems in experimental operation and production 	<p>To be able :</p> <ul style="list-style-type: none"> • To create an object-oriented projects on demand; • to debug programs in VS.Net programming in C ++, apply the basic techniques of object-oriented programming using the means of the target language (C ++); • to use automatic programming tools provided by the study 	<table> <tr> <td>Laboratory workshops</td> <td>38 h</td> </tr> <tr> <td>Trainings</td> <td>0 h</td> </tr> <tr> <td>Didactic games</td> <td>0 h</td> </tr> <tr> <td>Self-guided work</td> <td>87 h</td> </tr> <tr> <td>Examination/test</td> <td>36 h</td> </tr> <tr> <td>Total hours</td> <td>180 h</td> </tr> <tr> <td>Credits:</td> <td>5 credits</td> </tr> </table>	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Self-guided work	87 h	Examination/test	36 h	Total hours	180 h	Credits:	5 credits	
Laboratory workshops	38 h																
Trainings	0 h																
Didactic games	0 h																
Self-guided work	87 h																
Examination/test	36 h																
Total hours	180 h																
Credits:	5 credits																

COM-technologies

<p>A graduate who has mastered the bachelor's degree program must possess the following</p>	<p>To understand:</p> <ul style="list-style-type: none"> • the basic techniques and methods of automation design, production, testing and evaluation of software quality. • current models and methods for assessing the 	<table> <tr> <td>Lectures:</td> <td>32 h</td> </tr> <tr> <td>Tutorials</td> <td>0 h</td> </tr> <tr> <td>Practical exercises lessons</td> <td>0 h</td> </tr> <tr> <td>Case studies</td> <td>0 h</td> </tr> <tr> <td>Workshop</td> <td>0 h</td> </tr> </table>	Lectures:	32 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	<p>Assessment: Laboratory workshop – 100 points; Total: 100</p>
Lectures:	32 h												
Tutorials	0 h												
Practical exercises lessons	0 h												
Case studies	0 h												
Workshop	0 h												

<p>general professional skills:</p> <ul style="list-style-type: none"> the understanding of essence and significance of information in modern information society development and the compliance with the basic requirements for information security, including state secrets protection <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to select source data for designing the ability to design basic and applied information technologies 	<p>quality and reliability of the design.</p> <ul style="list-style-type: none"> the main problems of modern computer science and programming. <p>To be able :</p> <ul style="list-style-type: none"> To develop new methods and tools for the design of information systems. To forecast the development of information systems and technologies to implement and support the choice of design decisions on the types of information systems. <p>To obtain:</p> <ul style="list-style-type: none"> forecasting skills of the information systems development and technologies. the development of new methods and tools for the design of information systems. modern operating elements. 	<p>Laboratory workshops 40 h</p> <p>Trainings 0 h</p> <p>Didactic games 0 h</p> <p>Self-guided work 72 h</p> <p>Examination/test 0 h</p> <p>Total hours 144 h</p> <p>Credits: 4 credits</p>	
Project management in e-commerce systems			
<p>A graduate who has mastered the bachelor's</p>	<p>To understand:</p> <ul style="list-style-type: none"> particularities of project implementation in e-commerce 	<p>Lectures: 32 h</p> <p>Tutorials 0 h</p> <p>Practical exercises lessons 0 h</p>	<p>Assessment:</p> <p>Laboratory workshop – 70 points;</p> <p>Essay – 18 points;</p>

