MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
ODESA I.I. MECHNYKOV NATIONAL UNIVERSITY

DEPARTMENT OF MARKETING AND BUSINESS ADMINISTRATION

APPROVED
Vice-rector for scientific and pedagogical work

_____ _____

«_____» _____ 20___ p.

WORKING PROGRAM OF EDUCATIONAL COURSE

Modelling, analysis and automation of business processes

Level of higher education: Second (master's)
Field of knowledge: 12 Information technologies
Specialty: 126 Information systems and technologies
Educational and professional program: Information systems and technologies

2023

Work program of the educational discipline "Modelling, analysis and automation of business processes". – Odesa: ONU, 2023. –19 p.

Maryna Chaikovska, Doctor of economic sciences, Professor, professor of the Department of Marketing and Business Administration

The work program was approved at the meeting of the Department of Marketing and Business Administration
Protocol No. ___ of "___" _____ 20___

Head of the department _____Olena SADCHENKO

Agreed with the guarantor of the EPP "Information Systems and Technologies"
"___" _____ 20___
Guarantor of EPP _____Eugene MALAKHOV

Approved by the Educational and Methodological Commission (EMC) of the Faculty of Economics and Law
Protocol No. ___ of "___" _____ 20___
Head of EMC. _____ Iryna HOLODENKO

Reviewed and approved at a meeting of the Department of Marketing and Business Administration

Protocol No. ___ from "____" _____ 20 __

Head of Department _____ (_____)
(signature) (First Name Surname)

Reviewed and approved at a meeting of the Department of Marketing and Business Administration

Protocol No. ___ from "____" _____ 20 __

Head of Department _____ (_____)
(signature) (First Name Surname)

1. Description of the academic course

Name of indicators	Field of knowledge, specialty, specialization, level of higher education	Characteristics of the academic discipline
The total number of credits is 4 hours - 120 content modules - 2	Field of knowledge: 12 Information technologies Specialty: 126 Information systems and technologies Level of higher education: Second (master's)	Mandatory
		A year of training
		1-st
		Semester
		1-st
		Lectures
		14 h.
		Laboratory
		16 h.
		Individualt work
		90 h.
		Final control form
		Exam

2. The purpose and tasks of the educational course

The *purpose* of the discipline is the formation of a system of theoretical knowledge and practical skills regarding the application of modern models, methodologies, tools for the automation of business processes in the enterprise in the conditions of the transition of the organization to the use of digital channels.

Tasks of the discipline:

- acquiring the necessary knowledge of modern areas and technologies of modeling business processes, their standards and tools, which would make it possible to effectively apply information systems in practice to obtain relevant, timely, reliable, complete information for solving problems of a research and innovation nature in the field information systems and technologies;
- acquiring the necessary theoretical knowledge regarding modern areas of automation of business processes, concepts of modeling enterprise business processes and methodological approaches to their reengineering, areas of development of the information infrastructure of the enterprise in order to create effective communication in the process of management and solving the tasks of managing the organization;
- acquisition of practical skills of working in specific automated information systems regarding the analysis and modeling of business processes used by modern organizations, for the effective use and development of the organization's resources, identification of problems in the organization and justification of their solution methods;
- acquisition of practical skills of creating models of business processes in accordance with the relevant standards, conducting research to identify prerequisites for the introduction of information and communication technologies, selecting and evaluating the effectiveness of their use in order to plan and implement informational, methodical, material, financial and personnel support of the organization.

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

–IC: The ability, to solve research and innovation-oriented tasks in the field of information systems and technologies.

-GC03. Ability to communicate with representatives of other professional groups at various levels experts from different fields of knowledge/types of economic activities.

– GC04. Capability to develop and manage projects.

– GC05. Proficiency in assessing and ensuring the quality of work performed.

– SC02. The ability to formulate requirements for the stages of the life cycle of service-oriented information systems.

– SC04. The ability to develop mathematical, informational, and computer models of objects and processes related to informatization.

– SKM01. The ability to formalize economic situations, apply mathematical methods for justification and make managerial and technical decisions in various situations.

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

LOO3. Make effective decisions on the development of information infrastructure, creation, and application of ICT.

