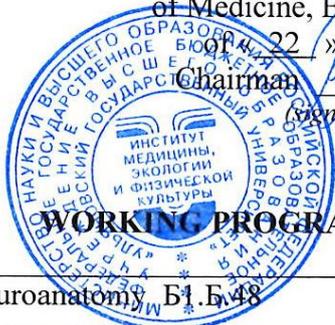


Ministry of Science and Higher Education of the Russian Federation Ulyanovsk State University	Form	
F - Working program on discipline « Neuroanatomy »		

**APPROVED**

by the decision of the Academic Council of the Institute  
of Medicine, Ecology and Physical Culture of USU



« 22 » June 2020, protocol № 10/220  
Chairman V. I. Midlenko

(signature, signature clarification)

« 22 » June 2020

**WORKING PROGRAM**

Discipline	Neuroanatomy, Б1.Б.48
Faculty	Faculty of medicine. T. Z. Biktimirova
Department	Human Anatomy
Course	2

Field (speciality) 31.05.01 General medicine  
*course code (speciality), full name*

Orientation (profile / specialization) \_\_\_\_\_  
*full name*

Form of study intramural  
*intramural, extramural, intra-extramural (specify only those that are implemented)*

Date of introduction in the teaching process at USU: « 01 » september 2020

The program was updated at the department session: protocol № 1 of 31.08.2021

The program was updated at the department session: protocol № \_\_\_\_\_ of \_\_\_\_\_ 20

The program was updated at the department session: protocol № \_\_\_\_\_ of \_\_\_\_\_ 20

The program was updated at the department session: protocol № \_\_\_\_\_ of \_\_\_\_\_ 20

Information on authors:

Initials	Department	Degree, title
Zerkalova J.F.	Human Anatomy	Candidate of Medical Sciences, assistant professor
Vorotnikova M.V.	Human Anatomy	Candidate of Biological Sciences, assistant professor

AGREED	AGREED
Head of the department of Human Anatomy	Head of the department of Hospital Therapy
 / <u>Vorotnikova M.V.</u> / <i>Signature</i> <i>Initials</i>	 / <u>Vize-Khripunova M. A.</u> / <i>Signature</i> <i>Initials</i>
« 22 » June 2020	« 22 » June 2020

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## 1. GOALS AND TASKS OF MASTERING THE DISCIPLINE:

**Goals of mastering the discipline** - is the acquisition by students of knowledge about the form and structure of the human body, its constituent organs and systems.

The process of mastering the discipline "Neuroanatomy" is aimed at the formation of general cultural and general professional competencies ( GC-1, GPC-9).

### Tasks of mastering the discipline:

- to form students' knowledge about the shape of the human body, organs and systems;
- the study of anatomy as a fundamental biomedical discipline on the development and structure of organs and systems, the study of the development, structure of sex, age and individual variability of organs and systems as a whole and their individual parts.

## 2. PLACE OF DISCIPLINE IN THE STRUCTURE OF THE BASIC PROFESSIONAL EDUCATIONAL PROGRAM: the discipline Б1.Б.48

Natural science, mathematical and biomedical disciplines. Students must master the basics of terminology, correctly apply medical terms in both Latin and Russian, as well as master the knowledge and skills in the anatomy and topography of organs and tissues of the human nervous system.

Mastering the discipline is based on the knowledge, skills and abilities formed by previous disciplines: "Normal physiology", "Philosophy", "Histology, embryology, cytology", "Biochemistry", "Anatomy", "Physics", "Mathematics", "Foreign language". "Embryonic development of body tissues".

Studying the discipline "Neuroanatomy" allows students to obtain the necessary knowledge, skills in the development of subsequent disciplines: "Physiology of visceral systems", "Surgical gastroenterology and endoscopy", preparation for passing and passing the state exam, "Radiation diagnostics", "Forensic medicine", "Obstetrics and gynecology", "Topographic anatomy and operative surgery", "Pathophysiology, clinical pathophysiology", "Pathological anatomy", "Propaedeutics of internal diseases", "State final certification".

## 3. THE LIST OF PLANNED LEARNING OUTCOMES ON DISCIPLINE (MODULE), CORRELATED WITH THE PLANNED RESULTS OF MASTERING THE BASIC PROFESSIONAL EDUCATIONAL PROGRAM

Code and name of the implemented competence	List of planned learning outcomes for discipline (module), correlated with indicators of achievement of the competencies
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<b>GC-1</b>	<b>The student must know:</b> <ul style="list-style-type: none"> <li>• a clear idea of the brain structures and their functions;</li> <li>• macro- and microscopic structure of the human body connected with the biological regularities in living organisms, as well as the constitutional, sex, age and individual characteristics;</li> <li>• anatomical and topographical relations agencies, options volatility of individual organs and vices of their development, for the subsequent application of knowledge in the study of other basic and clinical disciplines and future practice.</li> </ul>
	<b>The student must be able to:</b> <ul style="list-style-type: none"> <li>• find the location of organs, nerve trunks in human body;</li> <li>• identify anatomical structures available on the organs;</li> <li>• work with cadaver material and phantom-waxwork material.</li> </ul>
	<b>The student must possess:</b> <ul style="list-style-type: none"> <li>• preparation and work with cadaveric material with phantom-dummy material;</li> <li>• scientific, educational and reference books to find the necessary information.</li> </ul>
<b>GPC-9</b>	<b>The student must know:</b> <ul style="list-style-type: none"> <li>• the peculiarities of human ontogenesis, patterns of development of organs and systems, abnormal development of organs;</li> <li>• causes and mechanisms of formation of congenital malformations of organs in adult, children and adolescents.</li> </ul>
	<b>The student must be able to:</b> <ul style="list-style-type: none"> <li>• explain the formation of anomalies of organs during the formation of embryogenesis and the fetus during the prenatal period of human development.</li> </ul>
	<b>The student must possess:</b> <ul style="list-style-type: none"> <li>• medical-anatomical conceptual apparatus</li> </ul>