<p>degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to conduct a pre-project survey of the design object, a system analysis of the subject area and their interrelationships • the ability to develop, coordinate and produce all types of project documentation • the ability to arrange the received results as presentations, scientific and technical reports, articles and lectures at scientific and technical conferences 	<ul style="list-style-type: none"> • main usefulness argumentation of an Internet project. • the composition and structure of the reference terms for the development of the Internet project, especially the Internet-project planning • Guidelines for the preparation of scientific and technical reports, presentations and briefings. <p>To be able :</p> <ul style="list-style-type: none"> • To set up specific features of the project, set up goals and objectives of the project. • to use tools for project planning; • to use tools to prepare presentations <p>To obtain:</p> <ul style="list-style-type: none"> • domain skills analysis of the project. • skills trainings of reference terms for the development of the Internet project, development plan of the project; • skills trainings of accounting documentation, presentation of project results through reports and presentations. 	<table> <tr> <td>Case studies</td> <td>0 h</td> </tr> <tr> <td>Workshop</td> <td>0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td>40 h</td> </tr> <tr> <td>Trainings</td> <td>0 h</td> </tr> <tr> <td>Didactic games</td> <td>0 h</td> </tr> <tr> <td>Self-guided work</td> <td>72 h</td> </tr> <tr> <td>Examination/test</td> <td>0 h</td> </tr> <tr> <td>Total hours</td> <td>144 h</td> </tr> <tr> <td>Credits:</td> <td>4 credits</td> </tr> </table>	Case studies	0 h	Workshop	0 h	Laboratory workshops	40 h	Trainings	0 h	Didactic games	0 h	Self-guided work	72 h	Examination/test	0 h	Total hours	144 h	Credits:	4 credits	<p>Research– 12 points; Total: 100</p>
Case studies	0 h																				
Workshop	0 h																				
Laboratory workshops	40 h																				
Trainings	0 h																				
Didactic games	0 h																				
Self-guided work	72 h																				
Examination/test	0 h																				
Total hours	144 h																				
Credits:	4 credits																				

TRACK OF: DEVELOPMENT, MAINTENANCE AND SUPPORT OF THE INFORMATION SYSTEMS SECURITY

Basic usage and its configuration 1C: Enterprise

<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to carry out detailed designing • the ability to develop means of implementing information technologies (methodical, information, mathematical, algorithmic, technical and software) 	<p>To understand:</p> <ul style="list-style-type: none"> • basic operation 1C: Enterprise • user activity algorithm of 1C: Enterprise • construction methods and modern corporate information systems implementation • main objects of typical configurations systems 1C: Enterprise, their characteristics and properties • functionality of 1C: Enterprise • general principles and working sequence with the configuration objects 	<table> <tr><td>Lectures</td><td>38 h</td></tr> <tr><td>Tutorials</td><td>0 h</td></tr> <tr><td>Practical exercises lessons</td><td>0 h</td></tr> <tr><td>Case studies</td><td>0 h</td></tr> <tr><td>Workshop</td><td>0 h</td></tr> <tr><td>Laboratory workshops</td><td>38 h</td></tr> <tr><td>Trainings</td><td>0 h</td></tr> <tr><td>Didactic games</td><td>0 h</td></tr> <tr><td>Self-guided work</td><td>32 h</td></tr> <tr><td>Exam/test</td><td>36 h</td></tr> <tr><td>Total hours</td><td>144 h</td></tr> <tr><td>Credits:</td><td>4 credits</td></tr> </table>	Lectures	38 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	38 h	Trainings	0 h	Didactic games	0 h	Self-guided work	32 h	Exam/test	36 h	Total hours	144 h	Credits:	4 credits	<p>Assessment: Laboratory workshop – 100 points; Total: 100</p>
	Lectures		38 h																								
	Tutorials		0 h																								
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	38 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	32 h																										
Exam/test	36 h																										
Total hours	144 h																										
Credits:	4 credits																										
<p>To be able :</p> <ul style="list-style-type: none"> • To determine the required set of features and configuration options to customize the efficient work of the users of 1C: Enterprise • to use effective ways of work with the standard configuration objects • to formulate automation tasks for the individual business processes 																											
<p>To obtain:</p> <ul style="list-style-type: none"> • setup and trainings skills of a typical configuration of 1C: Enterprise skills to realize individual and collective work with a typical configuration of 1C: Enterprise (different modes) • skills to develop their own algorithms to solve the problem in the embedded language 1C: 																											

