

CRITERIA

for a 10-grade scale estimation of the knowledge on Microbiology, Virology and Immunology shown by international students during their study at the Department of Microbiology, Virology and Immunology named after S.I. Gelberg of the Institution of Education «Grodno State Medical University»

1.0. CRITERIA FOR EVALUATION OF THE KNOWLEDGE SHOWN BY THE STUDENTS DURING ORAL (OR WRITTEN) ANSWER

Mark 10 (ten) is credited for systematic, deep and complete knowledge of all sections of the Curriculum in Microbiology, Virology and Immunology, using information from other training courses and disciplines. Accurate use of scientific terminology, competent and logically correct formulation of answers to questions, the ability to make appropriate conclusions and summaries. The ability of consciously and quickly transform the acquired knowledge when describing the theoretical and clinical-diagnostic aspects of Microbiology, Virology and Immunology. Complete and deep mastering the information based on main and additional literature recommended by the Curriculum in Microbiology, Virology and Immunology. Fluency in operation by clinical and diagnostic values of laboratory parameters. Creative self-dependent work in practical and laboratory classes, active creative participation in group discussions, and a high level of intelligence shown during the solving study tasks.

Mark 9 (nine) is credited for systematic, deep and complete knowledge of all sections of the Curriculum in Microbiology, Virology and Immunology. Accurate use of scientific terminology, competent and logically correct formulation of answers to questions, the ability to make appropriate conclusions and summaries. Complete mastering the information based on main and additional literature recommended by the Curriculum in Microbiology, Virology and Immunology. Systematic, active self-dependent work in practical and laboratory classes, creative participation in group discussions, and a high level of intelligence shown during the solving study tasks.

Mark 8 (eight) is credited for systematic and complete knowledge of all sections of the Curriculum in Microbiology, Virology and Immunology. Use of scientific terminology, competent and logically correct formulation of answers to questions. Free use of drawings to illustrate the answer. Mastering the information based on main and additional literature recommended by the Curriculum in Microbiology, Virology and Immunology. Active self-dependent work in practical and laboratory classes, systematic participation in group discussions, and a high level of intelligence shown during the solving study tasks.

Mark 7 (seven) is credited for systematic and complete knowledge of all sections of the Curriculum in Microbiology, Virology and Immunology. Ability to use the scientific terminology, competent, logically correct formulation of answers to questions. Sufficiently complete mastering the material of the main and additional literature recommended by the Curriculum in Microbiology, Virology and Immunology. Independent work in practical and laboratory classes, participation in group discussions, and a high level of intelligence shown during the solving study tasks.

Mark 6 (six) is credited for sufficiently complete and systematic knowledge in the scope of the Curriculum in Microbiology, Virology and Immunology. Ability to use the necessary scientific terminology, logically correct formulation of answers to questions, use of drawings to illustrate the answer. Mastering the material of the ground literature recommended by the Curriculum of Higher Education Institutions in Microbiology, Virology and Immunology. Independent work in practical, laboratory classes, periodic participation in group discussions, a good level of culture of task execution.

Mark 5 (five) is credited for sufficient knowledge within the scope of the Curriculum in Microbiology, Virology and Immunology. The ability to use of scientific terminology, fairly competent and logically correct formulation of answers to questions involving application of separate schemes. Satisfactory mastering the material of the ground literature recommended by the Curriculum in Microbiology, Virology and Immunology. Independent work in practical and laboratory classes, fragmentary participation in-group discussions, and a sufficient level of intelligence shown during the solving study tasks.

Mark 4 (four) is credited for sufficient knowledge within the scope of Educational Standard of Higher Education in the specialty 79 01 04 - Medical Affair. Use of scientific terminology and drawings without significant mistakes, rather logical formulation of answers to questions. Satisfactory mastering the ground material recommended by the Curriculum in Microbiology, Virology and Immunology. Ability to master practical skills under the guidance of a teacher during practical laboratory classes, and the acceptable level of intelligence shown during the solving study tasks.

Mark 3 (three) – not credited for insufficiently complete volume of knowledge within scope of Educational Standard of Higher Education in the specialty 79 01 04 - Medical Affair. Poor knowledge of scientific terminology, formulation of answers to questions with significant logical mistakes. Mastering only part of the material of the main literature recommended by the Curriculum in Microbiology, Virology and Immunology. Passivity shown in practical laboratory classes, and low level of intelligence shown during the solving study tasks.

Mark 2 (two) – not credited for fragmentary volume of knowledge within scope of Educational Standard of Higher Education in the specialty 79 01 04 - Medical Affair. Mastering only separate parts of the material of literature sources recommended by the Curriculum in Microbiology, Virology, and Immunology. Inability to use the scientific terminology in Microbiology, Virology and Immunology, making serious logical mistakes when answering questions. Passivity shown in practical laboratory classes and low level of intelligence shown during the solving study tasks.