#### 4. TOTAL WORKLOAD OF THE DISCIPLINE

4.1. Volume discipline in credit units (total) 108 hours

4.2 Volume discipline by type of study (in hours)

Type of academic workload	Number of hours (form of study <u>intramural</u> )			
	Total in the plan	Throughout the terms		
		term № 1	term № 2	term № 3
1	2	3	4	5
Student-Teacher activity	72			72/72*
Classes:	72	-	-	72
Lectures	18	-	-	18/18*
Practical classes and seminars	54	-	-	54/54*
Laboratory work, workshops	-	-	-	-
Self-study work	36	-	-	36

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Types of midterm assessment (exam, test)	Test (1 Credit)	-		Test (1 Credit)
Total hours on discipline	<b>108 (3 Credit)</b>	-	-	<b>108 (3 Credit)</b>

\*The number of hours of teaching staff working with students in a distance format using e-learning.

#### 4.3 The content of discipline (module). Distribution of hours on the themes and types of academic work:

Form of study intramural

Name of sections and themes	Total	Types of classes					Form of knowledge control
		Classes:			Interac tive classes	Self- study work	
		Lecture s	Practical classes and seminars	Laboratory work, workshops			
1	2	3	4	5	6	7	8
<b>Section 1. CENTRAL NERVOUS SYSTEM.</b>							
Introduction to neuroanatomy. Functional anatomy of the brain. Localization of functions in the cerebral cortex.	2	2	0	0	1	0	Test and practical skills
Functional anatomy of the basal nuclei. Classification of nerve fibers. The concept of associative, commissural and projection fibers.	2	2	0	0	1	0	Test and practical skills
Functional anatomy of the diencephalon and midbrain.	2	2	0	0	0	0	Test and practical skills
Functional anatomy of the metencephalon and medulla oblongata. Topography of the nuclei of the cranial nerves.	2	2	0	0	0	0	Test and practical skills
Ventricular system of the brain.	2	2	0	0	1	0	Test and practical skills
Functional anatomy	5	0	3	0	0	2	Test and

of the brain, the topography of the roots of the cranial nerves							practical skills
The telencephalon	5	0	3	0	0	2	Test and practical skills
The basal nuclei (nuclei basales)	5	0	3	0	0	2	Test and practical skills
The diencephalon. The midbrain	5	0	3	0	0	2	Test and practical skills
The metencephalon (metencephalon)	5	0	3	0	0	2	Test and practical skills
The medulla oblongata. The fourth ventricle	5	0	3	0	0	2	Test and practical skills
The system of the brain ventricles. Intermeningeal spaces of the brain and the spinal cord	5	0	3	0	0	2	Test and practical skills
The rhomboid fossa	5	0	3	0	0	2	Test and practical skills
Upward tracts of the brain and spinal cord (1)	5	0	3	0	1	2	Test and practical skills
Downward tracts of the brain and spinal cord (2)	5	0	3	0	1	2	Test and practical skills
Downward tracts of the brain and spinal cord (3)	5	0	3	0	0	2	Test and practical skills
<b>Section 2. PERIPHERAL NERVOUS SYSTEM</b>							
Functional anatomy of the cranial nerves (1-6 pairs).	2	2	0	0	0	0	Test and practical skills
Functional anatomy of the cranial nerves (7-12 pairs)	2	2	0	0	0	0	Test and practical skills
I-IV pars of the cranial nerves	5	0	3	0	0	2	Test and practical skills
V- VII pars of the	5	0	3	0	0	2	Test and

cranial nerves							practical skills
VIII- XII the cranial nerves	5	0	3	0	0	2	Test and practical skills
<b>Section 3. ESTHESIOLOGY</b>							
Functional anatomy of organ of vision	7	2	3	0	0	2	Test and practical skills
Functional anatomy of organ of hearing and balance	7	2	3	0	0	2	Test and practical skills
The organ of smell. The organ of taste.	5	0	3	0	1	2	Test and practical skills
The skin (cutis)	5	0	3	0	0	2	Test and practical skills
<b>TOTAL</b>	<b>108</b>	<b>18</b>	<b>54</b>		<b>6</b>	<b>36</b>	

## 5. CONTENT OF THE DISCIPLINE (MODULE)

### THEMES OF LECTURES

#### Section 1. CENTRAL NERVOUS SYSTEM

##### **Topic 1. Introduction to neuroanatomy. Functional anatomy of the brain. Localization of functions in the cerebral cortex.**

Functional qualification of the nervous system. Shell and intermembranous space of the brain. Functional anatomy of the brain regions. The cortex of the brain, its structure, sulcus and gyrus.

##### **Topic 2. Functional anatomy of the basal nuclei. Classification of nerve fibers. The concept of associative, commissural and projection fibers.**

Functional anatomy of associative, commissural and projection fibers. Classification of pathways.

##### **Topic 3. Functional anatomy of the diencephalon and midbrain.**

Anatomy of the diencephalon and mesencephalon, their structure. Topography and functions.