Enterprise				
Programming and hardware of information security				
<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to maintain the operability of information systems and technologies due to specified functional characteristics and in compliance with quality criteria • the ability to ensure security and integrity of these information systems and technologies 	<p>To understand:</p> <ul style="list-style-type: none"> • a list of info-communication equipment and its technic details; • creation method of protected local area network (LAN) topology; • a list and details of server equipment required to create a secure local area network; • a list and capabilities of server operating systems and server software; • software and hardware means for identification and authentication (MIA) of LAN users. • threats to the security of operating systems (OS); • OS protection mechanisms; • principles and means of access rights differentiation in the operating system; • principles and means of role-based management in the OS access rights; • embedded security tools of the OS. • Network shielding function; • classification, capabilities and settings of firewalls; • principles of network traffic filtering; • functions and technologies of secure virtual private networks (VPN); • ways to organize and build secure virtual 	<p>Lectures: 38 h Tutorials 0 h Practical exercises lessons 0 h Case studies 0 h Workshop 0 h Laboratory workshops 38 h Trainings 0 h Didactic games 0 h Self-guided work 68 h <u>Examination/test</u> 36 h Total hours 180 h Credits: 5 credits</p>	<p>Assessment: Laboratory workshop – 70 points; Essay – 15 points; Research– 15 points; Total: 100</p>	

	<p>private networks (VPN);</p> <ul style="list-style-type: none"> • types of network attacks; • detection and reflection methods of network attacks; • security analysis tools • PC; • classification of malicious code; • principles of echelon protect your PC; • PC protection from malicious code; • signs of PC infection; • steps to do when it infects a computer; • Principles of safe work in social networking websites. 		
	<p><i>To be able :</i></p> <ul style="list-style-type: none"> • to determine the list and technic details of communication equipment to create a secure LAN basing on the task; • to determine the list and specifications of servers, workstations and peripherals to create a secure LAN; • to identify ways to optimal placement of servers, workstations and peripherals to create a secure LAN; • to determine the list and technic details of MIA to create a secure LAN basing on the task. • to configure automatic update for the Windows operating system, control updates; • to configure the system audit events in the Windows operating systems; • to customize the built-in security of Windows 		

	<p>operating system;</p> <ul style="list-style-type: none"> • to configure archiving of computer data and make recovery from the archive; • to define and customize a security policy group in Windows operating systems. • To assess the possibility of software and hardware information security tools; • to comparative study and selection software and hardware information security tools basing on the problem conditions; • to carry out the installation, configuration and operation of software and hardware information security tools; • to create a usage policy of selected software and hardware information security tools in the context of the organization's information security policy. 		
	<p><i>To obtain:</i></p> <ul style="list-style-type: none"> • Skills of secure LAN topology developing; • skills of a complex hardware and software creation to ensure the safe operation of LAN users, including administrative MIA tools. <p>Security skills for Windows operating system;</p> <ul style="list-style-type: none"> • role-based access control in Windows operating systems. • practical use skills of software and hardware information security tools; • skills of analyzing the technical and economic characteristics of software and hardware information security tools samples for 		

