


Ministry of science and high education RF Ulyanovsk State University	Form	
F-Educational plan of the discipline		

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

18.05.2022 Record No. 9/239

Chairman Midlenko V.I.

(Signature, Name)

18 » May 2022.

EDUCATIONAL PLAN

Discipline	Neurologists, medical genetics, neurosurgery
Faculty	Medical faculty of T.Z. Biktimirov
Name of department	Department of neurology, neurosurgery and medical rehabilitation
Course	4 course

Direction (specialty) 31.05.01 General medicine

the code of the direction (specialty), full name

Orientation (profile/specialty) not provided

Form of training full-time full name

full-time, part-time, part-time (specify only those that are being implemented)


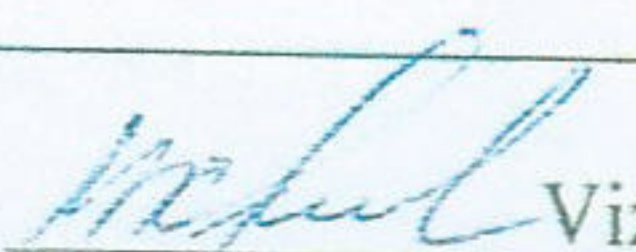
Date of introduction into the academic process at Ulyanovsk State University


« 1 » 09 2022

Revised at the Department meeting, Record No. 11 of 24 « May » 20 23  
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 Revised at the Department meeting, Record No. \_\_\_\_\_ of \_\_\_\_\_ « \_\_\_\_\_ » 20 \_\_\_\_

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Agreed	Agreed
Head of the department of neurology, neurosurgery and medical rehabilitation developing discipline	Head of the graduating Department
 /Mashin V.V./ Signature Full name « 12 » 2022 г.	 Vize-Khripunova M.A. / Signature Full name « 12 » 2022 г.

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## 1. GOALS AND OBJECTIVES OF DEVELOPMENT OF DISCIPLINE:

### *Goals of the discipline:*

-Students obtain knowledge about the etiology, pathogenesis, clinic, diagnosis, treatment, prevention of major diseases of the nervous system, the formation of the basics of clinical neurological thinking among students, the ability to diagnose major neurological diseases, conduct their emergency therapy, organize care for neurological patients and to carry out the prevention of nervous system diseases .

### *Objectives:*

1. To give the students the latest knowledge on the etiology, pathogenesis, clinical, diagnosis , treatment and prevention of major diseases of the nervous system.
2. Establish a student clinical neurological thinking, ability to self-diagnose the most common neurological diseases, conduct urgent treatment of neurological conditions and the prevention of nervous system diseases.

## 2. PLACE OF THE COURSE IN THE CURRICULUM:


2.1 Discipline " Neurology, medical genetics, neurosurgery " is included in the basic part of the structure of the educational program 31.05.01. «General medicine». professional cycles. The total complexity is 7 SET (252 academic hours).

2.2. To study this discipline are necessary

To study this discipline, the student must master such disciplines from the group of humanitarian and socio-economic disciplines as "Psychology and pedagogy of medical practice", "Clinical psychology", from the groups of "natural scientific and clinical disciplines" such as "Pharmacology", "Pathological anatomy ", " General Surgery ", " Ward Nurse Assistant "and" Procedural Nurse Assistant ", " Internal Medicine Propedeutics "and" Immunology ".


Simultaneously with the discipline, such subjects as "Dentistry", "Dermatovenerology", "Obstetrics and Gynecology", "Endocrinology", "Faculty Therapy", "Ophthalmology", "Otorhinolaryngology", "Faculty Surgery" are studied.

This discipline is essential and lays the foundation for such disciplines as "Psychiatry, medical psychology", "Hospital therapy", "Infectious diseases", "Polyclinic therapy", "Hospital surgery, pediatric surgery", "Anesthesiology, resuscitation and intensive care", "Phthisiology", "Clinical Pharmacology", "Oncology, Radiation Therapy", "Modern Aspects of Neurology", "Clinical Psychology", "Diagnostics and Treatment of Extrapulmonary Tuberculosis", "Palliative Medicine", "Pediatrics", "Occupational Diseases", " Traumatology, Orthopedics ", " Radiation Diagnostics ", " Fundamentals of Functional and Laboratory Diagnostics ", " Modern Aspects of Neurology ", " Topical Issues of Obstetrics and Gynecology ", " Clinical Psychology ", " Modern Aspects of Oncology ", " Urology, Andrology ", " Diagnostics and treatment of extrapulmonary tuberculosis ", " Surgical gastroenterology and endoscopy ", " Clinical electrocardiography ", " Actual problems of HIV infection ", " Modern problems of miscarriage ", " Diabetology and emergency endocrinology ", " Preparation for passing and passing the state exam ", " Clinical practice (Assistant to a hospital doctor) ", " Practice for obtaining professional skills and professional experience (Assistant doctor of an outpatient clinic) ".

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### 3. LIST OF PLANNED RESULTS OF TRAINING IN THE DISCIPLINE «NEUROLOGY, MEDICAL GENETICS, NEUROSURGERY» RELATED TO THE PLANNED RESULTS OF DEVELOPMENT OF THE BASIC EDUCATIONAL PROGRAM

Code and name of competency	List of planned learning outcomes by discipline (module), correlated with indicators of achievement of competencies
OPK-8 Able to implement and monitor the effectiveness of the patient's medical rehabilitation, including in the implementation of individual rehabilitation and rehabilitation programs for the disabled, to assess the patient's ability to carry out labor activities	<p>Know: population health indicators, factors shaping human health (environmental, professional, climatic, endemic, social, epidemiological, psycho-emotional, diseases associated with the adverse effects of climatic and social factors; the basics of preventive medicine, the organization of preventive measures aimed at strengthening the health of the population; methods of sanitary and educational work; etiology, pathogenesis and preventive measures for the most common diseases; modern classification of diseases; clinical picture, characteristics of the course and possible complications of the most common diseases occurring in a typical form in different age groups; diagnostic methods, diagnostic the possibilities of methods of direct research of a patient of a therapeutic, surgical and infectious profile, modern methods of clinical, laboratory instrumental examination of patients (including endo scopic, radiological methods, ultrasound diagnostics); methods of treatment and indications for their use; the mechanism of the therapeutic action of physiotherapy exercises and physiotherapy, indications and contraindications to their appointment, the peculiarities of their implementation; diagnostic significance of morphogenetic variants of diseases; congenital anomalies; professional, genetic).</p> <p>Be able to: to plan, analyze and evaluate the quality of medical care, the state of health of the population and the influence of environmental and working environment factors on it; to participate in the organization and provision of treatment and prophylactic and sanitary and anti-epidemic assistance to the population, taking into account its social and professional (including professional sports) and age and sex structures; carry out preventive, hygienic and anti-epidemic measures; determine the patient's status: collect anamnesis, interview the patient and / or his relatives, conduct a physical examination of the patient (examination, palpation, auscultation, blood pressure measurement, determination of the properties of the arterial pulse, etc.); assess the patient's condition in order to make a decision on the need to provide him with medical care;</p> <p>Own: public health assessments; methods of general clinical examination; interpretation of the results of laboratory, instrumental diagnostic methods; correct maintenance of medical records; an algorithm for a detailed clinical diagnosis; an algorithm for making a preliminary diagnosis with the subsequent referral of the patient to the appropriate specialist doctor</p>
PK-2	Know The main complaints and data from the analysis of the patient's

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Readiness to collect and analyze patient complaints, medical history, examination results, laboratory, instrumental, pathological and anatomical and other studies in order to recognize the state or establish the presence or absence of a disease	<p>history, the mechanism of the onset of clinical neurological symptoms and the principles of their grouping into clinical syndromes, the clinical picture, course features and possible complications of the most common diseases of the nervous system.</p> <p>To be able to: Identify and justify neurological syndromes, taking into account the identified clinical symptoms and knowledge of the mechanisms of their development. To choose and use in professional activity the possibilities of various methods of clinical and immunological examination and assessment of the functional state of the body for timely diagnosis of neurological disease.</p> <p>Own: Methods of general clinical examination (interrogation, collection of objective and subjective information) in order to diagnose the main clinical neurological syndromes, with diseases of the nervous system</p>
<b>PK-3</b> Readiness to manage and treat patients with various nosological forms on an outpatient basis and in a day hospital	<p>Know: The principles of management and treatment of patients with various nosological forms in an outpatient day hospital.</p> <p>Be able to: To diagnose and treat patients with various nosological forms on an outpatient basis and in a day hospital, according to the standards of diagnosis and treatment based on the principles of evidence-based medicine</p> <p>Own: The tactics of managing patients with various nosological forms on an outpatient basis and in a day hospital, taking into account the standards of diagnosis and treatment</p>

#### 4. TOTAL labor intensity of discipline

4.1. The amount of discipline in credit units (total) 7 3E

#### 4.2. The volume of discipline by type of educational work (in hours) - 252 hours

Type of study	Total according to plan	Including by semester	
		Semester number 7	Semester number 8
1	2	3	4
Contact work of students with teachers	144	72	72
Auditory lessons:			
Lectures	36	18	18
practical and seminar classes	108	54	54
laboratory work (laboratory and practical workshop)			
Independent work	72	54	18
Current control (quantity and type: cont. Work, colloques and mind, abstract)		Quiz, test control, tasks, medical history	Quiz, test control, tasks, medical history


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Course work	no		
Types intermediate certification (exam, offset)	exam		exam (36h)
Total hours for discipline	216(+36h exam)	126	90


