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MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION

Federal State Autonomous Educational Institution of Higher Education
"Moscow Polytechnic University"

APPROVE
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for International Affairs
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"15" февраля 2024

Dean of the Faculty
of Economics and Management
_____ /A.V. Nazarenko/
"15" февраля 2024

WORKING PROGRAM OF THE DISCIPLINE

"Digitalization of management processes"

Field of study
38.03.02 Management

Educational program (profile)
"Business Process Management"

Qualification (degree)
Bachelor

Form of study
Part-time

Moscow 2024

Developer(s):

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Agreed:
Head of the Department of Management,
Ph.D., Associate Professor  /E.E. Alenina/

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1. Goals, objectives and planned learning outcomes in the discipline

The main goals of mastering the discipline “Digitalization of management processes” include:

– formation of knowledge about modern principles, methods and means of modern information technologies in relation to management, methods and means of their application in business;

– preparing students for activities in accordance with the qualification characteristics of a bachelor’s degree in the field, including the formation of skills to identify necessary improvements in the organization; ensuring the use of information technologies to improve the efficiency of professional activities.

The main objectives of mastering the discipline “Digitalization of management processes” include:

– mastering the methodology, analysis and selection of information technologies for use in professional activities in the organization. mastering the methods and conditions for using information technologies, choosing evaluation criteria, quality indicators, determining the parameters to be checked, the procedure for determining and processing the information received and protecting it.

Training in the discipline “Digitalization of management processes” is aimed at developing the following competencies in students:

Code and name of competencies	Indicators of Competency Achievement
OPK - 5. Able to use modern information technologies and software when solving professional problems, including managing large amounts of data and their intellectual analysis	IOPK-5.1. Knows modern methods of using information technologies and software, including managing large amounts of data and their intelligent analysis. IOPK-5.2. Able to use modern information technologies and software tools when solving professional problems, including managing large amounts of data and their intelligent analysis.

	IOPK-5.3. Possesses the skills to use modern information technologies and software in solving professional problems, including managing large amounts of data and their intellectual analysis.
OPK - 6. Able to understand the principles of operation of modern information technologies and use them to solve professional problems	IOPK-6.1. Knows the principles of operation of modern information technologies and the methodology of their use to solve professional problems. IOPK-6.2. Able to apply the operating principles of modern information technologies to solve professional problems. IOPK-6.3. Possesses the skills of using modern information technologies to solve professional problems.

2. Place of discipline in the structure of the educational program

Discipline "Digitalization of managementprocesses" is one of the academic disciplines of the part formed by participants in educational technologies (B1.2.03) of the undergraduate educational program.

The discipline “Digitalization of management processes” is logically, substantively and methodologically interconnected with the following EP disciplines and practices:

- "Digital Literacy";
- “Technologies for organizing management interaction”;
- "Process management";
- “Business Process Management Tools”;
- "Fundamentals of Technological Entrepreneurship."

3. Structure and content of the discipline

The total labor intensity of the discipline is:

Full-time - part-time - 3 credit units, i.e. 108 academic hours (of which 72 hours are independent work of students).

Second term:

Part-time/correspondence: lectures – 18 hours, practical classes – 18 hours, form of control – exam.

3.1 Types of educational work and labor intensity

3.1.2. Part-time education

o.	Type of educational work	Number of hours	Semesters	
	Auditory lessons	**36**		36
	Including:			
.1	Lectures	18		18
.2	Seminars/practical sessions	18		18
.3	Laboratory exercises			
	Independent work	**72**		108
	Including:			
	Interim certification			
	exam			
	Total	**108**		

3.2 Thematic plan for studying the discipline

3.2.2. Part-time education

No. p/p	Sections/topics disciplines	Labor intensity, hour					
		Total	Classroom work				Independent work
			Lectures	Seminars/practical sessions	Laboratory exercises	Practical training	
1.1	History of computer development		1	1			6
1.2	Corporate use of computers and computer networks.		1	1			6
2.1	Personal computer in a corporate environment		1	1			6
2.2	Operating principles and types of PC elements		1	1			6

3.1	Principles of development and management of a corporate digital product		1	1			6
3.2	Types of programming languages		1	1			6
4.1	Text processing technology		1	1			6
4.2	Typography Basics		1	1			6
5.1	Technologies for processing graphic information		1	1			6
5.2	Raster and vector graphics editors		1	1			6
6.1	Spreadsheets		1	1			6
6.2	Excel functions		1	1			6
7.1	Electronic presentation tools		1	1			6
7.2	Basic properties of Power Point		1	1			6
8.1	Database technologies		1	1			6
8.2	Working with MS Access DBMS		1	1			6
9.1	Local and global computer networks		1	1			6
9.2	. Global Internet.		1	1			6
Total			**18**	**18**			**108**

3.3 Contents of the discipline

Topic 1. History of computer development.

The concept of "computer". The first computers. Alan Turing is the creator of the first computer. General purpose computer model Encryption systems. The evolution of Windows. Corporate use of computers and computer networks.

Topic 2. Personal computer in a corporate environment.

Form factors of modern computers (computers). Office PC configuration. The main elements and their characteristics of a modern PC. Operating principles and types of PC elements. Data input/output devices used in business networks.

Topics 3. Principles of development and management of a corporate digital product.

Stages of digital product development. Types of programming languages. Data typing. Declarative and imperative programming languages. Programming paradigms. Procedural and Object-oriented languages. VBA programming language.

Topic 4. Text information processing technology

Working with text in Microsoft Word. An expanded set of standard operations, including contextual search and replacement, saving operations, checking the spelling of words and syntax, a dictionary of synonyms, setting general page parameters, autotext, using templates, macros, merging documents. Basics of typography. GOST R 7.0.97-2016. Working with tables. Formation of hyperlinks. Creating document content. Formation and work with document sections. Template maker for design styles.

Topic 5. Technologies for processing graphic information

The concept of computer graphics. Raster and vector graphic editors. Fundamentals of artistic design of advertising products. Graphics in texts. Basics of color and composition in a corporate environment. Modern software for creating graphics. Image processing. Features of printing graphic images.

