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Federal State Budget Educational Institution
of Higher Education
Pacific State Medical University
of the Ministry of Health of the Russian Federation

APPROVED BY

Head of the Department
_____ / Matveeva N.Yu./
"10th" of April 2025

COLLECTION OF ASSESSMENT TOOLS
Б1.О.12 Histology, embryology, cytology
of the basic educational program of Higher Education

Specialty	**31.05.01 General Medicine for international students (in English)** (code, name)
Degree	Specialist's degree
Profile	02 "Healthcare" (in the field of providing primary health care to the population in medical organizations: polyclinics, outpatient clinics, inpatient/outpatient facilities of the municipal health care system)
Mode of study	**Full-time**
Period of mastering the BEP	**6 years** (nominal length of study)
Department	of Histology, Embryology and Cytology

Vladivostok, 2025

1. INTRODUCTION

1.1. Collection of Assessment Tools is a document that regulates the format, content, and types of assessment tools for continuous assessment, interim examination and final (state final) examination, and graded criteria for each type of assessment tools.

1.2. Assessment tools allows to evaluate the development of universal, general professional, and professional competencies (UCs, GPCs and PCs respectively) outlined in Federal State Educational Standard of Higher Education and defined in the basic educational program of higher education for the specialty 31.05.01 General Medicine for international students (in English), profile 02 "Healthcare" (in the field of providing primary health care to the population in medical organizations: polyclinics, outpatient clinics, inpatient/outpatient facilities of the municipal health care system).

(BEP HE for the 31.05.01 General Medicine for international students (in English) specialty, section 3 Learning Outcomes Requirements of the Basic Educational Program of Higher Education)

2. DOCUMENT BODY

2.1. Types of Assessment, Formats of Assessment Tools

No.	Types of assessment	Assessment Tools Format
1	**Continuous assessment**	**Tests**
		Interview Questions
		Mini-Case Studies
		Library-research paper topics
		Checklists
2	**Interim assessment**	**Tests**
		Interview Questions
		Mini-Case Studies
		Checklists

3. The contents of assessment tools for continuous and interim examination are prepared by the teacher of the course

Tests for continuous and interim assessment

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.01	General Medicine for international students (in English)
C	UC-1	Is able to analyze of problems critically using system approach and devise a plan of action
C	GPC-5	Is able to assess morphofunctional status, physiological states, and pathological processes in the human body when working to achieve objectives of professional activity
F	A/02.7	Examination of the patient in order to make a diagnosis
I		**ANSWER LEVEL 1 TEST QUESTIONS (ONE CORRECT ANSWER)**
		1. Intrinsic DNA and RNA are part of 1) ribosomes 2) Golgi apparatus

		3) lysosomes 4) centrosomes +5) mitochondria **2. Tay-Sachs disease is caused by dysfunction of** 1) ribosomes 2) Golgi apparatus +3) lysosomes 4) centrosomes 5) mitochondria
		ANSWER LEVEL 2 TEST QUESTIONS (MULTIPLE CORRECT ANSWERS)
		1. Types of terminal portions of salivary glands include +1) serous and mucous +2) serous and mixed +3) serous, mucous and mixed 4) endocrine islets 5) exocrine acini **2. The sensory organ of taste is located** 1) in the epithelium of filiform papillae 2) in the lamina propria of papillae +3) in the epithelium of fungiform papillae +4) in the epithelium of vallate papillae +5) in the epithelium of foliate papillae
		ANSWER LEVEL 3 TEST QUESTIONS (MATCHING QUESTIONS)
		1. Match the listed structures and corresponding organ 1) lymphoid follicles with a central artery 2) lymphoid follicles, medullary cords, sinuses 3) cortex and medulla 4) lymphoid follicles, stratified squamous non-keratinized epithelium A) thymus B) lymph node C) spleen D) tonsils 1-C, 2-B, 3-A, 4-D **2. Match structural features and corresponding organ** 1) villi, crypts, glands in the submucosa 2) stratified squamous epithelium, glands in the submucosa 3) foveolae, glands in the lamina propria of the mucous membrane 4) crypts, absence of villi 5) villi, crypts, absence of glands in the submucosa A) esophagus B) stomach C) duodenum D) jejunum and ileum E) large intestine 1-C, 2-A, 3-B, 4-E, 5-D

Assessment criteria

"Very good" – over 91% correct answers of questions of every level
"Good" – 81-90% correct answers of questions of every level
"Satisfactory" – 71-80% correct answers of questions of every level
"Unsatisfactory" – less than 71% correct answers of questions of every level

