

Документ подписан простой электронной подписью

Информация о владельце:

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MINISTRY OF SCIENCE AND HIGHER EDUCATION

RUSSIAN FEDERATION

Federal State Autonomous Educational Institution of Higher Education

NORTH-CAUCASUS FEDERAL UNIVERSITY

APPROVED

Assoc. Prof. Kubanov S.I.

PhD in Medical Sciences

Dean

Faculty of Medicine and Biology

ASSESSMENT TOOLS FUND FOR THE DISCIPLINE

Microbiology, virology, epidemiology

Name of the discipline (module)

- Specialty: 31.05.01 General Medicine
- Mode of training: Full-time
- Year of commencement of studies: 2026
- Delivered in Semester 4,5

Introduction

1. Intended for carrying out current control of academic performance progress and intermediate attestation in the discipline of «Microbiology, virology, epidemiology» for students of the specialty (majoring in) 31.05.01 General Medicine.

2. The ATF is an appendix to the program of the discipline (module) «Microbiology, virology, epidemiology» developed based on the curriculum for the course "Microbiology, Virology, Epidemiology" and in accordance with the higher education curriculum for the specialty 31.05.01 General Medicine.

3. Developer(s): Penkova Nadezhda Ivanovna, Associate Professor of the Base Department of Microbiology (Full Name, Position)

4. Expert examination of the ATF has been completed.

Expert group:

Chairperson: Pakhomova T.A. Chairman educational and methodological complex of the MBF

Committee members:

Vlasov A.A., Acting Head of the Department of Physicochemical Biology and Immunology

Dzhandarova T.I., Head of the Department of Anatomy and Histology

Employer organization representative: Vilensky I.L., Chief Physician of Independent CDL, LLC

Expert conclusion – the ATF allows evaluating the level of competency levels and is recommended to be employed in the educational process.

5. The validity period for the ATF shall be determined by the period of implementation of the educational program.

1. Description of Evaluation Criteria at Various Stages of Their Formation, Description of Evaluation Scales

Levels of formation of competence(s), indicator(s)	Descriptors			
	Minimum level not achieved (Unsatisfactory) 2 points	Minimum level (Satisfactory) 3 points	Intermediate level (Good) 4 points	High level (Excellent) 5 points
Competency				
Learning outcomes for the discipline (module): <i>Indicator:</i> AI-1 UC-8.	has difficulty mastering basic scientific and theoretical knowledge and practical skills in the subject to solve pedagogical, scientific and methodological, and organizational and managerial problems;	does not fully possess the basic scientific and theoretical knowledge and practical skills in the subject to solve pedagogical, scientific and methodological, and organizational and managerial problems;	has basic scientific and theoretical knowledge and practical skills in the subject, but may have some inaccuracies;	has basic scientific and theoretical knowledge and practical skills in the subject to solve pedagogical, scientific and methodological, and organizational and managerial problems;
AI-3 GPC-6.	has difficulty making professional decisions in emergency situations at the pre-hospital stage	does not fully possess the ability to make decisions in emergency situations, epidemics, and in areas of mass destruction	possesses the ability to make decisions in emergency situations, epidemics, and in areas of mass destruction	capable of making professional decisions in emergency situations at the pre-hospital stage, during emergencies, epidemics, and in areas of mass casualty.

The evaluation of the competency formation level in the discipline is carried out on the basis of the Regulations on conducting current control of academic progress and intermediate attestation of students in higher education educational programs – Bachelor’s programs, Specialist’s programs, Master’s programs – at the Federal State Autonomous Educational Institution of Higher Education NORTH-CAUCASUS FEDERAL UNIVERSITY in its current edition.

ASSESSMENT TOOLS FOR CHECKING THE LEVEL OF COMPETENCY DEVELOPMENT

Task Number	Correct Answer	Content of the Question	Competency
1.	3	Who developed the smallpox vaccine: 1. Pasteur	UC-8

		2. Mechnikov 3. Jenner 4. Ivanovsky	
2.	2	What are microorganisms grown in nutrient media called: 1. clone 2. culture 3. bacteriophages 4. strain	UC-8
3.	clone	Fill in the missing word in the correct case. A collection of microorganisms grown from a single cell	UC-8
4.	1	What are bacterial cells that have remnants of a cell wall called? 1. <i>Spheroplasts</i> 2. <i>Rickettsia</i> 3. <i>Mycoplasmas</i> 4. <i>Protoplasts</i>	UC-8
5.	1	Who first developed the rules of antiseptics: 1. Lister 2. Robert Koch 3. Gabrichevsky 4. Jenner	UC-8
6.	3	Staphylococci shape: 1. rods 2. curved 3. round 4. oval	GPC-6
7.	2	Vibrios include: 1. the causative agent of anthrax 2. the causative agent of cholera 3. the causative agent of tetanus 4. the causative agent of tuberculosis	GPC-6
8.	3	Clostridia include: 1. <i>Anthrax bacilli</i> 2. <i>Staphylococcus aureus</i> 3. <i>Botulinum bacilli</i> 4. <i>Streptococcus aureus</i>	GPC-6
9.	4	Which of the following microorganisms forms spores in an oxygen environment: 1. <i>Borrelia</i> 2. <i>Streptococci</i> 3. <i>Vibrio</i> 4. <i>Bacilli</i>	UC-8
10.	4	Rod-shaped bacteria include: 1. cocci 2. spirochetes 3. sarcins 4. dysentery bacteria	UC-8
11.	Louis Pasteur	The name of the scientist who:	UC-8