LOO4. Manage complex, unpredictable processes related to the development, implementation, and operation of ICT, requiring new strategic and team approaches.

LOO5. Define requirements for ICT based on the analysis of business processes and stakeholder needs, and develop technical specifications.

LOO11. Solve digital transformation tasks in new or unfamiliar environments based on specialized conceptual knowledge, including modern scientific achievements in the field of information technology, research, and knowledge integration from various fields.

EXPECTED RESULTS

As a result of studying the course, the student must

to know: theoretical, methodological and methodical bases of modeling; organizational and legal principles of creation and functioning of information systems and communication technologies; main categories of modeling business processes; concepts of engineering and reengineering of business processes; a system of business process modeling standards; types of information products of analysis and modeling of business processes; - the essence and content of the management process model; the principles of a systematic approach to modeling and reengineering the company's activities in order to critically consider, select and use the necessary scientific, methodical and analytical tools for management in unpredictable conditions;

to be able to: effectively apply information systems and business process modeling technologies in practice; application of business process automation tools; choose a class of models for a certain task; develop models of business processes in modeling standards; use modern technological tools of analysis and modeling; form a comprehensive and systematic view of the modeling and reengineering of material, financial and information flows of the enterprise, aimed at optimizing business processes and organizational structure, redistributing and minimizing the use of resources, shortening the terms of production cycles, realizing customer needs, improving the quality of their

service, which are reserves ensuring flexibility and increasing the efficiency and competitiveness of enterprises at present.

3. Course content

Module 1. Modeling and reengineering of the enterprise's business processes

Topic 1. Evolution of production and economic systems in the context of the current stage of development of informatization and modeling processes.

Characteristics of transformational processes in the economy and business environment. Ukraine is in the process of developing information society technologies. Prospects of Industry 4.0 in Ukraine. The main factors and barriers to growth. State support of information processes of the economy of Ukraine. The latest mechanisms in management. The role and significance of modeling in the activities of modern enterprises. Evolution of production systems paradigms, software development methodologies, epistemological approaches. The company's maturity model for assessing the level of application of information systems and communication technologies. Information base and system of technical and economic indicators for modeling the enterprise's activity.

Topic 2. Modern perspective directions of modeling the activity of enterprises.

Classification of modeling approaches. Comparative characteristics and areas of application of models. The evolution of the development of simulation modeling approaches. Peculiarities of agent modeling and reflexive approach. Challenges of the modern stage of the use of CASE technologies. Modern technologies and models of analysis and construction of socio-economic development trends and applying them to justify the development strategy of economic entities and the formation of related management decisions.

Topic 3. Process approach to enterprise management.

Advantages of using process-oriented enterprise management. Definition and main characteristics, signs of business processes of the enterprise. Purpose, tasks, tools for modeling business processes of an enterprise. Modern approaches to the classification of information systems and communication technologies at the enterprise. CRM strategy – modeling of business processes of customer relations. Resource planning systems synchronized with purchasing of the USSR - requirements, characteristics, functionality. Management strategy based on the concept of CRM and ERP II. Characteristics, advantages, directions of development, standards. CRM systems as a tool for implementing a new customer-oriented business paradigm.

Module 2. Modern technological tools for analysis and automation of business processes

Topic 4. Business engineering and reengineering at the enterprise.

Features and advantages of the engineering approach Definition, purpose and characteristics of optimization and reengineering of business processes. Problems and conditions of application. Evolution of business process modeling methodologies. Development directions of IDEF modeling standards.

Topic 5. Characteristics of specialized IDEF methodologies.

IDEF0 standard for modeling enterprise business processes. Notations, schemes, connections. Characteristics, advantages and disadvantages, scope of application of IDEF1, IDEF3 and DFD standards. Characteristics, advantages and disadvantages, scope of the IDEF5 standard.

Topic 6. Evolution of the technological automation toolkit in relation to multi-approach modeling.

Connection of business process reengineering and enterprise informatization. ARIS concept. Principles, flows, models, advantages. Prospects for the further development of software tools for the implementation of methodologies for modeling the activities of enterprises.

