KSPEU

MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION
Federal State Budgetary Educational Institution of Higher Education
«KAZAN STATE POWER ENGINEERING UNIVERSITY»
(FSBEI HE «KSPEU»)

APPROVED
Director of the Institute of Digital Technologies and Economics
_____Zainullin R.R.
«24»_____February_____2026

WORKING PROGRAM OF THE DISCIPLINE

B1.V.01 Digital ecosystems

Direction Training: 38.03.02 Management

Qualification_: _Bachelor's Degree_

Kazan, 2026

The program was developed by:

Department name	Position,academic degree, academic title	FCs Developer's full name
Management	Candidate of Economic Sciences, Associate Professor,	Timofeev R. A.

Approval	Division name	Date	№ Protocol	Signature
Approved	Management	10.02.2026	Protocol №5	Head of Department, Doctor of Social Sciences, Professor Makhiyanova A.V.
Agreed	Management	10.02.2026	Protocol №5	Head of the Department., Doctor of Social Sciences, prof.Makhiyanova A.V.
Agreed	Educational and Methodological Council of IDTE	24.02.2026	Protocol №6	Director, Ph.D., Associate Professor, Zainullin R.R..
Approved	Scientific Council of IDTE	24.02.2026	Protocol №6	Director, Ph.D., Associate Professor, Zainullin R.R.

1. Purpose, objectives and planned results of training in the discipline

The purpose of mastering the discipline "Digital ecosystems" is to develop competencies in the field of digital economy, consolidate knowledge about innovative technologies that form the basis of digital ecosystems.

The objectives of mastering the discipline are: mastering knowledge in the field of theoretical foundations of the digital business ecosystem; obtaining knowledge and practical experience in the field of organizational and methodological principles of the formation of the digital business ecosystem.

Competencies and indicators formed by students:

Competence code and name	Indicator code and name
PC-2 Able to develop strategies for the organization with the aim of adapting its production and economic activities to changing external and internal market conditions in order to ensure investment attractiveness and competitiveness in the modern global economy	PC-2.3 Based on big data analysis and using modern digital tools, develops analytical materials to monitor and analyze the implementation of the organization's strategy in the changing external and internal conditions of the global market to ensure investment attractiveness and competitiveness.

2. Place of the discipline in the structure of the OP

Previous disciplines (modules), practices, research and development: Information management systems, Algorithmization andprogramming, Management.

Subsequent disciplines (modules), practices, research and development: Менеджмент Digital ecosystem management, System analysis in management, Investment management of the organization.

3. Structure and content of the discipline

3.1. Structure of the discipline

For full-time education

Type of academic work	Total ZE	Total hours	Semester
			5
TOTAL LABOR INTENSITY OF THE DISCIPLINE	3	108	108
CONTACT WORK*	2	72	72
CLASSROOM WORK	1.9	68	68
Lectures	0.95	34	34
Practical (seminar) classes	0.95	34	34
STUDENT'S INDEPENDENT WORK	1.1	40	40
Study of educational material	0.1	4	4
Intermediate certification:			Credit

For full-time and part-time education

Type of academic work	Total ZE	Total hours	Semester
			6
TOTAL LABOR INTENSITY OF THE DISCIPLINE	3	108	108
CONTACT WORK*	1	36	36
CLASSROOM WORK	0.8	28	28
Lectures	0.3	10	10
Practical (seminar) classes	0.5	18	18
STUDENT'S INDEPENDENT WORK	2.1	76	76
Study of educational material	0.2	8	8
Control	0.1	4	4
Intermediate certification:			Credit

3.2. Content of the discipline, structured by sections and types of classes

Discipline sections	Total hours	Distribution of labor intensity by type of academic work				Forms and type of control	Indexes of indicators of formed competencies
		lectures	laboratory work	practical exercises	independent work		
Section 1. Theoretical foundations and key components of digital ecosystems.	concepts 54	17		17	20	TK1	PC-2.3Z; PC-2.3Y: PC-2.3V
Section 2. PeriodicMethodological and organizational principles of forming digital ecosystems.	aspects 54	17		17	20	TK2	PC-2.3Z; PC-2.3Y:PC-2.3V
Offset						**OM Z**	PC-2.3Z;PC-2.3Y:PC-2.3V
TOTAL	**108**	**34**		**34**	**40**		

3.3. Content of the discipline

Section 1.Theoretical foundations and key components of digital ecosystems.