Topic 6: Spreadsheets

Microsoft Excel spreadsheet processor. Program interface. Operations with workbooks and sheets. Basic formulas for analyzing quantitative indicators of an organization. Excel functions. Construction of graphs and diagrams. Sorting and retrieving data.

Topic 7. Electronic presentation tools

Microsoft Power Point Presentation as a means of presenting ideas. Basic properties of Power Point. Development of presentations. Manage presentation playback.

Topic 8. Database technologies.

Database management systems. Microsoft Access The concept of information support. Definitions of database (DB), database management system (DBMS), data bank. Data organization models: hierarchical, network, relational. Database classification. Architectures of centralized database systems with network access: file-server, client-server. Designing a relational database. Generalized technology for user work in a DBMS. Working with Access DBMS. Table structure and data types. Organizing data in relational databases. Data integrity. Creating inter-table

relationships. Entering, editing, sorting, filtering data. Printing output. Creation of forms, queries, reports. Automating work with databases using VBA. Structured Query Language SQL.

Topic 9. Local and global computer networks

Network technologies for data processing. Fundamentals of computer communication. Principles of organization and basic topologies of computer networks. Network service and network standards. Global Internet. Internet structure. Methods of transmitting information to the Internet (protocols, services). Services provided by the Internet (search engines, file servers, news servers, information channels). Internet connection. Programs for sending and receiving email. Creating an email.

3.4 Topics of seminars/practical and laboratory classes

1. Solving logical problems
2. Make a schedule and describe the route diagram
3. Write a memo
4. Map out digital enterprise product development in Word
5. Creating sheets in MS WORD
6. Format text according to GOST R 7.0.97-2016
7. Create a flyer in Word
8. Create an informational poster for your study group.
9. Creating a graphic product card for an online store.
10. Analysis of organizational data, calculation of profit and return on sales. Building a sales schedule.
11. Create a table and chart from your payroll data
12. Self-presentation
13. Creating a creative presentation title slide.
14. Creating an electronics store database in MS Access DBMS
15. Creating a sales registration database

16. Analysis of information from search engines

17. Create a presentation on network topologies

4. Educational, methodological and information support

4.1 Regulatory documents and GOSTs

4.2 Main literature

1. Galieva N.V. Information technologies in management: textbook - M.: MISIS, 2020. - 172 p. — ISBN 978-5-907226-81-4. — Text: electronic // Lan: electronic library system. — URL:https://e.lanbook.com/book/147972
2. Brozgunova N.P. Information technologies for project management: textbook - Voronezh: Michurinsky State Agrarian University, 2021. - 79 p. — ISBN 978-5-94664-445-7. — Text: electronic // Lan: electronic library system. — URL:https://e.lanbook.com/book/202019

4.3 Additional literature

1. Chaika, A. M., Bradul N.V., Bradul S.V. Information technologies in crisis management: textbook / - D.: DONAUIGS, 2021. - 208 p. — Text: electronic // Lan: electronic library system. — URL:https://e.lanbook.com/book/225800
2. Provalov V. S. Information technologies of management: textbook - 4th ed., erased. - M.: FLINTA, 2018. - 373 p. — ISBN 978-5-9765-0269-7. — Text: electronic // Lan: electronic library system. — URL:https://e.lanbook.com/book/109575

4.4 Electronic educational resources

1. An electronic educational resource on the discipline is under development.

4.5 Licensed and freely distributed software

Office applications, Microsoft Office 2013 (or lower) – Microsoft Open License. License No. 61984042

4.6 Modern professional databases and information reference systems

Office applications, Microsoft Office 2013 (or lower) -Microsoft Open License - License No. 61984042 Agreement No. 08-05/13 dated 06/03/2013 Transfer and Acceptance Certificate No. 961, Transfer and Acceptance Certificate No. 385

Operating system, Windows 7 (or lower) - Microsoft Open License – License No. 61984214, 61984216, 61984217, 61984219, 61984213, 61984218, 61984215; Agreement No. 08-05/13 dated 06/03/2013 Acceptance and transfer certificate No. 9 61

5. Logistics support

Auditoriums for lectures and seminars of the general fund: educational tables with benches, a blackboard, a portable multimedia complex (projector, projection screen, laptop). Teacher's workplace: table, chair.

Office applications, Microsoft Office 2013 (or lower) -Microsoft Open License - License No. 61984042 Agreement No. 08-05/13 dated 06/03/2013 Transfer and Acceptance Certificate No. 961, Transfer and Acceptance Certificate No. 385

Operating system, Windows 7 (or lower) - Microsoft Open License – License No. 61984214, 61984216, 61984217, 61984219, 61984213, 61984218, 61984215; Agreement No. 08-05/13 dated 06/03/2013 Acceptance and transfer certificate No. 9 61

6. Guidelines

6.1 Methodological recommendations for teachers on organizing training

A presentation (from the English word - presentation) is a set of color pictures-slides on a specific topic, which is stored in a special format file with the PP extension. The term “presentation” (sometimes called “slide film”) is associated primarily with the information and advertising functions of pictures, which are designed for a certain category of viewers (users).

Multimedia computer presentation is:

- dynamic synthesis of text, image, sound;
- interactive contact between the speaker and the demonstration material;
- mobility and compactness of information media and equipment;
- ability to update, supplement and adapt information;

Rules for designing computer presentations

General Design Rules

Many designers claim that there are no laws or rules in design. There are tips, tricks, tricks. Design, like any kind of creativity, art, like any way of some people

communicating with others, like a language, like a thought, will bypass any rules and laws.

Font design rules:

- Serif fonts are easier to read than sans serif fonts;
- It is not recommended to use capital letters for body text.
- Font contrast can be created through: font size, font weight, style, shape, direction and color.
- Rules for choosing colors.
- The color scheme should consist of no more than two or three colors.
- There are incompatible color combinations.
- Black color has a negative (gloomy) connotation.
- White text on a black background is hard to read (inversion is hard to read).

