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**Federal State Autonomous Educational Institution of Higher Education**  
**PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA**  
**NAMED AFTER PATRICE LUMUMBA**  
**RUDN University**  
**Institute of Medicine**

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educational division (faculty/institute/academy) as higher education program developer

## **COURSE SYLLABUS**

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**Histology, Embryology, Cytology - Oral Histology**

course title

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**Recommended by the Didactic Council for the Education Field of:**

**31.05.03 Dentistry**

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field of studies / speciality code and title

**The course instruction is implemented within the professional education programme of higher education:**

**Dentistry**

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higher education programme profile/specialisation title

**2025**

## 1. COURSE GOAL(S)

The goal of the course "**Histology, embryology, cytology – Oral Histology** " is to acquire knowledge of microscopic functional morphology and the development of human cellular, tissue and organ systems, including organs of the oral cavity, providing an appropriate part of the theoretical foundation for the training and professional activity of a dentist.

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

The mastering of the discipline "**Histology, embryology, cytology – Oral Histology**" is aimed at the formation of the following competencies among students: GPC-9.

*Table 2.1. List of competences that students acquire through the course study*

Competence code	Competence descriptor	Competence formation indicators (within this course)
GPC-9	Able to assess morphofunctional, physiological states and pathological processes in the human body to solve professional problems	GPC-9.1 Owns the algorithm of clinical, laboratory and functional diagnostics in solving professional tasks
		GPC-9.2 Evaluates the results of clinical, laboratory and functional diagnostics in solving professional tasks.
		GPC-9.3 Determines morphofunctional, physiological states and pathological processes of the human body

## 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the core/variable/elective\* component of (B1) block of the higher educational programme curriculum.

\* - Underline whatever applicable.

Within the higher education programme students also master other (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

*Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results*

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
GPC-9	Able to assess morphofunctional, physiological conditions and pathological processes in the human body to solve professional problems	Anatomy Biology	General pathology and pathologic physiology; Pathological anatomy of the head and neck; General and clinical pharmacology; Forensic medicine; Gerontostomatology and diseases of the oral mucosa; Cariesology and disease of hard tissues of the oral cavity; Paradontology

\* To be filled in according to the competence matrix of the higher education programme.

#### 4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "Histology, embryology, cytology" is 6 credits (216 academic hours).

Table 4.1. Types of academic activities during the periods of higher education programme mastering (**full-time training**)\*

Type of academic activities		Total academic hours	Semesters/training modules			
			2	3		
<i>Contact academic hours</i>		140	72	68		
including:						
Lectures (LC)		35	18	17		
Lab work (LW)		-	-	-		
Seminars (workshops/tutorials) (S)		105	54	51		
<i>Self-studies</i>		52	30	22		
<i>Evaluation and assessment (exam/passing/failing grade)</i>		24	6	18		
<b>Course workload</b>	academic hours	<b>216</b>	<b>108</b>	<b>108</b>		
	credits	<b>6</b>	<b>3</b>	<b>3</b>		

\* To be filled in regarding the higher education programme correspondence training mode.

#### 5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Section 1 Introduction to the discipline. Research methods	1.1 Methods of histological, cytological and embryological studies Stages of histological specimen preparation. Types of histological specimens and histological stains. Light and electron microscopy.	LC, S
<b>Section 2</b> Cytology.	2.1 Cell theory. Cell structure. Organelles and inclusions. General structure of the eukaryotic cell. Cell structure at the microscopic and ultramicroscopic levels. Structure of the plasma membrane. Functions of the plasma membrane. Mechanisms of substance transport across the plasmalemma: passive transport, facilitated diffusion, active transport, vesicular	LC, S

