

Документ подписан простой электронной подписью  
 Информация о владельце:  
 ФИО: Косенок Сергей Михайлович  
 Должность: ректор  
 Дата подписания: 10.06.2024 11:45:08  
 Уникальный программный ключ:  
 e3a68f3eaa1e62674b54f4998099d3d6bfdcf836

Khanty-Mansiysk Autonomous Okrug-Ugra  
 "Surgut State University"

Approved by  
 Deputy Rector for Academic Affairs  
 \_\_\_\_\_ E.V. Konovalova  
 "13" June 2024, Record No. 5

## HISTOLOGY, EMBRYOLOGY, CYTOLOGY

### Syllabus

Department	<b>Pathophysiology and General Pathology</b>
Curriculum	s310501- LechDeloIn -24-1.pli.xml Specialty 31.05.01 General Medicine
Qualification	<b>General Practitioner</b>
Form of education	<b>Full-time</b>
Total (in credits)	<b>7</b>
Total academic hours	252
including:	
Classes	160
Self-study	56
Control hours	36

Control:  
 Exam, 3<sup>rd</sup> term  
 Credit, 2<sup>nd</sup> term

### Course outline in terms

Academic year (Term)	1 (1.2)		2 (2.1)		Total	
	Weeks		Weeks			
	22		19			
Types of classes	Cur	Syl	Cur	Syl	Cur	Syl
Lectures	32	32	32	32	64	64
Practical	48	48	48	48	96	96
Self-study	28	28	28	28	56	56
Control hours	-	-	36	36	36	36
Total	108	108	144	144	252	252

The Syllabus is compiled by:

The Syllabus

**Histology, embryology, cytology**

Federal State Educational Standard of higher education in the specialty 31.05.01 General medicine (Order of the Ministry of Education and Science of the Russian Federation on February 9, 2016 No. 95)  
Developed in accordance with Federal State Educational Standard:

Federal State Educational Standard of higher education in the specialty 31.05.01 General medicine (Order of the Ministry of Education and Science of the Russian Federation on February 9, 2016 No. 95)  
Specialization: General medicine

Approved by the Academic Council of Surgut State University, "18" June 2020, Record No. 6  
Based on the Curriculum:

31.05.01 GENERAL MEDICINE

Specialization: General Medicine

Approved by the Academic Council of Surgut State University, "13" June 2024, Record No. 5

Pathophysiology and general pathology

The Syllabus was approved by the department

Pathophysiology and general pathology

April "19" 2024, Record No 11.

Head of Department, Doctor of Medicine, Professor Kovalenko L.V.

The Syllabus is compiled

F

The Syllabus

**Histology, embryology, cytology**

Developed in accordance with Federal  
State Educational Standard:

Federal State Educational Standard of higher education in the specialty 31.05.01 General medicine (Order of the Ministry of Education and Science of the Russian Federation on February 9, 2016 No. 95)

Based on the Curriculum:

31.05.01 GENERAL MEDICINE

Specialization: General Medicine

Approved by the Academic Council of Surgut State University, "18" June 2020, Record No. 6

The Syllabus was approved by the department

Pathophysiology and general pathology

## 1. COURSE OBJECTIVES

- 1.1 The **aim** of the course of histology, embryology, and cytology in higher medical schools is to master the knowledge of the microscopic functional morphology and development of the cellular, tissue and organ systems of the human body. It provides the basis for studying clinical disciplines and contributes to the formation of medical thinking.
- The **objectives** of mastering the discipline "Histology, embryology, cytology" are:
- to study general and specific structural and functional properties of body cells and tissues and their patterns of embryonic and post-embryonic development;
  - to study the histo-functional characteristics of main body systems, patterns of their embryonic development, as well as functional, age-related and protective-adaptive changes in organs and their structural elements;
  - to form students' skills in microscopic examination of histological specimens.

## 2. COURSE OVERVIEW

**Course code (in curriculum)** | **B1.O.04**

### 2.1 Assumed background:

Human anatomy

Biology

Latin

Chemistry

Human anatomy

### 2.2 Post requisites:

Immunology

Pathologic Anatomy

Clinical Pathologic Anatomy

Dermatovenereology

Neurology, Medical Genetics, Neurosurgery

Otorhinolaryngology

Ophthalmology

Obstetrics and Gynecology

Pediatrics

Hospital Therapy, Endocrinology

Dentistry

Oncology, X-Ray Therapy

Traumatology and Orthopedics

Clinical Anatomy

Clinical cytology and biochemistry

## 3. COMPETENCES UPON COMPLETION OF THE COURSE (MODULE)

**GPC-5.1** Demonstrates knowledge and understanding in the sections of fundamental medicine - anatomical, histological structures (anatomy of the human body, tissue structure of organs and their microscopic differentiation), physiological processes (human physiology, mechanisms of regulation of homeostasis, functional systems of the body in norm