Interview questions

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.01	General Medicine for international students (in English)
C	UC-1	Is able to analyze of problems critically using system approach and devise a plan of action
C	GPC-5	Is able to assess morphofunctional status, physiological states, and pathological processes in the human body when working to achieve objectives of professional activity
F	A/02.7	Examination of the patient in order to make a diagnosis
I		**ANSWER THE QUESTIONS** 1. Mitochondria, their energy function. 2. Competent and committed cells, constitutive and inducible genes. 3. Mesenchyme as a source of development of connective tissues. 4. Hemogram, its clinical significance. 5. Humoral and nervous regulation of hematopoiesis. 6. Cartilage tissue. Origin, structure, varieties. 7. Two types of bone tissue, cells and intercellular substance, functions. 8. Types of motor activity. Classification of muscle tissues. 9. Sarcomere, its structure and significance. Theory of muscle contraction. 10. Morphological and neurochemical classification of neurons. 11. Types of synapses, principles of volume transmission. 12. Spinal ganglion and primary sensory neurons. Classification, size and significance, neurochemical specialization. 13. Cortical column as a functional and structural unit of the cerebral cortex. 14. Cerebellar cortex. Structure and functions. 15. General characteristics of sensory organs. Concept of analyzers, their significance. 16. Retina of the eye. Neuronal composition. 17. Thymus gland, its age-related and accidental involution. Status thymico-lymphaticus. 18. Capillaries, their types, structure and function. Concept of microcirculation. 19. Myocardium, structure, types of cardiomyocytes and their functions. 20. Neurosecretory nuclei of the hypothalamus, their hormones and significance. Hypothalamo-neurohypophyseal and hypothalamo-adenohypophyseal systems.

		21. Human embryonic development: formation of the placenta, its structure and functions. Influence of anthropogenic factors on the hematoplacental barrier.

Assessment criteria

"Very good" grade is given to a student who possesses knowledge of the subject in full scope outlined in the curriculum, has a sufficiently deep insight into the subject; is able to answer all questions clearly, exhaustively, and with no outside help; structures their answers logically, with emphasis on the most important information; is able to analyze, compare, classify, summarize, refine, and structure the course content, giving particular attention to cause-and-effect relationships.

"Good" is given to a student whose knowledge of the subject is almost in full scope outlined in the curriculum (gaps are only present in the knowledge of some especially complex aspects); is able to answer questions exhaustively with little to no outside help; does not always put emphasis on the most important information, but does not make significant mistakes.

"Satisfactory" is given to a student who possesses the bulk of knowledge on the subject; has difficulties answering questions with no outside help, uses imprecise wording; makes mistakes in substantial number of their answers.

"Unsatisfactory" is given to a student who does not have the mandatory minimum of knowledge on the subject, is not able to give an answer even with additional guiding questions.

Standardized case studies and checklists for the **Б1.О.12 Histology, embryology, cytology** course

Case Study No.1

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.01	General Medicine for international students (in English)
C	UC-1	Is able to analyze of problems critically using system approach and devise a plan of action
C	GPC-5	Is able to assess morphofunctional status, physiological states, and pathological processes in the human body when working to achieve objectives of professional activity
F	A/02.7	Examination of the patient in order to make a diagnosis
I		**READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS**
		In a specimen, a decrease in the size of cell nuclei, their condensation, shrinkage, and more intense staining of chromatin compared to unchanged nuclei is observed
Q	1	Question: What is this phenomenon called?
Q	2	Question: What can be said about the functional state of these cells?

Case Study No.1 Checklist

	Code	**Competence description / name of labor function / name of work activity / text**
S	31.05.01	General Medicine for international students (in English)
C	UC-1	Is able to analyze of problems critically using system approach and devise a plan of action

C	GPC-5	Is able to assess morphofunctional status, physiological states, and pathological processes in the human body when working to achieve objectives of professional activity
F	A/02.7	Examination of the patient in order to make a diagnosis
I		**READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS**
		In a specimen, a decrease in the size of cell nuclei, their condensation, shrinkage, and more intense staining of chromatin compared to unchanged nuclei is observed
Q	1	Question: What is this phenomenon called?
A		Correct answer 1. Pyknosis 2. Irreversible process characterizing cell death
R2	Very good	Full answer given (points 1 and 2 are given)
R1	Good/Satisfactory	Incomplete answer given ("Good" grade – point 1 is given "Satisfactory" grade – point 2 is given)
R0	Fail	Incorrect answer given (no answer given)
Q	2	Question: What can be said about the functional state of these cells?
A		Correct answer 1. The cell is in a state of necrosis 2. The cell is in a state of apoptosis
R2	Very good	Full answer given (points 1 and 2 are given)
R1	Good/Satisfactory	Incomplete answer given ("Good" grade – point 1 is given "Satisfactory" grade – point 2 is given)
R0	Fail	Incorrect answer given (no answer given)