Topic 1.1. The main conceptual framework of digital ecosystems.

Topic 1.2. Key principles of formation of digital ecosystems in the modern economy.

Topic 1.3. System-forming components of the digital ecosystem based on based on digital platforms and services, the Internet of things, and cloud technologies.

Section 2. Methodological and organizational principles of forming digital ecosystems.

Topic 2.1. Basic organizational - and economic principles of formation and development of digital ecosystems.

Topic 2.2. Transformation of business models into digital ecosystems in the context of modern digital development.

Topic 2.3. Convergent business model of a digital company on the example of the financial and banking sector.

Topic 2.4. Methodological approaches to assessing the effectiveness of digital ecosystems in a platform economy.

3.4. Thematic plan of practical exercises

Section 1. Theoretical foundations and key components of digital ecosystems.

Topic 1.1. Key concepts of national and international companies that form modern digital ecosystems.

Topic 1.2. Organizational forms and principles of development of digital ecosystems in the modern economy.

Topic 1.3. Architecture and components of digital ecosystems in Russia and abroad.

Section 2. Methodological and organizational principles of forming digital ecosystems.

Topic 2.1. Justification of the need to form digital ecosystems based on strategies for integration and diversification of activities in the modern economy.

Topic 2.2. Justification of the need for business transformation and the formation of digital ecosystems based on the identification of competitive advantages (SWOT and PEST analysis matrices).

Topic 2.3. Key characteristics of the process of convergence of existing businesses into components of digital ecosystems and prospects for their development.

Topic 2.4. Assessment of the effectiveness of the formation of digital ecosystems in the modern economy.

3.5. Thematic plan of laboratory work

This type of work is not provided for in the curriculum.

3.6. Course project /course work

This type of work is not provided for in the curriculum.

4. Evaluating learning outcomes

Assessment of the results of training in the discipline is carried out within the framework of current control and intermediate certification, conducted according to the point-rating system (BRS)

Scale of assessment of learning outcomes in the discipline:

Code Competence	Competence indicator code	Planned learning outcomes In the discipline	The level of formation of the competence indicator			
			High	Average	Below average	Low
			from 85 to 100	from 70 to 84	from 55 to 69	from 0 to 54
			Assessment scale			
			excellent	good	satisfactory	unsatisfactory
			credited			not credited
PC-2 Able to develop strategies for the organization with the aim of adapting its production and economic activities to changing external and internal market conditions in order to ensure investment attractiveness and competitiveness in the modern global economy.	PC-2.3 Based on big data analysis and using modern digital tools, develops analytical materials to monitor and analyze the implementation of the organization's strategy in the changing external and internal conditions of the global market to ensure investment attractiveness and competitiveness.	to know::				
		Fundamentals of big data and modern digital tools	Level of knowledge in the volume corresponding to the training program, without errors	Level of knowledge in the volume corresponding to the program, there are several non-rough errors	Minimum permissible level of knowledge, there are not many non-rough errors	Level of knowledge below the minimum requirements, there are gross errors
		be able to:				
		To develop analytical materials for the purpose of monitoring and analyzing the implementation of the organization's strategy	All basic skills have been demonstrated, all basic tasks have been solved with some minor shortcomings, and all tasks have been completed in full.	All basic skills were demonstrated, all basic tasks were solved with minor errors, all tasks were completed in full, but some with shortcomings	Basic skills have been demonstrated, typical tasks with minor errors have been solved, and all tasks have been completed, but not in full	When solving standard tasks, basic skills are not demonstrated, and gross errors occur.
		owned:				
		Tools to ensure the investment attractiveness and competitiveness	Demonstrate skills in solving non-standard tasks without mistakes and shortcomings	Demonstrated basic skills in solving standard tasks with some shortcomings	There is a minimal set of skills for solving standard tasks with some	In solving standard tasks not demonstrated basic skills, there are place some serious mistakes

		of the organization in the changing external and internal conditions of the global market			shortcomings.	