**GPC-5.2** Demonstrates knowledge of cell structure, phases of cell division, theoretical foundations of genetics, understanding of the biology of insects and helminths, their role in the etiology of human diseases

**GPC-5.6.** Demonstrates knowledge and skills to identify: the structure of the human body, morphological macro- and microscopic parameters in pathology; diagnose criteria of general pathological pathophysiological processes in various nosologies; on the basis of which he/she possesses skills in topographic anatomy and is able to solve questions of operative surgery

**By the end of the course students must:**

### 3.1 know:

safety and operating instructions for work in physical, chemical, biological laboratories with reagents, equipment, animals;

chemical and biological essence of the processes occurring in a living organisms at the molecular, cellular, tissue and organ levels;

the basic development and functioning patterns of the organisms on the basis of structural organization of their cells, tissues and organs;

histo-functional peculiarities of tissue elements and their research methods;

the structure, topography and development of cells, tissues, organs and systems of the organism in correlation with their function, peculiarities of the organismic and population life organization levels;

functional systems of the human body, their regulation and self-regulation when exposed to the external environment;

	the structure and functions of the human immune system, its age-related peculiarities, cellular-molecular development and functioning mechanisms of the immune system, the main stages, types, genetic control of the immune response;
	microscopic structure, functions and sources of cell development;
	tissue and microscopic structure, functions and sources of organ development;
	the main stages of embryonic development and their characteristics;
	critical periods of human embryonic development;
	age-related peculiarities of tissue and organ structure.
<b>3.2</b>	<b>be able to:</b>
	use educational, scientific, popular scientific literature and the Internet for professional activity;
	use physical, chemical and biological equipment;
	work with magnifying equipment (microscopes, optical and simple lenses);
	make a histophysiological assessment of the state of various cellular, tissue and organ structures;
	explain the nature of the deviations in the development pattern which can lead to the variants of abnormalities and malformations;
	interpret the results of the most common functional diagnostics methods used to detect the pathology of blood, heart and blood vessels, lungs, liver, kidneys and other organs and systems.
	draw histological and embryological specimens and to designate the structural elements in them;
	examine histological and embryological specimens with the microscope;
	analyse histological and embryological specimens;
	examine electron microphotographs of cells and non-cellular structures;
	prepare oral and written description of the specimens;
	apply the knowledge of histology in practice for solving standard problems in the professional activity of a doctor (solving situational tasks).

#### 4. STRUCTURE AND CONTENTS OF THE COURSE (MODULE)

Class Code	Topics /Class type	Term / Academic year	Academic hours	Competences	Literature	Notes
	<b>1.1 Cell structure /lecture</b>	2	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>1.2 Microscopy, Cell structure /practical classes</b>	2	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>1.3 Microscopy, Cell structure /self-study</b>	2	3	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>2.1 Cell Nucleus, DNA, Cell Division /lecture</b>	2	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>2.2 Cell Nucleus, DNA, Cell Division /practical classes</b>	2	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>2.3 Cell Nucleus, DNA, Cell Division /self-study</b>	2	3	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>3.1 Epithelial Tissue /lecture</b>	2	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>3.2 Epithelial Tissue /practical classes</b>	2	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>3.3 Epithelial Tissue /self-study</b>	2	3	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	

	<b>4.1 Glands /lecture</b>	2	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>4.2 Glands /practical classes</b>	2	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>4.3 Glands /self-study</b>	2	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>5.1 Connective Tissue /lecture</b>	2	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>5.2 Connective Tissue I /practical classes</b>	2	5	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>5.3 Connective Tissue I /practical classes</b>	2	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>5.4 Connective Tissue II /practical classes</b>	2	5	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>5.5 Connective Tissue II /practical classes</b>	2	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>6.1 Cartilage and Bone /lecture</b>	2	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>6.2 Cartilage and Bone /practical classes</b>	2	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>6.3 Cartilage and Bone /self-study</b>	2	3	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>7.1 Muscular Tissue /lecture</b>	2	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>7.2 Muscular Tissue /practical classes</b>	2	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>7.3 Muscular Tissue /self-study</b>	2	3	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>8.1 Lymphatics and Lymphoid Tissue /lecture</b>	2	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>8.2 Lymphatics and Lymphoid Tissue /practical classes</b>	2	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>8.3 Lymphatics and Lymphoid Tissue /self-study</b>	2	3	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	