Course module title	Course module contents (topics)	Academic activities types
	<p>transport. Endocytosis and exocytosis processes, pinocytosis and phagocytosis. Receptor function of the plasmalemma. Cell-cell junctions. Morphological features and functions of cytoplasmic structural components: hyaloplasm, elementary membrane, Golgi apparatus, endoplasmic reticulum (ER), mitochondria, lysosomes, ribosomes, centrioles, inclusions, and specialized organelles. Types of intracellular inclusions. Structure of cell-cell junctions.</p>	
	<p style="text-align: center;">2.2</p> <p>The nucleus: structure and functions. The cell cycle.. Structure and functions of the nucleus. Nuclear components: karyolemma, chromatin, nucleolus, and nuclear matrix. The cell cycle. Phases of the cell cycle. Mitosis — the main type of cell division in eukaryotes. Characteristics of mitosis and its variants: amitosis, endomitosis. Phases of mitosis.</p>	LC, S
<p><b>Section 3</b> Basic Histology.</p>	<p style="text-align: center;">3.1</p> <p>The concept of tissues. Epithelial tissues. Glands. Definition of the concept of fabric. Brief information on tissue histogenesis. Classification of fabrics. Interrelation of tissues. Tissue regeneration. General characteristics of epithelial tissues, their functions. Classification of epithelial tissues. Microscopic structure and physiology of various types of integumentary epithelium: single-layer and multi-layer. Structure and functions of glandular epithelium, types of secretion (apocrine, merocrine, holocrine). General characteristics of exocrine glands: structure and classification.</p>	LC, S
	<p style="text-align: center;">3.2</p> <p>System of internal tissues. Blood and general characteristics of the structure and functions of blood. Plasma lymph. Hematopoiesis. blood, its composition and properties. Formed blood elements: erythrocytes, leukocytes: granular and non-granular (neutrophils, eosinophils, basophils, lymphocytes, monocytes), their structure at the microscopic and ultramicroscopic level. Development of blood as a tissue (embryonic hematopoiesis). Postembryonic hematopoiesis and immunopoiesis –physiological regeneration of blood. Unitary theory of hematopoiesis. Classes of hematopoietic elements. Stem and semi-stem cells, their properties and role.</p>	LC, S

Course module title	Course module contents (topics)	Academic activities types
	<p style="text-align: center;">3.3</p> <p>Connective tissues. Connective tissue proper. Connective tissues with special properties. Loose fibrous connective tissue. Morphology and functions of cellular forms of loose connective tissue. Intercellular substance. Reticular, elastic, and collagen fibres. Their microscopic and electron-microscopic structure, physical properties, and chemical composition. Chemical composition and functions of the amorphous substance. The role of blood cells and connective tissue cells at different stages of inflammation. Interactions between blood cells and connective tissue cells. Dense fibrous connective tissue. Connective tissues with special functions: adipose, mucous, reticular, and pigmentary tissues.</p>	LC, S
	<p style="text-align: center;">3.4</p> <p>Connective tissues. Skeletal connective tissues: cartilage and bone tissue. Cartilage tissue. Cartilage cells. Structure of the intercellular substance and its chemical composition. Histogenesis of cartilage tissue. Structure and functions of the perichondrium. Different types of cartilage tissue. Cartilage regeneration. Age-related changes in cartilage tissue. Bone tissue. Bone cells. Structure and chemical composition of the intercellular substance of bone. Coarsely fibrous and lamellar bone tissue. Osteon (Haversian system). Bone formation from mesenchyme and in the place of cartilage. Bone growth and remodelling during ontogenesis. Structure and role of the periosteum. Bone tissue regeneration. Age-related changes in bone tissue.</p>	LC, S
	<p style="text-align: center;">3.5</p> <p>Muscle tissue. General morphofunctional characteristics and classification of muscle tissue. Smooth muscle tissue. Microscopic and electron-microscopic structure of smooth muscle tissue in mammals. Origin and histogenesis of smooth muscle tissue. Striated muscle tissue. Cardiac muscle tissue. Histogenesis of cardiac muscle tissue. Microscopic and electron-microscopic structure of cardiac muscle. Regeneration of cardiac muscle tissue. Skeletal muscle tissue. Histogenesis of skeletal muscle tissue. Functional morphology of skeletal muscle tissue. Regeneration of skeletal muscle tissue. Skeletal muscle as an organ.</p>	LC, S

