

**CRITERIA FOR ASSESSING KNOWLEDGE AND SKILLS  
OF APPLICANTS FOR HIGHER EDUCATION IN THE EDUCATIONAL COMPONENT  
"CELL BIOLOGY"**

The educational component "Cell Biology" is studied for one semester and consists of 1 module, which is divided into 3 content modules.

When assessing the knowledge of a higher education applicant, preference is given to standardized methods of control: testing (computer), written work, control of practical skills.

Current control is carried out systematically during the semester during seminars and is evaluated by the amount of points scored.

Current control is mandatory, the knowledge of higher education students is assessed at each lesson (on each topic). The forms of current control are testing (computer-based), written work, and practical skills control.

**The scheme of calculation and distribution of points of current control  
of higher education students**

	Content module	Тема	Бали
<b>Ongoing testing and self-work</b>	CM1	T1	-
		T2	10
		T3	10
		CCM1	10
	CM2	T4	5
		T5	5
		T6	5
		T7	5
		CCM2	10
	CM3	T8	5
		T9	5
		T10	5
		T11	5
		T12	5
		T13	5
		CCM3	10
<b>Total points</b>			100

Control of knowledge of the content module is aimed at checking and evaluating the activities of the higher education student and the competencies (knowledge, skills, abilities, etc.) acquired by him/her after studying the material from the logically completed part of the educational component - the content module. Usually, one module of the educational component consists of two content modules.

The independent work of higher education students is assessed during the current control and during the content module.

The total number of points for the current control is 100 points.

The final control includes semester control.

A higher education applicant is considered admitted to semester control if he or she has completed all the classroom classes provided for in the work program for the educational component, has completed all the types of work provided for in the work program for the educational component.

Semester control is carried out in the form of a semester test, a semester differentiated test of the educational component in the amount of educational material determined by the work program and within the time limits established by the curriculum.

The results of semester control in the form of a semester differentiated test are evaluated on the ECTS scale, 100-point and four-point scale ("excellent", "good", "satisfactory", "unsatisfactory"),

and the semester credit - on a 100-point, undifferentiated scale ("passed", "failed") and on the ECTS scale.

A semester credit is given to a higher education student at the last class of the educational component based on the results of the current assessment. This type of final control does not involve any additional work, surveys or testing at the last class.

Credit is given to higher education students who have scored the required minimum number of points during the current control (60 points and above), have no unexcused absences from laboratory, practical and seminar classes and have fulfilled all the requirements provided for in the work program of the educational component.

The final grade in the educational component for the semester is the final semester grade, which consists of the points of current control.

Semester differentiated credit is received by higher education students at the last lesson of the educational component for which the educational program provides for this type of semester control. This type of final control does not involve passing the final module work.

To receive a differentiated credit, a higher education student must score the required minimum number of points during the current control (60 points and above), have no unexcused absences from laboratory, practical and seminar classes and fulfill all the requirements provided for in the work program for the educational component. A module is considered passed if a student scores between 60 and 100 points.

Several grading scales are used in the educational process: 100-point scale, four-point ("excellent", "good", "satisfactory", "unsatisfactory") differentiated scale (for semester differentiated tests and exams) and undifferentiated ("passed", "failed") two-point scale (for semester tests) and ECTS rating scale. The results are converted from one scale to another according to the table.

### Rating scale

Total points on a 100-point scale	ECTS scale	Score on a four-point scale	Score on an undifferentiated scale
90-100	A	excellent	credit
82-89	B	good	
74-81	C	satisfactorily	
64-73	D		
60-63	E	unsatisfactory	not credit
35-59	FX		
1-34	F		

*"Excellent"* - the higher education student has firmly mastered the theoretical material, has a deep and comprehensive knowledge of the content of the educational component, the main provisions of scientific sources and recommended literature, thinks logically and builds an answer, freely uses the acquired theoretical knowledge in the analysis of practical material, is able to identify the essential features of what has been studied through the operations of synthesis, analysis, identify cause and effect relationships, form conclusions and generalizations, demonstrates a high level of mastery of practical skills;