	preparation of proposals on the operation of such equipment at all stages of the life cycle of IP; <ul style="list-style-type: none"> • modernization program skills and technical architecture of the organization in order to ensure information security and data protection. 																										
<i>Security of operational systems and databases</i>																											
<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to maintain the operability of information systems and technologies due to specified functional characteristics and in compliance with quality criteria • the ability to ensure security and integrity of these information systems and technologies 	<p>To understand:</p> <ul style="list-style-type: none"> • the main stages of the experiment performance to develop additional means of protecting information for client operating systems; • basic definitions and OS security rules; • basic defense mechanism of the client's OS; • particularities of client's security and security arrangements on Windows and Linux. • requirements for server operating systems to protect information from unauthorized access; • basic defense mechanisms of server operating systems; • particularities of security server rules on Windows and Unix; • basic techniques of attacks on the operating system. <p>To be able :</p> <ul style="list-style-type: none"> • To establish requirements for the work of experimental research regarding data users and administrators security; • to establish requirements for password length and complexity; • to establish requirements for the frequency 	<table border="0"> <tr> <td>Lectures:</td> <td style="text-align: right;">36 h</td> </tr> <tr> <td>Tutorials</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Practical exercises lessons</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Case studies</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Workshop</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td style="text-align: right;">54 h</td> </tr> <tr> <td>Trainings</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Didactic games</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Self-guided work</td> <td style="text-align: right;">90 h</td> </tr> <tr> <td><u>Examination/test</u></td> <td style="text-align: right;">36 h</td> </tr> <tr> <td>Total hours</td> <td style="text-align: right;">216 h</td> </tr> <tr> <td>Credits:</td> <td style="text-align: right;">6 credits</td> </tr> </table>	Lectures:	36 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	54 h	Trainings	0 h	Didactic games	0 h	Self-guided work	90 h	<u>Examination/test</u>	36 h	Total hours	216 h	Credits:	6 credits	<p>Assessment: Laboratory workshop – 100 points; Total: 100</p>
Lectures:	36 h																										
Tutorials	0 h																										
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	54 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	90 h																										
<u>Examination/test</u>	36 h																										
Total hours	216 h																										
Credits:	6 credits																										

	<p>change and blocking the password;</p> <ul style="list-style-type: none"> • to set access rights for different user groups; • To evaluate the threat of the client operating system security • to verify the client OS security • to establish and control user rights • To configure the Secure Socket Layer • to configure auditing Active Directory Domain Services • to configure the Kerberos network authentication protocol • to configure authentication based on keys • to evaluate threats to security server of OS • to verify the server security of OS 		
	<p>To obtain:</p> <ul style="list-style-type: none"> • skills of experimental studies using standard and security policy of OS • skills to configure security policies and users accounts of OS • evaluate the client security of OS • skills of security deterring of OS • skills for management protocol means to ensure OS security • skills to administer user rights and audit for access to operating system resources • evaluating skills of security level of OS server 		
Server applications development for WEB			
<p>A graduate who has</p>	<p>To understand:</p> <ul style="list-style-type: none"> • how to develop server applications using different 	<p>Lectures: 36 h Tutorials 0 h</p>	<p>Assessment: Laboratory workshop – 70 points;</p>

<p>mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to develop means of implementing information technologies (methodical, information, mathematical, algorithmic, technical and software) • the ability to adapt applications to changing operational modalities 	<p>technologies</p> <ul style="list-style-type: none"> • technological and functional standards. <p>To be able :</p> <ul style="list-style-type: none"> • To use modern approaches for the development of Internet applications • to develop new methods and information design tools <p>To obtain:</p> <ul style="list-style-type: none"> • skills in the development of Internet applications • forecasting skills in the developing of information systems and technologies 	<p>Practical exercises lessons 0 h</p> <p>Case studies 0 h</p> <p>Workshop 0 h</p> <p>Laboratory workshops 36 h</p> <p>Trainings 0 h</p> <p>Didactic games 0 h</p> <p>Self-guided work 32 h</p> <p><u>Examination/test</u> 36 h</p> <p>Total hours 180 h</p> <p>Credits: 5 credits</p>	<p>Final term research – 100 points; Total: 100</p>
--	---	--	--