##### **Topic 4. Functional anatomy of the metencephalon and medulla oblongata. Topography of the nuclei of the cranial nerves.**

Anatomy of the metencephalon and medulla oblongata, their structure, topography and functions. Functional anatomy of the nuclei of the pons, cerebelli and medulla. Topography of the cranial nerve nuclei in the brainstem.

##### **Topic 5. Ventricular system of the brain.**

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The system of the brain ventricles, its structure and meaning. The vascular basic of the lateral ventricles. Functional anatomy of the third ventricle of the brain and cerebral aqueduct. The fourth ventricle of the brain. Outflow tract traumatic brain fluid.

## **Section 2. PERIPHERAL NERVOUS SYSTEM**

### **Topic 6. Functional anatomy of the cranial nerves (1-6 pairs).**

General characteristics and classification of cranial nerves. Anatomy and characteristics of 1-6 pairs of cranial nerves.

### **Topic 7. Functional anatomy of the cranial nerves (7-12 pairs).**

General characteristics and classification of cranial nerves. Anatomy and characteristics of 7-12 pairs of cranial nerves.

## **Section 3. ESTHESIOLOGY**

### **Topic 8. Functional anatomy of organ of vision**

Anatomical and functional characteristics of sense organs. The organ of the vision, its structure, functions and topography. Accessory organs of the eye. The pathway of visual analyzer.

### **Topic 9. Functional anatomy of organ of hearing and balance**

Structure and functions of middle ear and outer ear. Bony and membranaceous labyrinth of inner ear. Mechanism of appreciation. Pathways of auditory and vestibular analyzer.

## **6. TOPICS OF PRACTICAL CLASSES (FOR DISCUSSING AND SELF-PREPARING OF STUDENTS)**

### **Section 1. Central nervous system.**

#### **Topic 1. Functional anatomy of the brain.**

##### **Questions on the topic:**

1. Anatomy of the brain regions.
2. Topography of the roots of the cranial nerves

#### **Topic 2. The telencephalon. The cortex of the brain, its structure, sulcus and gyrus.**

##### **Questions on the topic:**

1. Localization of functions in the cortex of hemispheres.
2. Meninges of the cerebrum and their derivatives.

#### **Topic 3. The basal nuclei (nuclei basales)**

##### **Questions on the topic:**

1. Basal ganglia.
2. White matter of hemispheres. Internal capsule.
3. Corpus callosum. Fornix.

#### **Topic 4. The diencephalon. The midbrain.**

##### **Questions on the topic:**

1. Anatomic of structures of the diencephalon. Their topography and functions.

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2. Anatomic of structures of the midbrain. Their topography and functions.

**Topic 5. The metencephalon.**

**Questions on the topic:**

1. Its structure, topography and functions.
2. Anatomy of cerebellum.

**Topic 6. The medulla oblongata.**

**Questions on the topic:**

1. Anatomic of structures of the brainstem part of the cerebrum (medulla oblongata, pons, mesencephalon and diencephalon).
2. The fourth ventricle. Its walls.

**Topic 7. The system of the brain ventricles.**

**Questions on the topic:**

1. Its structures and meaning.
2. Lateral ventricles. Its walls.
3. III ventricle. Its walls.
4. The vascular basic of the lateral ventricles. Functional anatomy of the third ventricle of the brain and cerebral aqueduct.

**Topic 8. The rhomboid fossa.**

**Questions on the topic:**

1. Its anatomical structures.
2. Topography of the cranial nerve nuclei of the brainstem.

**Topic 9. Pathway (tracts) of the brain and spinal cord.**

**Questions on the topic:**

1. Reflex arc as a basic of anatomical physiological unit of nervous system.
2. Simple and complex reflex arc.
3. Classification of pathways of nervous system. Association and commissural pathways.
4. Ascending projection (upward) tracts of nervous system. (exteroceptive, proprioceptive)

**Topic 10. Pathway (tracts) of the brain and spinal cord.**

**Questions on the topic:**

1. Classification of pathways of nervous system.
2. Descending projection (downward) tracts of nervous system (pyramidal).

**Topic 11. Pathway (tracts) of the brain and spinal cord.**

**Questions on the topic:**

1. Classification of pathways of nervous system.
2. Descending projection (downward) tracts of nervous system (extrapyramidal).

**Section 2 . Peripheral nervous system**

**Topic 12. I-IV pars of the cranial nerves.**

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**Questions on the topic:**

1. General characteristics and classification of cranial nerves.
2. Olfactory, optic, oculomotor, block (trochlea) nerves.

**Topic 13.V- VII pars of the cranial nerves.**

**Questions on the topic:**

1. General characteristics and classification of cranial nerves.
2. Trigeminal nerve. Branches of trigeminal nerve.
3. Facial and abducent nerves.

**Topic 14.VIII- XII the cranial nerves.**

**Questions on the topic:**

1. General characteristics and classification of cranial nerves.
2. Vestibulocochlear nerve, glossopharyngeal nerve, vagus nerve, accessory nerve, hypoglossal nerve.

**Section 3. Esthesiology**

**Topic 15. Functional anatomy of organ of vision**

**Questions on the topic:**

1. Anatomical and functional characteristics of sense organs.
2. The organ of the vision, its structure, functions and topography.
3. Accessory organs of the eye.
4. The pathway of visual analyzer.