4. Course structure

Titles of topics	**Number of hours**				
	Total				
		lec	**pr**	**lab**	**iw**
1	2	3	4	5	6
Module 1. Modeling and reengineering of the enterprise's business processes					
Topic 1. Evolution of production and economic systems in the context of the current stage of development of informatization and modeling processes.	15	4		2	9
Topic 2. Modern perspective directions of modeling the activity of enterprises	15	2		2	11
Topic 3. Process approach to enterprise management	15	2		2	11
Control work M 1	15			2	13
Total M1	60	8		8	44
Module 2. Modern technological tools for analysis and automation of business processes					
Topic 4. Business engineering and reengineering at the enterprise	15	2		2	11
Topic 5. Characteristics of specialized IDEF methodologies	15	2		2	11
Topic 6. Evolution of the technological automation toolkit in relation to multi-approach modeling.	15	2		2	11
Control work M 2	15			2	13
Total M2	60	6		8	46
Total	**120**	**14**		**16**	

5. Topics of seminar classes

Seminar classes are not provided.

6. Topics of practical classes

Practical classes are not provided.

7. Topics of laboratory classes

№	Titles of topics	Number of hours
Module 1. Modeling and reengineering of the enterprise's business processes.		
1.	The role and significance of modeling in the activities of modern enterprises. The company's maturity model for assessing the level of application of information systems and communication technologies. Modern trends of enterprise activity modeling.	2
2.	Modeling tools for enterprise business processes. Modeling of business processes by means of agent modeling.	2
3.	Modeling business processes of customer relations in CRM systems.	2
4.	Control work on content module 1	2
Module 2. Modern technological tools for analysis and automation of business processes		
5.	Management of engineering and reengineering projects of business processes of the enterprise.	2
6.	Complex modeling of enterprise business processes in IDEF standards. Modeling of business processes in the IDEF0 standard. Prospects for the development of business modeling standards and products.	2
7.	A portal approach to the modeling and automation of enterprise business processes in IS. Formalization of enterprise activity in information systems	2
8.	Control work on content module 2	2
	Total	**16**

9. Individual work

№	Titles of topics	Number of hours
Module 1. Modeling and reengineering of the enterprise's business processes		
1.	Characteristics of transformation processes in the economy and business environment. Evolution of the vector and modeling tools in the activities of current enterprises. analysis of models of technological maturity.	9
2.	Information base and system of technical and economic indicators for modeling business activities. Classification of approaches before modeling. The characteristics of the area of stagnation of models are equal. Evolution of simulation modeling approaches development.	9
3.	Advantages of process-oriented enterprise management. The main characteristics and signs of business processes of the enterprise are important. Meta, design, tools for modeling business processes of an enterprise.	11
4.	Control work on content module 1	13
Module 2. Modern technological tools for analysis and automation of business processes		
5.	Advantages of the engineering approach to modeling the activities of enterprises. Benchmarking of projects 11	11
6.	Directions and features of development of IDEF modeling standards. S. Notations, schemes, connections. Characteristics, advantages and disadvantages, scope of application of IDEF1, IDEF3 and DFD standards. Characteristics, advantages and disadvantages, scope of the IDEF5 standard. 11	11

7.	Modern approaches to modeling and automation of enterprise business processes. Challenges and threats. Automation of processes in IS. 11	11
8.	Control work on content module 2	13
	Total	**90**

Individual work includes:

[1] – preparation for lectures, laboratory classes, and current controls for meaningful modules

[2] – writing abstracts and preparing a presentation for defense

[3] – solving practical problems

[4] – performance of laboratory work in the software environment.

9. Teaching methods

The following teaching methods are used in the process of studying an academic discipline:

- - verbal methods: lecture, story, conversation, explanation, discussion, discussion of problem situations; project method, case method, brainstorming, preparation and defense of essays
- - visual methods: multimedia presentation, demonstration (in the form of distributed illustrative material);
- - practical methods: solving practical problems (including calculations), performing situational exercises and discussing problem situations; analysis of statistical data, performance of individual tasks, essay writing, preparation and presentation of reports, discussion of reports.