*"Good"* - the applicant for higher education has mastered the theoretical material well, knows the main aspects from primary sources and recommended literature, presents it reasonably; demonstrates practical skills, expresses his/her views on certain issues, but when presenting some issues, there is not enough depth and argumentation, some minor inaccuracies and minor errors are made. The applicant is able to highlight the essential features of what has been studied using synthesis and analysis, identify cause and effect relationships that may contain some minor errors, and draw conclusions and generalizations;

*"Satisfactory"* - the student has mastered the theoretical knowledge of the educational component, is familiar with the primary sources and recommended literature, but without a deep comprehensive analysis, justification and argumentation, makes significant inaccuracies and

errors, the student has problems in identifying the essential features of the studied, in identifying cause and effect relationships and forming conclusions;

"Unsatisfactory" - the applicant has not mastered the educational material of the educational component, does not know scientific facts, definitions, is not sufficiently versed in primary sources and recommended literature, practical skills are almost not formed, the applicant has a haphazard selection of random features of the studied, is unable to perform the simplest operations of analysis and synthesis, generalization and conclusions.

FX corresponds to "unsatisfactory" ("not enrolled") and the higher education student may be admitted to the semester control subject to certain additional work.

F corresponds to "unsatisfactory" ("not enrolled") with the re-study of the educational component by the higher education student.

### **CONTROL OF KNOWLEDGE AT EACH LESSON**

Current control is carried out at each seminar session in accordance with the specific objectives of the topic.

#### **Module 1**

##### *Content module 1.*

#### **General concepts of the cell as an elementary unit of life. Cell membranes.**

##### **Topic 1. Subject and methods of cytological research. Optical systems in biological research.**

There is no assessment of knowledge in this class.

##### **Topic 2. Structure and function of cell membranes. Plant cell membrane, its chemical composition, structure and functions.**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
8-10	is assigned to a higher education applicant who, when answering questions, showed comprehensive, systematic, deep knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge in answering problematic questions.
5-7	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
3-4	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, and made significant errors.
1-2	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided for by the program at the level of reproduction

##### **Topic 3. Mechanisms of transport of substances across the cell membrane.**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
8-10	is assigned to a higher education applicant who, when answering questions, showed comprehensive, systematic, deep knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge in answering problematic questions.

5-7	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
3-4	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, and made significant errors.
1-2	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided for by the program at the level of reproduction

***Content module 2.***

**Structure, chemical composition and functions of the most important structures of the protoplast.**

**Topic 4. General plan of the cell structure. The vacuolar system of the cytoplasm.**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
5	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge when answering problematic questions.
4	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
3	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, and made significant errors.
1-2	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided by the program at the level of reproductive reproduction

**Topic 5. Plastids, their types, structure, chemical composition and functions of chloroplasts. Photosynthesis**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
5	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge when answering problematic questions.
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**Topic 6: Cytoskeleton, its structure and functions. Support and motor structures of the cell: microfilaments, intermediate filaments, microtubules.**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
5	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge when answering problematic questions.
4	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
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1-2	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided by the program at the level of reproductive reproduction

**Topic 7. Cell nucleus, its structure and functions.**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
5	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge when answering problematic questions.
4	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
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1-2	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided by the program at the level of reproductive reproduction

*Content module 3.*

**Cell reproduction. Life span and pathology of the cell.**

**Topic 8. Cell life cycle. Mitosis - a way of dividing somatic cells.**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
5	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge when answering problematic questions.
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3	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, and made significant errors.
1-2	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided by the program at the level of reproductive reproduction

**Topic 9: Alternative ways of cell division. Direct cell division (amytosis). Endoreproduction, polytene, polyploidy.**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
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4	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
3	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, and made significant errors.
1-2	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided by the program at the level of reproductive reproduction

**Topic 10. Meiosis, types of meiosis and their characteristics.**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
5	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge when answering problematic questions.
4	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
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1-2	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided by the program at the level of reproductive reproduction

**Topic 11. Cell growth and development, cell differentiation. Stem cells.**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
5	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge when answering problematic questions.
4	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
3	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, and made significant errors.
1-2	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided by the program at the level of reproductive reproduction

**Topic 12: Lifespan of cells in different tissues and organs. Theories of aging.**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
5	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge when answering problematic questions.
4	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
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1-2	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided by the program at the level of reproductive reproduction

**Topic 13. Cell pathology. Tumor growth. Theories of oncogenesis. Reproductive biotechnology.**

<b>Rating score, points</b>	<b>Evaluation criteria</b>
5	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge when answering problematic questions.
4	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
3	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, and made significant errors.