Evaluation materials for conducting current control and interim certification are given in the Appendix to the discipline's work program.

The complete set of tasks and materials required for evaluating the results of training in the discipline is stored at the developer's department.

5.1 Educational and methodical support

Basic literature

1. Fundamentals of the Digital economy andbusiness transformation: textbook

/ Ю. Ю. Kostyukhin, G. V. Timokhova, O. T. Shipkova [et al.]; ed. by E. Yu. Sidorova. - Moscow: KnoRus, 2023. - 258 p — - ISBN 978-5-406-10523-

8. - URL: https://book.ru/book/947610 — -Text : electronic.

2. Teslenko I. B., Krylov V. E., Digilina O. B., Gubernatorov A.M. Tsifrovaya ekonomika : uchebnik [Digital Economy: textbook]. - Moscow: KnoRus, 2023. - 212 p. - ISBN 978-5-406-10729-4. — URL:https://book.ru/book/946275 — -Text : electronic.

3. SheveG., Khusig S., Gumerova G. I., Shaimieva E. S. Innovative management of the digital economy : a textbook,C. . -Moscow: KnoRus, 2023. - 307 p. - ISBN 978-5-406-10238-1. - URL: https://book.ru/book/946240 — -Text : electronic.

Additional literature

1. AnshinaM. L., бизнеса :Slavin B. B., and Terry U. Tsifrovaya transformatsiya biznesa : uchebnoe posobie [Digital transformation of business: a textbook]. Moscow: KnoRus Publ., 2022. - 270 p. - ISBN 978-5-406-09851-6. — URL: https://book.ru/book/943886 — -Text : electronic.

2. Digital transformation of Russian business : a monograph / I. E. Gergiev, N. A. Mardeyan, Z. P. Gassieva [et al.]; edited by A. I. Pozmogov. -Moscow: Rusains, 2019. - 455 p — - ISBN 978-5-4365-3798-6. - URL: https://book.ru/book/933886 — -Text : electronic.

4.1. Information support

Electronic andonline resources

n /	Name of electronic andInternet resources	Link
1	Official website of the University	https://kgeu.ru/
2	Official website of the Federal State Statistics Servicestate statistics services	https://rosstat.gov.ru/
3	Unified portal of state and municipalServicesrussia	https://www.gosuslugi.ru/
4.	Electronic library system "Book"	https://book.ru/

5.2.2. Professional databases / Information and reference systems

n /	Name of professional databases	Address	Access mode
1	Federal Educational Portal "Economics, Sociology, Management"	http://ecsocman.hse.ru/	http://ecsocman.hse.ru/
2	Ministry of Economic Development of the Russian Federation	https://economy.gov.ru/	https://economy.gov.ru/
3	Business navigator for SMEs	https://smbn.ru/	https://smbn.ru/

- Licensed and freely distributed software of the discipline

1	1C: Enterprise 8	software is designed for automation of accounting and management accounting, economic and organizational	IP Valishina No. VZS-0000641-L 22.05.2013Neiskl. right. Perpetual
2	Windows Server Standartd 2012R2 Russian OLP NL AcademicEdition 2Proc	Server operating system from Microsoft.	"SoftLineTrade CJSC" No. 2014.0310 dated 15.11.2014 Not applicable. right. Indefinitely
3	Office Professional Plus 2007 Windous32 Russian DiskKit MVL CD	A software package containing the necessary office software	of SoftLineTrade CJSC" No. 225/10 28.01.2010 Neiskl. right. Unlimited
4	Windows 7 Professional (FSTEC certified)	User operating system	"CJSC "TaksNet- Service" No. PO-PERSONS 0000/2014 dated 27.05.2014 Not applicable. right. Unlimited
5	Chrome browser	Information search system on the Internet	Free License right. Unlimited Neiskl.
6	OpenOffice	Suite of office applications	Free Perpetual license Neiskl. right.
7	Adobe Acrobat	Software package for creating and viewing PDF files	Free Perpetual license Neiskl. right.
8	LMSMoodle	Software for effective online interaction between a teacher and a student	Free Indefinitely license Neiskl. right.
9	Alt-Invest Sums	Software for preparation, analysis and optimization of investment projects of various industries, scales and	OOO Alt-Invest LLC No. 1-17-125 02.10.2017 Neiskl. right. Indefinitely