Administration of information systems

<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to maintain the operability of information systems and technologies due to specified functional characteristics and in compliance with quality criteria • the ability to compile operation instructions for information systems • the ability to install and to support the software and to set up the hardware to input the information systems in experimental operation and production 	<p>To understand:</p> <ul style="list-style-type: none"> • reference and functional characteristics of information systems. • basic administrative tasks of the operating system and management tools available to the operating system; the main database server administrator's tasks and data available to the control of database server tools; • the main features of different creators subsystems. • standards for the design of information systems • the development of standards of technical and design documents for information systems <p>To be able :</p> <ul style="list-style-type: none"> • to maintain the working efficiency of information systems with the supplied parameters. • using the tools of the operating system, manage users, configure the hardware and software of system to manage the database server users. • install and configure of different creators subsystems. • use tools for designing information systems • use the tools of information systems security <p>To obtain:</p> <ul style="list-style-type: none"> • to skills in methodology compliance criteria of quality assessment of information system. • to skills to manage workstations and servers running by operating systems; database servers. • to procedure of testing and commercial implementation of information system • to skills for preparing of technical documentation 	<table> <tr><td>Lectures:</td><td style="text-align: right;">36 h</td></tr> <tr><td>Tutorials</td><td style="text-align: right;">0 h</td></tr> <tr><td>Practical exercises lessons</td><td style="text-align: right;">0 h</td></tr> <tr><td>Case studies</td><td style="text-align: right;">0 h</td></tr> <tr><td>Workshop</td><td style="text-align: right;">0 h</td></tr> <tr><td>Laboratory workshops</td><td style="text-align: right;">36 h</td></tr> <tr><td>Trainings</td><td style="text-align: right;">0 h</td></tr> <tr><td>Didactic games</td><td style="text-align: right;">0 h</td></tr> <tr><td>Self-guided work</td><td style="text-align: right;">72 h</td></tr> <tr><td><u>Examination/test</u></td><td style="text-align: right;">36 h</td></tr> <tr><td>Total hours</td><td style="text-align: right;">180 h</td></tr> <tr><td>Credits:</td><td style="text-align: right;">5 credits</td></tr> </table>	Lectures:	36 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	36 h	Trainings	0 h	Didactic games	0 h	Self-guided work	72 h	<u>Examination/test</u>	36 h	Total hours	180 h	Credits:	5 credits	<p>Assessment: Laboratory workshop – 90 points; Essay – 10 points; Total: 100</p>
Lectures:	36 h																										
Tutorials	0 h																										
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	36 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	72 h																										
<u>Examination/test</u>	36 h																										
Total hours	180 h																										
Credits:	5 credits																										

	<ul style="list-style-type: none"> to audit check skills in accordance with the requirements of the technical documentation standards for information systems. 																										
Administration and configuration of IC: Enterprise																											
<p>A graduate who has mastered the bachelor's degree program must possess the following general cultural skills:</p> <ul style="list-style-type: none"> the ability to analyze socially significant problems and processes, the ability to put into practice methods of humanitarian, environmental, social and economic sciences in various types of professional and social activities <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> the ability to compile 	<p>To understand:</p> <ul style="list-style-type: none"> the basic techniques and methods of automation equipment design, production, testing and evaluation of software quality. the system architecture of the software modules "1C: Enterprise" <p>To be able :</p> <ul style="list-style-type: none"> to develop new methods and tools for the design of information systems. to develop software configuration modules that implement algorithms of applied behavior of the overall solution, individual facilities and also algorithms of interaction <p>To obtain:</p> <ul style="list-style-type: none"> methods for monitoring trends in the development of information systems and technologies. skills of group application development solution of system "1C: Enterprise" 	<table border="0"> <tr> <td>Lectures:</td> <td style="text-align: right;">36 h</td> </tr> <tr> <td>Tutorials</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Practical exercises lessons</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Case studies</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Workshop</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td style="text-align: right;">54 h</td> </tr> <tr> <td>Trainings</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Didactic games</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Self-guided work</td> <td style="text-align: right;">126 h</td> </tr> <tr> <td><u>Examination/test</u></td> <td style="text-align: right;">36 h</td> </tr> <tr> <td>Total hours</td> <td style="text-align: right;">252 h</td> </tr> <tr> <td>Credits:</td> <td style="text-align: right;">7 credits</td> </tr> </table>	Lectures:	36 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	54 h	Trainings	0 h	Didactic games	0 h	Self-guided work	126 h	<u>Examination/test</u>	36 h	Total hours	252 h	Credits:	7 credits	<p>Assessment:</p> <p>Laboratory workshop – 60 points; Essay – 40 points; Total: 100</p>
Lectures:	36 h																										
Tutorials	0 h																										
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	54 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	126 h																										
<u>Examination/test</u>	36 h																										
Total hours	252 h																										
Credits:	7 credits																										

