AGREED
Vice-Rector for Academic Affairs,

_____N.V. Loskutova

April 17, 2025

Decision of the CCMC
April 17, 2025

Protocol No. 7

APPROVED
by decision of the Academic Council of the FSBEI HE Amur State Medical Academy of the Ministry of Health of the Russian Federation
April 22, 2025

Protocol No. 15

Acting Rector of the FSBEI HE Amur State Medical Academy of the Ministry of Health of the Russian Federation

_____I.V. Zhukovets

April 22, 2025

ДОКУМЕНТ ПОДПИСАН
ЭЛЕКТРОННОЙ ПОДПИСЬЮ

Сертификат: 50AB2242604E64520B52614FA420034A
Владелец: Жуковец Ирина Валентиновна
Действителен: с 15.04.2025 до 09.07.2026

# EDUCATIONAL PROGRAM

## discipline "Neurology, neurosurgery"

**Specialty: 31.05.01 General Medicine**
**Course: 4**
**Semester: 7, 8**
**Total hours: 216 hrs.**
**Total credits: 6 credit units**
**Control form: credit– test, 7 semester**
**examination, 8 semester**

**Blagoveshchensk, 2025**

**The educational program of the discipline is designed in accordance with the requirements of the Federal State Educational Standard of Higher Education - specialist in specialty 31.05.01 General Medicine, approved by the order of the Ministry of Education and Science of Russia dated 08.12.2020 No. 988 (registered with the Ministry of Justice of Russia on 08.26.2020 No. 59493), BPEP HE (2021).**

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**APPROVED at the meeting of the Department of Nervous Diseases, Psychiatry and Narcology,**
**Protocol No. 9 dated April 14, 2025**

**Head of the Department, Ph.D. of Medical Sciences, Associate Professor _____**
**A.I. Karnaukh**

**Conclusion of the Expert Commission on the review of the Educational Programs:**
**Protocol No. 1 dated March 23, 2023**

**Expert of the Expert Commission,**
**Ph.D. of Engineering Sciences _____ E.E. Molchanova**

**APPROVED at the meeting of the CMC No. 3: Protocol No.6 dated April 17, 2025**

**Chairman of the CMC No. 3**
**Holder of the Advanced Doctorate (Doctor of Sciences) in Medical Sciences,**
**Professor _____ V.V. Voitsekhovsky**

**AGREED:**
**Dean of the Medical Faculty, Ph.D. of Medical Sciences _____ N.G. Brush**

**April 17, 2025**

CONTENT

# 1. EXPLANATORY NOTE

## 1.1 Characteristics of the discipline

Classes in neurology and neurosurgery are held in the 6th and 7th semesters .

Diseases of the nervous system, due to their widespread prevalence and social significance, occupy one of the leading places in clinical medicine. Teaching neurology is of great importance in the training of a modern doctor, since in his work he will certainly have to solve diagnostic, therapeutic and organizational issues of managing neurological patients to one extent or another. Studying the discipline "Neurology, neurosurgery" helps students develop the basics of clinical thinking, medical ethics and deontology, which are necessary for a future specialist regardless of his field of activity.

The work program for the discipline provides for the development of professional skills in students by mastering the methodology of studying neurological status, establishing a topical diagnosis, identifying the main neurological syndromes, which contributes to establishing a clinical diagnosis and developing a plan for treatment, rehabilitation and preventive measures.

The main focus of student training at the clinic is independent work both in the classroom and in the ward with patients under the guidance of a teacher, which contributes to the development of clinical thinking in the future doctor.

## 1.2.The goals and objectives of the discipline, its place in the structure of the main professional educational program of higher education

**The purpose of teaching the discipline** is to prepare a highly qualified specialist with certain knowledge, skills and abilities in the field of neurology, taking into account further professional activity in the specialty 31.05.01 General Medicine.