6. Material and technical support of the discipline

Name of the type of educational work	Name of the educational audience, specialized laboratory	List of necessary equipment and technical means of teaching
Lectures	Educational audience for conducting lecture-type classes	Specialized educational furniture, technical means of teaching that serve to present educational information to a large audience (multimedia projector, computer (laptop), screen), demonstration equipment, educational and visual aids
Practical classes	Educational audience for Conducting for conducting seminar-type classes, group and individual consultations, current control and intermediate certification	Specialized educational furniture, technical training tools (multimedia projector, computer (laptop), screen), etc. Classroom whiteboard, portable equipment-multimedia projector (2 pcs.), screen, laptop (3 pcs.)
Coursework	Classroom for conducting course work and individual consultations,current control and intermediate certification	Classroom whiteboard, portable equipment-multimedia projector (2 pcs.), screen, laptop (3 pcs.)
Independent work	Computer class with Internet access B-600a	Specialized educational furniture on 30 seats, 30 computers, technical training facilities (multimedia projector, computer (laptop), screen), video cameras, software
	Library Reading room	Specialized furniture, computer equipment with Internet access and Internet access EIOS, screen, multimedia projector, software
	The classroom for the course project (coursework) (to be specified if available	Specialized furniture, computer equipment with Internet access and access to EIOS, software Classroom whiteboard, portable equipment-multimedia projector (2 pcs.), screen, laptop (3 pcs)

7. Features of the organization of educational activities for persons with disabilities and disabled people

Persons with disabilities and persons with disabilities have the opportunity to move freely from one educational and laboratory building to another, to climb all floors of educational and laboratory buildings, to study in educational and other premises, taking into account the peculiarities of psychophysical development and health status.

Conditions of unhindered access to all educational facilities are provided for the training of persons with disabilities and disabled people with musculoskeletal disorders. Information about special conditions created for students with disabilities and disabilities is available on the university's website www//kgeu.ru/. There is a possibility to provide technical assistance by an assistant, as wellas sign language interpreters and tiflosurd interpreters.

To adapt to the perception of reference and educational material on the discipline by persons with disabilities and hearing impairments, the following conditions are provided:

- for better orientation in the classroom, use alerts about the beginning and end of the lesson (the word "call" is written on the blackboard).
- the teacher draws the attention of a hard-of-hearing student with a gesture (a hand is placed on the shoulder, a soft pat is performed).
- when talking to a student, the teacher looks at them, speaks clearly, in short sentences, providing the ability to read lips.

Compensation for difficulties in speech and intellectual development of hard-of-hearing students is carried out by:

- use diagrams, diagrams, drawings, and computer presentations with hyperlinks that comment on individual image components.
- regular use of exercises for graphic selection of essential features of objects and phenomena;
- providing an opportunity for the student to receive targeted advice by e-mail as needed.

The following conditions are provided for adaptation to the perception of reference, educational, and educational materials provided by the educational program for the chosen field of study by persons with disabilities and visually impaired people:

- The official website on the Internet is being adapted to meet the special needs of visually impaired people, large-scale reference information on the schedule of training sessions is being provided.
- the teacher and his / her interlocutor (if necessary) who are present at the lesson are introduced to the students, while each time, the person to whom the teacher applies is named.
- actions, gestures, and movements of the teacher are briefly and clearly commented on.
- printed information is provided in large font (starting from 18 points) and is fully voiced.
- provides the necessary level of illumination of the premises;
- it is possible to use computers during classes and the right to record explanations on a voice recorder (at the request of students).

The form of conducting current and intermediate certification for students with disabilities and disabilities is determined by the teacher in accordance with the curriculum. If necessary, students with disabilities, taking into account their individual psychophysical characteristics, are given the opportunity to pass an interim certification orally, in writing on paper, in writing on a computer, in the form of testing, etc., or are given additional time to prepare an answer.

8. Methodological recommendations for teachers on the organization of educational work with students.

Methodological support of the process of educating students is one of the determining factors of high quality of education. A university teacher, demonstrating high professionalism, erudition, a clear civic position, self-discipline, and a creative approach to solving professional problems, contributes to the formation of a harmonious personality during the educational process.