10. Forms of control and assessment methods (including criteria for evaluating learning outcomes)

Current control:

- oral control: individual / face-to-face survey on questions of the relevant topic, evaluation of the performance of individual independent tasks, protection of projects; evaluation of essays (report and presentation evaluation);

- written control: assessment of solving practical problems, assessment of the quality of independent work by topic, portfolio, self-check tests; assessment of solving situational exercises and problem situations;

- test control: evaluation of current testing by topics.

Periodic control:

- test control: evaluation of control works by meaningful modules (testing).

Final control: exam.

Criteria for evaluating the educational achievements of higher education

applicants for various types of work

Type of work	**Scores**
Current control:	
- - Survey on the questions of the relevant topic at the practical session, participation of the applicants in the discussion of problematic issues	0- 2
- - Making essays on one of the proposed topics: report and demonstration of the presentation	0- 3
- - Solving practical problems, situational exercises and problem situations	0- 5
Periodic control:	
- - Control work on meaningful modules in the form of testing	0- 5
Final control	
- - Exam in the form of testing	0- 20

Type of work	**Scores**	**Evaluation criteria**
Survey on questions of the relevant topic in a practical session, participation of applicants in the discussion of problematic issues	0	The acquirer does not participate in the practical session, is only an observer; never speaks or asks questions, disinterested in learning the material; gives wrong answers to questions, shows unsatisfactory knowledge of conceptual apparatus and literary sources.
	1	The acquirer sometimes participates in practical training; partially speaks and asks questions; makes mistakes when answering questions; shows passive work in practical classes; shows fragmentary knowledge of the conceptual apparatus and literary sources; shows the inability to publicly present the material.
	2	The applicant takes an active part in practical training; demonstrates deep knowledge, gives complete and detailed answers to questions; actively participates in the discussion of problematic issues, uses additional educational and methodological and scientific literature; knows how to form his attitude to a certain problem; expresses his own reasoning, gives appropriate examples; knows how to find the most adequate forms of conflict resolution; able to present the material publicly.
Writing essays on one of the proposed topics: report and demonstration of the presentation	0	Essays (reports) and presentations that are not made independently or borrowed from the Internet are not counted.
	1	The report and presentation were completed independently, the design meets the requirements with minor violations, the topicality of the topic was worked out, the theoretical analysis contains inaccuracies, but orally the applicant explains the material confidently and with the help of the teacher is corrected, the substantive material is presented well, general conclusions are formulated in the conclusion, the topic is generally disclosed with minor gaps, information in the presentation is provided with references to sources, but they are formatted with errors.
	2	The report and presentation were completed independently, the design meets the requirements, the relevance of the topic was worked out with the indication of previously unresolved aspects, the theoretical analysis is thorough and independent, the applicant explains the material orally and without the help of a teacher, the meaningful material is presented well,

		independent conclusions are formulated in the conclusion, the topic is generally disclosed, information the presentation is presented using self-developed schemes, drawings, graphs, contains links to sources that are appropriately designed and are relevant.
	3	The report and presentation are made independently and original, the design meets the requirements, the relevance of the topic is fully disclosed with the indication of previously unresolved aspects, the object and subject are correctly defined, the hypothesis of own research, the method corresponds to the topic and the task, the theoretical analysis is thorough and independent, the applicant freely presents material; the content of the presentation is not overloaded with slides with text material; the conclusion formulates independent thorough judgments supported by factual evidence and calculations, the information on the slides is presented mainly schematically using independently developed drawings and graphs, contains references to sources that are appropriately designed and are relevant.
Solving practical problems, situational exercises and problem situations	0	The applicant did not complete the practical task, situational exercise, problem situation.
	1	The acquirer completed a practical task, solved a situational exercise, a problematic situation, but did not sufficiently reveal the essence, allowing at the same time significant inaccuracies; lack of developed skills and research and substantiation of conclusions; a limited number of sources were used.
	2	The applicant completed a practical task, solved a situational exercise, a problem situation, but demonstrates fragmented knowledge of the subject of study and research, has difficulties in identifying its essential features, identifying cause-and-effect relationships and formulating conclusions; a limited number of sources were used.
	3	The applicant completed a practical task, solved a situational exercise, a problem situation, fully demonstrates knowledge of the subject of study, clearly describes its essential features, reveals cause-and-effect relationships and formulates conclusions; freely uses acquired theoretical knowledge when analyzing practical material; in addition to the recommended literature, uses additional literature, demonstrates knowledge of the content of relevant normative legal acts.
	4	The applicant completed a practical task, solved a situational exercise, a problem situation, fully substantiates the chosen research methods and tools, fully and clearly presents the main theoretical concepts for the analysis of practical material; in the analytical/calculation part, it provides a full-fledged analysis of the problem under investigation, its comprehensive coverage, in the conclusion, it formulates detailed conclusions, in addition to the recommended literature, it uses additional literature, it demonstrates knowledge of the content of the relevant regulatory and legal acts.
	5	The applicant completed a practical task, solved a situational exercise, a problem situation, fully demonstrates mastery of scientific research skills; shows independence in the selection, analysis and generalization of relevant statistical and analytical information; draws clear and correct conclusions from the considered problem. The applicant performs a task, solves a situational exercise, a problem situation with a creative approach, using non-standard phrases, demonstrates a detailed, interesting vision, which is distinguished by own thoughts and conclusions; in addition to the