**The educational objectives of the discipline** are to promote the development of clinical thinking, skills and professional abilities in students, and to teach students:

1. the ability to conduct a neurological examination and identify symptoms of damage to the nervous system, the ability to combine symptoms into syndromes and make a topical diagnosis.
2. timely diagnosis of the most common neurological and neurosurgical diseases
3. correctly analyze clinical and anamnestic data, results of the patient's physical examination;
4. correctly interpret data from additional examination methods;
5. correctly document the neurological examination data;
6. formulate a detailed clinical diagnosis in accordance with modern classifications, taking into account the presence of complications and concomitant diseases;
7. to draw up individual plans of treatment, rehabilitation and preventive measures for patients with various neurological diseases depending on the etiological factor, features of pathogenesis, degree of activity of the pathological process, clinical form of the disease, functional state of organs and systems;
8. the basic principles of providing emergency care in urgent neurological and neurosurgical conditions

## 1.3.The place of the discipline in the structure of the main professional educational Higher education programs of the Academy, main sections

The discipline "Neurology, neurosurgery" refers to the basic part of Block 1 "Disciplines (modules)" of the specialist according to the Federal State Educational Standard of Higher Education in the direction of training 31.05.01 General Medicine and is mandatory for students to master. The total workload is 6 credit units (216 hours).

Classes in neurology and neurosurgery are held on a cyclic system in two semesters: 86 hours of clinical practical classes (34 hours in the 7th semester and 52 in the 8th semester) and 34 hours of lectures (14 in the 7th semester and 20 in the 8th semester). Classes in the discipline are held in accordance with the curriculum in classrooms and hospital wards. Upon completion of training, students take an exam.

The discipline "Neurology, neurosurgery" contains the following sections:

1. General neurology: topical diagnostics, methods of examination of neurological patients
2. Private neurology and neurosurgery.

## 1.4. Requirements for students

| To study the discipline, knowledge, skills and abilities are necessary, formed by previous disciplines: |
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| **Latin** |
| **Knowledge:** basic medical and pharmaceutical terminology in Latin. |
| **Skills:** be able to apply knowledge for communication and obtaining information from medical literature, medical documentation ( II - III level) |
| **Skills:** navigate medical and pharmaceutical terminology |
| **Professional foreign language** |
| **Knowledge:** basic medical and pharmaceutical terminology in a foreign language ( II - III level). |
| **Skills:** apply knowledge to communication and obtaining information from foreign sources |
| **Skills:** obtaining information from foreign sources and the Internet |
| **Philosophy** |
| **Knowledge:** methods and techniques of philosophical analysis of problems; forms and methods of scientific knowledge, their evolution; basic patterns and trends in the development of the world historical process; laws of dialectical materialism in medicine ( II - III level). |
| **Skills:** to competently and independently express, analyze the forms and methods of scientific knowledge and the laws of dialectical materialism in medicine. |
| **Skills:** apply the fundamentals of philosophical knowledge, methods of scientific cognition, laws of dialectical materialism to analyze medical information in professional activities |
| **Bioethics** |
| **Knowledge:** moral and ethical standards, rules and principles of professional medical conduct, rights of the patient and the doctor, basic ethical documents regulating the activities of the doctor ( II - III level). |
| **Skills:** build and maintain working relationships with patients and team members. |
| **Skills:** apply knowledge and skills in bioethics in practical activities |
| **Histology** |
| **Knowledge:** neuron, neuroglia, synapse - structure, functional significance. Cell structure. Human chromosomes. Ontogenesis, embryonic development. ( II - III level) |
| **Skills:** determine age-related patterns of development of organs and systems; analyze the results of histophysiological research. |
| **Skills:** analyze the results of histophysiological research. |
| **Microbiology, virology** |
| **Knowledge:** the impact of microbes, viruses, rickettsia, fungi on the body. Microbiological diagnostics of infectious diseases ( II level). Classification, morphology, physiology of microorganisms and viruses, their impact on health, interaction of the infectious agent with the host organism. Methods of diagnostics of infectious diseases. |
| **Skills:** analyze the results of microbiological diagnostics of infectious diseases. |
| **Skills:** analysis of the results of microbiological and serological diagnostics of infectious diseases. |
| **Physics, Mathematics. Medical informatics. Medical biophysics** |
| **Knowledge:** basics of computer science, searching, processing, storing information, using information computer systems in medicine and health care. Using information computer systems in medicine and health care; principles of operation and design of equipment used in medicine, basics of physical and mathematical laws reflected in medicine. Characteristics of the impact of physical factors on the body; physical principles of functioning of medical equipment. ( II - III level). |
| **Skills:** be able to use educational, scientific, popular science literature, the Internet for professional |