Presentation Design Guidelines

In order for the presentation to be well received by the audience and not cause negative emotions (subconscious or fully conscious), it is necessary to follow the rules of its design.

A presentation involves a combination of information of various types: text, graphics, music and sound effects, animation and video clips. Therefore, it is necessary to take into account the specifics of combining pieces of information of different types. In addition, the design and display of each of the listed types of information is also subject to certain rules. So, for example, the choice of font is important for textual information, brightness and color saturation are important for graphic information, and optimal relative position on the slide is necessary for the best possible perception of them together.

Let's consider recommendations for the design and presentation of various types of materials on the screen.

Formatting text information:

- font size: 24–54 points (heading), 18–36 points;
- the font color and the background color should contrast (the text should be easy to read), but not hurt the eyes;

- font type: for the main text a smooth sans-serif font (Arial, Tahoma, Verdana),
- Italics, underlining, bold font, and capital letters are recommended to be used only for semantic highlighting of a text fragment.

Design of graphic information:

- drawings, photographs, diagrams are designed to supplement textual information or convey it in a more visual form;
- It is advisable to avoid drawings in the presentation that do not carry a semantic load, if they are not part of the style;
- the color of the graphic images should not sharply contrast with the overall style of the slide;
- illustrations are recommended to be accompanied by explanatory text;
- if a graphic image is used as a background, then the text on this background should be clearly readable.

Contents and arrangement of information blocks on the slide:

- there should not be too many information blocks (3-6);
- the recommended size of one information block is no more than 1/2 the size of the slide;
- It is desirable to have blocks with different types of information on the page (text, graphs, diagrams, tables, pictures) that complement each other;
- Key words in the information block must be highlighted;
- It is better to place information blocks horizontally, blocks related in meaning - from left to right;
- the most important information should be placed in the center of the slide;
- the logic of presenting information on slides and in a presentation must correspond to the logic of its presentation.

In addition to the correct arrangement of text blocks, we must not forget about their content - the text. Under no circumstances should it contain spelling errors. You should also take into account the general rules of text formatting.

After creating a presentation and its design, you need to rehearse its presentation and your speech, check how the presentation as a whole will look (on a computer screen

or projection screen), how quickly and adequately it is perceived from different places in the audience, under different lighting, noise, in an environment as close as possible to real performance conditions.

6.2 Guidelines for students on mastering the discipline

A lecture is a systematic, consistent, monologue presentation by a teacher of educational material, usually of a theoretical nature. When preparing a lecture, the teacher is guided by the work program of the discipline. During lectures, it is recommended to take notes, which will allow you to later recall the studied educational material and supplement the content when working independently with literature.

You should also pay attention to categories, formulations that reveal the content of certain phenomena and processes, scientific conclusions and practical recommendations, positive experience in oratory. It is advisable to leave margins in your working notes in which to make notes from the recommended literature, supplementing the material of the lecture you listened to, as well as emphasizing the special importance of certain theoretical positions.

Conclusions from the lecture summarize the teacher's thoughts on educational issues. The teacher provides a list of used and recommended sources for studying a specific topic. At the end of the lecture, students have the opportunity to ask questions to the teacher about the topic of the lecture. When delivering lectures on the discipline, electronic multimedia presentations can be used.

Guidelines for students when working at the seminar

Seminars are implemented in accordance with the working curriculum with sequential study of the topics of the discipline. In preparation for the seminars, the student is recommended to study the basic literature, familiarize himself with additional literature, new publications in periodicals: magazines, newspapers, etc. In this case, you should take into account the recommendations of the teacher and the requirements of the curriculum. It is also recommended to finalize your lecture notes by making appropriate notes from the literature recommended by the teacher and

provided for by the curriculum. Abstracts should be prepared for presentations on all educational issues brought up for the seminar.

Since the student's activity in seminar classes is the subject of monitoring his progress in mastering the course, preparation for seminar classes requires a responsible attitude. During interactive classes, students must be active.

Guidelines for students on organizing independent work

Independent work of students is aimed at independent study of a separate topic of the academic discipline. Independent work is mandatory for each student, its volume is determined by the curriculum. When working independently, the student interacts with the recommended materials with the participation of the teacher in the form of consultations. The electronic library system (electronic library) of the university provides the possibility of individual access for each student from any point where there is access to the Internet.

If there are students with disabilities, they will be provided with printed and (or) electronic educational resources in forms adapted to their health limitations.

7. Appraisal Fund

7.1 Methods for monitoring and assessing learning outcomes

OS No.	Name of the assessment tool	Brief description of the evaluation tool	Submission of the assessment tool to the Federal Fund
2	Oral survey, interview, (UO)	A means of control, organized as a special conversation between a teacher and a student on topics related to the discipline being studied, and designed to determine the amount of knowledge of the student in a certain section, topic, problem, etc.	Questions about topics/sections of the discipline
2	Test (T)	A system of standardized tasks that allows you to automate the procedure for measuring the level of knowledge and skills of a student.	Test task fund

3	Exam	Final form of knowledge assessment. In higher education institutions they are held during examination sessions.	Questions for the exam

7.2 Scale and criteria for assessing learning outcomes

An indicator for assessing competencies at various stages of their formation is the achievement by students of the planned learning outcomes in the discipline (module).