When implementing the discipline, the teacher can use the following methods of educational work:

- methods of forming a person's consciousness (conversation, dispute, suggestion, instruction, control, explanation, example, self-control, story, advice, persuasion, etc.);
- methods of organizing activities and forming behavioral experience (task, public opinion, pedagogical requirement, assignment, training, creating educational situations, training, exercise, etc.);
- methods of motivating activity and behavior (approval, encouragement of social activity, censure, creating success situations, creating situations for emotional and moral experiences, competition, etc.)

When implementing the discipline, the teacher should take into account the following areas of educational activity:

Civic and patriotic education:

- formation y of students ' holistic worldview, Russian identity, respect for their family, society, and the state,

the spiritual, moral and socio-cultural values adopted in the family and society, as well as respect for national, cultural and historical heritage, and the formation of a desire for its preservation and development;

- formation of students ' active citizenship based on traditional cultural, spiritual and moral values of Russian society, in order to increase their ability to responsibly exercise their constitutional rights and obligations;
- development of legal and political culture of students, expansion of constructive participation in decision-making affecting their rights and interests, including in various forms of self-organization, self-government, socially significant activities;
- formation of motives, moral and semantic attitudes of the individual, allowing to resist extremism, xenophobia, discrimination on social, religious, racial, national grounds, interethnic and interfaith intolerance, and other negative social phenomena.

Spiritual and moral education:

- education of a sense of dignity, honor and honesty, conscientiousness, respect for parents, teachers, and older people;
- formation of the principles of collectivism and solidarity, the spirit of mercy and compassion, the habit of caring for people in difficult life situations;
- forming solidarity and a sense of social responsibility towards people with disabilities, overcoming psychological barriers towards people with disabilities;
- formation of an emotionally rich and spiritually elevated attitude to the world, the ability and ability to pass on your aesthetic experience to others.

Cultural and educational education:

- forming an aesthetic picture of the world;
- formation of respect for the cultural values of the native city, region, or country;
- improving students ' cognitive activity.

Scientific and educational education:

- formation of students ' scientific worldview;
- formation of the ability to acquire knowledge;
- formation of skills in analyzing and synthesizing information, including in the professional field.

Current changes and approvals for the new academic year

n /	№ of the section for making changes	Date of making changes	Content of changes	«Agreed» Head of the department implementing the discipline	«Agreed» Chairman of the Department of Management of the Institute (faculty), which includes the graduate
1	2	3	4	5	6
1					
2					
3					

Appendix k
working
program of the
discipline

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EVALUATION MATERIALS
by discipline

B1.V.01 Digital ecosystems

Kazan, 2026

Assessment materials on the discipline, designed to assess the results of training for compliance with indicators of achievement of competencies. Assessment of the results of training in the discipline is carried out within the framework of current control (TC) and intermediate certification, conducted according to the pointrating system (BRS).

1. Technological map

Semester 3

Section name	Forms and type of control	Rating indicators							
		I current control	Additional points to TK1	II current control	Additional points to TK2	III current control	Additional points to TK3	Total	Interim certification
Section 1. Theoretical foundations and key components of digital ecosystems.	**TK1**	**0-25**						**0-25**	**0-20**
Test		0-15							
Survey by sections (topics)		0-10							
Section 2.Methodological and organizational principles of forming digital ecosystems.	**TK2**			**0-30**				**0-30**	**0-25**
Survey by sections (topics)				0-10					
Abstract				0-20					
Total								**0-55**	
Intermediate certification (credit)	**OM**								**0-45**
Intermediate assessment task									0-15
In the interview form									0-30
Total								**100**	

Scale of assessment of learning outcomes in the discipline:

Code Competence	Competence indicator code	Planned learning outcomes for the discipline	The level of formation of the competence indicator			
			High	Average	Below average	Low
			from 85 to 100	from 70 to 84	from 55 to 69	from 0 to 54
			Assessment scale			
			excellent	good	satisfactory	unsatisfactory
			credited			not credited
PC-2 Able to develop strategies for the organization with the aim of adapting its production and economic activities to changing external and internal market conditions in order to ensure investment attractiveness and competitiveness in the modern global economy.	PC-2.3 Based on big data analysis and using modern digital tools, develops analytical materials to monitor and analyze the implementation of the organization's strategy in the changing external and internal conditions of the global market to ensure investment attractiveness and competitiveness.	to know:				
		Fundamentals of big data and modern digital tools	Level of knowledge in the volume corresponding to the training program, without errors	Level of knowledge in the volume corresponding ем to the program, there are several non-rough errors	Minimum permissible level of knowledge, there are not many non-rough errors	Level of knowledge below the minimum requirements, there are gross errors
		be able to:				
		Develop analytical materials for the purpose of monitoring and analyzing the implementation of the organization's strategy	All basic skills have been demonstrated, all basic tasks have been solved with some minor shortcomings, and all tasks have been completed in full	All basic skills were demonstrated, all basic tasks were solved with minor errors, all tasks were completed in full, but some with shortcomings	Basic skills have been demonstrated, typical tasks with minor errors have been solved, and all tasks have been completed, but not in full	When solving standard tasks, basic skills are not demonstrated, and there are gross mistakes
		own:				
		Tools to ensure the investment attractiveness and	Demonstrate skills in solving non-standard tasks without mistakes and	Demonstrated basic skills in solving standard tasks with some	There is a minimal set of skills for solving standard tasks	In solving standard tasks not demonstrated basic skills, there are place some

		competitiveness of the organization in the changing external and internal conditions of the global market	shortcomings	shortcomings	with some shortcomings.	serious mistakes

3. List of evaluation tools

Brief description of the assessment tools used in the current monitoring of academic performance and intermediate certification of a student in the discipline:

Name of the evaluation tool	Brief description of the evaluation tool	Description of the evaluation tool
Survey by sections (topics)	Knowledge of the main concepts of the topic/section / discipline	List of definitions of the main concepts of the topic / discipline
Test (Test)	A system of standardized tasks that allows you to automate the procedure for measuring the level of knowledge and skills of a student	A set of test tasks
Interview (Sbs)	A control tool organized as a special conversation between the teacher and the student on topics related- to the discipline being studied, and designed to find out the amount of knowledge of the student on certain section, topic, problem, etc.	Questions on the sections of the discipline
Abstract	The product of the student's independent work, which is a written summary of the results of a theoretical analysis of a certain scientific (educational and research) topic, where the author reveals the essence of the problem under study, provides various points of view, as well as his own views on it.	Topics of abstracts

4. A list of control tasks or other materials necessary for assessing knowledge, skills and abilities that characterize the stages of competence formation in the course of mastering the discipline

Task example

For the current control of TK1:

PC-2 Able to develop strategies for the organization with the aim of adapting its production and economic activities to changing external and internal market conditions in order to ensure investment attractiveness and competitiveness in the modern global economy.

Name of competence, indicator:

PC-2.3 Based on big data analysis and using modern digital tools, develops analytical materials to monitor and analyze the implementation of the organization's strategy in the changing external and internal conditions of the global market to ensure investment attractiveness and competitiveness.

Tests.

1. Digital business transformation technologies are widely used in:

a) development of digital services and goods or modernization of old ones for modern technologies

b) developing an improved business development model based ondigitalization and the desire for modernization

c) both options are correct
d) there is no correct answer
2. In 2020, work on digitalization of state and municipal services should reach an assessment of at least ... on a 5 - point scale, the level of satisfaction with the quality of their provision:
a) 4
b) 2,3
c) 3.7
3. The advantages of digital transformation are:
a) the ability to use innovative tools
b) the ability to collect, analyze and store huge amounts of information
c) both options are correct
d) there is no correct answer
4. Virtual reality technology allows you to integrate information with real-world objects in the form of text, and the
augmented reality allows you to immerse a person inan immersive virtual world, is this true:
a) yes b) no
c) partly
5. The benefits of digital transformation are:
a) improved customer experience
b) flexibility of various business processes, as well as their acceleration
c) both options are correct
d) there is no correct answer
6. In the Russian Federation, the program regulatory documents for the developmentof blockchain are the roadmap for the development of end-to-end digital technology:
a) Direct registry systems
b) Borrowed registry systems
c) Distributed registry systems
7. The national program "Digital Economy of the Russian Federation" was approved in :
a) yes
b) no
c) partly
8. The national program "Digital Economy of the Russian Federation" was approved in ...
a) 2020
b) 2018
c) 2019
9. Digitalization of business involves not only the installation of additional equipment and software updates, but also
fundamental transformation of work processes. Is this statement true:
a) not true
b) true
c) only partially true
10. Increasing domestic spending on the development of the digital economy is one of the key goals of the national program
"Digital economy", is it true:
a) yes