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| activities, work with equipment taking into account safety regulations **.** |
| **Skills:** use of information computer systems in medicine and healthcare for the purpose of searching, processing, storing information, working with medical diagnostic and treatment equipment, |
| **Biochemistry** |
| **Knowledge:** Structure and biochemical properties of the main classes of biologically important compounds, the main metabolic pathways of their transformation, the role of cell membranes and their transport systems in metabolism; normal values of blood and cerebrospinal fluid parameters. ( II - III levels). |
| **Skills:** analyze the contribution of biochemical processes to the functioning of the nervous system interpret the results of the most common laboratory diagnostic methods |
| **Skills:** analyze biochemical processes in the functioning of the nervous system, interpret the results of laboratory diagnostic methods |
| **Anatomy** |
| **Knowledge:** anatomy of the central and peripheral nervous system. Age characteristics of the nervous system. ( II - III level). |
| **Skills:** analyze the structural features of various analyzers, the structure of the peripheral and central nervous system. |
| **Skills** : to navigate the structure and functioning of the nervous system, to have the skills to find the main formations of the central and peripheral nervous system. |
| **Normal Physiology** |
| **Knowledge :** functional systems of the body, their regulation and self-regulation in interaction with the external environment. Physiology of the nervous system, physiology of higher nervous activity, types of higher nervous activity. ( II - III level) |
| **Skills** : analyze the importance of the nervous system in regulating biological processes in the human body. |
| **Skills:** apply knowledge of normal physiology, analysis of regulation of biological processes in medical practice |
| **Topographic anatomy, operative surgery** |
| **Knowledge:** structure, topography of formations of the peripheral and central nervous system. ( Level II ). |
| **Skills:** analyze the functional characteristics of the nervous system in normal and pathological conditions. |
| **Skills** : Apply knowledge of topographic anatomy in determining the topical focus when deciding on surgical treatment for diseases of the nervous system. |
| **Pathophysiology, clinical pathophysiology** |
| **Knowledge:** functional systems of the body of children and adolescents, their regulation and self-regulation in pathological processes. Disorders of higher nervous activity, experimental neuroses, syndromes of damage to the trunk, subcortical ganglia, cerebral cortex, spinal cord. Typical forms of disorders of metabolism of proteins, carbohydrates, lipids, nucleic acids, minerals, etc.), pathophysiology of tumor growth. Allergy and heredity. ( II level). |
| **Skills:** determine the contribution of pathophysiological processes to the development of diseases of the nervous system. |
| **Skills:** determine pathophysiological processes in the development of diseases of the nervous system; apply knowledge of pathophysiology to substantiate the etiopathogenesis of the main clinical syndromes and the choice of therapy. |
| **Immunology** |
| **Knowledge:** Structure and functions of the immune system, age-related characteristics, development mechanisms, basic methods of immunodiagnostics, methods of assessing immune status, indications for the use of immune therapy. Concept of the autoimmune process. ( Level II ). |