		recommended literature, uses additional literature, demonstrates knowledge of the content of relevant normative legal acts.
Control work on meaningful modules in the form of testing	0	The answer to the question is incorrect.
	0,5	The answer to the question is correct.

Deadlines and reassignment policy: Assignments that are submitted late without good reason will be graded at a lower grade (-10%). Mandatory attendance of students at the final examination. Rescheduling takes place with the permission of the dean's office if there are valid reasons.

Policy on academic integrity: regulated by the Code of Academic Integrity of participants in the educational process of the Odesa I.I. Mechnikov National University (order No. 83-02 dated July 1, 2020).

Attendance Policy: Attendance is mandatory. In the event that the applicant is absent from a lecture or a practical session, he is obliged to make up for the missed session through a survey outside the classroom time (teacher consultation time).

Lessons that have not been completed are considered failed and no points are awarded for them. As a result, the student's knowledge, evaluated according to the 100-point system, is reflected in the credit and examination information and the credit book**.**

11. Questions for final control

1. Describe the transformational processes in the economy and business environment.
2. Determine the role and significance of modeling in the activities of modern enterprises.
3. Analyze the evolution of production systems paradigms, software development methodologies, and epistemological approaches.
4. Describe the syntactic dimension of information, system entropy, Shannon model.
5. Describe the semantic dimension, the user's thesaurus, Schneider's function.
6. Analyze the classification of modeling approaches and the scope of models.
7. Describe the simulation modeling methods. Give examples of use.
8. Describe agent and agent-dynamic modeling.
9. Analyze the software tools of simulation and agent modeling.
10. Describe reflective management.
11. Give the definition of business processes of the enterprise and examples.
12. Give a comparative description of function-oriented and process-oriented approaches to management.
13. Definition of business process modeling. The structure of the business model.
14. Engineering approach in enterprise management. Definition and principles of business process reengineering.
15. Tasks and areas of application of business process reengineering Conditions for the success of business process reengineering.
16. Classification and characteristics of enterprise flows.

17. Evolution of business process modeling methodologies.
18. IDEF modeling standards. Functional model of the business process. Constructive elements of building a functional model.
19. Display of business functions. Principles of modeling in IDEF0.
20. Characteristics and advantages of IDEF1. Features of the IDEF1X modeling standard.
21. Characteristics and advantages of IDEF3.
22. Characteristics and advantages of IDEF4.
23. Characteristics and advantages of IDEF5.
24. Types of ontological schemes and their purpose in the IDEF5 standard.
25. Stages and scope of application of the DFD standard.
26. Purpose and features of the IDEF6 standard.
27. Purpose and features of the IDEF8 standard.
28. Describe the development direction of modeling standards.
29. Multidimensional and multilevel models of the organization of analytical accounting in IS.
30. Analyze the principles and functionality of the ARIS methodology.
31. Describe the types of ARIS methodology models.
32. Analyze the Ukrainian market for business modeling products.
33. Analyze the mutual influence of information systems and reengineering.
34. Analyze modern approaches to creating information systems.
35. Analyze the sources and tools of customer base formation.
36. Analyze lead management tools and sales funnel formation.
37. Analyze tools for automating the business processes of the enterprise's sale.
38. Analyze integration tools with traffic sources and IP telephony.
39. Analyze the tools of ABCXYZ-analysis.
40. Analyze marketing activity management tools.
41. Consider the characteristics of business processes in relationship marketing.
42. Analyze tools for modeling and automating business processes in CRM systems.
43. Analyze the tools for creating tasks and projects.
44. Give a comparative analysis of Kanban and Gantt charts in task management.
45. Analyze the tools for generating sales analysis reports.
46. State the features of sales Funnel management at different stages.
47. State the features of the implementation of CRM systems in the services market.
48. State the features of mobility in relation to modeling business processes.
49. Consider artificial intelligence in modeling business processes.
50. Carry out IoT analysis and modeling of business processes.