<p>operation instructions for information systems</p> <ul style="list-style-type: none"> • the ability to apply the basic techniques and methods of establishment documentation and drawings and their reading with the use of hardware and software components of information systems • the ability to select and evaluate the way information systems and devices (software, hardware or hardware-software) are implemented to solve the task 																											
<i>Design and implementation of 1C: Enterprise configurations</i>																											
<p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to carry out technical designing 	<p>To understand:</p> <ul style="list-style-type: none"> • the basic techniques and methods of design automation, production, testing and evaluation of software quality. • methods to implement total number of technological tools and configuration mechanisms while developing of application solutions of system "1C: Enterprise"; • construction of the system architecture of the software modules "1C: Enterprise" • interaction methods of typical configurations of system "1C: Enterprise" with other applications and systems <p>To be able :</p>	<table border="0"> <tr> <td>Lectures:</td> <td style="text-align: right;">38 h</td> </tr> <tr> <td>Tutorials</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Practical exercises lessons</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Case studies</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Workshop</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td style="text-align: right;">76 h</td> </tr> <tr> <td>Trainings</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Didactic games</td> <td style="text-align: right;">0 h</td> </tr> <tr> <td>Self-guided work</td> <td style="text-align: right;">138 h</td> </tr> <tr> <td><u>Examination/test</u></td> <td style="text-align: right;">36 h</td> </tr> <tr> <td>Total hours</td> <td style="text-align: right;">288 h</td> </tr> <tr> <td>Credits:</td> <td style="text-align: right;">8 credits</td> </tr> </table>	Lectures:	38 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	76 h	Trainings	0 h	Didactic games	0 h	Self-guided work	138 h	<u>Examination/test</u>	36 h	Total hours	288 h	Credits:	8 credits	<p>Assessment:</p> <p>Laboratory workshop – 100 points; Final term research – 100 points; Total: 100</p>
Lectures:	38 h																										
Tutorials	0 h																										
Practical exercises lessons	0 h																										
Case studies	0 h																										
Workshop	0 h																										
Laboratory workshops	76 h																										
Trainings	0 h																										
Didactic games	0 h																										
Self-guided work	138 h																										
<u>Examination/test</u>	36 h																										
Total hours	288 h																										
Credits:	8 credits																										

<ul style="list-style-type: none"> • the ability to carry out detailed designing • the ability to design basic and applied information technologies • the ability to develop means of implementing information technologies (methodical, information, mathematical, algorithmic, technical and software) 	<ul style="list-style-type: none"> • to develop new methods and tools for the design of information systems. • to use the embedded mechanisms for the development of applied solutions of the system "1C: Enterprise"; • to develop software configuration modules that implement algorithms of applied behavior of the overall solution, individual facilities and also algorithms of interaction; • to use the embedded mechanisms for the integration of system "1C: Enterprise" with external applications and systems; <p>To obtain:</p> <ul style="list-style-type: none"> • methods for monitoring trends in the development of information systems and technologies. • skills of a professional approach to application solution of development system "1C: Enterprise". • skills of group application solution development of system "1C: Enterprise" • skills to optimize the efficiency of the developed application system solutions "1C: Enterprise" 		
---	--	--	--

