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Информация о владельце:

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MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION
Federal State Autonomous Educational Institution
Higher Education
"NORTH CAUCASUS FEDERAL UNIVERSITY"

APPROVED BY

Acting Director of the Institute

Advanced Engineering

A.A. Porokhnya

DISCIPLINE ASSESSMENT TOOLS FUND

"Introduction to Engineering Culture"

Field of study	11.03.02 Infocommunication Technologies and Communication Systems
Profile	Intelligent Data Processing in Infocommunication Systems and Networks
Year of start of training	<u>2026</u>
Form of study	<u>Full-time</u>
Implemented in a semester	<u>2</u>

Introduction

1. Purpose

The fund of assessment tools for the discipline "Introduction to Engineering Culture" is designed to objectively assess the level of competence formation.

2. FOS is an appendix to the program of the discipline "Introduction to Engineering Culture".

3. Developer N.Y. Bratchenko, Associate Professor of the Department of Digital, Robotic Systems and Electronics of the Institute of Advanced Engineering.

4. An examination of the FOC was carried out.

Members of the expert group:

Chairman: N.Y. Bratchenko, Chairman of the CMT of the Institute of Advanced Engineering, Associate Professor of the Department of Digital, Robotic Systems and Electronics of the Institute of Advanced Engineering.

Members of the Commission:

V.P. Mochalov, Professor of the Department of Digital, Robotic Systems and Electronics of the Institute of Advanced Engineering.

S.V. Melnikov, Senior Researcher of the Interdisciplinary Training and Research Center for Agricultural Technologies, Associate Professor of the Department of Digital, Robotic Systems and Electronics of the Institute of Advanced Engineering.

Representative of the employer's organization:

Mironov V.A., General Director of Orintex LLC.

Expert opinion: The FAT for the discipline allows you to assess the level of competence formation. Start approbation.

5. The validity period of the FAT is determined by the period of implementation of the educational program.

1. Description of the criteria for assessing competence at various stages of their formation, description of assessment scales

Competency(s), indicator(s)	Levels of competence formation(s),			
	The minimum level has not been reached (Unsatisfactory) 2 points	Minimum level (satisfactory) 3 points	Intermediate level (good) 4 points	High level (excellent) 5 points
Competency: UK-6				
Learning outcomes in the discipline (module): <i>Indicator:</i> ID-1 UK-6 sets personal and professional goals in accordance with the level of its resources and priorities of actions, for successful development in the chosen field of professional activity	Poorly understands his/her own and professional goals in accordance with the level of his/her resources and priorities for successful development in the chosen field of professional activity	Does not accurately understand his/her own and professional goals in accordance with the level of his/her resources and priorities of actions, for successful development in the chosen field of professional activity	Sufficiently understands his/her own and professional goals in accordance with the level of his/her resources and priorities for action, for successful development in the chosen field of professional activity	Clearly understands his/her own and professional goals in accordance with the level of his/her resources and priorities of actions, for successful development in the chosen field of professional activity

ASSESSMENT TOOLS TO CHECK THE LEVEL OF FORMATION OF COMPETENCIES

Job Number	Correct answer	Content of the question	Competence
		Full-time, Semester 1	
1.	a	The formation of professional competencies corresponding to the field of professional activity was carried out on the basis of the following standards: a) professional b) municipal c) Urban d) labor	UK-6
2.	a b e f	Documents regulating the content and organization of the educational process in the implementation of the educational program of higher education: a) Academic calendar b) Curriculum c) Work plan d) Individual teacher's work plan e) Work programs of disciplines f) Internship Programs	UK-6
	a d e	Competencies of a graduate formed as a result of mastering the educational program of higher education: a) Universal Competencies b) Economic Competencies c) organizational and managerial competencies d) General professional competencies e) Professional competencies	UK-6
3.	a	The formation of professional competencies corresponding to the field of professional activity was carried out on the basis of the following standards: a) professional b) municipal c) Urban d) labor	UK-6

4.	a	The concept of "competence" in the literature is more often referred to #### areas of activity. a) functional b) behavioral c) social d) Economic	UK-6
5.	a	Competence is... a) theoretical and practical ability, the potential ability to solve various kinds of problems, readiness to carry out any activity b) a personal quality that can only be tested in activity c) personality trait	UK-6
6.	a	The purpose of the introduction of the competency-based approach in vocational education is ... a) formation of an effective competent specialist of a high professional level b) formation of theoretical knowledge of a future specialist without a practical orientation c) improvement of only the leadership qualities of the future specialist	UK-6
7.	a	Mission of the educational program: a) implementation of the principles of higher education for the training of highly qualified bachelors in the field of information and communication technologies and communication systems for institutions of various departmental affiliation b) Implementation of the competency-based approach in the training of highly qualified bachelors in the field of information and communication technologies and communication systems c) Formation of social and personal qualities of bachelors	UK-6
8.	a	The concept of "competence" in the literature is more often referred to _____ areas of activity. a) functional b) behavioral c) social d) Economic	UK-6
9.	a d	Competence is a _____ that can only be tested in activities. a) Integrative personal quality	UK-6