b) no
c) partly
11. The type of technology that will contribute to a successful transformation is ... a question of:
a) primary
b) secondary
c) main
12. At least ... large and medium-sized enterprises submit official statistical reports in electronic form starting from January 1, 2021:
a) 90%
b) 80%
c) 70%
13. An indicator of the digital development of an organization or industry that characterizes the level of its digital transformation:
a) digital age
b) digital addiction
c) digital maturity
14. Sensorics is included in the list of end-to-end digital technologies within the framework of the federal project "Digital Technologies" of the national program "Digital Economy".
a) yes
b) no
c) partly

The tests are tasks that are completed within 20 minutes after completing the study of sections 1 and 2 (based on the materials of the sections). The student is given a task consisting of 15 tests. 1 point is awarded for each correctly completed task.

Questions for the survey by topic (section 1) of TK1

1. Business development in a digital environment.
2. Elements of the digital business ecosystem.
3. Conceptual framework of the digital business ecosystem.
4. National and international companies that form digital ecosystems by type of activity.
5. The impact of digital technologies (cloud technologies, the Internet of Things) on the formation of new business models.
6. Components of a special digital economy infrastructure and eco-systems.
7. The role of info communication infrastructure in the digital transformation of business and the formation of digital ecosystems.
8. The impact of the platform architecture of markets and the network organization of platforms on the convergence and blurring of business boundaries.
9. Organizational forms of digital ecosystems in Russia and abroad.
10. Organizational and economic principles of forming a digital business ecosystem.

Questions for the survey by topic (section 2) of TK2

1. International approaches and principles of ecosystem formation.

2. Architecture of a digital ecosystem based on digital platforms and services, the Internet of Things, and cloud technologies.

3. Organizational and economic principles of ecosystem formation based on integrated business.

4. Organizational and economic principles of ecosystem formation based on partnership and diversification of activities.

5. The concept of the "joint economy" of convergent business models.

6. The "co-production economy" of crowdsourcing and crowdfunding models.

7. Directions for improving the management system of the network platform economy in the digital environment.

8. Improvement of methods for measuring the effectiveness of digital technologies and synergy of integrated activities ecosystem partners.

9. Prospects for the development of digital ecosystems in Russia and abroad.

10. Transformation of business models into digital ecosystems in the conditions of:

The survey is conducted at the end of studying sections 1 and 2 (based on the materials of sections). Answers to questions should be accurate and concise. When evaluating a completed task, the following criteria are taken into account:

1. Knowledge of the material

- the content of the material is fully disclosed in accordance with the discipline program – 5 points;
- the content of the material is not fully disclosed, and the general understanding of the issue is shown, which is sufficient for further study of the program material – 3 points.
- the main content of the training material is not disclosed – 0 points.

2. Sequence of presentation

- the content of the material is disclosed consistently, quite well thought out – 3 points;
- the sequence of presentation of the material is not well thought out – 2 points.
- confusion in the presentation of the material – 0 points.

3. Proficiency in speech and terminology

- the material is presented in a competent language, with accurate use of terminology-3 points;
- there were difficulties in the presentation of the material and mistakes were made in the definition of concepts and in the use of terminology – 2 points;
- mistakes made in defining concepts – 0 points.

4. Applying specific examples

- the ability to illustrate the material with concrete examples is shown-3 points;
- giving examples is difficult – 2 points.
- inability to give examples when explaining the material – 0 points.

5. Level of theoretical analysis

- the ability to make generalizations, conclusions, and comparisons is shown-3 points.
- generalization, conclusions, and comparison are made with the help of a teacher – 2 points.
- complete inability to make generalizations, conclusions, and comparisons – 0 points.