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| **Skills:** identify syndromes and symptoms of diseases associated with immune system disorders, prescribe a clinical and immunological examination, know the indications for prescribing immune therapy. |
| **Skills:** identify syndromes and symptoms of diseases associated with immune system disorders, prescribe a clinical and immunological examination, interpret the assessment of the results of the immune status study, prescribe immune therapy as indicated |
| **Pharmacology** |
| **Knowledge** : classification and main characteristics of medicinal substances, pharmacodynamics and pharmacokinetics, indications, contraindications for the use of medicinal products, side effects. ( II - III level). |
| **Skills:** write prescriptions for prescribed medications, know the indications and contraindications for their use. |
| **Skills:** prescribing drug therapy for neurological diseases **.** |
| **Propaedeutics of internal diseases** |
| **Knowledge:** collection of complaints, anamnesis **,** objective methods of examination of patients (palpation, percussion, auscultation ( II - III level). |
| **Skills:** conduct anamnestic and physical examination, identify the main syndromes and symptoms of diseases of internal organs. |
| **Skills:** collecting complaints, anamnesis, physical examination |
| **Hygiene** |
| **Knowledge:** Fundamentals of preventive medicine aimed at strengthening the health of adults, children and adolescents. Sanitary and hygienic requirements for the design, organization and operation of hospitals. ( Levels II - III ). |
| **Skills** : to carry out preventive measures among the population for the most common diseases of the nervous system. |
| **Skills** : methods of non-drug primary prevention of neurological diseases **.** |
| **Pathological anatomy, clinical pathological anatomy** |
| **Knowledge:** concept of etiology, pathogenesis, morphogenesis, pathomorphosis of diseases, principles of classification of diseases, basic concepts of general nosology. Pathological anatomy of hereditary and non-hereditary diseases. |
| **Skills:** substantiate the nature of the pathological process and its clinical manifestations. |
| **Skills:** skills to determine the etiology, pathogenesis, and pathomorphology of diseases of the nervous system. |
| **General, faculty surgery, urology** |
| **Knowledge** : clinical manifestations of the main syndromes requiring surgical treatment, information about diseases that cause complications from the nervous system, as well as those that have symptoms and syndromes similar to diseases of the nervous system (trophic ulcers, obliterating endarteritis, osteomyelitis, etc.). Neurogenic bladder, indications for epicystostomy ( II - III level). |
| **Skills** : formulate and justify a clinical diagnosis, prescribe an examination and treatment plan for major surgical diseases, develop an action plan to prevent neurological complications. |
| **Skills** : identifying neurological complications in surgical diseases, conducting differential diagnostics **,** prevention. |
| **Faculty therapy** |
| **Knowledge:** etiology, pathogenesis, clinical features, possible complications, diagnostics, treatment and prevention of the most common diseases. Diseases of internal organs leading to complications from the nervous system (somatogenic nervous disorders). ( II - III level). |
| **Skills:** formulate and justify a clinical diagnosis, prescribe an examination and treatment plan for the main therapeutic diseases, develop an action plan for the prevention of neurological complications. |
| **Skills:** somatic examination, formulation and justification of clinical diagnosis, identification of |

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| neurological complications in somatic pathology, their prevention. |

### 1.5. Interdisciplinary links with subsequent disciplines

| Item No. | Name of subsequent disciplines | Sections of this discipline that are necessary for studying subsequent disciplines | |
|---|---|---|---|
| | | Neurology | Neurosurgery |
| 1. | Infectious diseases | + | |
| 2. | Hospital therapy, endocrinology | + | + |
| 3. | Hospital surgery, pediatric surgery | + | |
| 4. | Pediatrics | + | + |
| 5. | Ophthalmology | + | + |
| 6. | Otorhinolaryngology | + | |
| 7. | Public Health and Healthcare | + | |
| 8. | Phthisiology | + | |
| 9. | Dermatovenereology | + | |
| 10. | Psychiatry, medical psychology | + | + |
| 11. | Oncology, radiation therapy | + | + |
| 12. | Outpatient therapy | + | + |
| 13. | Anesthesiology, resuscitation, intensive care | + | + |
| 14. | Clinical pharmacology | + | |
| 15. | Traumatology and orthopedics | + | + |
| 16. | Obstetrics and gynecology | + | |
| 17. | Forensic medicine | + | + |

## 1.6 . Requirements for the results of mastering the discipline

The study of the discipline "Neurology, neurosurgery" is aimed at the formation/improvement of the following competencies: universal (UK), general professional (**GPC**) and professional (PC): UK-1, 3; **GPC**-5, 6; PC - 1-9, 11-12.