**4.3. The content of the discipline " Neurology, medical genetics, neurosurgery ".  
Distribution of hours by topics and types of academic work:**

Form of study \_\_\_\_\_ full-time \_\_\_\_\_

Title of sections and topics	Total	Types of Training					Current knowledge control form
		Auditory lessons		interactives classes		Independent work	
		Lectures	Practical classes, seminars	Laboratory work, practical work	Interactive work		
1	2	3	4	5	6	7	
<b>Section 1. General Neurology</b>							
The subject and history of clinical neurology. The principles of the structure and function of the nervous system. Research methods of the nervous system. The construction of a topical diagnosis in neurology.	5	1	2			2	
Movements and their disorders. Symptoms of a lesion of the cortex-muscular tract at different levels. Central and peripheral paresis.	7	1	4			2	
Extrapyramidal system and its disorders	5		3			2	
Coordination of movements and its disorders.	5		3			2	
Sensitivity and its disorders. Types of sensitivity disorders. Central and peripheral pain mechanisms.	12	2	6			4	
Syndromes of damage to the spinal cord, its roots and	10		6			4	

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peripheral nerves..							
Syndromes of damage to the brain stem and cranial nerves.	18		12			6	
Autonomic nervous system and autonomic disorders. Neurogenic dysfunctions of the pelvic organs.	10	2	6			2	
Symptoms of damage to individual lobes of the brain.	9	2	3			4	
Brain membrane, cerebrospinal fluid, cerebral ventricles. Meningeal and hypertensive syndromes. Hydrocephalus.	9	2	3			4	
<b>TOTAL</b>	<b>90</b>	<b>10</b>	<b>48</b>			<b>32</b>	
<b>Section 2. Clinical Neurology</b>							
Acute cerebrovascular accident. Encephalopathy. Vascular dementia. Neurological disorders in the elderly and senile.	14	4	6			4	
Diseases of the peripheral nervous system and vertebrogenic neurological disorders	12	4	6			4	
Demyelinating diseases of the nervous system. Multiple sclerosis.	12	2	6			4	
Infectious diseases of the nervous system.	12	2	6			4	
Paroxysmal disorders of consciousness (epilepsy and syncope).	12	2	6			4	
Neurosis.	7	2	3			2	
Vegetative dystonia. Headaches and facial pains.	7	2	3			2	
<b>TOTAL</b>	<b>78</b>	<b>18</b>	<b>36</b>			<b>24</b>	
<b>Section 3. Medical Genetics</b>							
Fundamentals of medical genetics. The methodology of genetic research in the clinic of nervous diseases.	6	1	3			2	
Hereditary cerebellar and spinal ataxia. Hereditary diseases with damage to the extrapyramidal system. Neuromuscular disease.	6	1	3			2	
<b>TOTAL</b>	<b>12</b>	<b>2</b>	<b>6</b>			<b>4</b>	
<b>Section 4. Neurosurgery</b>							

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Traumatic lesions of the nervous system	12	2	6			4	
Tumors of the brain.	12	2	6			4	
Hydrocephalus	12	2	6			4	
TOTAL	36	6	18			12	
Total	252 (exam ( 36h)	36	108			72	

## 5. DISCIPLINE CONTENT

### Section 1. GENERAL NEUROLOGY.

**Topic 1.** The subject and history of clinical neurology. The principles of the structure and function of the nervous system. Research methods of the nervous system. The construction of a topical diagnosis in neurology.

The goals and objectives of the study of clinical neurology. Clinical neurology is part of neuroscience. General and private neurology.

History of Neurology. The formation of neurology as a medical specialty. Moscow, St. Petersburg, Kazan schools of neurology. AND I. Kozhevnikov and V.M. Bekhterev - the founders of national neurology.

Anatomical and physiological characteristics of the central and peripheral nervous system. Age-related characteristics of the nervous system. Neuron, neuroglia, synapse: structure, functional significance, role in norm and pathology. Axon waiting mechanism, axoplasmic current. The blood-brain barrier. The main parts of the nervous system: cerebral hemispheres (cortex and white matter, subcortical ganglia), diencephalon, brain stem, cerebellum, reticular formation, limbic system of the brain, spinal cord, roots, plexuses, peripheral nerves, autonomic nervous system.


Methodology for constructing a neurological diagnosis: topical and nosological diagnoses.

**Topic 2.** Movements and their disorders. Symptoms of a lesion of the cortex-muscular tract at different levels. Central and peripheral paresis.

Modern ideas about the organization of arbitrary movement. Cortical-muscular pathway: structure, functional significance. Central (upper) and peripheral (lower) motor neurons. Corticospinal tract: its functional significance for the organization of voluntary movements.

Reflex arc: structure and functioning. Levels of reflex closure in the spinal cord and brain stem, significance in topical diagnosis. Superficial and deep reflexes, the main pathological reflexes, protective spinal reflexes. Regulation of muscle tone: spinal reflex arch, gamma system. Suprasegmental levels of regulation of muscle tone. Study of muscle tone. Neuropathophysiological basis for changes in physiological reflexes, pathological pyramidal reflexes, spasticity.

Central and peripheral paresis: changes in muscle tone and reflexes, trophic muscles. Clinical features of the lesion of the cortical muscle at different levels: the brain (precentral gyrus, radiant crown, inner capsule, brain stem), spinal cord (lateral cord, anterior horn), anterior root, plexus, peripheral nerve, neuromuscular synapse, muscle. Paraclinical research methods: electromyography, electroneuromyography (study of the speed of conduction along the motor fibers

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of peripheral nerves), magnetic stimulation with the determination of motor potentials, study of the level of serum phosphine kinase, muscle and nerve biopsy.

**Topic 3.** Extrapyramidal system and symptoms of its defeat.

The structure and main connections of the extrapyramidal system, the role in the organization of movements; participation in the organization of movements by providing posture, muscle tone and stereotyped automated movements. Neurophysiological and neurochemical mechanisms of regulation of the extrapyramidal system, the main neurotransmitters: dopamine, acetylcholine, gamma-aminobutyric acid.

Hypokinesia (oligo- and bradykinesia), rigidity and muscle hypotonia. Hyperkinesia: tremor, muscular dystonia, chorea, tics, hemiballism, athetosis, myoclonus. Hypotonic-hyperkinetic and hypertonic-hypokinetic syndromes. Neuropathophysiology of extrapyramidal motor disorders, methods of pharmacological correction.

**Topic 4.** Coordination of movements and its disorders.

The content of the topic. Anatomical and physiological data: cerebellum and vestibular system anatomy and physiology, afferent and efferent connections, role in the organization of movements. Clinical research methods of coordination of movements.

Symptoms and syndromes of cerebellar damage: ataxia, dysinergy, nystagmus, dysarthria, muscle hypotension.

Ataxia cerebellar, vestibular, frontal, sensitive. Pathophysiology and pharmacological correction methods.

**Topic 5.** Sensitivity and its disorders. Types and types of sensitivity disorders. Central and peripheral mechanisms of pain.

Sensitivity: exteroceptive, proprioceptive, interoceptive, complex species. Afferent systems of somatic sensitivity and their structure: receptors, pathways. Anatomy and physiology of conductors of superficial and deep sensitivity. Epicritic and protopathic sensitivity.

Types of disorders of sensitivity: hypo- and hyperesthesia, paresthesia and pain, dysesthesia, hyperpathy, allodynia, causalgia. Types of sensitivity disorders: peripheral, segmental, conductor, cortical. Dissociated Sensory Disorder.

Neuropathophysiological, neurochemical and psychological aspects of pain. Antinociceptive system. Acute and chronic pain. Central pain. "Reflected" pain.

**Topic 6.** Syndromes of damage to the spinal cord, its roots and peripheral nerves.

Spinal cord and peripheral nervous system: anatomy and physiology.

Sensitive and motor disorders in lesions of the cervical, thoracic, lumbar and sacral segments of the spinal cord, anterior and posterior roots, plexuses, peripheral nerves. Brown syndrome - Secara. Syringomyelitis syndrome.

Paraclinical research methods - MRI and CT of the spine, electroneuromyography (the study of the speed of movement along the motor and sensory fibers of the peripheral nerves, the study of the H-reflex and P-wave, magnetic stimulation with motor potentials).

**Topic 7.** Syndromes of damage to the brain stem and cranial nerves.


The structure of the brain stem (medulla oblongata, bridge and midbrain).

Cranial nerves: anatomical and physiological data, clinical research methods and symptoms of damage.

I pair - olfactory nerve and olfactory system; symptoms and syndromes of the lesion.

II pair - the optic nerve and the visual system, signs of damage to the visual system at different levels (retina, optic nerve, cross, optic tract, optic tubercle, visual radiance, cortex).



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Neuroophthalmological and paraclinical methods for studying the visual system (fundus examination, visual evoked potentials).

III, IV, VI pairs - oculomotor, block, abducent nerves and oculomotor system; symptoms of lesion; medial longitudinal bundle and internuclear ophthalmoplegia; gaze regulation, cortical and stem paresis of the gaze; oculocephalic reflex; pupillary reflex and signs of its defeat; types and causes of anisocoria; Argyle Robertson syndrome, Adie syndrome.

V pair - trigeminal nerve, syndromes of sensitivity disorders (peripheral, nuclear, stem and hemispheric); chewing disorders.

VII pair - facial nerve, central and peripheral paresis of facial muscles, clinic of facial nerve damage at different levels. Taste and its disorders.