OPK-5 Ability to use modern information technologies and software when solving professional problems, including managing large amounts of data and their intellectual analysis.				
Index	**Evaluation criteria**			
	2	**3**	**4**	**5**
know: modern methods of using information technologies and software, including managing large amounts of data and their intelligent analysis.	The student demonstrates a complete absence or insufficient compliance with the following knowledge: modern methods of using information technology and software, including managing large amounts of data and their intellectual analysis.	The student demonstrates incomplete compliance with the following knowledge: modern methods of using information technology and software, including managing large amounts of data and their intelligent analysis. Significant mistakes are made, insufficient knowledge is manifested, according to a number of indicators, the student experiences significant difficulties in operating knowledge	The student demonstrates partial compliance with the following knowledge: modern methods of using information technology and software, including managing large amounts of data and their intellectual analysis, but Minor errors, inaccuracies, and difficulties during analytical operations are allowed.	The student demonstrates full compliance with the following knowledge: modern methods of using information technologies and software, including the management of large amounts of data and their intellectual analysis, fluently operates with the acquired knowledge.

		when transferring it to new situations.		
be able to: solve standard problems of professional activity and apply information and communication technologies	The student is unable or insufficiently able to solve standard tasks of professional activity and apply information and communication technologies	The student demonstrates incomplete compliance with the following skills: solve standard problems of professional activity and apply information and communication technologies. Significant mistakes are made, insufficient skills are manifested, according to a number of indicators, the student experiences significant difficulties in operating skills when transferring them to new situations.	The student demonstrates partial compliance with the following skills: solve standard problems of professional activity and apply information and communication technologies. The skills have been mastered, but minor errors, inaccuracies, and difficulties are allowed during analytical operations and transfer of skills to new, non-standard situations.	The student demonstrates full compliance with the following skills: solve standard problems of professional activity, apply information and communication technologies Fluently operates with acquired skills and applies them in situations of increased complexity.
wn: skills in using modern information technologies and software when solving professional problems, including managing large amounts of data and their intellectual analysis.	The student does not have or does not have enough skills to use modern information technologies and software tools when solving professional problems, including managing large amounts of data and their intelligent analysis.	The student has the skills to use modern information technologies and software in solving professional problems, including the management of large data sets and their intelligent analysis; significant mistakes are made; insufficient proficiency in skills is manifested in a number of indicators; the student experiences significant difficulties in	The student partially has the skills to use modern information technologies and software in solving professional problems, including managing large amounts of data and their intelligent analysis, but minor errors, inaccuracies, and difficulties in analytical operations and transferring skills to new, non-standard situations are allowed.	The student fully possesses the skills to use modern information technologies and software tools when solving professional problems, including managing large amounts of data and their intelligent analysis, and freely applies the acquired skills in

		applying skills in new situations.		situations of increased complexity.
OPK - 6. Able to understand the operating principles of modern information technologies and use them to solve professional problems				
)PK-6.1. Knows the principles of operation of modern information technologies and the methodology of their use to solve professional problems.	The student demonstrates a complete absence or insufficient compliance of the following knowledge: the principles of operation of modern information technologies and the methodology for their use to solve problems of professional activity.	The student demonstrates incomplete compliance with the following knowledge: the principles of operation of modern information technologies and the methodology of their use to solve problems of professional activity. Significant mistakes are made, insufficient knowledge is manifested, according to a number of indicators, the student experiences significant difficulties in operating knowledge when transferring it to new situations.	The student demonstrates partial compliance with the following knowledge: the principles of operation of modern information technologies and the methodology of their use to solve problems of professional activity, but Minor errors, inaccuracies, and difficulties during analytical operations are allowed.	The student demonstrates full compliance with the following knowledge: the principles of operation of modern information technologies and the methodology of their use to solve problems of professional activity, freely operates with the acquired knowledge.
)PK-6.2. Able to apply the operating principles of modern information technologies to solve professional problems.	The student does not know how or is insufficiently able to apply the principles of modern information technologies to solve professional problems	The student demonstrates incomplete compliance with the following skills: apply the principles of modern information technologies to solve problems of professional activity. Significant mistakes are made, insufficient skills are	The student demonstrates partial compliance with the following skills: apply the principles of modern information technologies to solve professional problems. The skills have been mastered, but minor errors, inaccuracies, and difficulties are	The student demonstrates full compliance with the following skills: apply the principles of modern information technologies to solve professional problems.

		manifested, according to a number of indicators, the student experiences significant difficulties in operating skills when transferring them to new situations.	allowed during analytical operations and transfer of skills to new, non-standard situations.	Fluently operates with acquired skills and applies them in situations of increased complexity.
)PK-6.3. Possesses the skills of using modern information technologies to solve professional problems.	The student does not have or does not have sufficient skills in using modern information technologies to solve professional problems.	The student has the skills to use modern information technologies to solve problems of professional activity, significant mistakes are made, insufficient proficiency in skills is manifested in a number of indicators, the student experiences significant difficulties when applying skills in new situations.	The student partially has the skills to use modern information technologies to solve professional problems, but minor errors, inaccuracies, and difficulties in analytical operations and transfer of skills to new, non-standard situations are allowed.	The student is fully proficient in the use of modern information technologies to solve professional problems, and freely applies the acquired skills in situations of increased complexity.

7.3 Evaluation tools

7.3.1 Questions for preparing for the exam in the discipline “Digitalization of management processes”, formation of competence OPK-5, OPK-6

1. What is the essence of information management and what is the place of the IT manager in IS management?
2. What is an information system?
3. What are the functions of an IT manager at a consumer company and an IP manufacturing company?
4. What are the features of information process management?
5. What are the features of managing the processes of creating new knowledge?
6. What are the features of creativity management?
7. What are the features of managing the development of innovations?

8. What are the features of managing the social and psychological aspects of innovation?

9. What is the decision maker's information environment?

10. What is the tool environment?

11. What are corporate information resources?

12. What is an organizational structure?

13. What is the technological environment?

14. What place do corporate information resources occupy in the FIT structure?

15. What is the mutual influence of PT and FIT?

16. What is the connection between FIT and the business process?

17. What are the methods for distributing FIT between participants in a business process?

18. What is IP risk?

19. What is the place of IT risk among management risks?

20. How are IP risks classified and what are the methods for regulating them?

21. What risks exist at different stages of their IP life cycle? 22. How to assess the risk of purchasing, implementing and operating IP?