Course module title	Course module contents (topics)	Academic activities types
	<p style="text-align: center;">3.6</p> <p>Nervous tissue.            General morphofunctional characteristics. Types of neurons and their structure. The concept of the reflex arc. Microscopic and electron-microscopic structure of nerve cells in relation to their function. Nissl substance (tigroid substance). Cytochemical characteristics of neurons. Neurosecretory cells. Structure of myelinated and unmyelinated nerve fibres. Synapses and their electron-microscopic structure. Mechanism of synaptic transmission. Effector and receptor nerve endings, their microscopic structure. Free and encapsulated sensory nerve endings. Structure and functions of neuroglia. Ependyma. Astroglia. Oligodendroglia. Microglia. Relationships between neurons and neuroglia. Histogenesis of nervous tissue. Regeneration and degeneration of neuronal processes.</p>	LC, S
<b>Section 4</b> Histology of organs and organ systems	<p style="text-align: center;">4.1</p> <p>Nervous system.            Nervous system, general morphofunctional characteristics, sources and course of embryonic development. The concept of nerve centers, their classification and principles of structural organization. Nerve: structure and histofunctional features, response to damage and regeneration. Sensitive nerve nodes: development, structure, tissue and cellular composition. The central nervous system. Features of the structure of gray and white matter.            Spinal cord, general morphofunctional characteristics. Brain, general morphofunctional characteristics. The structure of the dura, arachnoid and soft membranes of the brain.            Cerebellum, structure and functional significance. Cerebral cortex, general morphofunctional characteristics, neural composition. Layers of the cerebral cortex.            Cytoarchitectonics myeloarchitectonics. Structure and significance of the blood-brain barrier.</p>	LC, S
	<p style="text-align: center;">4.2</p> <p>Sensory organs: primary and secondary senses. General characteristics of sensory organs in the light of the theory of analyzers (sensory systems). Peripheral, intermediate, and central parts of the analyzer.            Classification of sensory organs by the genesis and</p>	LC, S

Course module title	Course module contents (topics)	Academic activities types
	<p>structure of receptor cells. Cytophysiology of neurosensory and sensorepithelial cells. Structural and biochemical bases of the reception mechanism. Visual organ, general morphofunctional characteristics, sources and course of embryonic development. General outline of the structure of the eyeball. The retina is like a screen-type nerve center. Neural composition and retinal gliocytes. Organ of hearing and balance, general morphofunctional characteristics, sources and course of embryonic development. External and middle ear, structural features and functional significance. The inner ear. The structure of the spiral (Cortical) organ: hair (sensory-epithelial) and support cells. Histophysiology of sound perception. Vestibular part of the membranous labyrinth: elliptical and spherical sacs, semicircular channels. Receptor divisions: spots (maculae) and ampullary scallops, their structure. Features of the structure of vestibular hair cells.</p>	
	<p style="text-align: center;">4.3</p> <p>Cardiovascular system. General morphofunctional characteristics of the cardiovascular system. Sources and course of embryonic development of vascular system organs. Classification of blood vessels, general principles of structure. Interrelation of hemodynamic conditions and vascular structure. Arteries, morphofunctional characteristics, classification. Interrelation of arterial structure and hemodynamic conditions. Vessels of the microcirculatory bed: structure and functions, significance in metabolism. Structure and functional significance of blood capillaries, classification and organ features. Regeneration, age-related changes in the vessels of the microcirculatory bed. Veins, morphofunctional characteristics, classification. Structure of the venous wall in connection with hemodynamic conditions. Features of the structure of veins of various types (muscular and non-muscular). Heart. General morphofunctional characteristics of the heart, sources and course of embryonic development. Structure of the heart wall.</p>	LC, S