Number of points: maximum-10

An approximate list of topics for abstracts for TK2.

1. Scientific foundations of business development in the digital environment.
2. Components of the digital business ecosystem in the context of digital development.
3. Theoretical foundations and conceptual framework of the digital ecosystem of business.
4. Concepts of national and international companies that form ecosystems by type of activity.
5. The impact of digital technologies on the formation of new business models based on cloud technologies and the Internet of Things.
6. The essence and components of a special infrastructure of the digital economy and ecosystems.
7. The essence and significance of info communication infrastructure for digital business transformation and ecosystem formation.
8. The impact of the platform architecture of markets and the network organization of platforms on the convergence and blurring of business boundaries.
9. Organizational forms of digital ecosystems in Russia and abroad.
10. Organizational and economic principles of forming a digital business ecosystem.

The criteria for evaluating the task performance, according to the level achieved in 2 TK, are:

the content of the abstract topic is fully disclosed, the material is presented in a competent language with precise use of terminology, the information is built logically and concisely-16-20 points.

Intermediate level:

the abstract shows a general understanding of the issue sufficient for further study of the material, the sequence of presentation of the material is quite well thought out, the material is presented in competent language, some errors in the use of terminology are made – 15-12 points.

Below average level:

the content of the abstract topic is not fully disclosed, the material is presented correctly, however, inconsistency in the presentation of the material was noted, there were difficulties in the presentation of the material and mistakes were made in the definition of concepts and in the use of terminology – 11-5 points.

Low level:

the abstract does not disclose the main content of the educational material, confusion in the presentation of the material, errors in the definition of concepts, complete inability to generalize, conclusions, comparisons – less than 5 points.

Number of points for completing the presentation: minimum-1 point.
Number of points for completing a presentation: maximum-20 points.
For intermediate certification:

Credit in the form of an interview. A control tool in the form of a conversation between a teacher and a student/students with each other on the topic being studied in order to determine the level of student's knowledge of the volume of knowledge on the topic being studied, their level of proficiency in dialogic speech.

Examples of questions:

1. International approaches and principles of forming digital ecosystems.
2. Architecture of a digital ecosystem на based on digital platforms and services, the Internet of Things, and cloud technologies.
3. Organizational and economic principles of forming an eco-system based on integrated business.
4. Organizational and economic principles of ecosystem formation based on partnership and diversification of activities.
5. Development of a "joint economy" based on convergent business models.
6. Development of the "co-production economy" basedo n crowdsourcing and crowdfunding models.
7. Directions for improving the management system of the network-platform economy in the digital environment.
8. Improvement of methods for measuring the effectiveness of digital technologies and the synergy of integrated activities of ecosystem partners.
9. Prospects for the development of digital ecosystems in Russia and abroad.
10. Transformation of business models into digital ecosystems in the context of digital development of the economy and society.
11. Convergent business model of a digital company on the example of the infocommunication and banking sectors.
12. Analytical methods of business transformation justification and company ecosystem formation: SWOT and PEST analysis matrices, bankruptcy and business risk modeling.
13. Methodological approaches to measuring the effectiveness of digital business ecosystems in a networked market architecture and platform economy.
14. Application of the integrated expert method to assess the effectiveness of the project of forming the company's digital ecosystem.
15. Application of methods for evaluating the effectiveness of networks and information systems (IP components) for measuring the efficiency of the company's digital ecosystem.

The criteria for evaluating the task performance, according to the achieved level, are:

High level:

The answer to the question is complete, detailed, presented in a competent language with precise use of terminology, the student responds to questions and is able to maintain a dialogue – 30-45 points

Intermediate level:

the answer to the question shows a general understanding of the question, sufficient for further study of the program material, the answer is presented in competent language, some errors in the use of terminology are made – 15-29 points.

Below average level:

The answer to the question is incomplete, inconsistency in the presentation of the material is noted, there were difficulties and mistakes in the definition of concepts and in the use of terminology when answering the questionпри изложения, there are not rough lexical and grammatical errors in the presentation of the material-0-14 points.

The minimum number of points for the test is 0 The maximum number of points for the test is 45