23. What are MRP, MRPII, ERP, APS, PDM, CRM, SCM, PLM systems?

24. What are the functionality and structure of information systems (MRP; MRPII; ERP; APS; e-commerce systems)?

25. What are the features, positive and negative aspects of the implementation of MRPII; ERP systems?

26. What is TPS; MIS; EPSS; IPSS; EIS; GPSS; DSS systems?

27. What are the functionality and structure of DSS;EPSS information systems)?

28. What are the features, positive and negative aspects of implementing DSS systems?

29. What is custom, unique, replicable IP?

30. What is a transformer system (designer system)?

31. What is IP adaptation?

32. What is adaptable IS?

33. What are the different ways to acquire IP?

34. What are the advantages and disadvantages of buying IP?

35. What are the advantages and disadvantages of developing an IP by an IP development firm?

36. What are the advantages and disadvantages of developing IP in-house?

37. What are the advantages and disadvantages of purchasing and refining an IP?

38. What are the advantages and disadvantages of custom, unique and replicable information systems?

39. What are the advantages and disadvantages of domestic and foreign information systems?

40. What is outsourcing?

41. What is ASP (Applications Service Providing)?

42. What are the advantages and disadvantages of outsourcing?

43. What components does the IP acquisition price include?

44. What are the components of the total cost of IP ownership?

45. What stages of the IP life cycle affect the price of IP ownership?

46. What is ABC (Activity Based Costing)?

47. How is the quality of IP determined?

48. What are the general requirements for IP?

49. What is TQM (Total Quality Management)?

50. What is SMM (Sarability Maturity Model)?

51. What is the IP life cycle?

52. What models of IP life cycle exist?

53. What are the features of the cascade, stage-by-stage and spiral models of the IS life cycle?

54. What stages of the IP life cycle can be distinguished?

55. What are the features of IP management at various stages of their life cycle?

Test task fund

Job number	Contents of the question	Correct answer	Name of the discipline that forms the competence
1.	DBMS is A) Data security management system B) System of unification of the base depository B) Database management system D) Big data removal system	IN	Digitalization of management processes
2.	Databases based on relational theory and storing data in tables consisting of rows and columns are called: A) Hierarchical databases B) Spatial databases B) Object-oriented databases D) Relational databases	G	
3.	A data organization model in which data is organized in the form of several nested lists and relationships between them is called: A) Hierarchical model B) Network model IN) Relational model G) Graph model	B	
4.	A database management system that allows you to create and manage databases, included in the Microsoft office package, is called: A) Microsoft Publisher B) Microsoft Access IN) Microsoft Outlook G) Microsoft Excel	B	
5.	Databases used to process transactions and core business operations are called: A) Analytical databases B) Operational Databases B) Management databases D) Financial databases	B	
6.	The process of creating a data structure in the form of tables and relationships, in which each table represents a specific object is called: A) Relational Database Design B) Designing an object-oriented database B) Design of a graph database D) Design of a network database	A	

7	Testing and optimization of the relational database is carried out on the subject: A) Database integrity B) Database security B) Database availability D) Efficiency and efficiency	G	
8	Objects that organize the interface for entering and editing data in database tables in Microsoft Access are called: A) Tables B) Requests B) Forms D) Reports	IN	
9	Objects created to store data in a database in Microsoft Access are called: A) Tables B) Requests B) Forms D) Reports	A	
10	Objects created to display information from a database in Microsoft Access are called: A) Tables B) Requests B) Forms D) Reports	G	
11	Objects that allow you to select and display information from multiple database tables in Microsoft Access are called: A) Tables B) Requests B) Forms D) Reports	B	
12	The Internet Data Protocol, which defines the rules and procedures for transmitting data over the Internet in the form of packets, is called: A) TCP/IP B) HTTP B) Ethernet D) SMTP	A	
	The wireless networking standard that allows devices such as computers, phones, and tablets to connect to the Internet via a wireless network is called: A) TCP/IP B) Wi-Fi B) Ethernet	B	

	D) SMTP		
13	The service that resolves domain names into IP addresses that are used for communication between computers on a network is called: A) TCP/IP B) HTTP B) Ethernet D) DNS	G	
14	The Hypertext Transfer Protocol, which is used to transfer data between web servers and Internet browsers, is called: A) TCP/IP B) HTTP B) Ethernet D) DNS	B	
15	A protocol that defines the rules for formatting, sending, and delivering email messages between different computers and servers. A) TCP/IP B) Wi-Fi B) Ethernet D) SMTP	G	
16	The standard that defines methods for transmitting data over cable and provides connections between devices on a network is called: A) TCP/IP B) HTTP B) Ethernet D) DNS	IN	
17	Services that allow users to save and upload files to cloud storage, synchronize these files between devices and share them with other people are called: A) Search engines B) Social networks B) Search engines D) File servers	G	
18	Services that allow users to create profiles, share content, communicate with friends, and follow news are called: A) Search engines B) Social networks B) Search engines D) File servers	B	
19	Services that provide the user with information on requests, allowing him to find the necessary information on the Internet, are called:	A	

	A) Search engines B) Social networks B) Search engines D) File servers		
20	A network topology where all devices are connected to a central node (hub) that controls all connections on the network is called: A) Star B) Bus B) Ring D) Tree	A	
21	A network topology where each node has its own parent and children to provide a hierarchical network structure is called: A) Star B) Bus B) Ring D) Tree	G	
22	The network topology, where each device is connected to neighboring devices, is called: A) Star B) Bus B) Ring D) Tree	IN	
23	The network topology, all devices are connected into one cable, which serves as a communication line, is called: A) Star B) Bus B) Ring D) Tree	B	
24	A programming paradigm in which the programmer must explicitly define the process of program execution: what happens at each step and what changes occur to the data is called: A) Imperative programming. B) Declarative programming B) Free programming D) Extreme Programming	A	
25	A programming paradigm in which the programmer describes what the desired result looks like without specifying all the steps necessary to achieve it A) Imperative programming. B) Declarative programming B) Free programming	B	