VIII pair - the vestibulo-cochlear nerve, the auditory and vestibular systems; the role of the vestibular apparatus in the regulation of coordination of movements, balance and posture; signs of damage at different levels; nystagmus, vestibular dizziness, vestibular ataxia, Meniere's syndrome. Otoneurological methods for studying vestibular function.

IX and X pairs - glossopharyngeal and vagus nerves, autonomic functions of the vagus nerve; signs of damage at different levels, tabloid and pseudobulbar syndromes.

XI pair - accessory nerve, signs of damage.

XII pair - hyoid nerve, signs of damage; Central and peripheral paresis of the muscles of the tongue. Syndromes of damage to the brain stem at various levels, alternating syndromes.

**Topic 8.** Autonomic nervous system and autonomic disorders. Neurogenic dysfunctions of the pelvic organs. Symptoms of damage to individual lobes of the brain.

The content of the topic. The structure and functions of the autonomic (autonomous) nervous system: sympathetic and parasympathetic systems; peripheral (segmental) and central parts of the autonomic nervous system.

Limbic-hypothalamic-reticular complex. Symptoms and syndromes of damage to the peripheral autonomic nervous system: peripheral autonomic failure, Raynaud's syndrome.

Physiology of voluntary bladder function control. Neurogenic bladder, retention and urinary incontinence, peremptory urination. Signs of central and peripheral dysfunction of the bladder.

Instrumental and drug correction of peripheral vegetative disorders and neurogenic bladder.

**Topic 9.** Lobes of the brain. Higher brain functions and their disorders: aphasia, apraxia, amnesia, agnosia, dementia.


**Topic 10.** Brain membrane, cerebrospinal fluid, cerebral ventricles. Meningeal and hypertensive syndromes. Hydrocephalus.

The structure and function of the membranes of the spinal cord and brain. Cerebrospinal fluid: functional value, formation, circulation, reabsorption. Meningeal syndrome: manifestations, diagnosis. The study of cerebrospinal fluid: lumbar puncture, pressure measurement, Kveckenstedt test, the composition of cerebrospinal fluid is normal and in the main pathological conditions, protein-cell and cell-protein dissociation.

Hypertension syndrome: the main clinical and paraclinical signs. Dislocation syndrome. Hydrocephalus is congenital and acquired, open and occlusal, medical tactics. Drug correction of intracranial hypertension.

## Section 2. CLINICAL NEUROLOGY

**Topic 1.** Acute cerebrovascular accident. Encephalopathy. Vascular dementia. Neurological disorders in the elderly and senile.

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Blood supply to the brain: anatomy and physiology. Classification of vascular diseases of the brain. Etiology of vascular diseases of the brain. Pathophysiology of cerebral circulation during blockage of cerebral arteries and arterial hypertension. Transient cerebrovascular accident (transient ischemic attack) and ischemic stroke: etiology, pathogenesis, clinic, diagnosis, treatment. Brain hemorrhage: etiology, pathogenesis, clinical features, diagnosis, therapy and indications for surgical treatment. Subarachnoidal non-traumatic hemorrhage: etiology, pathogenesis, clinic, diagnosis, therapy and indications for surgical treatment. Paraclinical methods for the diagnosis of acute cerebrovascular accidents - CT and MRI, ultrasound dopplerography, ultrasound duplex and triplex scanning, transcranial dopplerography, angiography. Rehabilitation of stroke patients.

Discirculatory encephalopathy: etiology, pathogenesis, clinical forms, diagnosis, treatment and prevention. Hypertensive crisis and hypertensive encephalopathy. Vascular dementia; pathogenesis, clinic, diagnostics (neuropsychological research, neuro-imaging research methods), prevention; differential diagnosis with Alzheimer's disease.

Blood supply to the spinal cord. Disorders of spinal circulation.

Changes in the nervous system in the elderly and senile. Features of treatment and examination of neurogeriatric patients. Syndrome of falls.

**Topic 2.** Diseases of the peripheral nervous system. Vertebrogenic neurological disorders and other musculoskeletal disorders.

Classification of diseases of the peripheral nervous system. Mononeuropathies and polyneuropathies: etiology, pathogenesis, clinic, diagnosis, treatment. Neuropathy of the median, ulnar, radial, fibular, tibial nerves. Tunnel syndromes, conservative therapy and indications for surgical treatment. Syndrome carpal canal, cubital canal. Polyneuropathies in case of somatic diseases (diabetes, uremia, liver failure, diffuse diseases of connective tissue, vasculitis, etc.), infectious and parainfective, alcoholic, hereditary (hereditary somatosensory and autonomic, amyloid, porphyria, etc.), acute inflammatory demyelinating. Facial neuropathy: clinic, diagnosis, treatment. Trigeminal neuralgia: clinic, diagnosis, treatment.

Lumbar ischialgia and cervicobrachialgia. Myofascial syndrome. Fibromyalgia. Clinic and pathogenetic treatment. Indications for surgical treatment.

Differential diagnosis for pain in the back and limbs: epidural abscess, primary and metastatic spinal tumors, dishormonal spondylopathy, tuberculous spondylitis, reflected pain in diseases of internal organs, ankylosing spondylitis.

Paraclinical methods in the diagnosis of back pain: spondylography, CT and MRI of the spine.

**Topic 3.** Demyelinating diseases of the nervous system. Multiple sclerosis.

Multiple sclerosis: pathogenesis, clinical features, diagnosis, types of course. Paraclinical research methods in the diagnosis of multiple sclerosis: MRI of the brain and spinal cord, the study of evoked potentials of the brain, liquor studies. Treatment.

Acute disseminated encephalomyelitis: clinic, diagnosis, treatment.

**Topic 4.** Infectious diseases of the nervous system.

Encephalitis: classification, etiology, clinic, diagnosis, treatment.


Herpetic encephalitis. Tick-borne encephalitis. Parainfective encephalitis with measles, chickenpox, rubella. Rheumatic lesions of the nervous system, small chorea.

Meningitis: classification, etiology, clinic, diagnosis, treatment.

Primary and secondary purulent meningitis: meningococcal, pneumococcal, caused by hemophilic bacillus. Serous meningitis: tuberculous and viral meningitis.

Poliomyelitis, features of the modern course of poliomyelitis, polio-like diseases.

Shingles (herpes). Diphtheria polyneuropathy. Botulism. Neurosyphilis. Damage to the nervous system in AIDS.

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Paraclinical methods in the diagnosis of infectious, nervous system diseases: cerebrospinal and serological studies, CT and MRI of the head.

**Topic 5.** Paroxysmal disorders of consciousness (epilepsy and fainting).

Classification of epilepsy and epileptic seizures. Etiology and pathogenesis of epilepsy and epileptic syndrome. The treatment of epilepsy. Epileptic status: clinic, pathogenesis, treatment.

Neurogenic syncope - classification, pathogenesis, diagnosis, treatment, prevention.

Paraclinical methods in the diagnosis of paroxysmal disorders of consciousness - electroencephalography, CT and MRI of the head.

**Topic 6.** Neurosis. Occupational diseases.

Neurosis: etiology, pathogenesis, classification, clinic, diagnosis, treatment.

Metabolic disorders and intoxication of the nervous system.

Pathogenesis and clinic of the main occupational diseases of the nervous system, metabolic disorders and intoxications.

Vibratory disease. Cesonic disease. Neurological complications of poisoning with mercury, lead, manganese, carbon dioxide, arsenic. Damage to the nervous system by high-frequency currents.

**Topic 7.** Vegetative dystonia. Headaches and facial pains.

Vegetative dystonia, autonomic crisis (panic attack): etiology, pathogenesis, clinical features, diagnosis.

Classification of headaches. Pathogenesis of headache. Examination of patients with headache.

Migraine: classification, pathogenesis, clinical forms, course, diagnosis. Treatment of a migraine attack. Prevention of migraine attacks.

Beam head disease: clinic, diagnosis, treatment.

Headache of tension: pathogenesis, diagnosis, treatment.

Trigeminal neuralgia: clinic, treatment. Facial sympathy. Facial myofascial syndromes.

Temporomandibular joint dysfunction syndrome.

### Section 3. MEDICAL GENETICS

**Topic 1-2.** Human genome. The role of DNA and RNA in the transmission of hereditary information. The main diagnostic methods for hereditary diseases. Monogenic hereditary diseases. Diseases with a hereditary predisposition (multifactorial diseases). Hereditary cerebellar and spinal ataxia. Hereditary diseases with a primary lesion of the extrapyramidal system and other hereditary-degenerative diseases of the nervous system. Neuromuscular disease.

The principles of classification of hereditary diseases with damage to the cerebellum and / or spinal cord.

Cerebellar ataxia: classification, etiology, clinical manifestations, diagnosis, differential diagnosis, the main directions of treatment.


Spinal ataxia: classification, etiology, mechanisms of spinal cord damage, clinical manifestations, diagnosis, differential diagnosis, main directions of treatment.

Spinal spastic paraplegia: classification, etiology, mechanisms of damage to the substance of the spinal cord, clinical manifestations, diagnosis, differential diagnosis, the main directions of treatment and prevention.

Hereditary diseases with a primary lesion of the extrapyramidal system and other hereditary-degenerative diseases of the nervous system.

The principles of classification of hereditary diseases with damage to the extrapyramidal system.

Parkinson's disease and Parkinson's syndrome: classification, etiology, clinical manifestations,

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diagnosis, differential diagnosis, the main directions of treatment.

Hepatocerebral degeneration: classification, etiology, mechanisms of damage to the subcortical structures, clinical manifestations, diagnosis, differential diagnosis, the main directions of treatment.