		b) readiness to carry out any activity c) responsibility for the professional activity performed d) personality trait	
10.	a	Competence-based education (CBE) began to take shape in _____. a) 1970s b) 1940s c) 2000s d) 1950s	UK-6
11.		The main regulatory documents regulating the educational activities of a student.	UK-6
12.		Define the code of ethics of a NCFU student.	UK-6
13.		Objects and characteristics of the professional activity of bachelors and masters in the field of training "Infocommunication Technologies and Communication Systems".	UK-6
14.		General characteristics of the direction of training "Infocommunication Technologies and Communication Systems".	UK-6
15.		Objects of professional activity of a graduate.	UK-6
16.		Types of tasks of the graduate's professional activity.	UK-6
17.		Competencies of a graduate formed as a result of the development of this EP HE.	UK-6
18.		Define a competency-based approach.	UK-6
19.		Name the schemes of study at the university.	UK-6
20.		Principles and forms of education.	UK-6
21.		Acquisition, assimilation and transfer of knowledge.	UK-6
22.		Organization and planning of independent work by the student.	UK-6
23.		General principles of the competence approach.	UK-6
24.		The main task of education.	UK-6
25.		Goals of education from the point of view of the competence approach.	UK-6
26.	b	Computer network is a set of: a) computers, users, companies and their resources b) computers, protocols, network resources c) computers, servers, nodes	UK-6
27.	b	A message is... a) Reflection of the real world b) any information or data received from the sender (source) of the message to the input	UK-6

		of the communication system for transmission to the recipient c) Eliminated uncertainty	
28.	c	Specify the purpose of computer networks: a) Provide simultaneous access to network resources for all network users b) Replace failing computers with other network computers c) to use the resources of the connected computers of the network, strengthening the capabilities of each	UK-6
29.	a c d	Classifying networks on a territorial basis, there are: a) Local (LAN) b) High-speed networks c) Global (WAN) d) Metro (MAN) networks e) Municipal	UK-6
30.	a c	There are two main options for organizing two-way radio communication: a) Simplex & Duplex b) duplex and half-duplex c) Simplex and half-duplex d) Half-Simplex and Half-Duplex	UK-6
31.	a	In a cellular network, the entire covered area is divided into many small areas – ### a) Honeycomb b) Channels c) Stations d) Lines	UK-6
32.	c	A generalized geometric characteristic of a computer network is: a) Network server b) Remoteness of network computers c) Network topology	UK-6
33.	b	The main types of computer networks are networks: a) Client, corporate, international b) local, global, regional c) social, entertainment, business-oriented	UK-6
34.	a	Information exchange between computer networks is always carried out through: a) independent small data sets (packages)	UK-6

		b) byte-by-byte independent transmission c) Sequence by the duration of the distance between nodes	
35.	b	Communication channels in computer networks are all of the following list: a) satellite communication, solar rays, magnetic fields, telephone b) satellite communications, fiber-optic cables, telephone networks, radio relay communications c) satellite communication, infrared rays, ultraviolet, contact-relay communication	UK-6
36.		List the features of the functioning of wireless personal area networks	UK-6
37.		What are the possible topologies of local area networks?	UK-6
38.		Explain what network technologies can be used to deploy a wireless personal area network.	UK-6
39.		List the possible causes of wireless personal area network failures.	UK-6
40.		Characterize twisted pair cable, coaxial cable, and fiber optic cable.	UK-6
41.		List all possible modes of operation of Cisco Pocket Tracer	UK-6
42.		Describe how DHCP works.	UK-6
43.		Explain what a network interface is.	UK-6
44.		What is a well-known enough tool for capturing and analyzing network traffic?	UK-6
45.		What is a wireless router?	UK-6
46.		What is the simulation mode used for in Cisco Pocket Tracer?	UK-6
47.		What is a Computing Machine?	UK-6
48.		What features does VM VirtualBox have?	UK-6
49.		Explain how to use simulation mode to track changes in the contents of a packet as it travels through the network in Cisco Pocket Tracer.	UK-6
50.		Can you explain what types of network devices and connections you can use in Cisco Packet Tracer?	UK-6
51.	b	The main representations of models are: a) Text description b) Verbal description c) Physical Description	UK-6