Mark 1 (one) – not credited for the complete lack of knowledge on the subject within scope of Educational Standard of Higher Education in the specialty 79 01 04 - Medical Affair, the refusal of a student to answer, absence of a student during the intermediate or final control of the knowledge without a valid reason.

1.1. CRITERIA FOR EVALUATION OF THE KNOWLEDGE SHOWN BY STUDENTS DURING THE REGULAR CLASSES

In the beginning of lessons every teacher has to answer the questions asked by students and explain more complicated and difficult for understanding parts of the study material. After fulfilling the discussion teacher starts controlling part of the lesson: online computer-based assessment work. Oral discussion (or written work) to reveal the knowledge of the study material can be also additionally conducted.

The computer-based assessment work is applied to evaluate the ground knowledge of theoretical material shown by every students. The obtained marks can vary from "1" to "10". However, to confirm the highest mark ("10") the student, who received it, has to give excellent oral (or written) answer on the special thinking question asked by a teacher. Such questions are grounded on the material of the Curriculum on the current theme or related themes (described in the training appliances and in Moodle). To get higher marks students are stimulated to demonstrate knowledge of additional material including:

- the information given by a lecturer during the lecture,
- material of the appliances containing whole lecture material (on the corresponding section of Microbiology) and online textbooks,
- Internet educational resources).

The answer of students is evaluated by a mark according to the criteria of the mark estimation shown above.

Every student has to get a mark at every lesson. The current marks obtained at the regularly classes **are not upgraded.**

The online Computer-based assessments are created with use of the basic information of the Lecture Material on the current theme and presented in a brief form in the Illustrated Digest, in the training appliances (or also in Summaries of the lectures on current lessons) – the study materials found in **MOODLE** program at the University site. Every student has to study this information and to carry out the computer-based assessments at every lesson. Training computer-based assessments (not the same

assessments which students are having in the class but useful for training) are also available in **MOODLE**.

Computer-based assessment work is a main part of the lesson revealing the ground knowledge of the theoretical material. This work includes the next categories of questions and tasks which every student has to perform:

1. to choose one right answer from the proposed variants;
2. to choose several right answers from the proposed variants;
3. to choose the variants according to their conformity;
4. to choose the variants corresponding to their accordance to the group;
5. to choose the variants corresponding to their right sequence;
6. to type the answers using the key-board of the computer.

Student has to give answers to the questions of the assessment on the theme of the current lesson and also on the themes of the previous lessons (the assessment revealing the residual knowledge of a student). The complexity of the questions differs, so the input of every answer into the final mark is different. In addition, a partially correct answer is taken into account. The computer program calculates the proportion of correct and incorrect answers, taking into account the total "weight" of the questions offered to the student and the "soft" assessment of some questions, and gives the mark scored by a student after fulfilling the computer work. The mark varies from 1 to 10.

1.2. CRITERIA FOR EVALUATING PRACTICAL SKILLS IN MICROBIOLOGY, VIROLOGY AND IMMUNOLOGY

All students have to give answer to one question of the computer-based assessment of practical skills knowledge. The time limit is 1 minute. Correct answer (highlighted in green) or partially correct answer (highlighted in yellow) do not change the student's grade at the lesson. If the answer is incorrect (highlighted in red), the mark for the lesson is reduced by one grade.

Besides that, the practical skills including ability to manipulate with the light microscope using the immersion system and to carry out standard bacteriological techniques are mastered in the laboratory classroom and later are controlled at the intermediate control lessons (mini-exams).

When studying the subject of Microbiology, Virology and Immunology, every student has to master the following practical skills:

- 1) to follow safety rules and techniques when performing laboratory work;
- 2) to master the main stages of the method of growing of bacterial culture (Table 1);
- 3) to master microscopy techniques and approaches to identification of microorganisms in smears using an immersion system;
- 4) to know the algorithm of setting up of serological tests (reactions) and approaches to evaluation of their results;
- 5) to be able to explain the main indexes of the immunogram.

The groups of practical skills which students have to master at the practical part of Concluding lesson (mini-exam) on the corresponding Sections of Microbiology (Section N1 – General Microbiology, Section N2 – Immunology and Section N3 – Medical Bacteriology)

Table 1.

Groups of practical skills mastered by students in the process of studying Microbiology, Virology and Immunology

	The name of the skill	The number of the Concluding lesson			The way of estimation
		N1	N2	N3	
1	The algorithms of staining techniques	+		+	Computer-based work
2	Making a smear, seeding of the material containing bacteria and other standard bacteriological techniques	+		+	A lecturer
3	Immersion microscopy technique	+		+	A lecturer
4	The algorithms of setting up serological reactions		+	+	Computer-based work
5	The estimation of the results of serological reactions(reading of the results of the tests)		+	+	Computer-based work
6	Identification of microorganisms in the smears	+		+	Computer-based work
7	Evaluation of the immunogram		+	+	Computer-based work
8	Visual evaluation of the growth characteristics of microorganisms and of their features	+		+	Computer-based work

Table 2.