Course module title	Course module contents (topics)	Academic activities types
	<p>Endocardium and its derivatives – heart valves. Myocardium: working conducting and secretory cardiomyocytes. Functions and structural features of various types of cardiomyocytes. Conducting system of the heart, its morphofunctional characteristics. Cardiomyocytes of the conducting system. Epicardium and pericardium.</p>	
	<p style="text-align: center;">4.4</p> <p>System of hematopoietic organs and immune defense. General characteristics of the hematopoietic system and immune defense, principles of structural organization. Central organs of hematopoiesis and immunogenesis. Bone marrow, thymus: structure, tissue composition. Structure and significance of the hematothymic barrier. Peripheral organs of hematopoiesis and immunogenesis: spleen, lymph node-embryonic development, tissue and cellular composition.</p>	LC, S
	<p style="text-align: center;">4.5</p> <p>Endocrine system. General morphofunctional characteristics and main structural components of the endocrine system. Classification of endocrine glands according to the hierarchical principle: central and peripheral (adeno-pituitary-independent and adeno-pituitary-dependent) links of the integrated endocrine system. Central endocrine glands: sources of development, structure, tissue and cellular composition, secreted hormones and targets of these hormones. Peripheral endocrine glands (thyroid, parathyroid glands, adrenal glands)-sources and main stages of embryonic development, structure, tissue and cellular composition, secreted hormones and their targets.</p>	LC, S
	<p style="text-align: center;">4.6</p> <p>Digestive system. Composition of the digestive system and its functions. General principles of the structure of the digestive tube wall: layers and tissue composition. Middle and posterior parts of the digestive system, features of the wall structure of various departments, development. Stomach, morphofunctional characteristics.</p>	LC, S

Course module title	Course module contents (topics)	Academic activities types
	<p>Sources of development of tissues that make up the gastric membranes. Cytophysiological characteristics of the integumentary gastric epithelium. Localization, structure, and cellular composition of the proper, pyloric, and cardiac glands.</p> <p>Histophysiology of exo-and endocrine cells. Small intestine, functions, structural components of the wall (membranes, layers and their tissue composition). Sources of development of tissues that make up the membranes of the small intestine. Features of the structure of the mucous membrane in various parts of the intestine.</p> <p>Duodenal glands, their structure and functions.</p> <p>Types of villi and crips epithelial cells, their structure and cytophysiology. Histophysiology of the digestive process (cavitary, parietal, membrane, intracellular). The role of enterocyte microvilli in parietal digestion. Colon, sources of development. Morphofunctional characteristics, structure of the colon wall. Liver, sources of development, morphofunctional characteristics. Structure of the classical hepatic lobule as a structural and functional unit, cellular composition. Pancreas morphofunctional characteristics, sources of development. Structure of the exocrine and endocrine parts of the pancreas</p>	
	<p style="text-align: center;">4.7</p> <p>Respiratory system.</p> <p>Respiratory system: general characteristics, respiratory and non-respiratory functions, sources and course of embryonic development, stages of postnatal development. Extrapulmonary airways. Structural components of the wall (membranes, layers and their tissue composition) of the nasal cavity, larynx, trachea and main bronchi. Histofunctional features of the mucous membrane. Cellular composition of the tracheobronchial epithelium-ultrastructure, functions. Intrapulmonary airways. Classification of intrapulmonary bronchi, their structure depending on the caliber. Terminal bronchioles. General patterns of changes in the structure of bronchial walls as they branch. Cellular composition of bronchopulmonary epithelium. Acinus as a morphofunctional unit of the lung. Composition and significance of the arohematic barrier.</p>	LC, S