52.	b	What is the name of the first stage of the process of solving a problem using ready-made software: a) Model Building b) Problem statement c) Selection of ready-made software	UK-6
53.	c	An algorithm is: a) description of the properties and patterns of behavior of objects that are essential for the task, ensuring its solution b) a program designed to create and process graphic information c) a step-by-step description of the sequence of actions that need to be performed to solve the problem	UK-6
54.	d	What criterion for the properties of algorithms refers to the solution of a whole class of problems of the same type? a) Limb b) Unambiguity c) Correctness d) Mass	UK-6
55.	a	The solution of the problem is understood as obtaining: a) of the required results from the initial data b) of the initial data from the required results c) answer to the question	UK-6
56.	b c d	A programming language is... a) The art of creating software products that are written in a programming language b) a formal sign system, which is designed to write programs that are understandable to the executor (in our opinion, it is a computer) c) a notation system for describing algorithms and data structures, a certain artificial formal system by means of which algorithms can be expressed d) a set of lexical, syntactic and semantic rules that specify the appearance of the program and the actions that the executor (computer) performs under its control	UK-6

57.	a c e	The following criteria for the quality of programs can be noted: a) Correctness b) Loyalty c) Reliability d) Clarity e) Efficiency	UK-6
58.	a c d	The levels of programming languages are known: a) Low b) Medium c) High d) Very high	UK-6
59.	a c e f	Low-level languages tend to be used to write ... a) small system programs b) large system programs c) device drivers d) adapters e) joint modules with non-standard equipment f) for programming specialized microprocessors	UK-6
60.	a c d e	High-level programming languages include: a) Fortran b) Assembly c) Pascal d) Java e) C, C++, C#	UK-6
61.		Name the stages of information retrieval.	UK-6
62.		Define information retrieval and information need.	UK-6
63.		Give a definition of a program, software (software).	UK-6
64.		Word and table processors.	UK-6
65.		Graphic systems.	UK-6

66.		Telecommunications.	UK-6
67.		Integrated systems.	UK-6
68.		Programming systems.	UK-6
69.		Describe the DBMS. Give examples of DBMS.	UK-6
70.		Operating systems.	UK-6
71.		The process of booting the operating system.	UK-6
72.		What features does VM VirtualBox have?	UK-6
73.		What is a high-level language program? Define it.	UK-6
74.		Point out the difference between a high-level programming language and low-level programming languages.	UK-6
75.		Define a programming system.	UK-6
76.	a	What is Robotics? a) The science of building and controlling robots b) The branch of physics that studies the motion of bodies (c) Computer programming	UK-6
77.	a	What are the main types of robots? a) Industrial, medical, domestic (b) Flying, swimming, crawling c) Metal, plastic, wooden	UK-6
78.	b	What is the "brain" of a robot called? (a) Sensor b) Microcontroller (e.g. Arduino, Raspberry Pi) c) Battery	UK-6
79.	b	Why do robots need sensors? a) For decoration (b) To collect information on the environment c) For weight gain	UK-6
	b	What is a "chassis" in robotics?	UK-6

		(a) Program code (b) Base with wheels/tracks for movement (c) Decorative element	
80.	b	What is the most commonly used programming language in robotics? a) HTML b) Python/C++ c) Photoshop	UK-6
81.	b	What is "feedback" in robotics? a) When the robot complains about the owner (b) Correction of actions based on sensor data (c) Power Off	UK-6
82.	a	What control system is used for mobile robots? a) ROS (Robot Operating System) b) Windows c) Google Chrome	UK-6
83.	b	What does a servo (servo) do? a) Stores data b) Precise control of the swivel angle (e.g. in manipulators) c) Generates electricity	UK-6
84.	b	How does the robot understand commands? a) Via Wi-Fi/Bluetooth b) Through pre-programmed algorithms c) Through telepathy	UK-6
85.		What is Webots and what tasks is it used for?	UK-6
86.		What are the main elements of the Webots interface that you know?	UK-6
87.		What programming languages are supported for writing robot controllers in Webots?	UK-6

88.		What features of the Webots simulator do you know?	UK-6
89.		Name the robots you can choose for the Webots project?	UK-6
90.		How do I create a new controller in Webots?	UK-6
91.		How to set up speed control in Webots?	UK-6

2. Description of the rating scale

Students' progress in each discipline is assessed during current control and intermediate certification.

3. Criteria for assessing competencies*

A grade "passed" is given to a student if the student clearly understands the basic principles of the organization of educational activities at the university, independently applies the main regulatory documents governing the educational activities of the student, when setting personal educational and professional goals. Organizes and plans independent work; clearly and clearly understands the basic principles of the construction and operation of telephone and telegraph communications, multi-channel transmission systems, fiber-optic communication lines, radio communications. Independently determines the main standards and generations of cellular communications, as well as reasonably and independently builds structural diagrams of communication networks, uses switching equipment when performing practical tasks.

The grade "failed" is given to a student if the student does not understand the basic principles of the organization of educational activities at the university, does not apply the basic regulatory documents governing the educational activities of the student, when setting personal educational and professional goals; poorly understands the basic principles of the construction and operation of telephone and telegraph communications, multi-channel transmission systems, fiber-optic communication lines, radio communications. Does not determine the basic standards and generations of cellular communication and incorrectly builds structural diagrams of communication networks, and also does not know how to use switching equipment when performing practical tasks.