	D) Extreme Programming		
26	A programming paradigm in which a program contains a set of procedures, each of which performs a specific task, and these procedures are directly called from another program to solve the task A) Free programming B) Extreme Programming B) Procedural programming D) Object-oriented programming	IN	
27	A programming paradigm where the central element is an object that can have data and functionality. A) Free programming B) Extreme Programming B) Procedural programming D) Object-oriented programming	G	
28	The programming language developed by Microsoft to automate Office applications such as Excel, Word, PowerPoint, Access, etc. is called: A) C# B) Java B) Python D) VBA	G	
29	At what stage of digital product development is the project goal, functional requirements, deadlines and budget determined? A) Design B) Service IN) Planning G) Implementation	IN	
thirty	At what stage of digital product development does the installation and configuration of software and publication of the project on available platforms take place? A) Design B) Service IN) Planning G) Implementation	G	
31	At what stage of digital product development do developers create a product concept, determine user interfaces, functional requirements and software architecture A) Design B) Service IN) Planning G) Implementation	A	

32	At what stage in the development of a digital product do product updates and maintenance of its functionality, changes and expansion of the functional and software part of the product occur. A) Design B) Service IN) Planning G) Implementation	B	
33	A corporate enterprise management system aimed at optimizing business processes within an organization, managing the product life cycle and planning interaction with partners is called: A) Quality management system B) Business process management system B) Risk management system Ш) Project management system	B	
34	A corporate enterprise management system designed for project management, resource planning and assessment, budget management and project implementation monitoring is: A) Quality management system B) Business process management system B) Risk management system D) Project management system	G	
35	The corporate enterprise management system is designed to assess and control the occurrence of unfavorable situations related to financial, operational, reputational and other aspects of activity - these are: A) Quality management system B) Business process management system B) Risk management system Ш) Project management system	IN	
36	A corporate enterprise management system aimed at ensuring compliance with product and service standards accepted in the industry, control of production processes is called: A) Quality management system B) Business process management system B) Risk management system Ш) Project management system	A	
37	Decision support systems that monitor certain conditions and alert the user if changes occur that require his attention, called: A) Public address systems	A	

	B) Analytics systems C) Expert knowledge systems D) Reporting systems		
38	Decision support systems that are used to analyze data and identify trends are called: A) Public address systems B) Analytics systems C) Expert knowledge systems D) Reporting systems	B	
39	Decision support systems that automate decision-making processes using knowledge bases are called: A) Public address systems B) Analytics systems C) Expert knowledge systems D) Reporting systems	IN	
40	Decision support systems that collect, process and present information about the fields of activity of an organization are called: A) Public address systems B) Analytics systems C) Expert knowledge systems D) Reporting systems	G	
41	An information security method that uses special algorithms that convert information into a form that is incomprehensible to outsiders is called: A) Antivirus software B) Access control B) Encryption D) Backup and recovery	IN	
42	An information security method that protects devices from malicious software is called: A) Antivirus software B) Access control B) Encryption D) Backup and recovery	A	
43	A method of protecting information in which information is stored in multiple places, allowing the database to be accessed after a system failure, disaster, or hack A) Antivirus software is called: B) Access control B) Encryption D) Backup and recovery	G	

44	An information security method that is based on the fact that certain users can only access certain resources with permission is called: A) Antivirus software is called: B) Access control B) Encryption D) Backup and recovery	IN	
45	Identification and audit as a method of protecting information in computer networks is: A) Registration of events related to network access and the receipt and transmission of information so that it is possible to identify and investigate violations that have occurred. B) Protection through authorization, authentication and setting access rights for groups or users. C) The use of special algorithms that help encrypt and decrypt information transmitted over the network. D) Blocking the flow of data packets containing sensitive information and establishing rules and procedures to prevent unauthorized transmission of data from the network.	A	
46	Cryptographic protection as a method of protecting information in computer networks is: A) Registration of events related to network access and the receipt and transmission of information so that it is possible to identify and investigate violations that have occurred. B) Protection through authorization, authentication and setting access rights for groups or users. C) The use of special algorithms that help encrypt and decrypt information transmitted over the network. D) Blocking the flow of data packets containing sensitive information and establishing rules and procedures to prevent unauthorized transmission of data from the network.	IN	
	Control of outgoing traffic as a method of protecting information in computer networks is: A) Registration of events related to network access and the receipt and transmission of information so that it is possible to identify and investigate violations that have occurred. B) Protection through authorization, authentication and setting access rights for groups or users. C) The use of special algorithms that help encrypt and decrypt information transmitted over the network.	G	

	D) Blocking the flow of data packets containing sensitive information and establishing rules and procedures to prevent unauthorized transmission of data from the network.		
47	Access restriction as a method of protecting information in computer networks is: A) Registration of events related to network access and the receipt and transmission of information so that it is possible to identify and investigate violations that have occurred. B) Protection through authorization, authentication and setting access rights for groups or users. C) The use of special algorithms that help encrypt and decrypt information transmitted over the network. D) Blocking the flow of data packets containing sensitive information and establishing rules and procedures to prevent unauthorized transmission of data from the network.	B	
48	Network data processing technologies that allow storing and processing large amounts of data on remote servers are called: A) Virtualization technologies B) Network storage B) Cloud technologies G) Virtualization technologies	B	
49	Network data processing technologies that allow you to work with data and applications from anywhere with Internet access. A) Virtualization technologies B) Network storage B) Cloud technologies G) Virtualization technologies	IN	
50	Network data processing technologies that allow you to run multiple operating systems on one computer.	G	

Job number	Contents of the question	Correct answer	Name of the discipline (practice) that forms this competence

1	The form factor of a personal computer that is convenient to use on trips and outside the office, having a built-in keyboard, touchpad and display, is called: A) Mini-PC computers B) Desktop computers B) Laptop computers D) Computers such as tablets	IN	
2	The form factor of a personal computer, which is most common for desktop use. consisting of a system unit and a monitor is called: A) Mini-PC computers B) Desktop computers B) Laptop computers D) Computers such as tablets	B	
3	The form factor of a personal computer, which is usually used for reading, watching videos, listening to music and other entertainment tasks running on the Android, iOS and Windows operating systems, is called: A) Mini-PC computers B) Desktop computers B) Laptop computers D) Computers such as tablets	G	
4	Personal computer form factors that take up less space than desktop computers are often used as media centers, as well as for special tasks such as control point control and automated systems called: A) Mini-PC computers B) Desktop computers B) Laptop computers D) Computers such as tablets	A	
5	What element of a personal computer is responsible for executing all commands and operations on the computer? A) Motherboard B) Video card B) RAM D) Processor	G	