Course module title	Course module contents (topics)	Academic activities types
	<p style="text-align: center;">4.8</p> <p>Skin and its derivatives  Skin as an organ: skin functions, structural components, sources of development. The epidermis and its layers. Cellular composition of the epidermis: ultrastructure, origin, meaning of cells.  Dermis of the skin: papillary and reticular layers. Tissue composition and functions of the dermis of the skin. Hypoderm. Skin derivatives: Glands: location, structure, and function.</p>	LC, S
	<p style="text-align: center;">4.9</p> <p>Urinary system  General characteristics and functions of the urinary system, sources and main stages of embryonic development. Kidneys, structure and functions. Nephron as a structural and functional unit of the kidney, its structure. Phases of urination. Endocrine system of the kidneys( renin-angiotensin apparatus, prostaglandin apparatus, kallikrein-kinin apparatus, steroid hormone of the kidneys), localization, structure and functions. Urinary tract, morphofunctional characteristics.</p>	LC, S
	<p style="text-align: center;">4.10</p> <p>Reproductive system  General morphofunctional characteristics of the reproductive system, sources and course of embryonic development. Male sexual organs. Testicle, structure and functions. Convoluted spermatic tubule, wall structure. Epitheliospermatogenic layer (spermatogenic cells and sustentocytes), ultrastructure and functions. Generative function of the testis. Endocrine functions of the testis. Vas deferens: histophysiology of the rectus tubules, reticulum and outflow tubules of the testicle. Canal of the appendage. Vas deferens and ejaculatory canal. Structure and functions of the vas deferens. Auxiliary glands of the male reproductive system (seminal vesicles, prostate, bulbo-urethral glands), structure and functions. Female genitalia. Structure and functions of the ovary, cortical and medullary structures. Follicles: types, structure and functions. Ovulation and its mechanisms. Structure and functions of the corpus luteum. Endocrine functions of the ovaries. Fallopian tubes: structure and functions. Uterus: the structure of the uterine wall in different</p>	LC, S

Course module title	Course module contents (topics)	Academic activities types
	parts of the uterus. The cervix. Ovarian-menstrual cycle, phases and duration. Features of the structure of the endometrium of the uterus in different phases of the cycle. Influence cyclical changes on the ovaries	
<b>Section 5</b> Oral Histology	5.1 Features of the structure of the anterior section of the digestive tract Anterior part of the digestive system. Oral cavity, structural components, development, functions. The structure of the mucous membrane in connection with the function and features of conditions in the oral cavity. Lips, cheeks, hard and soft palate, tongue, gums: building. Pirogov's lymphoepithelial pharyngeal ring. Tonsils. Language: functions, structure, tissue composition, differences in the structure of the mucosa of the dorsal and ventral surfaces of the organ. Papillae of the tongue and their types, structure, and functions. Structure and tissue composition of the esophageal pharyngeal wall in its various parts. Esophageal glands.	LC, S
	5.2 General morphofunctional characteristics of teeth. Periodontium. Supporting apparatus. Concept of hard and soft dental tissues. Enamel: microscopic and ultramicroscopic structure, physicochemical properties. Enamel prisms. Radial light and dark bands of enamel and tangential lines. Interprismatic substance. Features of mineralization and metabolism in enamel. Cuticle, pellicle, and their role in the penetration of inorganic substances into enamel. Dentin: its microscopic and ultramicroscopic characteristics. Ground substance of dentin. Dentinal fibres, radial and tangential. Dentinal tubules and mineralization of dentin. Interglobular dentin. Granular layer. Mantle dentin and circumpulpal dentin. Nutrition and innervation of dentin. Primary and secondary dentin. Reaction of dentin to injury. Cementum: its location, chemical composition, mineralization. Cellular and acellular cementum. Topography of different types of cementum in single-rooted and multi-rooted teeth. Nutrition of cementum. Soft tissues of the tooth. Structural features and morphofunctional significance of the dental pulp. Intercellular substance of the pulp, its histochemical	LC, S