Library-research paper topics

1. Special and general morphological methods of research and histological technique.
2. Structure and function of the cell.
3. Lysosomes: normal and pathological conditions.
4. Mitochondrial apparatus.
5. Informational intercellular interactions.
6. Regulation of the cell cycle: cyclin-dependent kinases and cyclins, proteins p53, p21, p15 and p16.
7. Apoptosis and diseases.
8. Regulation of hematopoietic cell differentiation: humoral factors, factors of the hematopoietic microenvironment, cytokines.
9. Cells of loose fibrous connective tissue.
10. Expression of hormones in the brain and their role in the pathogenesis of neurodegenerative diseases.
11. Neurotransmitters: chemical structure, biosynthesis.
12. Synaptogenesis and synaptic plasticity.
13. Interneuronal connections: gap junctions, ribbon synapses, autapses, their organization and function.
14. Self-organization of neural systems (modules and distributed systems).
15. Typology and neurochemistry of cerebellar cortex cells.
16. Morphological and neurotransmitter characteristics of retinal neurons.
17. Histophysiology of central visual pathways (retina, lateral geniculate bodies, optic radiation, primary visual cortex).

18. Neuroimmunoendocrine molecules and their role in the pathogenesis of glaucoma.
19. Endothelial signaling molecules: nitric oxide, endothelial hyperpolarization factor, prostacyclin, endothelins, biogenic amines.
20. Antigen-independent and antigen-dependent differentiation of lymphocytes.
21. Concept of hormones, target cells and their receptors.
22. Diffuse neuroimmunoendocrine system. APUD and DNIES systems.
23. Neuroendocrine cells of the digestive system: types and hormones.
24. Biochemical phenotypes of neuroendocrine and immunocompetent cells of the skin.
25. Neuroimmunoendocrine signaling molecules expressed in the kidneys.
26. Human embryonic development: critical periods and disruption of determination processes as a cause of anomalies and malformations.
27. Stem cells.

Assessment criteria

Grade	**Description**
" Very good "	The content is based on deep and comprehensive knowledge of the topic, studied scientific literature, presented logically, argumentatively and in full. Basic concepts, conclusions and generalizations are formulated convincingly and demonstratively.
"Good"	Library-research paper is based on solid knowledge of the research topic. Possible shortcomings in systematization or generalization of the material, inaccuracies in conclusions. The student knows the basic categories well and skillfully applies them to present the material.
"Satisfactory"	Library-research paper is based on knowledge of the basics of the subject, but there are significant gaps in the presentation of the material, difficulties in its presentation and systematization, conclusions are poorly argued, theoretical errors are made in the content.
"Unsatisfactory"	Library-research paper contains an incorrect presentation of the main issues of the topic, there are no generalizations or conclusions. The text is entirely or largely verbatim copied from the source without referencing it.

Assessment criteria

"Very good" grade is given to a student who possesses knowledge of the subject in full scope outlined in the curriculum, has a sufficiently deep insight into the subject; is able to answer all questions clearly, exhaustively, and with no outside help; structures their answers logically, with emphasis on the most important information; is able to analyze, compare, classify, summarize, refine, and structure the course content, giving particular attention to cause-and-effect relationships.

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"Satisfactory" is given to a student who possesses the bulk of knowledge on the subject; has difficulties answering questions with no outside help, uses imprecise wording; makes mistakes in substantial number of their answers.

"Unsatisfactory" is given to a student who does not have the mandatory minimum of knowledge on the subject, is not able to give an answer even with additional guiding questions.

Practical Skills Assessment Checklist

Practical Skill Name "Mastery of microscopy skills and description of a histological specimen"

C	UC-1	Is able to analyze of problems critically using system approach and devise a plan of action	
C	GPC-5	Is able to assess morphofunctional status, physiological states, and pathological processes in the human body when working to achieve objectives of professional activity	
F	A/02.7	Examination of the patient in order to make a diagnosis	
WA	Work activities as part of the function Formulation of a preliminary diagnosis and drawing up a plan for laboratory and instrumental examinations of the patient. Carrying out differential diagnosis with other diseases/conditions, including emergency ones		
	Action	Performed	Not Performed
1.	Turn on the microscope, adjust the optical system	1 point	-1 point
2.	Characterize the specimen: name, staining, principle of organ structure (hollow or parenchymatous organ)	1 point	-1 point
3.	Provide morphological characteristics: number of layers/membranes, their names, layers within membranes with names of constituent tissues, describe the stroma and parenchyma, name and describe the structural-functional unit	1 point	-1 point
4.	Indicate morphological features of tissues in the layers of this organ, features of the parenchyma, functional state of parenchyma cells	1 point	-1 point
5.	Indicate the sources of origin of the tissues forming this organ	1 point	-1 point
	Total	5 points	

Assessment criteria:

"Pass" –75% or more of actions performed correctly

"Fail" – 74% and less