6	On which element of a personal computer are other components installed, such as the processor, RAM, and various controllers? A) Motherboard B) Video card B) Data storage G Power supply	A	
7	Which element of a personal computer is responsible for displaying images on the screen? A) Motherboard B) Video card B) RAM D) Processor	B	
8	What element of a personal computer is used to store data? A) Motherboard B) Video card B) Data storage G Power supply	IN	
9	What function in MS Word allows you to find a specific word or phrase in the text of a document and replace it with another? A) Dictionary of synonyms B) Contextual search and replace B) Autotext D) Checking the spelling of words and syntax	B	
10	What function in MS Word allows you to quickly insert text fragments, macros and other elements into a document? A) Dictionary of synonyms B) Contextual search and replace B) Autotext D) Checking the spelling of words and syntax	IN	
11	Which feature in MS Word allows you to select from a larger list of synonyms for a selected word or phrase? A) Dictionary of synonyms B) Contextual search and replace B) Autotext D) Checking the spelling of words and syntax	A	

12	Which feature in MS Word allows you to check for spelling errors in words and syntax errors in sentences? A) Dictionary of synonyms B) Contextual search and replace B) Autotext D) Checking the spelling of words and syntax	G	
13	The distance between characters in MS Word is called: A) Text alignment B) Line spacing B) Text spacing D) Paragraph indentation	IN	
14	Placing text relative to the vertical axis in MS Word is called: A) Text alignment B) Line spacing B) Text spacing D) Paragraph indentation	A	
15	Changing the distance between lines in MS Word is done using the tool: A) Text alignment B) Line spacing B) Text spacing D) Paragraph indentation	B	
16	The Font text formatting features in Microsoft Word DO NOT APPLY to: A) Changing the font B) Setting text effects B) Text alignment D) Changing the size of the point	IN	
17	The Paragraph text formatting functions in Microsoft Word DO NOT APPLY to: A) Text alignment B) Tabulation B) Numbering and bulleted lists D) Setting text effects	G	
18	Graphics, the image of which is created using mathematical formulas that determine the shape and color of objects, are called: A) 3D graphics B) Raster graphics B) Animation D) Vector graphics	G	

19	Graphics that allow you to create three-dimensional images of various objects and scenes are called: A) 3D graphics B) Raster graphics B) Animation D) Vector graphics	A	
20	Graphics that create movement and dynamics in images are called: A) 3D graphics B) Raster graphics B) Animation D) Vector graphics	IN	
21	Graphics in which an image is formed from pixels, each of which has its own color and position on the screen, is called: A) 3D graphics B) Raster graphics B) Animation D) Vector graphics	B	
22	A graphics image storage and transmission format that is used to store images with transparent backgrounds or images where preservation of image detail is more important than compressibility is called: A) PNG (Portable Network Graphics) B) BMP (Bitmap) B) JPEG (Joint Photographic Experts Group) D) GIF (Graphics Interchange Format)	A	
23	The graphic format for storing and transmitting images, which is used to create animations and short videos, is called: A) PNG (Portable Network Graphics) B) BMP (Bitmap) B) JPEG (Joint Photographic Experts Group) D) GIF (Graphics Interchange Format)	G	
24	A graphical image storage and transmission format that is used to store photographic images with a high degree of compression is called: A) PNG (Portable Network Graphics) B) BMP (Bitmap) B) JPEG (Joint Photographic Experts Group) D) GIF (Graphics Interchange Format)	IN	

25	A graphical image storage and transmission format that stores images as pixels and provides very high image quality but can generate large file sizes is called: A) PNG (Portable Network Graphics) B) BMP (Bitmap) B) JPEG (Joint Photographic Experts Group) D) GIF (Graphics Interchange Format)	B	
26	An Excel spreadsheet interface element that can contain one or more tables, as well as other types of objects, is called: A) Table B) Cells B) Workbook D) Sheets	IN	
27	An Excel spreadsheet interface element that consists of cells arranged in a grid and organized into rows (horizontal) and columns (vertical) is called: A) Table B) Cells B) Workbook D) Sheets	A	
28	The interface element of the Excel spreadsheet processor, which represents the sections in the workbook where the tables are located, is called: A) Table B) Cells B) Workbook D) Sheets	G	
29	An Excel spreadsheet interface element that represents rectangular areas of a table located at the intersection of rows and columns and can contain data, formula, formatting, comments and other objects is called: A) Table B) Cells B) Workbook D) Sheets	B	
30	The formula for calculating the sum of numbers in a given range of cells in MS Excel is called: A) AVERAGE B) IF B) SUM(SUM) D) COUNT	IN	

31	The formula for calculating the average value for numbers in a given range of cells in MS Excel is called: A) AVERAGE B) IF B) SUM(SUM) D) COUNT	A	
32	The formula for calculating the number of values in a given range of cells in MS Excel is called: A) AVERAGE B) IF B) SUM(SUM) D) COUNT	G	
33	The formula for performing conditional operations on data in cells in MS Excel is called: A) AVERAGE B) IF B) SUM(SUM) D) COUNT	B	
34	Graphs that are used to compare values across categories or time periods where the data is displayed as columns along the X axis in MS Excel are called: A) Pie Chart B) Histogram B) Line Chart D) Column Chart	G	
35	Graphs that are used to display the distribution of values in a one-dimensional data set and divide the data into equal intervals and also display the number of values in each interval in MS Excel are called: A) Pie Chart B) Histogram B) Line Chart D) Column Chart	B	
36	Graphs that are used to show changes in one or more sets of data over a period of time, where the data is displayed as lines that connect points on a graph in MS Excel, are called: A) Pie Chart B) Histogram B) Line Chart D) Column Chart	IN	