**Topic 16. Functional anatomy of organ of hearing and balance**

**Questions on the topic:**

1. Structure and functions of middle ear and outer ear.
2. Bony and membranaceous labyrinth of inner ear.
3. Mechanism of appreciation.
4. Pathways of auditory and vestibular analyzer.

**Topic 17. Functional anatomy of organ of smell. The organ of taste.**

**Questions on the topic:**

1. Structure and functions.
2. The pathways (tracts) of smell and taste.

**Topic 18. Functional anatomy of skin (cutis).**

**Questions on the topic:**

1. Structure and functions.
2. Types of skin glands.
3. Structure of nails and hairs.

**7. LABORATORY WORK, WORKSHOPS**

"This type of work is not provided by the curriculum."

## 8. THEMES OF COURSE, CONTROL WORKS, ABSTRACTS

"This type of work is not provided by the curriculum."

## 9. LIST OF QUESTIONS FOR CREDIT

№ task	Question wording
1.	Anatomic and morphological classifications of the nervous system; its anatomic formations (plexus, ganglions, nerves).
2.	Anatomic classification of cerebrum.
3.	Anatomical structures of telencephalon. Relief of pallium.
4.	Localization of functions in the cortex of hemispheres.
5.	Meninges of the cerebrum and their derivates.
6.	The vessels of the brain.
7.	Basal ganglia. White matter of hemispheres.
8.	Internal capsule. External capsule.
9.	Corpus callosum. Fornix. Its parts, structures and functions.
10.	Anatomical structures of diencephalon. Its borders, parts, structures and functions.
11.	Anatomical structures of mesencephalon. Its borders, parts, structures and functions.
12.	Anatomical structures of metencephalon. Borders, parts, structures and functions of the pons.
13.	Anatomical structures of metencephalon. Borders, parts, structures and functions of the cerebellum.
14.	Anatomical structures of medulla oblongata. Borders, parts, structures and functions.
15.	Lateral ventricles. Parts and walls.
16.	Third ventricle. Its walls.
17.	Fourth ventricle. Its walls.
18.	Ways outflow of cerebrospinal fluid.
19.	Rhomboid fossa, its structure and relief, topography of nuclei of the cranial nerves.
20.	Reflex arc as a basic of anatomical physiological unit of nervous system. Simple and complex reflex arc.
21.	Classification of pathways of nervous system. Association and commissural pathways.
22.	Ascending projection (upward) tracts of nervous system. (exteroceptive)
23.	Ascending projection (upward) tracts of nervous system. (proprioceptive)
24.	Descending projection (downward) tracts of the nervous system (pyramidal).
25.	Descending projection (downward) tracts of the nervous system (extrapyramidal).
26.	General characteristics and classification of cranial nerves.
27.	Characteristic, nucleus, topography and branches of olfactory nerve.
28.	Characteristic, nucleus, topography and branches of optic nerve.
29.	Characteristic, nucleus, topography and branches of oculomotor nerve. block (trochlea) nerves.
30.	Characteristic, nucleus, topography and branches of trochlea nerve.

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31.	Characteristic, nucleus, topography and branches of trigeminal nerve.
32.	Characteristic, nucleus, topography and branches of abducent nerve.
33.	Characteristic, nucleus, topography and branches of facial nerve.
34.	Characteristic, nucleus, topography and branches of vestibulocochlear nerve.
35.	Characteristic, nucleus, topography and branches of glossopharyngeal nerve.
36.	Characteristic, nucleus, topography and branches of vagus nerve.
37.	Characteristic, nucleus, topography and branches of accessory nerve.
38.	Characteristic, nucleus, topography and branches of hypoglossal nerve.
39.	Anatomy of sense organs. Organ of vision.
40.	Anatomy of organs of hearing and balance.
41.	Functional anatomy of organ of smell. The organ of taste.
42.	Functional anatomy of skin (cutis).

## 10. SELF-STUDY WORK OF STUDENTS

**Form of education: intramural**

Name of sections and topics	The content of work	Volume in hours	Form of control
<b>Section 1. CENTRAL NERVOUS SYSTEM.</b>			
Topic 1. Functional anatomy of the brain, the topography of the roots of the cranial nerves	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Age features of the brain. 2. Brain shells. 3. Age features of the meninges of the brain. 4. Formation and ways of cerebrospinal fluid outflow. The vessels of the brain.	2	Credit
Topic 2. The telencephalon	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Functions of reticular formation. 2. Age features and the structure of reticular formation.	2	Credit
Topic 3. The basal nuclei (nuclei basales)	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Basal nuclei of the terminal brain: striatum, amygdala, internal capsule. 2. The corpus callosum, its structure, fiber composition. 3. The fornix of the brain, the topography of the fornix.	2	Credit
Topic 4. The diencephalon. The midbrain	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Thalamic region, hypothalamus, their nuclei. 2. The middle brain, its departments.	2	Credit