Information Management

<p>A graduate who has mastered the bachelor's degree program must possess the following general professional skills:</p> <ul style="list-style-type: none"> • the ability to select and evaluate the way information systems and devices 	<p>To understand:</p> <ul style="list-style-type: none"> • main categories and concepts of the course. • main ways of interaction of IT experts and specialists in the enterprise domain; • principles of effective work of the group and the organization of the labor process; • principles and methods of organizing and managing IT teams • business information management, management of information technology. 	<table> <tr> <td>Lectures:</td> <td>38 h</td> </tr> <tr> <td>Tutorials</td> <td>0 h</td> </tr> <tr> <td>Practical exercises lessons</td> <td>0 h</td> </tr> <tr> <td>Case studies</td> <td>0 h</td> </tr> <tr> <td>Workshop</td> <td>0 h</td> </tr> <tr> <td>Laboratory workshops</td> <td>76 h</td> </tr> <tr> <td>Trainings</td> <td>0 h</td> </tr> <tr> <td>Didactic games</td> <td>0 h</td> </tr> <tr> <td>Self-guided work</td> <td>138 h</td> </tr> <tr> <td><u>Examination/test</u></td> <td>36 h</td> </tr> </table>	Lectures:	38 h	Tutorials	0 h	Practical exercises lessons	0 h	Case studies	0 h	Workshop	0 h	Laboratory workshops	76 h	Trainings	0 h	Didactic games	0 h	Self-guided work	138 h	<u>Examination/test</u>	36 h	<p>Assessment:</p> <p>Laboratory workshop – 90 points; Research – 10 points; Total: 100</p>
Lectures:	38 h																						
Tutorials	0 h																						
Practical exercises lessons	0 h																						
Case studies	0 h																						
Workshop	0 h																						
Laboratory workshops	76 h																						
Trainings	0 h																						
Didactic games	0 h																						
Self-guided work	138 h																						
<u>Examination/test</u>	36 h																						

<p>(software, hardware or hardware-software) are implemented to solve the task</p> <p>A graduate who has mastered the bachelor's degree program must possess the professional skills in compliance with the type (or types) of professional activity on which the bachelor's program is focused</p> <ul style="list-style-type: none"> • the ability to calculate the economic efficiency • the ability to collect and analyze scientific and technical information, domestic and foreign experience on the subject of research 	<ul style="list-style-type: none"> • Enterprise Content Management (ECM). Service desks. ITIL. IS Price and IS acquisition cost. • concept of IS quality. • advantages and disadvantages unique and retailed information systems. • classification of IS and developing trends. • life cycle of IS and its main stages. • standards and life cycle of IS models. • problems of the analysis phase requirements to the IS. • advantages and disadvantages of different methods of IS acquisition. • ways of acquiring IS • nature of pre-project inspection and system analysis domain. • problems of the analysis phase requirements to the IS 	<p>Total hours 288 h Credits: 8 credits</p>	
	<p><i>To be able :</i></p> <ul style="list-style-type: none"> • To self-study of lecture material, textbooks, manuals, scientific literature, periodicals and Internet resources; • to carry out oral and written tasks according to the programme of the discipline. • to manage support of IS operation. • To implement an information system in the enterprise • To ensure mutual adaptation of enterprise and IS. 		

	<ul style="list-style-type: none"> • to develop an IT strategy and IS of enterprise. • to identify strategic IS properties. • to choose IS class. • to develop and analyze the requirements to IS for the subsequent acquisition • to implement an information system in the enterprise • to ensure mutual adaptation of enterprise and IS. • to develop an IT strategy and IS of enterprise. • to develop and analyze the requirements to IS for the subsequent acquisition • to set goals and formulate the tasks associated with the implementation of professional functions; • to define criteria for the effectiveness of the working group of IT experts. • to seek solutions in unusual situations • to manage support of IS operation. • to implement an information system in the enterprise • to ensure mutual adaptation of enterprise and IS • to develop an IT strategy and IS of enterprise • to develop and analyze the requirements to IS for the subsequent acquisition 		
	<p><i>To obtain:</i></p> <ul style="list-style-type: none"> • skills of generalization, analysis, perception of information, setting goals and selecting ways of achieving it, the ability to speak and write logically, truly and with clear arguments • skills of cooperation with colleagues and teamwork • making research skills in unusual situations and • readiness to take responsibility for them • skills to solve practical problems in the 		

	<p>information systems and technologies sphere</p> <ul style="list-style-type: none"> • selection and evaluation skills of acquisition method of information systems on demand • skills of pre-project survey design object, system analysis of the subject area and their interconnections. • skills development methodology means of information technology implementation • skills of IS performance and technology with the respect to functional characteristics and in according to quality criteria 		
--	--	--	--