Course module title	Course module contents (topics)	Academic activities types
	<p>characteristics. Cells of the pulp. Structural features of pulp layers. Odontoblasts: their structure and role. Coronal pulp and radicular pulp. Innervation and blood supply of the dental pulp. Significance of the pulp in tooth vitality. Reactive properties, aseptic inflammation, and regeneration of the dental pulp. Age-related and regressive changes of the pulp. Supporting apparatus of the teeth. Periodontium: cells and collagen framework. Circular ligament. Features of fibre distribution in different regions of the periodontium. Marginal periodontium. Blood supply and innervation of the periodontium. Dental alveolus: structure and functional characteristics. Features of the location and structure of interalveolar and interradicular septa. Remodelling of the periodontium, dental alveoli, and alveolar portions of the upper and lower jaws in response to changes in functional load. Gingiva. Dentogingival junction.</p>	
	<p style="text-align: center;">5.3</p> <p>Tooth development (odontogenesis)  Formation of the buccodental and primary dental laminae. Initiation of the tooth germ. Differentiation of the tooth germ.  Dental epithelium organ, dental papilla, dental follicle. Their structure, development, and derivatives. Disturbances of early stages of tooth development. Histogenesis of the tooth. Odontoblasts and their role in dentin formation in the crown and root of the tooth.  Formation of radial and tangential dentinal fibres. Mantle dentin and circumpulpal dentin. Predentin. Disturbances of dentinogenesis. Ameloblasts and changes in their polarity. Amelogenesis. Formation of enamel prisms. Mineralization of enamel. Neonatal line. Enamel maturation. Disturbances of amelogenesis. Development of the tooth root. Cementoblasts and their role in cementum formation. Formation of cellular and acellular cementum. Differentiation of dental papillae. Development of the dental pulp. Vascularization and innervation of the developing tooth. Development of the periodontium and dental alveolus.</p>	<p>LC, S</p>
	<p style="text-align: center;">5.4</p> <p>Salivary glands.</p>	<p>LC, S</p>

Course module title	Course module contents (topics)	Academic activities types
	<p>Large salivary glands of the oral cavity: structure, development, and histophysiology. Microscopic and ultramicroscopic structure of terminal (secretory) portions and excretory ducts. Characteristics of serous, mucous, and mixed terminal portions. Striated salivary ducts and their role in secretion and reabsorption processes. Saliva: its chemical composition and significance. Features of development and structure of the parotid, submandibular, and sublingual salivary glands. Endocrine function of the salivary glands.</p>	
<p><b>Section 6</b> Embryology.</p>	<p style="text-align: center;">6.1</p> <p>Male and female germ cells, progenesis. Fertilization. Cleavage. Progenesis. Morphofunctional characteristics of germ cells. Spermatogenesis. Oogenesis. Fertilization and its biological significance. Phases of fertilization. Structure of the zygote, optical differentiation and blastomere determination. Cleavage. Type and mechanisms of cleavage in the human embryo. Chronology of the process. Significance of the fertilization membrane. Blastomeres: their characteristics and interactions. Morula. Blastocyst: embryoblast and trophoblast.</p>	<p>LC, S</p>
	<p style="text-align: center;">6.2</p> <p>Stages of human embryogenesis: implantation, gastrulation. Histogenesis and organogenesis. Features of implantation in humans. Adhesion, invasion. Differentiation of the trophoblast (cytotrophoblast, syncytiotrophoblast). Gastrulation: characteristics, significance, and mechanisms in the human embryo. The first phase of gastrulation — delamination (formation of the epiblast and hypoblast). The second phase of gastrulation — migration. Formation of the primitive streak and primitive node. Formation of embryonic endoderm, ectoderm, mesoderm, and notochord. Differentiation of germ layers, formation of the axial complex of primordia (notogenesis). Differentiation of the ectoderm: neurulation (formation of ganglion crests, placodes, and neural tube), cutaneous ectoderm, prechordal plate, extraembryonic ectoderm.</p>	<p>LC, S</p>