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	3.The structure of the roof, tires and base of the midbrain. 4. The nucleus and the pathways of the midbrain.		
Topic 5.The metencephalon (metencephalon)	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Bridge, its surfaces, cores and paths. 2. Cerebellum, its shape, surfaces, divisions, nuclei of the cerebellum. The legs of the cerebellum.	2	Credit
Topic 6.The medulla oblongata.The fourth ventricle	<b>Study of literature</b> <b>Questions on the topic:</b> 1. The medulla oblongata, its surfaces, nuclei and pathways. 2. The fourth ventricle, its vascular base, messages.	2	Credit
Topic 7.The system of the brain ventricles. Intermeningeal spaces of the brain and the spinal cord	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Choroid plexus of the lateral ventricle of the brain. 2. Spider shell tanks. 3. Ways outflow of cerebrospinal fluid.	2	Credit
Topic 8.The rhomboid fossa	<b>Study of literature</b> <b>Questions on the topic:</b> 1. The projection of the nuclei of the cranial nerves on the rhomboid fossa. 2. Topography of white and gray matter in the frontal, horizontal and sagittal sections of the brain substance.	2	Credit
Topic 9. Upward tracts of the brain and spinal cord (1)	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Anatomical and functional classification of the pathways of the nervous system. 2. Associative and commissural pathways. 3. Ascending projection tracts of the nervous system.	2	Credit
Topic 10. Downward tracts of the brain and spinal cord (2)	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Descending projection (downward) tracts of the nervous system (pyramidal). 2. Subcortical and cortical centers, functions.	2	Credit
Topic 11. Downward tracts of the brain and spinal cord (3)	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Descending projection (downward) tracts of nervous system (extrapyramidal). 2. Subcortical and cortical centers, functions.	2	Credit
<b>Section 2. PERIPHERAL NERVOUS SYSTEM</b>			

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Topic 12. I- IV pars of the cranial nerves.	<b>Study of literature</b> <b>Questions on the topic:</b> 1. The features of development, nucleus, the topography of the canals and openings of the skull, branches, innervation area 1-4 pairs of cranial nerves. 2. Features of the functional anatomy of 1,2 pairs of cranial nerves.	2	Credit
Topic 13. V- VII pars of the cranial nerves.	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Autonomic ganglions, their relations with trigeminal nerve. 2. Pterygopalatine ganglion, otic ganglion, sublingual ganglion, submandibular ganglion, their biding with branches of trigeminal nerve	2	Credit
Topic 14. VIII- XII the cranial nerves.	<b>Study of literature</b> <b>Questions on the topic:</b> 1. The features of development, nucleus, the topography of the canals and openings of the skull. 2. Its branches, innervation area 8-12 pairs of cranial nerves.	2	Credit
<b>Section 3. ESTHESIOLOGY</b>			
Topic 15. Functional anatomy of organ of vision	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Filo and ontogenesis of the organ of vision. 2. Age features of the organ of vision. 3. Anomalies of the development of the eye cloud.	2	Credit
Topic 16. Functional anatomy of organ of hearing and balance	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Development and age characteristics of vestibule-cochlear organ. 2. Anomalies of the development of the cochlear organ.	2	Credit
Topic 17. The organ of smell. The organ of taste.	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Filo and ontogenesis of organs of smell and taste. 2. Anomalies of the development of this organs.	2	Credit
Topic 18. The skin (cutis)	<b>Study of literature</b> <b>Questions on the topic:</b> 1. Nerves and blood vessels of the skin. 2. Ectoderm and neuroderm. 3. Derivatives of the skin. 4. Structure and functions of the mammary gland.	2	Credit
<b>Total for the III term</b>	<b>36 hours</b>		

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## 11. EDUCATIONAL-METHODICAL AND INFORMATION SUPPORT OF DISCIPLINE

### a) The list of recommended literature

#### Main literature:

1. Sapin M. R. Textbook of human anatomy = Анатомия человека : for medical students : учебное пособие для студентов медицинских вузов (на англ. яз.) : in 2 vol. Vol. 2 / M. R. Sapin, L. L. Kolesnikov, D. B. Nikitjuk; ed. by M. R. Sapin. - 2nd ed. - Moscow : New Wave, 2020. - 480 с. : ил. - ISBN 978-5-7864-0211-8 (кн. 2) (в пер.). - ISBN 978-5-7864-0209-5 : 2150.00.
2. Uddin, Lucina Q. Insula : Neuroanatomy, Functions and Clinical Disorders/ Uddin, Lucina Q..- New York : Nova Science Publishers, Inc. 2014.- Series: Neuroscience Research Progress.- ISBN 9781631171758.-  
<http://search.ebscohost.com/login.aspx?direct=true&db=e600xww&AN=714784&site=ehost-live>
3. Boezaart, André P. The Anatomical Foundations of Regional Anesthesia and Acute Pain Medicine Macroanatomy Microanatomy Sonoanatomy Functional Anatomy/Boezaart, André P..- Sharjah, UAE : Bentham Science Publishers. 2016.- ISBN: 9781681081922.-  
<http://search.ebscohost.com/login.aspx?direct=true&db=e600xww&AN=1227586&site=ehost-live>

#### Additional literature:

1. [Seiden, David, Lachman, Ernest, Corbett, Siobhan A.](#) Lachman's Case Studies in Anatomy/[Seiden, David, Lachman, Ernest, Corbett, Siobhan A.](#).- Ed.: 5th ed. rev. by David Seiden and Siobhan A. Corbett. New York : Oxford University Press. 2013.-ISBN: 9780199846085.-  
<http://search.ebscohost.com/login.aspx?direct=true&db=e600xww&AN=644737&site=ehost-live>
2. Borden, Neil M, Forseen, Scott E. Imaging Anatomy of the Human Brain : A Comprehensive Atlas Including Adjacent Structures/Borden, Neil M, Forseen, Scott E..- New York : Demos Medical. 2016.-ISBN: 9781936287741.-  
<http://search.ebscohost.com/login.aspx?direct=true&db=e600xww&AN=1081584&site=ehost-live>
3. Forseen, Scott E., Borden, Neil M. Imaging Anatomy of the Human Spine : A Comprehensive Atlas Including Adjacent Structures/Forseen, Scott E., Borden, Neil M..- New York : Demos Medical. 2016.- ISBN: 9781936287826.-  
<http://search.ebscohost.com/login.aspx?direct=true&db=e600xww&AN=1109463&site=ehost-live>