Torsion dystonia and spastic torticollis: classification, etiology, clinical manifestations, diagnosis, differential diagnosis, the main directions of treatment and prevention.

Syringomyelia: clinic, diagnosis, treatment.

Alzheimer's disease: clinic, diagnosis, prognosis.

Amyotrophic lateral sclerosis: clinical presentation, diagnosis, prognosis.

Neuromuscular disease.

Classification of neuromuscular diseases.

Progressive muscular dystrophy. Myopathy of Duchenne, Becker, Landusi - Dejerine. Clinic, diagnosis, differential diagnosis, medical and genetic aspects.

Myasthenia gravis: pathogenesis, clinical features, diagnosis, treatment. Myasthenic crisis: causes, clinic, diagnosis, treatment. Cholinergic crisis: causes, clinic, diagnosis, treatment.

Thomsen myotonia and dystrophic myotonia: clinical presentation, diagnosis, prognosis.

Paraclinical methods in the diagnosis of neuromuscular diseases: electromyography, electroneuromyography, muscle biopsy, study of serum creatine phosphokinase, DNA studies.

#### **Section 4. NEUROSURGERY.**

##### **Topic 1.** Cranial and spinal injury.

Classification of closed head injury. Mild, moderate and severe traumatic brain injury. Brain concussion. Bruise of the brain. Intracranial traumatic hematomas. Medical tactics.

The consequences of traumatic brain injury.

Spinal cord injury: pathogenesis, clinical features, diagnosis, medical tactics. Rehabilitation of patients with spinal injury.

**Topic 2.** Tumors of the nervous system. Brain tumors: classification, clinic, diagnosis; sub- and supratentorial tumors, especially the course. Spinal cord tumors: clinic, diagnosis; extra- and intramedullary tumors of the spinal cord. Paraclinical methods. Indications and principles of surgical


##### **Topic 3.** Hydrocephalus

Etiopathogenesis of the development of hydrocephalus. Meninges, cerebrospinal fluid. Meningeal and hypertensive syndromes. Classification of hydrocephalus. Clinical manifestations of hydrocephalus. Modern ideas about the surgical treatment of hydrocephalus in children. Types of surgical treatment of hydrocephalus, indications for surgical treatment. Post-traumatic hydrocephalus. Clinic, diagnosis and treatment. Complications of CSF shunting operations. Catheterization of the lateral ventricles in children of different age groups, ventriculography.

#### **TOPICS OF PRACTICAL LESSONS**

##### **Section 1. GENERAL NEUROLOGY.**

**Topic 1.** The subject and history of clinical neurology. The principles of the structure and function of the nervous system. Research methods of the nervous system. The construction of a topical diagnosis in neurology.

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Questions to the topic:

1. What does neurology study?
2. Who were the founders of domestic neurology?
3. What is a neuron?
4. What classification of neurons do you know (by structure, function, etc.)?
5. What functions does the blood-brain barrier perform?
6. What structures belong to the central and peripheral nervous system?

**Topic 2.** Movements and their disorders. Symptoms of a lesion of the cortex-muscular tract at different levels. Central and peripheral paresis.

Questions to the topic:

1. What is the pyramidal path?
2. What is located in the front horns of the spinal cord?
3. Where is the center of voluntary movement?
4. What are the signs of central and peripheral paresis?
5. What pathological reflexes do you know?
6. What paraclinical research methods are used for paresis and paralysis?

**Topic 3.** Extrapyramidal system and symptoms of its defeat.

Questions to the topic:

1. What functions does the extrapyramidal system perform?
2. What applies to striatal and pallidar systems?
3. What do you know the main neurotransmitters of the extrapyramidal system?
4. What is hypertonic-hypotonic cider?
5. What occurs when the striatal system is affected?
6. What are the main methods of pharmacological correction of extrapyramidal motor disorders?

**Topic 4.** Coordination of movements and its disorders.


Questions to the topic:

1. What systems perform the function of maintaining coordination of movements?
2. What are the main pathways that connect the cerebellum to the cortex?
3. What is the anatomical structure of the cerebellum, the center of coordination of movements?
4. What are the methods of research of coordination of movements?
5. What types of ataxia do you know?
6. What diseases cause coordinative disorders?

**Topic 5.** Sensitivity and its disorders. Types and types of sensitivity disorders. Central and peripheral pain mechanisms.

Questions to the topic:

1. What types of sensitivity do you know depending on the location of the receptors?
2. What do afferent systems of somatic sensitivity include? What is the structure of receptors?
3. Where are 1,2,3 neurons of conductors of surface and deep sensitivity located?
4. What are the differences between epicritical and protopathic sensitivity?
5. What types of sensory disorders are there?
6. Describe the peripheral, segmental, wire nicks cortical sensitivity disorder?
7. What is dissociated sensitivity disorder? What is the law of the eccentric arrangement of the long wire nicknames? Its significance in the clinic?
8. What is the law of the eccentric arrangement of the long wire nicknames? Its significance in the clinic?
9. What causes central pain? What are its characteristics?

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10. What is the antinociceptive system?

**Topic 6.** Syndromes of damage to the spinal cord, its roots and peripheral nerves.

Questions to the topic:

What structure does the spinal cord have? How many segments are secreted in the spinal cord?

2. What motor and sensory disturbances will be observed with damage to segments of the spinal cord at different levels, with damage to the anterior and posterior roots, plexuses, peripheral nerves?
3. What are the signs of Brown-Secar syndrome?
4. What type of sensitivity disorder is characteristic for syringomyelia? What are sensitive disorders?
5. What are the non-invasive ways to visualize the spinal cord and brain?

**Topic 7.** Syndromes of damage to the brain stem and cranial nerves.

Questions to the topic:

1. Where are 1,2,3 neurons of the olfactory pathways conditionally located?
2. What are the signs of damage to the visual system at the level of the retina, optic nerve, optic tubercle, visual radiance, cortex?
3. What is the manifestation of the direct and reverse Argyll-Robertson syndrome? What diseases does it occur in?
4. How is sensitivity disturbed in case of damage to the trigeminal nerve at the peripheral, nuclear, stem, and hemispheric levels?
5. What are the differences between central and peripheral paralysis of the facial nerve?
6. What tests are performed to determine the lesion of the sound-conducting and sound-picking parts of the nervous apparatus of the 8th pair? Their technique?
7. What are the similarities and differences between bulbar and pseudobulbar paralysis?
8. What are the signs of defeat of 11th pairs ?
9. What are the differences between the central and Peripheral paresis of the muscles of the tongue?

**Topic 8.** The autonomic nervous system and autonomic disorders. Neurogenic dysfunction of the pelvic organs.


Questions to the topic:

1. What departments does the autonomic nervous system consist of?
2. What are the symptoms and syndromes of damage to the peripheral autonomic nervous system?
3. What does Bernard-Horner syndrome include? What diseases does it occur in?
4. What is Raynaud's syndrome manifested? What diseases does it occur in?
5. What is the innervation of the bladder?
6. What are the signs of central and peripheral dysfunction of the bladder?

**Topic 9.** Lobes of the brain. Higher brain functions and their disorders: aphasia, apraxia, amnesia, agnosia, dementia.

Questions to the topic:

1. What are the basic principles of the structure and function of the cerebral cortex?
2. How important is the functional asymmetry hemispheres of the brain?
3. What are the main higher brain (mental) functions.
4. What are the clinical manifestations of aphasia?
5. What are the clinical manifestations of apraxia?
6. What are the clinical manifestations of agnosia?
7. What are the main syndromes of lesions of the frontal, parietal, temporal and occipital lobes of the brain.
8. How can a violation of the psychomotor and speech development of a child occur?

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**Topic 10.** Brain membrane, cerebrospinal fluid, cerebral ventricles. Meningeal and hypertensive syndromes. Hydrocephalus.

Questions to the topic:

2. What membranes are secreted by the brain and spinal cord?
3. What is the difference between meningism and meningitis?
4. What does meningeal syndrome include?
5. What are the normal levels of cerebrospinal fluid? How is lumbar puncture performed?
6. What is the difference between protein-cell and cell-protein dissociation? When do they meet?
7. What are the signs of hypertension and dislocation syndrome? When do they meet?
8. What is the medical tactic for various types of hydrocephalus?

Section 2. **CLINICAL NEUROLOGY.**

**Topic 1.** Acute cerebrovascular accident. Encephalopathy. Vessels flock of dementia. Neurological disorders in the elderly and senile.

Questions to the topic:

1. What are the two main systems that supply the brain with blood?
2. What is attributed to acute cerebrovascular accident?
3. What is the etiology of cerebrovascular disease?
4. What prevails in the clinical picture with transient ischemic attack?
5. What are the indications for surgical treatment of cerebral hemorrhage?
6. What is the difference between hypertensive crisis and hypertensive encephalopathy?
7. What is the blood supply to the spinal cord?

**Topic 2.** Diseases of the peripheral nervous system. Vertebrogenic neurological disorders and other musculoskeletal disorders.


Questions to the topic:

1. What are the clinical forms of peripheral nervous system damage?
2. What is the clinical picture observed in neuropathy of the median elbow, small of the tibial, peroneal nerve?
3. What are the indications for surgical treatment tunnel syndrome?
4. What is the clinical picture of neuralgia of the facial nerve at different levels of its claim of expressions?
5. What is characterized by pain with trigeminal neuralgia?
6. What is the treatment for acute inflammatory demyelinating sex and neuropathy?
7. What characterizes sciatica and neurological symptoms like cervicobrachialgia of a complication in the in spinal osteochondrosis?
8. What does myofascial syndrome include?
9. What are the indications for surgical treatment of osteochondrosis?
10. What paraclinical diagnostic methods are used for pain in the joint venture and not?