Course module title	Course module contents (topics)	Academic activities types
	Differentiation of the endoderm: formation of the body fold, development of the intestinal endoderm of the embryo and extraembryonic endoderm of the allantois and yolk sac. Differentiation of the mesoderm: somites, nephrogo-notome, parietal and visceral layers of the splanchnopleure (splanchnic mesoderm), extraembryonic mesoderm. Mesenchyme. Histogenesis and organogenesis, concept of morphogenesis. Provisional (extraembryonic) organs. Concept of the functional system “mother–fetus”. Critical periods of development.	

\* - to be filled in only for **full**-time training: *LC* - lectures; *LW* - lab work; *S* - seminars.

## 6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

*Table 6.1. Classroom equipment and technology support requirements*

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Lecture	Lecture room equipped with a set of specialized furniture, a board (screen), and technical equipment for multimedia presentations.	Projector, Laptop
Seminar	Seminar room designed for seminar-type sessions, group and individual consultations, ongoing assessment, equipped with a set of specialized furniture and multimedia presentation equipment.	projector; laptop; magnetic whiteboard.
Self-studies	A study room for independent work of students (can also be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to the electronic information and educational environment (EIEE).	

## 7. RESOURCES RECOMMENDED FOR COURSE STUDY

*Main readings:*

1. Savrova O. B., Eremina I. Z., Botchey V. M. Cytology, embryology and general histology. Synopsis of lectures, Moscow: RUDN University, 2021, 126s.

2. Afanasyev Yu. I., Aleshin B. V.,

Barsukov N. P., Yurina N. A. Histology, embryology, cytology : textbook / Afanasyev Yu. I., Aleshin B. V., Barsukov N. P., Yurina N. A. - Moscow: GEOTAR-Media, 2023. - 832 c.

*Additional literature:*

1. Botchey V. M., Savrova O. B., Eremina I. Z. Introduction to embryology. Short course, Moscow: RUDN Publishing House, 2023, 131s.

*Resources of the Internet information and telecommunications network:*

1. RUDN University EBS and third-party EBS that university students have access to on the basis of concluded contracts

- RUDN University Electronic Library System – RUDN

University EBS <https://mega.rudn.ru/MegaPro/Web-EBS>

"University Library online" <http://www.biblioclub.ru-EBS>

"Yurayt" <http://www.biblio-online.ru-EBS>

"Student's consultant

" [www.studentlibrary.ru-Znanium](http://www.studentlibrary.ru-Znanium) EBS <https://znanium.ru/>

## 2. Databases and search engines

- Sage <https://journals.sagepub.com/>
- Springer Nature Link <https://link.springer.com/>
- Wiley Journal Database <https://onlinelibrary.wiley.com/>
  - Scientometric database Lens.org  
<https://www.lens.org>  
[www.lens.org](http://www.lens.org)

*Teaching materials for independent work of students in the development of the discipline / module\*:*

1. Course of lectures on the discipline "Histology, embryology, cytology-Histology of the oral cavity".

\* - all teaching materials for independent work of students are placed in accordance with the current procedure on the discipline page **in TUIS!**

### **DEVELOPER:**

Assistant of the Department of  
Histology Cytology and  
Embryology

\_\_\_\_\_  
position, department

\_\_\_\_\_  
signature

\_\_\_\_\_  
Jumaniyazova En. D.  
name and surname

### **HEAD OF EDUCATIONAL DEPARTMENT:**

Head of the department

\_\_\_\_\_  
name of department

\_\_\_\_\_  
signature

\_\_\_\_\_  
Fatkhudinov T.Kh.  
name and surname

### **HEAD OF HIGHER EDUCATION PROGRAMME:**

Deputy Director of Institute of  
medicine

\_\_\_\_\_  
position, department

\_\_\_\_\_  
signature

\_\_\_\_\_  
S.N. Razumova  
name and surname