| No. p/p | Code and name of competence | Code and name of the indicator of achievement of competence |
|---|---|---|
| **Universal competencies** | | |
| 1 | **UC-1.** Capable of carrying out a critical analysis of problematic situations based on a systems approach, developing an action strategy | **AI UC-1.1.** Analyzes the problem situation as a system, identifying its components and the connections between them.<br>**AI UC-1.2.** Identifies gaps in information needed to solve problem situations and designs processes to eliminate them.<br>**AI UC-1.5.** Critically evaluates the reliability of information sources, works with contradictory information from different sources. |
| 2 | **UC-3** . Able to organize and manage the work of a team, developing a team strategy to achieve the set goal. | **AI UC-3.1** . Establishes and develops professional contacts in accordance with the needs of joint activities, including the exchange of information and the development of a unified strategy; works in a tolerant manner in a team, perceives social, ethnic, religious and cultural differences.<br>**AI UC-3.3.** Selects constructive methods for resolving conflicts and contradictions in business communication. |
| **General professional competencies** | | |
| 3 | **GPC-5** . Capable of assessing morphofunctional, physiological states and pathological processes in the human body to solve professional problems | **AI GPC-5.1** . Knows the functional systems of the human body, their regulation and self-regulation when interacting with the external environment in the norm and in pathological processes.<br>**AI GPC-5.2** . Knows the etiology, pathogenesis, morphogenesis, pathomorphosis of disease development, basic concepts of nosology.<br>**AI GPC-5.4** . Applies indicators of morphofunctional, physiological state and pathological process to examine the human body in order to establish a diagnosis, prescribe treatment and monitor its effectiveness and safety. |
| 4 | **GPC-6** . Capable of organizing patient care, providing primary health care, ensuring the organization of work and making professional decisions in emergency situations at the pre-hospital stage, in emergency situations, epidemics | **AI GPC-6.1** . Organizes patient care, provides primary health care and emergency care to patients.<br>**AI GPC-6.3** . Makes professional decisions in emergency situations and provides first medical aid at the pre-hospital stage, in emergency situations, epidemics and in areas of mass destruction. |

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| | and in areas of mass destruction. | |

**Professional competencies with achievement indicators in the specialty 31.05.01 General Medicine**

| Labor function | Code and name of professional competencies | Code and name of the indicator of achievement of professional competence |
|---|---|---|
| **Provision of primary health care to the adult population in outpatient settings that do not provide for round-the-clock medical supervision and treatment, including at home when a health worker is called (code A)** | | |
| **A/01.7** Diagnostics of diseases and (or) conditions in the profile of "therapy" | **PC-1.** Ability to collect and analyze complaints, life history, and patient disease history in order to establish a diagnosis and/or condition in the "therapy" profile | **AI** PC- 1.1. Collect complaints, medical history, and life history from a patient with a disease and/or condition in the "therapy" profile (or his/her legal representative)<br>**AI** PC 1.2. Interpret and analyze information received from a patient with a disease and (or) condition in the profile "therapy" (or his legal representative) |
| | **PC-2.** Ability to conduct a physical examination of a patient, analyze the results of additional examination methods in order to establish a diagnosis and (or) condition in the "therapy" profile | **AI** PC- 2.1. Conduct a physical examination of the patient (inspection, palpation, percussion, auscultation) and interpret its results<br>**AI** PC- 2.2. Justify the need and scope of laboratory and instrumental examinations of a patient with a disease and (or) condition in the "therapy" profile<br>**AI** PC-2 .4. Interpret the results of laboratory and instrumental examinations of patients<br>**AI** PC- 2.5. Justify the referral of a patient with a disease and (or) condition in the "therapy" profile to specialist doctors in the presence of medical indications, taking into account contraindications in accordance with the Procedures for the provision of medical care, clinical recommendations, taking into account the standards of medical care<br>**AI** PC-2 .6. Interpret the conclusions received from medical specialists<br>**AI** PC-2 .7. Assess the severity of the disease and (or) the condition of the patient with the disease according to the profile "therapy"<br>**AI** PC-2 .8. Establish a diagnosis taking into account the ICD of a patient with a disease and (or) condition according to the profile "therapy"<br>**AI** PC- 2.9. Conduct differential diagnostics of diseases and (or) conditions in the "therapy" profile, using diagnostic algorithms (primary, concomitant and complications) taking into account the ICD |
| | **PC-3** . Ability to determine medical indications for hospitalization, indications for providing emergency, including emergency specialized, medical care | **AI** PC- 3.1. Determine medical indications for providing emergency, including emergency specialized, medical care<br>**AI** PC- 3.2. Determine medical indications for referring a patient for medical care in inpatient settings or day hospital settings providing specialized medical care in the "therapy" profile in case of difficulties in diagnosis and in the absence of the possibility of conducting additional examinations in outpatient settings |
| **A/02.7** | **PC-4.** Ability to prescribe treatment to | **AI** PC- 4.1. To draw up and justify a treatment plan for a patient with a disease and (or) |