**Topic 3.** Demyelinating diseases of the nervous system.

Questions to the topic:

1. What geographical factors are important in the development of multiple sclerosis?
2. What are the main symptoms can be identified in the clinical picture of sclerosis and neurological examination?
3. How are the functions of the pelvic organs impaired in multiple sclerosis?
4. List the clinical criteria for a diagnosis of Schumacher SCR e Rose?

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5. What are the main MR diagnostic criteria used for d and agnostic and multiple sclerosis?
6. What is the treatment of multiple sclerosis is required in acute and p e mission?

#### **Topic 4. Infectious diseases**

Questions to the topic:

1. What is meningitis and encephalitis?
2. What is related to meningeal syndrome?
3. What types of meningitis do you know?
4. What meningitis is more common in children?
5. What methods for diagnosing infectious diseases of the brain exist?
6. What are the main treatments for meningitis and encephalitis and LTL?

#### **Topic 5. Paroxysmal disorders of consciousness** Questions to the topic:

1. What types of epileptic seizures do you know?
2. What is the difference between epileptic seizures and Jackson's?
3. What is an epistatus?
4. How to distinguish episeizures from neurogenic syncope?
5. What are the main paraclinical methods of research in upset consciousness?
6. What are the main methods of pharmacological correction of epilepsy and and seizures?

#### **Topic 6. Neurosis.**

Questions to the topic:

1. What are the main signs of a neurosis?
2. What is the treatment of neurosis?
3. What are the signs of toxic damage to the nervous system?
4. What is vibration disease?
5. What are the signs of an electric shock?
6. Poisoning what substances can cause neurological complicated ?

#### **Topic 7. Vegetative-vascular dystonia. Headaches and facial pains.**

Questions to the topic:


1. What is vegetative-vascular dystonia?
2. What types of vegetative crises do you know?
3. What types of headaches do you know?
4. What is the difference between migraine and tension headache?
5. What are the features of the treatment of trigeminal neuralgia?
6. What is the temporomandibular joint dysfunction syndrome?

### Section 3 . MEDICAL GENETICS

**Topic1-2. Hereditary cerebellar and spinal ataxia**  
Questions to the topic:

1. The human genome.
2. DNA and RNA role in the transmission of inheritance N hydrochloric information.
3. The main methods for the diagnosis of hereditary diseases. inheritance and generative diseases. Diseases with a hereditary predisposition (multifactorial diseases).
4. Amyotrophic lateral sclerosis: clinical presentation, diagnosis, prognosis.
5. Neuromuscular disease.
6. Classification of neuromuscular diseases.



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7. Progressive muscular dystrophy. Myopathy of Duchenne, Becker, Landusi - Dejerine. Clinic, diagnosis, differential diagnosis, medical and genetic aspects.
8. Myasthenia gravis: pathogenesis, clinical features, diagnosis, treatment. Myasthenic crisis: causes, clinic, diagnosis, treatment. Cholinergic crisis: causes, clinic, diagnosis, treatment.
9. Thomsen myotonia and dystrophic myotonia: clinical presentation, diagnosis, prognosis.

#### Section 4. NEUROSURGERY.

##### **Topic 1.** Cranial and spinal injury.

Questions to the topic:

1. Classification of closed head injury.
2. Light, medium and severe injury. Brain concussion. traumatic hematoma. Medical tactics.
3. The consequences of a traumatic brain injury.
4. Spinal Cord Injury: pathogenesis, clinical features, diagnosis, medical Tactical

##### **Topic 2.** Tumors of the nervous system.

1. Brain tumors: classification, cells and nicknames, diagnosis; sub- and supratentorial tumors, especially the course.
2. Spinal cord tumors: clinic, diagnosis; extra- and intramedullary tumors of the spinal cord. Paraclinical methods. Indications and principles of surgical interventions for tumors of the brain and spinal cord.

##### **Topic 3.** Hydrocephalus.

Questions to the topic:

1. Etiopathogenesis of the development of hydrocephalus
2. Meninges, cerebrospinal fluid. Meningeal and hypertensive syndromes.
3. Classification of hydrocephalus
4. Clinical manifestations of hydrocephalus
5. Modern ideas about the surgical treatment of hydrocephalus in children.
6. Types of surgical treatment of hydrocephalus, indications for surgical treatment.
7. Post-traumatic hydrocephalus. Clinic, diagnosis and treatment.
8. Complications of CSF shunting operations.
9. Catheterization of the lateral ventricles in children of different age groups, ventriculography.

#### **7. LABORATORY WORKS, PRACTICES**

*This type of work is not provided.*


#### **8. SUBJECT OF COURSE, CONTROL WORKS, ABSTRACTS**

*This type of work is not provided.*

#### **9. LIST OF QUESTIONS FOR THE EXAM**


##### **General neurology**

1. The history of neurology. The emergence of neurology as a medical specialty. Moscow, Saint-Petersburg and Kazan schools of neurology. A. Y. Kozhevnikov and V. M. Bekhterev –founders of the national neurology. Medical deontology and ethics.
2. Anatomical and physiological characteristics of the central and peripheral nervous system. Age

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characteristics of the nervous system. Neuron, neuroglia, synapse-structure, functional value, role in norm and pathology. The mechanism of conduction of excitation along the axon, explanationsi current. Hematoencephalic barrier.

3. Voluntary movements and their disorders. The symptoms of lesion of cortical-muscular way at different levels. Central and peripheral paresis. Paraclinic research methods-electromyography, electroneuromyography, magnetic stimulation with the determination of motor potentials, the study of the level of creatine kinase in blood serum, muscle and nerve biopsy.
4. Reflex arc, structure and function. Levels of closure of reflexes in the spinal cord and brain stem, the value in the topical diagnosis.
5. Regulation of muscle tone-spinal reflex arc, gamma system. Suprasegmental levels of regulation of muscle tone. Studies of the muscle tone.
6. Extrapyramidal system, role in the organization of movements. Neurophysiological and neurochemical mechanisms of regulation of the extrapyramidal system, the main neurotransmitters.
7. Semiotics of lesion of extrapyramidal system. Neuropathophysiology of extrapyramidal motor disorders, methods of pharmacological correction.
8. Cerebellum and vestibular system, anatomy and physiology. Semiotics of defeat.
9. Coordination of movements and its disorders, clinical research methods. Types of ataxias-vestibular, frontal, sensitive. Pharmacological methods of correction.
10. Sensitivity-types of sensitivity conducting paths. Types of sensitivity disorders, types of sensitivity disorders.
11. Central and peripheral mechanisms of pain. Acute and chronic pain. The Central pain. Reflected pain. Antinociceptive system. Paraclinic research methods-electroneuromyography, somatosensory evoked potentials.
12. The spinal cord and peripheral nervous system. Anatomy and physiology. Paraclinical research methods: MRI and CT of the spine, electroneuromyography.
13. Semiotics of spinal cord segments damage at different levels, anterior and posterior roots, plexuses, peripheral nerves. Syndrome Brown-Sekara. Syringomyelia syndrome.
14. The structure of the brain stem. Semiotics of his defeat at various levels. Alternating syndromes.
15. 1 pair of cranial nerves and the olfactory system. Semiotics of defeat.
16. 2 pair of cranial nerves and the visual system. Semiotics of defeat at different levels. Neuro-ophthalmologic and laboratory methods of research of the visual system (fundus examination, visual evoked potentials).
17. 3,4,6 pairs of cranial nerves and oculomotor system. Semiotics of defeat. The medial


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longitudinal bundle. The regulation of gaze.


18. 5 pair of cranial nerves. Semiotics of defeat.
19. 7 pair of cranial nerves. Clinic lesions of the facial nerve at various levels. Taste and its disorders.
20. 8 pair cranial nerves, auditory and vestibular systems. Semiotics of defeat. Otoneurological methods of examination of vestibular function.
21. 9.10 pairs of cranial nerves. Semiotics of defeat at various levels. Bulbar and pseudobulbar syndromes.
22. 11 pairs of cranial nerves. Semiotics of defeat.
23. 12 pairs of cranial nerves. Semiotics of defeat at various levels.
24. Structure and functions of the autonomic nervous system.
25. Suprasegmental apparatus of the autonomic nervous system. Semiotics of defeat.
26. Anatomical and physiological basis of the regulation of consciousness, wakefulness, sleep. Forms of consciousness disorders-deafness, SOPOR, coma, akinetic mutism. Disorders of sleep and wakefulness. The principles of therapy.
27. Destructive and metabolic coma. Chronic vegetative state, brain death. Electrophysiological methods – EEG, evoked potentials of the brain. Principles of management of patients in coma.
28. Segmental apparatus of the autonomic nervous system. Semiotics of defeat.
29. Physiology of arbitrary control of bladder functions. Neurogenic bladder, urinary retention and incontinence, imperative urge to urinate. Instrumental and medicinal correction of neurogenic bladder.
30. The lining of the brain. Cerebrospinal fluid. The study of cerebrospinal fluid.
31. Hypertension syndrome. Dislocation syndrome. Hydrocephalus congenital and acquired, open and occlusive, medical tactics.
32. Syndrome lesions of the frontal, parietal, temporal and occipital lobes of the brain.

## **CLINICAL NEUROLOGY**

1. Blood supply of the brain. Semiotics lesions of individual vascular basins.
2. Classification of vascular diseases of the brain. Etiology of vascular diseases of the brain.
3. Classification of vascular diseases of the brain. Acute disorders of cerebral circulation.