#### Educational-methodical reading

1. Neuroanatomy : methodological recommendations for students (Specialty 31.05.01 «General medicine») / Zerkalova Yu. F. , M. V. Vorotnikova, Ю. Ф. **Зеркалова**; Ulyanovsk State University, Institute of Medicine, Ecology and Physical culture. - Ulyanovsk : ULSU, 2019. - Текст на англ. яз.; Загл. с экрана. - Электрон. текстовые дан. (1 файл : 380 КБ). - Текст : электронный.  
<http://lib.ulsu.ru/MegaPro/Download/MObject/2888>
2. Methodological recommendations for self-study work of students on discipline "Neuroanatomy" : Specialty - 31.05.01 "General medicine". Form of study: intramural / developers: J.F. Zerkalova, M.V. Vorotnikova ; Ulyanovsk State University, Faculty of Medicine, Department of

Ministry of Science and Higher Education of the Russian Federation Ulyanovsk State University	Form	
F - Working program on discipline « Neuroanatomy »		

Human Anatomy. - Ulyanovsk : UISU, 2019. - Загл. с экрана; Неопубликованный ресурс. - Электрон. текстовые дан. (1 файл : 198 Кб). - Текст : электронный.  
<http://lib.ulsu.ru/MegaPro/Download/MObject/1835>

**AGREED:**

*И. Бибешотсарова* / *И. Бибешотсарова* / *И. Бибешотсарова* / *2020*  
 Position of scientific library employee      full name      signature      date

**b) Software:**

Information infrastructure of the department includes web-page on the official website of the University, its own computer lab for testing students at 8 workplaces, personal computers, the current generation (equipped with every job faculty, staff and graduate students), multimedia lecture complex (2 stationary and portable), all computers, without exception, are in the local network of university and have access to the Internet, printers, copiers, computer hardware. 100% of lectures in the field of medical faculty provided multimedia presentations, including animations and video clips. The training process uses more than 30 electronic textbooks and open Internet resources, including the use of on-line mode during practical classes and lectures, a DVD-videos on certain sections of the subjects taught, the department organized base of electronic textbooks and atlases with your network access to the local network of educational building of the medical Faculty.

**c) Professional databases, information and reference systems:**

**1. Digital Library System:**

1.1. IPRbooks : электронно-библиотечная система : сайт / группа компаний Ай Пи Ар Медиа. - Саратов, [2020]. – URL: <http://www.iprbookshop.ru>. – Режим доступа: для зарегистрир. пользователей. - Текст : электронный.

1.2. ЮРАЙТ : электронно-библиотечная система : сайт / ООО Электронное издательство ЮРАЙТ. – Москва, [2020]. - URL: <https://www.biblio-online.ru>. – Режим доступа: для зарегистрир. пользователей. - Текст : электронный.

1.3. Консультант студента : электронно-библиотечная система : сайт / ООО Политехресурс. – Москва, [2020]. – URL: [http://www.studentlibrary.ru/catalogue/switch\\_kit/x2019-128.html](http://www.studentlibrary.ru/catalogue/switch_kit/x2019-128.html). – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.4. Лань : электронно-библиотечная система : сайт / ООО ЭБС Лань. – Санкт-Петербург, [2020]. – URL: <https://e.lanbook.com>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.5. Znanium.com : электронно-библиотечная система : сайт / ООО Знаниум. - Москва, [2020]. - URL: <http://znanium.com>. – Режим доступа : для зарегистрир. пользователей. - Текст : электронный.

1.6. Clinical Collection : коллекция для медицинских университетов, клиник, медицинских библиотек // EBSCOhost : [портал]. – URL: <http://web.a.ebscohost.com/ehost/search/advanced?vid=1&sid=e3ddfb99-a1a7-46dd-a6eb-2185f3e0876a%40sessionmgr4008>. – Режим доступа : для авториз. пользователей. – Текст : электронный.

**2. КонсультантПлюс** [Электронный ресурс]: справочная правовая система. /ООО «Консультант Плюс» - Электрон. дан. - Москва : КонсультантПлюс, [2020].

**3. Базы данных периодических изданий:**

3.1. База данных периодических изданий : электронные журналы / ООО ИВИС. - Москва, [2020]. – URL: <https://dlib.eastview.com/browse/udb/12>. – Режим доступа : для авториз. пользователей. – Текст : электронный.



Ministry of Science and Higher Education of the Russian Federation Ulyanovsk State University	Form	
F - Working program on discipline « Neuroanatomy »		

The rooms for independent work are equipped with computer equipment with the ability to connect to the Internet and provide access to an electronic educational information environment, an electronic library system.