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|---|---|---|
| Prescribing treatment to patients with diseases and/or conditions in the “therapy” profile and monitoring its effectiveness and safety | patients with diseases and (or) conditions in the profile of "therapy" | condition in the “therapy” profile, taking into account the diagnosis, age of the patient, clinical picture of the disease and (or) condition in accordance with the procedures for providing medical care, clinical recommendations, taking into account the standards of medical care<br>**AI** PC- 4.2. Prescribe medicinal products, medical devices taking into account the clinical picture of the disease and (or) the condition in the profile "therapy" and the risk factors for its development in accordance with the procedures for the provision of medical care, clinical recommendations, taking into account the standards of medical care<br>**AI** PC- 4.3. Prescribe non-drug treatment and therapeutic nutrition to a patient with a disease and (or) condition in the “therapy” profile, taking into account the diagnosis, age and clinical picture in accordance with the procedures for providing medical care, clinical recommendations, taking into account the standards of medical care |
| | **PC-5.** Ability to monitor the effectiveness and safety of the therapy being administered | **AI** PC-5 .1. Analyze the pharmacological action and interaction of drugs in a patient with a disease and (or) condition in the profile "therapy"<br>**AI** PC- 5.2. Assess the effectiveness and safety of non-drug therapy, therapeutic nutrition, the use of drugs and medical devices in a patient with a disease and (or) condition in the profile of "therapy"<br>**AI** PC- 5.3. Refer the patient in case of difficulty in choosing a treatment tactic, as well as in case of complicated course of the disease and (or) condition in the profile "therapy" for the provision of specialized medical care in a hospital setting or in a day hospital setting, if there are medical indications in accordance with the procedures for the provision of medical care, clinical recommendations, taking into account the standards of medical care |
| **A/03.7.** Conducting and monitoring the effectiveness of medical rehabilitation of patients, including the implementation of individual rehabilitation or habilitation programs for disabled people | **PC-6.** Readiness to conduct and control medical rehabilitation activities for patients with diseases and (or) conditions in the "therapy" profile, including when implementing an individual rehabilitation or habilitation program for disabled people in accordance with the procedure for organizing medical rehabilitation and the procedure for organizing spa treatment | **AI** PC- 6.1. Determine medical indications and medical contraindications for carrying out medical rehabilitation and spa treatment, including when implementing an individual rehabilitation or habilitation program for disabled people, in accordance with the procedures for organizing medical rehabilitation and spa treatment<br>**AI** PC- 6.3. Participate in the implementation of medical rehabilitation activities for patients with diseases and (or) conditions in the “therapy” profile, including the implementation of an individual rehabilitation or habilitation program for disabled people in accordance with the procedure for organizing medical rehabilitation and the procedure for organizing spa treatment<br>**AI** PC-6 .4. Assess the effectiveness and safety of medical rehabilitation measures for patients with diseases and (or) conditions in the profile of "therapy |
| **A/04.7.** Conducting medical | **PC-7.** Readiness to conduct medical examinations of | **AI** PC- 7.1. Determine the signs of temporary disability, the need for a family member to care for a patient with diseases in the “therapy” profile, signs of persistent impairment of life activity |