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4. Chronic disorders of cerebral circulation. Neuro-visualization methods of research. Vascular dementia. The differential diagnosis of Alzheimer's disease.
5. Basic and differentiated therapy of strokes.
6. Blood supply to the spinal cord. Violations of the spinal circulation.
7. Classification of diseases of the peripheral nervous system. Mononeuropathy and polyneuropathy. Etiology, pathogenesis, clinic, diagnostics, treatment.
8. Neuropathy of the median, ulnar, radial, peroneal, and tibial nerves. Tunnel syndrome, conservative therapy and indications for surgical treatment.
9. Neuropathy of the facial nerve. Trigeminal neuralgia. Clinic, diagnostics, treatment.
10. Vertebrogenic lesions of the nervous system. Classification, etiology, pathogenesis, stages, clinical and pathogenetic forms of neurological manifestations in spinal osteochondrosis. Neurovisualization methods-spondylography, CT, MRI of the spine.
11. Reflex syndromes in vertebrogenic lesions of the nervous system. Pathogenesis, clinic, diagnostics, treatment.
12. Radicular syndromes of vertebrogenic lesions of the nervous system. Pathogenesis, clinic, diagnostics, treatment.
13. Vascular and vascular radicular-spinal syndromes of vertebrogenic lesions of the nervous system. Pathogenesis, clinic, diagnostics, treatment.
14. Infectious diseases of the nervous system. Classification. The diagnostic algorithm.
15. Purulent meningitis-primary and secondary. Etiology, clinic, diagnostics, treatment.
16. Serous meningitis-primary and secondary. Etiology, clinic, diagnostics, treatment.
17. Encephalitis-primary and secondary. Etiology, clinic, diagnostics, treatment.
18. Polio. The features of the modern currents of polio. Polio-like diseases.
19. Damage to the nervous system in diphtheria, botulism. Neurosyphilis. Neurospin.
20. Demyelinating diseases of the nervous system. Myelinopathy, myelinoclastic. Sclerosis. Pathogenesis. Clinic. Diagnostics. Treatment.
21. Laboratory methods in the diagnosis of infectious diseases of the nervous system – liquorologic and serology. CT and MRI of the brain.
22. Epilepsy. Classification of epilepsy and epileptic seizures. Clinic. Diagnostics. Treatment.
23. Epileptic status. Etiology, clinic, diagnostics, treatment.
24. Paraclinical methods in the diagnosis of paroxysmal disorders of consciousness-

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electroencephalography, CT and MRI of the brain.

25. Neuroses. Etiology, pathogenesis, classification, clinic, diagnosis, treatment.
26. Vegetative dystonia. Etiology, pathogenesis, clinic, treatment.
27. Migraine. Beam headache. Tension headache. Ubusuna headache. Etiology, clinic, diagnostics, treatment.
28. Progressive muscular dystrophy. Myopathy Duchenne, Becker, Landouzy-Dejerine. Clinic, diagnostics, differential diagnostics, medico-genetic aspects.
29. Myasthenia. Pathogenesis, clinic, diagnostics, treatment.
30. Myasthenic crisis-causes, clinic, diagnostics, treatment. Cholinergic crisis-causes, clinic, diagnosis, treatment.
31. Thomsen myotonia and dystrophic myotonia –clinic, diagnostics, prognosis.
32. Paraclinic methods in the diagnosis of neuromuscular diseases-electroneuromyography, muscle biopsy, examination of CFC in blood serum, DNA research.
33. Degenerative diseases of the nervous system. Syringomyelia. Etiology, clinic, diagnosis, prognosis.
34. Hereditary diseases of the nervous system with a predominant lesion of the extrapyramidal system. Parkinson's disease and parkinsonism. Small chorea. chorea. Hereditary torsion dystonia. Hepatolenticular degeneration.
35. Hereditary diseases of the nervous system with a predominant lesion of the spinal cord, cerebellum. Family spastic paraplegia. Cerebellar degeneration.
36. Alzheimer. Clinic, diagnosis, prognosis.
37. Amyotrophic lateral sclerosis. Clinic, diagnosis, prognosis.
38. Vibration disease. Decompression sickness. Neurological complications of mercury, lead, manganese, carbon dioxide, arsenic poisoning. Damage to the nervous system with high frequency currents.
39. Changes in the nervous system in elderly and senile age. Peculiarities of examination and treatment of patients neuropediatrics. Fall syndrome.


## 10. INDEPENDENT WORK OF STUDENTS

Form of study            full-time

Title of sections and topics	Type of independent work	Volume	form of
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		in hours	control ( <i>verification of problem solving, abstract, etc.</i> )
The subject and history of clinical neurology. The principles of the structure and function of the nervous system. Research methods of the nervous system. The construction of a topical diagnosis in neurology.	study material	2	Verification of presentation and report
Movements and their disorders. Symptoms of a lesion of the cortic-muscular tract at different levels. Central and peripheral paresis	solution	2	Verification of problem solving
Extrapyramidal symptoms and its disorders	solution	2	Verification of problem solving
Coordination of movements, and its disorders.	solution	2	Verification of problem solving
Sensitivity and its disorders. Types and types of sensitivity disorders. Central and peripheral pain mechanisms.	solution	4	Verification of problem solving
Syndromes of damage to the spinal cord, its roots and peripheral nerves.	solution	4	Verification of problem solving
Syndromes of damage to the brain stem and cranial nerves.	solution	6	Verification of problem solving
Autonomic nervous system and autonomic disorders. Neurogenic dysfunctions of the pelvic organs.	solution	2	Verification of problem solving
Symptoms of damage to individual lobes of the brain.	solution	4	Verification of problem solving
Shells of the brain, cerebral with pineal fluid, gland in the daughter of the brain. Meningeal and hypertensive syndrome. Hydrocephalus.	Solution	4	Verification of problem solving
Acute cerebrovascular accident. Encephalopathy. Vascular dementia. Neurological disorders in the elderly and senile.	Solution	4	Verification of problem solving
Diseases of the peripheral nervous system and vertebrogenic	Solution	4	Verification of problem

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neurological disorders			solving
Demyelinating diseases of the nervous system. Multiple sclerosis.	Solution	4	Verification of problem solving
Infectious diseases of the nervous system.	Solution	4	Verification of problem solving
Paroxysmal disorders of consciousness (epilepsy and syncope).	Solution	4	Verification of problem solving
Neurosis	Solution	2	Verification of problem solving
Vegetative dystonia. Headaches and facial pains.	Solution		Verification of problem solving
Fundamentals of medical genetics. The genetic methodology with investigations in the clinic of nervous system	Solution	2	Verification of problem solving
Hereditary cerebellar of stems and spinal ataxia.	Solution	2	Verification of problem solving
Traumatic lesions of the nervous system	Patient supervision	4	Verification of problem solving
Tumors of the brain and sleep n marrow, peripheral nervous system .	Solution	4	Verification of problem solving
Hydrocephalus	Solution	4	Verification of problem solving
Total		72	

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

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**1. List of recommended literature:**

**Core reading:**

1. Карпов, С. М. Topical diagnosis of diseases of the nervous system Топическая диагностика заболеваний нервной системы : учебник на английском и русском языках / Карпов С. М. , Долгова И. Н. - Москва : ГЭОТАР-Медиа, 2018. - 896 с. - ISBN 978-5-9704-4501-3. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : <https://www.studentlibrary.ru/book/ISBN9785970445013.html>

2. Heinrich Mattle, Marco Mumenthaler. Fundamentals of Neurology : An Illustrated Guide Edition: 2nd edition. Stuttgart : Thieme. 2017. eBook-  
<https://search.ebscohost.com/login.aspx?direct=true&db=e600xww&AN=1447317&site=ehost-live&scope=site>

**Supplementary reading:**

1 Morris Levin. Emergency Neurology Series: What Do I Do Now?. New York : Oxford University Press. 2013. eBook.

<https://search.ebscohost.com/login.aspx?direct=true&db=e600xww&AN=586112&site=ehost-live&scope=site>

2. Task book on the course of basic and medical genetics = Сборник задач по общей и медицинской генетике: учебно-методическое пособие : educational and methodological manual / О. В. Воронкова, И. А. Осихов, А. Г. Семенов и др. - Томск : Издательство СибГМУ, 2022. - 172 с. - Текст : электронный // ЭБС "Букап" : [сайт]. - URL : <https://www.books-up.ru/ru/book/task-book-on-the-course-of-basic-and-medical-genetics-15004984/>

**Educational and methodical literature**

**1. Zolotuhina N. E.**

Methodical instructions for self-independent work of the student at the discipline «Neurology, medical genetics, neurosurgery» for specialty 31.05.01 «General medicine» / N. E. Zolotuhina, E. Y. Kotova, V. V. Mashin; Ulyanovsk State University. - Ulyanovsk : UISU, 2022. - 35 p. - Неопубликованный ресурс; На англ. яз. - URL: <http://lib.ulsu.ru/MegaPro/Download/MObject/12890>. - Режим доступа: ЭБС УлГУ. - Текст : электронный.


**2. Zolotuhina N. E.**


Methodical instructions for the student at the discipline «Neurology, medical genetics, neurosurgery» for specialty 31.05.01 «General medicine» / N. E. Zolotuhina, E. Y. Kotova, V. V. Mashin; Ulyanovsk State University. - Ulyanovsk : UISU, 2022. - 21 p. - Неопубликованный ресурс; На англ. яз. - URL: <http://lib.ulsu.ru/MegaPro/Download/MObject/12889>. - Режим доступа: ЭБС УлГУ. - Текст : электронный.