		• proved that fermentation (lactic, alcoholic, acetic) is not a chemical process, but is caused by microorganisms (1857); • refuted the theory of spontaneous generation; • discovered the phenomenon of anaerobiosis; • proposed the pasteurization method; • pointed out that microorganisms are the cause of infectious diseases in humans and animals; • established a method for preventing infectious diseases through vaccination; • first proposed a method for attenuating pathogenic strains of microorganisms.	
12.	Robert Koch	The name and surname of the scientist who: • proposed using an immersion system, a condenser, and microphotography for microscopic examination of bacteria, and dense nutrient media based on gelatin and agar for growing microbes; • developed methods for isolating pure microbial cultures and methods for staining microbes with aniline dyes (methyl violet and fuchsin); • substantiated the use of disinfectants in infectious diseases; • isolated the causative agents of tuberculosis (1882) and cholera (1883), and also studied the causative agent of anthrax; • created tuberculin.	UC-8
13.	Dmitry Ivanovskith	The name and surname of the scientist, the founder of the theory of viruses	GPC-6
14.	Clone	A genetically homogeneous culture of microorganisms obtained from a single cell	GPC-6
15.	Strain	A culture of cells of the same species isolated from different sources, or from the same source but at different times	UC-8
16.	Identification	Determining the species identity of isolated microorganisms by studying and comparing their basic biological properties with those described in the literature	UC-8
17.	Capsule	A thickened outer layer of the cell wall that forms a mucous membrane	GPC-6
18.	Exoenzymes	Enzymes released into the environment break down complex organic substances into simpler molecules that can pass through the CPM	GPC-6

19.	Viruses	Non-cellular life forms that possess their own genome and are capable of reproducing only in the cells of more highly organized organisms (plants, fungi, animals, and humans)	GPC-6
20.	Pigments	Specific photoreceptor molecules, secondary metabolites formed in the presence of light and imparting color to bacteria	GPC-6
21.	Dysbacteriosis (dysbiosis, dismicrobiocenosis)	A qualitative and quantitative change in the normal microflora, with a decrease in the number of microorganisms that are normal inhabitants of the body's biotopes and an increase in the number of microorganisms that are not present in healthy people or that occur in insignificant quantities.	UC-8
22.	Plasmids	An extrachromosomal factor of bacterial heredity, which is a circular cytoplasmic DNA molecule that encodes information about 2-5 properties of the bacterial cell	UC-8
23.	Bacteriocins	Antibiotic substances of protein nature, synthesized by bacteria and inhibiting the growth and reproduction of closely related microorganisms	UC-8
24.	Metabolism	The sum of all chemical transformations occurring in a cell, ensuring the reproduction of its biomass and viability. It consists of two interconnected but opposing processes: catabolism and anabolism.	UC-8 GPC-6
25.	Prebiotics	Non-microbial preparations or biologically active supplements (oligosaccharides - inulin, oligofructose, lactulose) that provide functional nutrition to the microflora and thereby stimulate the growth of normal intestinal microflora.	UC-8
26.	Zoonoses	Diseases in which animals are the source of infection (rabies, tularemia, brucellosis)	GPC-6
27.	Strict (obligate) aerobes	Microorganisms in which free oxygen is the electron acceptor and the method of obtaining energy is aerobic respiration (example: diphtheria bacillus, cholera vibrio)	GPC-6
28.	gene	A section of a DNA molecule that carries information about the primary structure of a polypeptide, protein, or RNA	GPC-6
29.	Staphylococcus	Cells arranged in a cluster, reminiscent of bunches of grapes. This shape is formed by cell division in different planes	UC-8
30.	Microaerophiles	The final electron acceptor is a small amount of O ₂ (2%); energy is obtained through aerobic respiration	UC-8

2. Description of the Evaluation Scale

Within the framework of the rating system, students' academic progress in each discipline is evaluated during current control and intermediate attestation. The rating system for assessing students' knowledge is based on the use of a combination of control activities to check the covered material (checkpoints), optimally located throughout the entire time interval of studying the discipline. The principles of the rating system for assessing students' knowledge are based on the requirements described in the Regulations on the organization of the educational process based on the rating system for assessing students' knowledge at NCFU.

3. Criteria for Evaluating Competencies

The grade **Excellent** shall be awarded to a student if the theoretical content of the course has been mastered completely, without gaps; the material is presented exhaustively, consistently, clearly, and logically; the student freely copes with tasks, questions, and other types of knowledge application; uses additional material in the answer; all tasks provided for by the program are completed, and the quality of their execution is evaluated by a number of points close to the maximum; analyzes the obtained results; demonstrates independence when performing tasks.

The grade **Good** is to be awarded to a student if the theoretical content of the course is mastered completely, the necessary practical competencies are mainly formed, all educational tasks provided for by the training program are completed, and the quality of their execution is sufficiently high. The student firmly knows the material, presents it competently and strictly on the merits of the matter, without allowing significant inaccuracies in answering the question.

The grade **Satisfactory** is awarded to a student in case the theoretical content of the course has been mastered in part only, but the gaps are not of a significant nature, most of the tasks provided for by the program are completed, but contain errors, the student allows inaccuracies and insufficiently correct wording when answering the question, and violations of logical sequence are observed in the presentation of the program material.

The grade **Unsatisfactory** is awarded to a student if they do not know a significant part of the program material, allow significant errors, perform practical works with great difficulty and uncertainty, the necessary practical competencies are not formed, most of the educational tasks provided for by the training program are not completed, and the quality of their execution is evaluated by a number of points close to the minimum.