12. Distribution of points received by higher education applicants

Evaluation criteria

<table>
<tr><td colspan="6">Current and periodic control</td><td rowspan="2">Exam</td><td rowspan="2">Total</td></tr>
<tr><td colspan="3">module 1</td><td colspan="3">module 2</td></tr>
<tr><td>T1</td><td>T2</td><td>T3</td><td>T4</td><td>T5</td><td>T6</td><td rowspan="5">20</td><td rowspan="5">100</td></tr>
<tr><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr>
<tr><td colspan="3">Current control in the form of testing (blank testing) according to the content module 1: 10</td><td colspan="3">Current control in the form of testing (blank testing) according to the content module 2: 10</td></tr>
<tr><td colspan="3">Total M1: 40</td><td colspan="3">Total M2: 40</td></tr>
<tr><td colspan="6">Total: 80</td></tr>
</table>

T1, T2 ... T6 – topics of content modules

* Note: Control work for the content module is carried out in the form of test tasks after completing the study of the educational material of each content module. Test tasks for control papers consist of 10 test tasks and correspond to the content of the educational material of the relevant content module. For each correct answer to one test task, the applicant receives 0.5 points.

Rating scale: national and ECTS

Total points for all types of educational activities	Evaluation ECTS	Evaluation according to the national scale
90 - 100	A	excellent
85 - 89	B	good
75 - 84	C	
70 - 74	D	satisfactory
60 - 69	E	
35 - 59	FX	Unsatisfactory with the possibility of reassembly
0 - 34	F	Unsatisfactory with mandatory repeated study of the discipline

Criteria for evaluating educational achievements of higher education applicants

Evaluation according to the national scale	100 point scale ECTS	Theoretical training	Practical training
excellent	90 – 100 / A	The applicant fully possesses the educational material, presents it freely, comprehensively, substantiated and reasoned during oral presentations and written answers. The applicant demonstrates a clear knowledge of the relevant categories, their content, an understanding of their relationship, correctly formulates the interpretation of the relevant concepts, demonstrates knowledge of the content of the regulatory and legal acts provided for by the program, and draws independent conclusions. The acquirer knows how to identify cause-and-effect relationships, independently find additional information and use it to implement tasks, freely uses new information technologies to replenish knowledge.	The applicant can reasonedly choose a rational method of performing practical tasks, performs practical tasks not provided for in the curriculum, freely uses the acquired theoretical knowledge when analyzing practical material, shows a creative approach to the performance of individual and collective tasks during individual work.
good	85 – 89 / B	The applicant has a sufficiently complete command of the educational material, presents it reasonably during oral presentations and written answers, while using normative and mandatory literature, applies knowledge to solve standard situations, independently analyzes, summarizes and systematizes educational information, but allows for inaccuracies, which are not essential for the characterization of the subject of the question and do not significantly affect the general characterization of this or that phenomenon (concept).	The applicant has stable skills in performing practical tasks, solves most practical tasks correctly.
	75 – 84 / C	The applicant shows a generally high level of knowledge regarding the entire program of the educational discipline, possesses the educational material at a sufficient level, applies knowledge to solve standard situations, but does not know how to independently analyze some	According to the sample, the applicant independently performs practical tasks provided for by the program of the academic discipline.