1-2	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided by the program at the level of reproductive reproduction
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### Semester control

#### CONTROL OF CONTENT MODULES

The control of mastering content modules (CM) is carried out at the last practical (seminar) classes of studying the topics of content modules according to the calendar plan for the current academic year. Only those higher education applicants who have completed all types of work provided for in the curriculum (worked out all missed practical classes, etc.) are allowed to control the CM. The means of diagnosing the level of training of higher education students is a written survey. The maximum number of points for controlling the mastery of the content module is 10 points, the minimum is 6 points. Ticket structure: 3 theoretical questions (the higher education applicant is assigned from 0 to 2 points) and 1 practical question (the higher education applicant is assigned from 0 to 4 points). The sum of points for studying the content module is the sum of points received by the higher education student during the study of all topics of the content module.

#### CONTROL OF CONTENT MODULES

The control of the content module (CM1, CM2) is carried out at the last practical lesson of the study of the topics of the content module according to the calendar for the current academic year. Only those applicants for higher education who have completed all types of work provided for by the curriculum (worked out all missed seminars, etc.) are allowed to control the CM.

**Control of the content module 1.** A written questionnaire is a means of diagnosing the level of training of higher education applicants. The ticket consists of 3 theoretical questions (the applicant for higher education is given from 0 to 2 points) and 1 practical question (the applicant for higher education is given from 0 to 4 points).

*Criteria for scoring points for answering the theoretical question:*

Points	Evaluation criteria
2	It is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, is able to demonstrate the knowledge provided at the level of creative use.
1	It is assigned to a higher education applicant who, when answering questions, revealed serious gaps in the knowledge of the basic material, made fundamental mistakes.

*Criteria for awarding points for answering a practical question:*

Points	Evaluation criteria
4	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge in answering problematic questions.
3	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
2	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, and made significant errors.



1	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided for by the program at the level of reproduction.
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**Control of the content module 2.** A written questionnaire is a means of diagnosing the level of training of higher education applicants. The ticket consists of 3 theoretical questions (the applicant for higher education is given from 0 to 2 points) and 1 practical question (the applicant for higher education is given from 0 to 4 points).

*Criteria for scoring points for answering the theoretical question:*

Points	Evaluation criteria
2	It is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, is able to demonstrate the knowledge provided at the level of creative use.
1	It is assigned to a higher education applicant who, when answering questions, revealed serious gaps in the knowledge of the basic material, made fundamental mistakes.

*Criteria for awarding points for answering a practical question:*

Points	Evaluation criteria
4	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge in answering problematic questions.
3	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
2	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, and made significant errors.
1	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided for by the program at the level of reproduction.

**Control of the content module 3.** A written questionnaire is a means of diagnosing the level of training of higher education applicants. The ticket consists of 3 theoretical questions (the applicant for higher education is given from 0 to 2 points) and 1 practical question (the applicant for higher education is given from 0 to 4 points).

*Criteria for scoring points for answering the theoretical question:*

Points	Evaluation criteria
2	It is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, is able to demonstrate the knowledge provided at the level of creative use.

1	It is assigned to a higher education applicant who, when answering questions, revealed serious gaps in the knowledge of the basic material, made fundamental mistakes.
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*Criteria for awarding points for answering a practical question:*

<b>Points</b>	<b>Evaluation criteria</b>
4	is assigned to a higher education applicant who, when answering questions, has demonstrated comprehensive, systematic, in-depth knowledge of the program material, demonstrates knowledge of information sources provided by the program and creatively uses this knowledge in answering problematic questions.
3	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, but made some minor mistakes.
2	is assigned to a higher education applicant who, when answering questions, showed complete knowledge of the program material provided at the level of similar reproduction, and made significant errors.
1	is assigned to a higher education applicant who, when answering questions, showed insufficient knowledge of the basic program material to the extent necessary for further study and work provided for by the program at the level of reproduction.

Завідувачка кафедри біологічної хімії та ветеринарної медицини, проф.



**Віра КРАВЧЕНКО**