37	Graphs that are used to display the shares of each category in the total, where the data is displayed in the form of "pieces of the pie" that correspond to the share of the corresponding category in MS Excel, are called: A) Pie Chart B) Histogram B) Line Chart D) Column Chart	A	
38	A Windows software that allows you to play audio and video files of various formats, as well as create and synchronize playlists of multimedia files, is called: A) Skype B) Windows Media Player B) Windows Defender D) OneDrive	B	
39	A Windows software designed to protect your computer from viruses and other malware is called: A) Skype B) Windows Media Player B) Windows Defender D) OneDrive	IN	
40	A Windows software tool that allows you to save files and documents in the cloud so that they can be accessed from any device with an Internet connection is called: A) Skype B) Windows Media Player B) Windows Defender D) OneDrive	G	
41	A Windows software tool designed for text messaging, audio and video calls, and conferencing is called: A) Skype B) Windows Media Player B) Windows Defender D) OneDrive	A	

42	The operating system most common for personal computers and developed by Microsoft, and also available in different versions, is called: A) Linux B) macOS B) Windows D) Android	IN	
43	A computer operating system developed by Apple that runs only on Mac computers and is used primarily for creative tasks such as design, photography, and music, called: A) Linux B) macOS B) Windows D) Android	B	
44	A free and open operating system that can be installed on most types of computers, offering great flexibility and customizability, making it a popular choice for servers, scientific and technical computing, and embedded systems, is called: A) Linux B) macOS B) Windows D) Android	A	
45	The operating system for smartphones and tablets developed by Google, which is an open and customizable operating system suitable for all types of mobile devices, is called: A) Linux B) macOS B) Windows D) Android	G	
46	A peripheral device of a personal computer, which is an input device that allows you to move around the computer screen and click on various interface elements, is called: A) Scanner B) Monitor B) Mouse D) Keyboard	IN	

47	A personal computer peripheral device, which is an input device used to digitize documents and images into a computer, is called: A) Scanner B) Monitor B) Mouse D) Keyboard	A	
48	A personal computer peripheral device, which is an input device used to enter text, commands and other data, is called: A) Scanner B) Monitor B) Mouse D) Keyboard	G	
49	A personal computer peripheral that is an output device used to display information on a computer screen A) Scanner B) Monitor B) Mouse D) Keyboard	B	
	A personal computer peripheral, which is an output device used to output sound from a computer, is called: A) Wi-Fi adapter B) USB drive B) Acoustic system D) Camera	IN	

7.3.1. Current control

During the learning process, evaluation means of midterm monitoring of progress are used: reports; surveys; tasks;

Samples of tasks for carrying out ongoing monitoring and exam papers are given in the appendix.

When performing routine monitoring, it is possible to use test material. Samples of control questions and tasks for conducting ongoing monitoring are given in the appendix. When implementing a bachelor's degree program, an organization has the right to use e-learning and distance learning technologies. All materials are posted in the Moscow Polytechnic Library.

When training people with disabilities, e-learning and distance educational technologies must provide for the possibility of receiving and transmitting information in forms accessible to them.

6.1.1. A list of competencies indicating the stages of their formation in the process of mastering the educational program.

As a result of mastering the discipline (module), the following competencies are formed:

Competency code	**As a result of mastering the educational program, the student must have**
OPK-5	Ability to use modern information technologies and software when solving professional problems, including managing large amounts of data and their intelligent analysis.
OPK-6	Able to understand the operating principles of modern information technologies and use them to solve professional problems

In the process of mastering the educational program, these competencies, including their individual components, are formed step by step as students master disciplines (modules) and practices in accordance with the curriculum and calendar schedule of the educational process.

7.3.2 Interim certification form: exam.

Interim certification of students in the form of an exam is carried out based on the results of completing all types of academic work provided for by the curriculum for a given discipline (module), while taking into account the results of ongoing monitoring of progress during the semester. Assessment of the degree to which students have achieved the planned learning outcomes in the discipline (module) is carried out by the teacher leading classes in the discipline (module) using the method of expert assessment. Based on the results of the intermediate certification for the discipline (module), a grade of “excellent”, “good”, “satisfactory” or “unsatisfactory” is given.

Only students who have completed all types of academic work provided for in the work program for the discipline “Digitalization of Management Processes” are allowed to participate in the intermediate certification (indicate what exactly - they passed the intermediate control, performed laboratory work, made a report, etc.)

Grading scale	***Description***
Great	*All types of educational work provided for by the curriculum have been completed. The student demonstrates compliance of knowledge, abilities, and skills with those given in the tables of indicators, operates with acquired knowledge, abilities, skills, and applies them in situations of increased complexity. In this case, minor errors, inaccuracies, and difficulties during analytical operations and the transfer of knowledge and skills to new, non-standard situations may be made.*
Fine	*All types of educational work provided for by the curriculum have been completed. The student demonstrates a good correspondence of knowledge, abilities, and skills with those given in the tables of indicators, operates with acquired knowledge, abilities, skills, and applies them in situations of ordinary complexity. In this case, some errors, inaccuracies, and difficulties may be made during analytical operations, transfer of knowledge and skills to new, non-standard situations.*
Satisfactorily	*Not all types of educational work provided for by the curriculum have been completed. The student demonstrates incomplete compliance of knowledge, skills and abilities with those given in the tables of indicators, does not confidently operate with acquired knowledge, skills, abilities, and does not apply them in situations of increased complexity. In this case, errors, inaccuracies, and difficulties may be made during analytical operations, transfer of knowledge and skills to new, non-standard situations.*

Unsatisfactory	*One or more types of educational work provided for by the curriculum have not been completed. The student demonstrates incomplete compliance of knowledge, abilities, skills with those given in the tables of indicators, significant mistakes are made, a lack of knowledge, abilities, skills is manifested in a number of indicators, the student experiences significant difficulties in operating knowledge and skills when transferring them to new situations.*

Only students who have completed all types of academic work provided for in the work program for the discipline are allowed to take intermediate certification.