		questions, does not fully convincingly argue his answers, allows minor inaccuracies.	
Satisfactorily	70 – 74 / D	The acquirer possesses the educational material at the reproductive level or reproduces a certain part of the educational material with elements of logical connections. The student knows the basic concepts of the educational material, but has difficulties in identifying the essential features of the subject and in identifying cause-and-effect relationships and formulating conclusions.	The applicant has elementary skills in performing practical tasks, solves only half of the practical tasks correctly.
	60 – 69 / E	The applicant does not fully understand the subject of the academic discipline, there are shortcomings in the disclosure of the content of concepts, categories, regularities, names and content of regulatory and legal acts. The acquirer provides unclear characteristics of the relevant phenomena, expresses his thoughts with a significant violation of the logic of the presentation of the material.	The acquirer can use knowledge only in standard practical situations, has unstable skills in performing practical tasks, makes many significant mistakes.
Unsatisfactory with the possibility of reassembly	35 – 59 / FX	The student does not correctly reveal the essence of the basic issues of the educational discipline, makes significant substantive errors, possesses the educational material superficially and fragmentarily, unsystematically singles out random features of the subject, does not know how to formulate his opinion and present it in a logical sequence, make generalizations and conclusions.	The applicant is able to perform only some practical tasks with the help of a teacher. The acquirer lacks developed skills and abilities.
Unsatisfactory with mandatory repeated study of the discipline	0 – 34 / F	The applicant does not know the basic provisions of the academic discipline, does not have the educational material.	The acquirer performs only elements of practical tasks, receives constant help from the teacher.

13. Educational and methodological support

the work program of the academic discipline;

- reference synopsis of lectures;
- multimedia presentations;
- handout illustrative material (examples of documents);
- test tasks.
- Modeling, analysis and automation of business processes [Electronic resource]: electronic. methodological recommendations for practical classes from the course for students of the second (master's) level of higher education in the field of knowledge 12 "Information technologies" / M. P. Chaikovska - Odesa: Odesa. I. I. Mechnikov national University, 2023. - 55 p.

14. Literature

Normative and legal acts

1. About information: Law of Ukraine dated October 2, 1992 No. 2657-XII. URL: http://zakon.rada.gov.ua/laws/show/2657-12.

2. On the protection of information in information and telecommunication systems: Law of Ukraine dated July 5, 1994 No. 80/94-VR. URL: http://zakon.rada.gov.ua/laws/show/80/94-vr.

3. On the Concept of the National Informatization Program: Law of Ukraine dated February 4, 1998 No. 75/98-VR. URL: http://zakon.rada.gov.ua/laws/show/75/98-vr.

4. On the National Informatization Program: Law of Ukraine dated February 4, 1998 No. 74/98-VR. URL: http://zakon.rada.gov.ua/laws/show/74/98-vr.

5. On measures to develop the national component of the global Internet information network and ensure wide access to this network in Ukraine: Decree of the President of Ukraine dated July 31, 2000 No. 928/2000. URL: http://zakon.rada.gov.ua/laws/show/928/2000.

6. On improving the information and analytical support of the President of Ukraine and state authorities: Decree of the President of Ukraine dated July 14, 2000 No. 887/2000. URL: http://zakon.rada.gov.ua/laws/show/887/2000.

7. On measures to develop the national component of the global Internet information network and ensure wide access to this network in Ukraine: Decree of the President of Ukraine dated July 31, 2000 No. 928/2000. URL: http://zakon.rada.gov.ua/laws/show/928/2000.

8. On the Basic Principles of Information Society Development in Ukraine for 2007-2015: Law of Ukraine dated January 9, 2007 No. 537-16. URL: http://zakon2.rada.gov.ua/laws/show/537-16.

9. On the main principles of ensuring cyber security of Ukraine: Law of Ukraine dated October 5, 2017 No. 2163-VIII. URL: http://zakon.rada.gov.ua/laws/show/2163-19.