**The list of equipment used in the educational process:**

1. Multimedia projector - 1 pc.
2. Screen - 1 pc.
3. Speakers - 1 pc.
4. Laptop - 1 pc.
5. Epson printer - 3 pcs.
6. Angioneurological drug of the child
7. Set of educational anatomical exhibits
8. Human Myological Drug
9. Natural preparations of bones and joints
10. Anatomical posters on myology and splanchnology
11. Natural preparations of internal organs

**13. SPECIAL CONDITIONS FOR STUDYING WITH DISABILITIES**

Education for BPEP HE students with disabilities is carried out taking into account the peculiarities of psychophysical development, individual empowerment and health status of the students. Education of students with disabilities can be arranged as a shared with other students, as well as separately. If necessary, students from the number of persons with disabilities (at the request of the student) can offer some of the following information perception options tailored to their individual psycho-physical features:

- for the visually impaired: in printed form in large print; in the form of an electronic document; in the form of an audio file (translation of educational materials in audio format); in printed form in Braille; individual consultations involving tactile interpreter; individual tasks and advice.
- for persons with hearing impairments: in printed form; in the form of an electronic document; videos with subtitles; individual counseling with the involvement of a sign language interpreter; individual tasks and advice.
- for people with disorders of the musculoskeletal system: in printed form; in the form of an electronic document; in the form of an audio file; individual tasks and advice. "

If it is necessary to use partially / exclusively distance educational technologies in the educational process, the organization of teaching staff work with students with disabilities and disabled people is provided in the electronic information and educational environment, taking into account their individual psychophysical characteristics.

**Разработчики:**

\_\_\_\_\_ /  / \_\_\_\_\_ /  
 Доцент / подпись / Зеркалова Ю.Ф. /  
 Должность / ФИО

\_\_\_\_\_ /  / \_\_\_\_\_ /  
 Доцент / подпись / Воротникова М.В. /  
 Должность / ФИО

**Согласовано:**

\_\_\_\_\_ /  / \_\_\_\_\_ /  
 Зав. кафедрой / подпись / Воротникова М.В. /  
 Должность / ФИО

**REVISION SHEET**  
**to the working program « Neuroanatomy » 2020**  
**speciality 31.05.01 General medicine**

<b>No</b>	<b>Content of the change or link to the attached text of the change</b>	<b>Head of the department, implementing the discipline</b>	<b>Signature</b>	<b>Date</b>
1.	Amendments to sub-item a) "List of recommended literature" item 11 "Educational-methodological and information support of the discipline" with the design of Supplement 1	Vorotnikova M.V.		31.08.2021
2.	Amendments to sub-item c) "Professional databases, information and reference systems" item 11 "Educational-methodological and information support of the discipline" with the design of Supplement 2	Vorotnikova M.V.		31.08.2021

## 11. EDUCATIONAL-METHODICAL AND INFORMATION SUPPORT OF DISCIPLINE

### a) List of recommended literature:

#### Main literature:

1. Sapin M. R. Textbook of human anatomy = Анатомия человека : for medical students : учебное пособие для студентов медицинских вузов (на англ. яз.) : in 2 vol. Vol. 2 / M. R. Sapin, L. L. Kolesnikov, D. B. Nikitjuk; ed. by M. R. Sapin. - 2nd ed. - Moscow : New Wave, 2020. - 480 с. : ил. - ISBN 978-5-7864-0211-8 (кн. 2) (в пер.). - ISBN 978-5-7864-0209-5 : 2150.00.
2. Uddin, Lucina Q. Insula : Neuroanatomy, Functions and Clinical Disorders/ Uddin, Lucina Q.- New York : Nova Science Publishers, Inc. 2014.- Series: Neuroscience Research Progress- ISBN 978163.1171758.-  
<http://search.ebscohost.com/login.aspx?direct=true&db=e600xww&AN=714784&site=ehost-live>

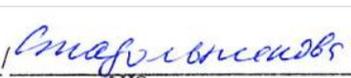
#### Additional literature:

1. Seiden, David, Lachman, Ernest, Corbett, Siobhan A. Lachman's Case Studies in Anatomy/Seiden, David, Lachman, Ernest, Corbett, Siobhan A.- Ed.: 5th ed. rev. by David Seiden and Siobhan A. Corbett. New York : Oxford University Press. 2013.-ISBN: 9780199846085.-  
<http://search.ebscohost.com/login.aspx?direct=true&db=e600xww&AN=644737&site=ehost-live>
2. Borden, Neil M, Forseen, Scott E. Imaging Anatomy of the Human Brain : A Comprehensive Atlas Including Adjacent Structures/Borden, Neil M, Forseen, Scott E.- New York : Demos Medical. 2016.-ISBN: 9781936287741.-  
<http://search.ebscohost.com/login.aspx?direct=true&db=e600xww&AN=1081584&site=ehost-live>
3. Forseen, Scott E., Borden, Neil M. Imaging Anatomy of the Human Spine : A Comprehensive Atlas Including Adjacent Structures/Forseen, Scott E., Borden, Neil M.- New York : Demos Medical. 2016.- ISBN: 9781936287826.-  
<http://search.ebscohost.com/login.aspx?direct=true&db=e600xww&AN=1109463&site=ehost-live>

#### Educational-methodical reading

1. Neuroanatomy : methodological recommendations for students (Specialty 31.05.01 «General medicine») / Zerkalova Yu. F. , M. V. Vorotnikova, Ю. Ф. Зеркалова; Ulyanovsk State University, Institute of Medicine, Ecology and Physical culture. - Ulyanovsk : ULSU, 2019. - Текст на англ. яз.; Загл. с экрана. - Электрон. текстовые дан. (1 файл : 380 КБ). - Текст : электронный.  
<http://lib.ulsu.ru/MegaPro/Download/MObject/2888>
2. Methodological recommendations for self- study work of students on discipline «Neuroanatomy» : Specialty - 31.05.01 "General medicine". Form of study: intramural / J. F. Zerkalova, M. V. Vorotnikova; Ulyanovsk State University, Faculty of Medicine, Department of Human Anatomy. - Ulyanovsk : ULSU, 2021. - 12 p. - Неопубликованный ресурс. - URL: <http://lib.ulsu.ru/MegaPro/Download/MObject/10615> . - Режим доступа: ЭБС УлГУ. - Текст : электронный.