	<b>9.1 Nervous Tissue /lecture</b>	2	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>9.2 Nervous Tissue /practical classes</b>	2	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>9.3 Nervous Tissue /self-study</b>	2	3	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>10.1 Integumentary System /lecture</b>	2	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>10.2 Integumentary System /practical classes</b>	2	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>10.3 Integumentary System /self-study</b>	2	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>Control work /Control /</b>	2	0	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	Control work
	<b>Credit</b>	2	0	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>11.1 Cardiovascular System /lecture</b>	3	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>11.2 Cardiovascular System /practical classes</b>	3	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>11.3 Cardiovascular System /self-study</b>	3	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>12.1 Respiratory System /lecture</b>	3	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>12.2 Respiratory System /practical classes</b>	3	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>12.3 Respiratory System /self-study</b>	3	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>13.1 Digestive system I /lecture</b>	3	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>13.2 Digestive system I /practical classes</b>	3	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>13.3 Digestive system I /self-study</b>	3	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	

	<b>14.1 Digestive system II /lecture</b>	3	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>14.2 Digestive system II /practical classes</b>	3	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>14.3 Digestive system II /self-study</b>	3	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>15.1 Urinary system and Male Reproductive System /lecture</b>	3	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>15.2 Urinary system and Male Reproductive System /practical classes</b>	3	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>15.3 Urinary system and Male Reproductive System /self-study</b>	3	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>16.1 Female Reproductive System /lecture</b>	3	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>16.2 Female Reproductive System /practical classes</b>	3	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>16.3 Female Reproductive System /self-study</b>	3	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>17.1 Sense Organs /lecture</b>	3	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>17.2 Sense Organs /practical classes</b>	3	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>17.3 Sense Organs /self-study</b>	3	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>18.1 Embryology /lecture</b>	3	2	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>18.2 Embryology /practical classes</b>	3	6	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>18.3 Embryology /self-study</b>	3	1	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
	<b>Control work /Control /</b>	3	0	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	Control work

	<b>19 Exam</b>	3	36	GPC-5.1 GPC-5.2 GPC-5.6	L1, L2, L3 E1 E2 E3 E4	
<b>5.1. Tests and tasks</b>						
Presented by a single document						
<b>5.2. Topics for written papers</b>						
Presented by a single document						
<b>6. COURSE (MODULE) RESOURCES</b>						
<b>6.1. Recommended Literature</b>						
<b>6.1.1. Core</b>						
	Authors	Title		Publish., year	Quantity	
<b>L1</b>	S. L. Kuznetsov, T. V. Boronikhina, V. L. Goryachkina	Histology, Cytology and Embryology [Text]: (a Course of Lectures		Moscow: Medical Informational Agency, 2004. 239 p.	31	
<b>L2</b>	Vishram Singh	Inderbir Singh's Textbook of Human Histology [Text]: With Color Atlas and Practical Guide		New Delhi [etc.]: Jaypee. The Health Sciences Publisher, 2016. 302 p.: ill.	33	
<b>L3</b>	J.P. Gunasegaran	Textbook of Histology [Text]: Atlas and Practical Guide		New Delhi: Elsevier, 2017. XVI, 438 p.: ill. Electronic resource	3	
<b>L4</b>	Vishram Singh	Textbook of Clinical Embryology [Text]		Amsterdam: Elsevier, cop. 2017. 365 p.: ill. Electronic resource	3	
<b>6.2. Internet resources</b>						
E1	Electronic library of medical University <a href="http://www.studmedlib.ru">www.studmedlib.ru</a>					
E2	Electronic library system <a href="http://www.znanium.com">www.znanium.com</a>					
E3	FreeMedicalJournals					
E4	<a href="http://e.lanbook.com/">http://e.lanbook.com/</a>					
<b>6.3.1 Software</b>						
6.3.1.1	Operational systems "Microsoft", Software package Microsoft Office					
<b>6.3.2 Information Referral systems</b>						
6.3.2.1	<a href="http://www.garant.ru">http://www.garant.ru</a>					
6.3.2.2	<a href="http://www.consultant.ru">http://www.consultant.ru</a>					
<b>7. THE LOGISTICS DISCIPLINE (MODULE)</b>						
7.1	<p>The lecture hall is equipped with a multimedia projector, a screen, a laptop, a stationary educational Board for chalk, typical educational furniture: desks, chairs.</p> <p>The training room for practical classes, group and individual consultations, ongoing monitoring and interim certification is equipped with a portable projector Epson (1 PCs), laptop (1 PCs), microscope Zeiss (12 PCs), video films, charts, models, microscope slide, study tables (10 PCs.), chairs (24 PCs.) interactive pathology class "VIRCHOW", Full HD Samsung IPS display (6 PCs.), interactive Smart Board SB480iv4, Lenovo laptop, Primo Star microscopes (8 PCs.).</p> <p>Morphological laboratory of the Department of pathophysiology and General pathology is equipped with: a microscope, a video camera with software, a computer, a microscope with a camera and a morphometric program, working microscopes, equipment for histological wiring of the material (microtome, water bath, thermostats, apparatus for histological wiring of the material), accessories for staining and immunohistochemical examination of the material, tools and consumables in an amount that allows students to master the skills provided by the program.</p>					