10. On the approval of the Concept of Development of the Digital Economy and Society of Ukraine for 2018-2020 and the approval of the plan of measures for its implementation: Order of the Cabinet of Ministers of Ukraine dated January 17, 2018 No. 67

Main literature

1. Bikulov D. Management of business processes of the enterprise: study guide. Zaporizhzhia, ZNU, 2017. 440 p.

2. Danchenko O.B. Practical aspects of business process reengineering: a study guide. K.: KROC University of Economics and Law, 2017. 238 p

3. Yefremenko T. M. Reengineering of business processes. Kharkiv: XNUMX named after O. M. Beketova, 2019. 100 p.

4. Mineev E.I. Modeling of business processes [Electronic resource] / Ye.I. Mineev - Resource access mode: http://zavantag.com/docs/663/index-1248743.html.

5. Robson M., Ulah F. Practical guide to reengineering business processes / Trans. from Eng. K.: KB, 2017. 224 p.

6. Chaikovska M.P. Modeling the activity of enterprises: a study guide with the stamp of the Ministry of Education and Culture of Ukraine (Letter No. 1/11-18686 dated 03.12.2013). Odesa: ONU, 2013. 360.

7. Chaikovska M.P., Zharova A.V. Workshop on modeling of enterprise activity: Educational and methodological manual / M.P. Chaikovska, Odesa: ONU, 2013. 190.

8. Chaikovska M. Innovative management: Study guide. Odesa: ONU, 2015. 382 p.

9. Chaikovska M.P. Investing: a textbook. Odesa: ONU, 2016. 312 p.

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Additional

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15. Electronic information resources

1. Official website of the Cabinet of Ministers of Ukraine [Electronic source: official website / Cabinet of Ministers of Ukraine: http: // – http://www.ukr-gold.net/links/21951/21962/.
2. Verkhovna Rada of Ukraine [Electronic source: official site / Verkhovna Rada of Ukraine. http: // www.rada.gov.ua.
3. Official website of the Accounting Chamber of Ukraine [[Electronic source]: official website / Accounting Chamber of Ukraine; CJSC Softline: http://www.ac-rada.gov.ua/control/main/uk/index.
4. Internet portal Activities of the UN system to achieve the Millennium Development Goals" [Electronic source]: Section of web services of the Department of Public Information of the United Nations.: http://www.un.org/russian/millenniumgoals/.
5. State Statistics Committee of Ukraine http://www.ukrstat.gov.ua/
6. National V.I. Vernadskyi Library of Ukraine http://www.nbuv.gov.ua/
7. National Parliamentary Library of Ukraine http://www.nplu.kiev.ua/

Distribution of points received by students of higher education according to the results of current, periodic and final control

Topics of practical lessons	Number of points for the type of work	Total points
Module 1. Modeling and reengineering of the enterprise's business processes.		
The role and significance of modeling in the activities of modern enterprises. The company's maturity model for assessing the level of application of information systems and communication technologies. Modern trends of modeling.	0 - 2 (survey) 0 – 3 (abstract, presentation) 0 – 5 (solving practical problems, situational exercises and problem situations)	0 - 10
Modeling Tools for business processes of an enterprise. Modeling business processes by means of agent modeling.	0 - 2 (survey) 0 – 3 (abstract, presentation) 0 – 5 (solving practical problems, situational exercises and problem situations)	0-10
Modeling business processes of customer relations in CRM systems.	0 - 2 (survey) 0 – 3 (abstract, presentation) 0 – 5 (solving practical problems, situational exercises and problem situations)	0-10
Control work on content module 1	0 - 10	0 - 10
Module 2. Modern technological tools for analysis and automation of business processes		
Management of engineering and reengineering projects of business processes of the enterprise.	0 - 2 (survey) 0 – 3 (abstract, presentation) 0 – 5 (solving practical problems, situational exercises and problem situations)	0 - 10
Complex modeling of enterprise business processes in IDEF standards. Modeling of business processes in the IDEF0 standard. Prospects for the development of business modeling standards and products.	0 - 2 (survey) 0 – 3 (abstract, presentation) 0 – 5 (solving practical problems, situational exercises and problem situations)	0 -10
A portal approach to the modeling and automation of enterprise business processes in IS. Formalization of enterprise activity in information systems	0 - 2 (survey) 0 – 3 (abstract, presentation) 0 – 5 (solving practical problems, situational exercises and problem situations)	0-10
Control work on content module 2	0 - 10	0-105
Final control (exam)	0-20	0-20
	Total	**0 - 100**