#### AGREED:



Должность сотрудника научной библиотеки \_\_\_\_\_ ФИО \_\_\_\_\_ подпись \_\_\_\_\_ дата \_\_\_\_\_

## 11. EDUCATIONAL-METHODICAL AND INFORMATION SUPPORT OF DISCIPLINE

### с) Professional databases, information and reference systems:

#### 1. Digital Library System:

1.1. IPRbooks : электронно-библиотечная система : сайт / группа компаний Ай Пи Ар Медиа. - Саратов, [2021]. – URL: <http://www.iprbookshop.ru>. – Режим доступа: для зарегистрир. пользователей. - Текст : электронный.

1.2. ЮРАЙТ : электронно-библиотечная система : сайт / ООО Электронное издательство ЮРАЙТ. – Москва, [2021]. - URL: <https://urait.ru>. – Режим доступа: для зарегистрир. пользователей. - Текст : электронный.

1.3. Консультант студента : электронно-библиотечная система : сайт / ООО Политехресурс. – Москва, [2021]. – URL: <https://www.studentlibrary.ru/cgi-bin/mb4x>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.4. Консультант врача : электронно-библиотечная система : сайт / ООО Высшая школа организации и управления здравоохранением-Комплексный медицинский консалтинг. – Москва, [2021]. – URL: <https://www.rosmedlib.ru>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.5. Большая медицинская библиотека : электронно-библиотечная система : сайт / ООО Букап. – Томск, [2021]. – URL: <https://www.books-up.ru/ru/library/>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.6. Лань : электронно-библиотечная система : сайт / ООО ЭБС Лань. – Санкт-Петербург, [2021]. – URL: <https://e.lanbook.com>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.7. Znanium.com : электронно-библиотечная система : сайт / ООО Знаниум. - Москва, [2021]. - URL: <http://znanium.com>. – Режим доступа : для зарегистрир. пользователей. - Текст : электронный.

1.8. Clinical Collection : коллекция для медицинских университетов, клиник, медицинских библиотек // EBSCOhost : [портал]. – URL: <http://web.b.ebscohost.com/ehost/search/advanced?vid=1&sid=9f57a3e1-1191-414b-8763-e97828f9f7e1%40sessionmgr102>. – Режим доступа : для авториз. пользователей. – Текст : электронный.

1.9. Русский язык как иностранный : электронно-образовательный ресурс для иностранных студентов : сайт / ООО Компания «Ай Пи Ар Медиа». – Саратов, [2021]. – URL: <https://ros-edu.ru>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

2. **КонсультантПлюс** [Электронный ресурс]: справочная правовая система. /ООО «Консультант Плюс» - Электрон. дан. - Москва : КонсультантПлюс, [2021].

#### 3. Базы данных периодических изданий:

3.1. База данных периодических изданий : электронные журналы / ООО ИВИС. - Москва, [2021]. – URL: <https://dlib.eastview.com/browse/udb/12>. – Режим доступа : для авториз. пользователей. – Текст : электронный.

3.2. eLIBRARY.RU: научная электронная библиотека : сайт / ООО Научная Электронная Библиотека. – Москва, [2021]. – URL: <http://elibrary.ru>. – Режим доступа : для авториз. пользователей. – Текст : электронный

3.3. «Grebennikon» : электронная библиотека / ИД Гребенников. – Москва, [2021]. – URL: <https://id2.action-media.ru/Personal/Products>. – Режим доступа : для авториз. пользователей. – Текст : электронный.

**4. Национальная электронная библиотека** : электронная библиотека : федеральная государственная информационная система : сайт / Министерство культуры РФ ; РГБ. – Москва, [2021]. – URL: <https://нэб.пф>. – Режим доступа : для пользователей научной библиотеки. – Текст : электронный.

**5. SMART Imagebase** // EBSCOhost : [портал]. – URL: <https://ebSCO.smartimagebase.com/?TOKEN=EBSCO-1a2ff8c55aa76d8229047223a7d6dc9c&custid=s6895741>. – Режим доступа : для авториз. пользователей. – Изображение : электронные.

**6. Федеральные информационно-образовательные порталы:**

6.1. [Единое окно доступа к образовательным ресурсам](http://window.edu.ru/) : федеральный портал / учредитель ФГАОУ ДПО ЦРГОП и ИТ. – URL: <http://window.edu.ru/>. – Текст : электронный.

6.2. [Российское образование](http://www.edu.ru/) : федеральный портал / учредитель ФГАОУ ДПО ЦРГОП и ИТ. – URL: [http://www.edu.ru.](http://www.edu.ru/) – Текст : электронный.

**7. Образовательные ресурсы УлГУ:**

7.1. Электронная библиотека УлГУ : модуль АБИС Мега-ПРО / ООО «Дата Экспресс». – URL: <http://lib.ulsu.ru/MegaPro/Web>. – Режим доступа : для пользователей научной библиотеки. – Текст : электронный.

**AGREED:**

зам. зам. зам. зам. / Ключкова НВ / 1/1/2021  
Position of information technology Department employee    full name    signature    date