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*Профессиональные базы данных, информационно-справочные системы*

**1. Электронно-библиотечные системы:**

1.1. Цифровой образовательный ресурс IPRsmart : электронно-библиотечная система : сайт / ООО Компания «Ай Пи Ар Медиа». - Саратов, [2022]. – URL: <https://www.iprbookshop.ru>. – Режим доступа: для зарегистрир. пользователей. - Текст : электронный.

1.2. Образовательная платформа ЮРАЙТ : образовательный ресурс, электронная библиотека : сайт / ООО Электронное издательство ЮРАЙТ. – Москва, [2022]. - URL: <https://urait.ru>. – Режим доступа: для зарегистрир. пользователей. - Текст : электронный.

1.3. Консультант врача. Электронная медицинская библиотека : база данных : сайт / ООО Высшая школа организации и управления здравоохранением-Комплексный медицинский консалтинг. – Москва, [2022]. – URL: <https://www.rosmedlib.ru>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.4. Большая медицинская библиотека : электронно-библиотечная система : сайт / ООО Букап. – Томск, [2022]. – URL: <https://www.books-up.ru/ru/library/>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.5. ЭБС Лань : электронно-библиотечная система : сайт / ООО ЭБС Лань. – Санкт-Петербург, [2022]. – URL: <https://e.lanbook.com>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.6. ЭБС Znanium.com : электронно-библиотечная система : сайт / ООО Знаниум. - Москва, [2022]. - URL: <http://znanium.com> . – Режим доступа : для зарегистрир. пользователей. - Текст : электронный.

1.7. Clinical Collection : научно-информационная база данных EBSCO // 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.

1.8. База данных «Русский как иностранный» : электронно-образовательный ресурс для иностранных студентов : сайт / ООО Компания «Ай Пи Ар Медиа». – Саратов, [2022]. – 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, [2022].

**3. Базы данных периодических изданий:**


3.1. База данных периодических изданий EastView : электронные журналы / ООО ИВИС. - Москва, [2022]. – 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, [2022]. – URL: <http://elibrary.ru>. – Режим доступа : для авториз. пользователей. – Текст : электронный

3.3. Электронная библиотека «Издательского дома «Гребенников» (Grebinnikon) : электронная библиотека / ООО ИД Гребенников. – Москва, [2022]. – URL: <https://id2.action-media.ru/Personal/Products>. – Режим доступа : для авториз. пользователей. – Текст : электронный.

**4. Федеральная государственная информационная система «Национальная электронная библиотека»** : электронная библиотека : сайт / ФГБУ РГБ. – Москва, [2022]. – URL: <https://нэб.рф>. – Режим доступа : для пользователей научной библиотеки. – Текст : электронный.

**5. SMART Imagebase** : научно-информационная база данных EBSCO // EBSCOhost : [портал]. – URL: <https://ebSCO.smartimagebase.com/?TOKEN=EBSCO>

Ministry of science and high education RF Ulyanovsk State University	Form	
F-Educational plan of the dicipline		

Ministry of science and high education RF Ulyanovsk State University	Form	
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**6. Федеральные информационно-образовательные порталы:**

6.1. Единое окно доступа к образовательным ресурсам : федеральный портал . – URL: <http://window.edu.ru/> . – Текст : электронный.

6.2. Российское образование : федеральный портал / учредитель ФГАУ «ФИЦТО». – URL: <http://www.edu.ru>. – Текст : электронный.

**7. Образовательные ресурсы УлГУ:**


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

Согласовано:

*Э.И.Иванов*  
Должность сотрудника УИТИГ

*И.К.Кочуров*  
ФИО

*И.К.Кочуров* 19.04.22  
подпись дата

Ministry of science and high education RF Ulyanovsk State University	Form	
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## **12. MATERIAL AND TECHNICAL SUPPORT OF DISCIPLINE:**

The material and technical support of this discipline is indicated:

### **1. The list of premises necessary for conducting classroom studies**

1. Audiences with couches and chairs - 4.
2. An audience equipped with simulation technology - a simulation center.
3. Model for demonstrating lumbar puncture.


### **2. The list of equipment necessary for conducting classroom training**

1. The multimedia complex - 1.
2. Personal computer - 3.
3. Sets of tables for various sections of the discipline.
4. Neurological hammers -20 pcs.
5. Tuning fork - 2 pcs.

## **13. SPECIAL CONDITIONS FOR STUDENTS WITH DISABLED HEALTH OPPORTUNITIES**

Training students with disabilities is carried out taking into account the peculiarities of psychophysical development, individual capabilities and health of such students. Education of students with disabilities can be organized in conjunction with other students, and separately. If necessary, students from among persons with disabilities (at the request of the student) may be offered one of the following options for the perception of information, taking into account their individual psychophysical characteristics:

- for persons with visual impairment: in printed form in large print; in the form of an electronic document; in the form of an audio file (translation of educational materials into audio format); in printed form in Braille; individual consultations with the involvement of a tiflosurdoperevodchika; individual tasks and consultations.
- for persons with hearing impairment: in printed form; in the form of an electronic document; video materials with subtitles; individual consultations with the assistance of a sign language interpreter; individual tasks and consultations.
- for persons with musculoskeletal disorders: in printed form; in the form of an electronic document; in the form of an audio file; individual tasks and consultations."

Ministry of science and high education RF Ulyanovsk State University	Form	
F-Educational plan of the dicipline		

Developer

\_\_\_ Head of the department \_\_\_ / \_\_\_ Mashin V.V. \_\_\_ / \_\_\_  
The position of the worker Full name signature

\_\_\_ Associate professor \_\_\_ / \_\_\_ Zolotukhina N.E. \_\_\_ / \_\_\_  
The position of the worker Full name signature

\_\_\_ Associate professor \_\_\_ / \_\_\_ Kotova T.V. \_\_\_ / \_\_\_  
The position of the worker Full name signature

## LIST OF CHANGES of

**Educational plan of discipline " Neurology, medical genetics, neurosurgery "**

**Speciality 31.05.01. <<General medicine>>**

№	Content of the change or a link to the attached text	Full name of the head of the Department developing the discipline	Signature	Date
1	Introduction of changes to item C) Professional databases, information and reference systems item II "Educational, methodological and information support of the discipline" with the design of Appendix 1 Introduction of	Mashin Victor Vladimirovich		23 April 2023
2	Introduction of changes to item A) Recommended Literature item II "Educational, methodological and information support of the discipline" with the design of Appendix 2	Mashin Victor Vladimirovich		23 April 2023

## Неврология, медицинская генетика, нейрохирургия

### 1. List of recommended literature:

#### Core reading:

1. Карпов, С. М. Topical diagnosis of diseases of the nervous system Топическая диагностика заболеваний нервной системы : учебник на английском и русском языках / Карпов С. М. , Долгова И. Н. - Москва : ГЭОТАР-Медиа, 2018. - 896 с. - ISBN 978-5-9704-4501-3. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : <https://www.studentlibrary.ru/book/ISBN9785970445013.html>

2 Кулеш С. Д. Neurology and neurosurgery = Неврология и нейрохирургия : Manual for the Faculty of Foreign Students (English medium) / С. Д. Кулеш, С. В. Тименова, А. И. Довнар. - Гродно : ГрГМУ, 2022. - 444 с. - ISBN 9789855957301. - Текст : электронный // ЭБС "Букап" : [сайт]. - URL : <https://www.books-up.ru/ru/book/neurology-and-neurosurgery-15913029/>

3. Gusev, E.I. Neurology and neurosurgery. Vol. 1. Neurology : textbook : in 2 vol. / E.I. Gusev, A.N. Konovalov, V.I. Skvortsova. - Москва : ГЭОТАР-Медиа, 2023. - 560 с. - ISBN 978-5-9704-7371-9. - Электронная версия доступна на сайте ЭБС "Консультант студента" : [сайт]. URL: <https://www.studentlibrary.ru/book/ISBN9785970473719.html>

#### Supplementary reading:

##### 1 Zolotuhina N. E.

Methodical instructions for the student at the discipline «Neurology, medical genetics, neurosurgery» for specialty 31.05.01 «General medicine» / N. E. Zolotuhina, E. Y. Kotova, V. V. Mashin; Ulyanovsk State University. - Ulyanovsk : UISU, 2022. - 21 p. -

Неопубликованный ресурс; На англ. яз. - URL:

<http://lib.ulsu.ru/MegaPro/Download/MObject/12889>. - Режим доступа: ЭБС УлГУ. - Текст : электронный.

2. Task book on the course of basic and medical genetics = Сборник задач по общей и медицинской генетике: учебно-методическое пособие : educational and methodological manual / О. В. Воронкова, И. А. Осихов, А. Г. Семенов и др. - Томск : Издательство СибГМУ, 2022. - 172 с. - Текст : электронный // ЭБС "Букап" : [сайт]. - URL : <https://www.books-up.ru/ru/book/task-book-on-the-course-of-basic-and-medical-genetics-15004984/>

#### Educational and methodical literature

##### 1. Zolotuhina N. E.

Methodical instructions for self-independent work of the student at the discipline «Neurology, medical genetics, neurosurgery» for specialty 31.05.01 «General medicine» / N. E. Zolotuhina, E. Y. Kotova, V. V. Mashin; Ulyanovsk State University. - Ulyanovsk : UISU, 2022. - 35 p. -

Неопубликованный ресурс; На англ. яз. - URL:

<http://lib.ulsu.ru/MegaPro/Download/MObject/12890>. - Режим доступа: ЭБС УлГУ. - Текст : электронный.