The criteria of evaluation of the practical skills including making smear, seeding of the material containing bacteria and other standard bacteriological techniques performed by a student

The performed work	The evaluation
Satisfactory (good) work	= (no change to the basic mark)
Non satisfactory work done with significant mistake	- 1 grade

Table 3.

The criteria of evaluation of the microscopy techniques using an immersion system

Time taken for the performance of the technique	The evaluation
45 seconds or less	= (no change to the basic mark)
46 or more	- 1 grade

Thus, the evaluation of mastering practical skills and abilities performed by every student at every practical lesson is conducted and estimated as: "credited – " = " or "not credited – "- 1 ". The mark obtained by student for oral answer can be decreased for non-satisfactory results of mastering practical skills.

1.3. CRITERIA FOR EVALUATION OF THE KNOWLEDGE SHOWN BY STUDENTS DURING THE INTERMEDIATE CONTROL (CONCLUDING LESSON OR MINI-EXAM)

During intermediate control of knowledge (mini-exam), the mark is calculated according to the mark obtained by a student at the mini-exam: for the computer-based assessment, which includes the questions from all themes of the corresponding section of the Subject "Microbiology, Virology, Immunology". One of the special thinking question within the Curriculum corresponding to the Section can be also proposed to the student as **Oral** (or **Written**) answer to demonstrate knowledge of the theoretical material on the subject for the final evaluation of the student's knowledge at the intermediate

control lesson. The answer of every student is evaluated according to the criteria shown above in the Section 1.0.

The average current mark (average value of the marks obtained during the current classes when the corresponding section of the Subject “Microbiology, Virology, Immunology” was studied) is not accounted at the mini-exam.

Mastering all practical skills, including ability to manipulate with the light microscope using the immersion system and to carry out standard bacteriological techniques is controlled at the intermediate control lessons (mini-exams). The computer-based assessment of practical skills knowledge is also performed. All students have to give answer to one question during 1 minute. Correct answer (highlighted in green) and partially correct answer (highlighted in yellow) do not change the student's mark at the mini-exam. If the answer is incorrect (highlighted in red), the mark obtained for the oral (or written) answer is reduced by one grade.

At the concluding lesson (mini-exam) every student has to demonstrate mastering of the light microscopy techniques and to be able to perform on of the skills of the standard bacteriological technique (Tables 1 – 3).

Evaluation of the results of mastering the practical skill by students at the mini-exams is carried out taking into account the quality of the performed work, however, this stage of the mini-exam is not evaluated by a separate mark. The result of performed work can change (or not changed) the mark received by the student during the oral (or written) survey (see section 1.2.).

The mark received by student for the answer at mini-exam can be decreased for non-satisfactory results of mastering practical skills and/or wrong answer the question of the Practical skills computer-based assessment.

Students have a right to **upgrade their non-satisfactory or satisfactory marks** obtained at mini-exams (if a student wants to increase the mark), but this possibility will be provided **only once**. The mark, which such a student will get when carrying out the upgrading work, will be **the final mark** (the previous mark will be not accounted).

1.4. CRITERIA FOR EVALUATION OF THE KNOWLEDGE SHOWN BY STUDENTS DURING THE FINAL CONTROL OF KNOWLEDGE (EXAMINATION)

During the final control of knowledge (examination), every student has to generate the examination card using special computer program and to carry out the examination computer-based assessment according to the selected card. The card will contain four groups of questions, according to the corresponding Sections of the Subject “Microbiology, Virology, Immunology”: General Microbiology, Immunology, Medical Bacteriology and Virology included into the Curriculum.

The mark obtained for the examination assessment will be the basic part of the examination mark of every student. The final examination mark of those students, who will pass a computer-based assessment successively (the obtained mark is “4” or higher), will be calculated, taking into account the Rating Mark achieved by such a student during the whole study of the Subject. The Rating Mark is calculated as average of the Intermediate control marks (the average score of four mini-exam marks) and average of the Current control marks (the average score of all marks obtained at regular lessons during the whole period of study). The bonuses obtained by every student for good residual knowledge shown at regular lessons are also included into examination mark, as well as bonuses obtained by the Winners of the Annual Olympiad on Microbiology.

The practical skill assessment is not conducted during the Examination.

Head of the Department of Microbiology,
Virology and Immunology named

after S. I. Gelberg, Professor



V. M. Sheybak

Approved at the meeting of the Department of Microbiology, Virology and Immunology named after S. I. Gelberg (On the 29th of January, 2021).