AGREED: \_\_Leading specialist /

*Стедельникова Анастасия* 10.05.2023

The position of the worker scientific library Full name signature date

**1. Электронно-библиотечные системы:**

1.1. Цифровой образовательный ресурс IPRsmart : электронно-библиотечная система : сайт / ООО Компания «Ай Пи Ар Медиа». - Саратов, [2023]. – URL: <http://www.iprbookshop.ru>. – Режим доступа: для зарегистрир. пользователей. - Текст : электронный.

1.2. Образовательная платформа ЮРАЙТ : образовательный ресурс, электронная библиотека : сайт / ООО Электронное издательство «ЮРАЙТ». – Москва, [2023]. - URL: <https://urait.ru>. – Режим доступа: для зарегистрир. пользователей. - Текст : электронный.

1.3. База данных «Электронная библиотека технического ВУЗа (ЭБС «Консультант студента») : электронно-библиотечная система : сайт / ООО «Политехресурс». – Москва, [2023]. – URL: <https://www.studentlibrary.ru/cgi-bin/mb4x>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.4. Консультант врача. Электронная медицинская библиотека : база данных : сайт / ООО «Высшая школа организации и управления здравоохранением-Комплексный медицинский консалтинг». – Москва, [2023]. – URL: <https://www.rosmedlib.ru>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.5. Большая медицинская библиотека : электронно-библиотечная система : сайт / ООО «Букап». – Томск, [2023]. – URL: <https://www.books-up.ru/ru/library/>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.6. ЭБС Лань : электронно-библиотечная система : сайт / ООО ЭБС «Лань». – Санкт-Петербург, [2023]. – URL: <https://e.lanbook.com>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.7. ЭБС Znanium.com : электронно-библиотечная система : сайт / ООО «Знаниум». - Москва, [2023]. - URL: <http://znanium.com>. – Режим доступа : для зарегистрир. пользователей. - Текст : электронный.

**2. КонсультантПлюс** [Электронный ресурс]: справочная правовая система. / ООО «Консультант Плюс» - Электрон. дан. - Москва : КонсультантПлюс, [2023].

**3. Базы данных периодических изданий:**

3.1. eLIBRARY.RU: научная электронная библиотека : сайт / ООО «Научная Электронная Библиотека». – Москва, [2023]. – URL: <http://elibrary.ru>. – Режим доступа : для авториз. пользователей. – Текст : электронный

3.2. Электронная библиотека «Издательского дома «Гребенников» (Grebinnikon) : электронная библиотека / ООО ИД «Гребенников». – Москва, [2023]. – URL: <https://id2.action-media.ru/Personal/Products>. – Режим доступа : для авториз. пользователей. – Текст : электронный.

**4. Федеральная государственная информационная система «Национальная электронная библиотека»** : электронная библиотека : сайт / ФГБУ РГБ. – Москва, [2023]. – URL: <https://нэб.рф>. – Режим доступа : для пользователей научной библиотеки. – Текст : электронный.

**5. Российское образование** : федеральный портал / учредитель ФГАУ «ФИЦТО». – URL: <http://www.edu.ru>. – Текст : электронный.

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

APPROVED:

  
Должность сотрудника УИТИТ

Ф.И.О.

  
Подпись


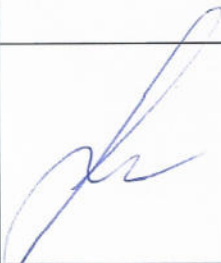
Дата

15.05.2023

LIST OF CHANGES of

Educational plan of discipline ” ” Neurology, medical genetics, neurosurgery””

Speciality 31.05.01. «General medicine»

№	Content of the change or a link to the attached text of the	Full name of the head of the Department developing the discipline	Signature	Date
1	Introduction of changes to item C) Professional databases, information and reference systems item 11 "Educational, methodological and information support of the discipline" with the design of Appendix 1	Mashin Victor Vladimirovich		15.06. 2024
2	Introduction of changes to item A) Recommended Literature item 11 "Educational, methodological and information support of the discipline" with the design of Appendix 2	Mashin Victor Vladimirovich		15.06. 2024



## Неврология, медицинская генетика, нейрохирургия

### 1. List of recommended literature:

#### Core reading:

1. Карпов, С. М. Topical diagnosis of diseases of the nervous system Топическая диагностика заболеваний нервной системы : учебник на английском и русском языках / Карпов С. М. , Долгова И. Н. - Москва : ГЭОТАР-Медиа, 2018. - 896 с. - ISBN 978-5-9704-4501-3. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : <https://www.studentlibrary.ru/book/ISBN9785970445013.html>

2 Кулеш С. Д. Neurology and neurosurgery = Неврология и нейрохирургия : Manual for the Faculty of Foreign Students (English medium) / С. Д. Кулеш, С. В. Тименова, А. И. Довнар. - Гродно : ГрГМУ, 2022. - 444 с. - ISBN 9789855957301. - Текст : электронный // ЭБС "Букап" : [сайт]. - URL : <https://www.books-up.ru/ru/book/neurology-and-neurosurgery-15913029/>

3. Gusev, E.I. Neurology and neurosurgery. Vol. 1. Neurology : textbook : in 2 vol. / E.I. Gusev, A.N. Konovalov, V.I. Skvortsova. - Москва : ГЭОТАР-Медиа, 2023. - 560 с. - ISBN 978-5-9704-7371-9. - Электронная версия доступна на сайте ЭБС "Консультант студента" : [сайт]. URL: <https://www.studentlibrary.ru/book/ISBN9785970473719.html>

#### Supplementary reading:

##### 1 Zolotuhina N. E.

Methodical instructions for the student at the discipline «Neurology, medical genetics, neurosurgery» for specialty 31.05.01 «General medicine» / N. E. Zolotuhina, E. Y. Kotova, V. V. Mashin; Ulyanovsk State University. - Ulyanovsk : UISU, 2022. - 21 p. -

Неопубликованный ресурс; На англ. яз. - URL:

<http://lib.ulsu.ru/MegaPro/Download/MObject/12889>. - Режим доступа: ЭБС УлГУ. - Текст : электронный.

2. Task book on the course of basic and medical genetics = Сборник задач по общей и медицинской генетике: учебно-методическое пособие : educational and methodological manual / О. В. Воронкова, И. А. Осихов, А. Г. Семенов и др. - Томск : Издательство СибГМУ, 2022. - 172 с. - Текст : электронный // ЭБС "Букап" : [сайт]. - URL : <https://www.books-up.ru/ru/book/task-book-on-the-course-of-basic-and-medical-genetics-15004984/>

#### Educational and methodical literature

##### 1. Zolotuhina N. E.

Methodical instructions for self-independent work of the student at the discipline «Neurology, medical genetics, neurosurgery» for specialty 31.05.01 «General medicine» / N. E. Zolotuhina, E. Y. Kotova, V. V. Mashin; Ulyanovsk State University. - Ulyanovsk : UISU, 2022. - 35 p. -

Неопубликованный ресурс; На англ. яз. - URL:

<http://lib.ulsu.ru/MegaPro/Download/MObject/12890>. - Режим доступа: ЭБС УлГУ. - Текст : электронный.

AGREED:

Leading specialist

Стадольникова/



2024

The position of the worker scientific library

Full name

signature

date

**1. Электронно-библиотечные системы:**

1.1. Цифровой образовательный ресурс IPRsmart : электронно-библиотечная система : сайт / ООО Компания «Ай Пи Ар Медиа». - Саратов, [2024]. – URL: <http://www.iprbookshop.ru>. – Режим доступа: для зарегистрир. пользователей. - Текст : электронный.

1.2. Образовательная платформа ЮРАЙТ : образовательный ресурс, электронная библиотека : сайт / ООО Электронное издательство «ЮРАЙТ». – Москва, [2024]. - URL: <https://urait.ru> . – Режим доступа: для зарегистрир. пользователей. - Текст : электронный.

1.3. База данных «Электронная библиотека технического ВУЗа (ЭБС «Консультант студента») : электронно-библиотечная система : сайт / ООО «Политехресурс». – Москва, [2024]. – URL: <https://www.studentlibrary.ru/cgi-bin/mb4x>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.4. Консультант врача. Электронная медицинская библиотека : база данных : сайт / ООО «Высшая школа организации и управления здравоохранением-Комплексный медицинский консалтинг». – Москва, [2024]. – URL: <https://www.rosmedlib.ru>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.5. Большая медицинская библиотека : электронно-библиотечная система : сайт / ООО «Букап». – Томск, [2024]. – URL: <https://www.books-up.ru/ru/library/> . – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.6. ЭБС Лань : электронно-библиотечная система : сайт / ООО ЭБС «Лань». – Санкт-Петербург, [2024]. – URL: <https://e.lanbook.com>. – Режим доступа: для зарегистрир. пользователей. – Текст : электронный.

1.7. ЭБС Znanium.com : электронно-библиотечная система : сайт / ООО «Знаниум». - Москва, [2024]. - URL: <http://znanium.com> . – Режим доступа: для зарегистрир. пользователей. - Текст : электронный.

**2. КонсультантПлюс** [Электронный ресурс]: справочная правовая система. / ООО «Консультант Плюс» - Электрон. дан. - Москва : КонсультантПлюс, [2024].

**3. eLIBRARY.RU**: научная электронная библиотека : сайт / ООО «Научная Электронная Библиотека». – Москва, [2024]. – URL: <http://elibrary.ru>. – Режим доступа : для авториз. пользователей. – Текст : электронный

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