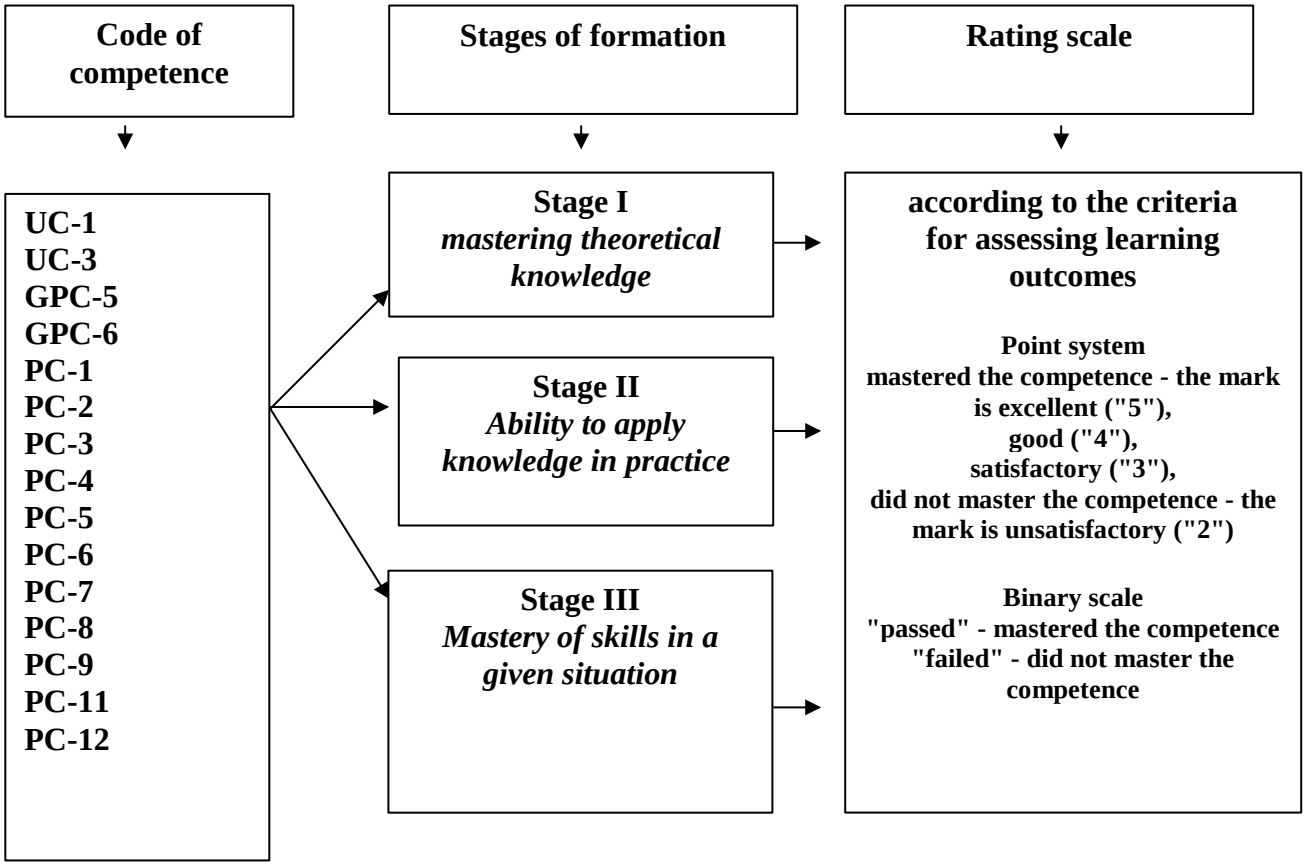
| | | |
|---|---|---|
| examinations of patients with diseases and (or) conditions in the profile of "therapy" | patients with diseases and (or) conditions in the "therapy" profile | of patients with diseases and (or) conditions in the “therapy” profile |
| **A/05.7.** Conducting medical, preventive medical examinations, medical examinations, medical check-ups, dispensary observation of patients with diseases and (or) conditions in the profile of "therapy" and monitoring the effectiveness of measures for dispensary observation | **PC-8.** Readiness to conduct preventive medical examinations, medical check-ups and implementation of medical observation of healthy and chronic patients | **AI** PC- 8.4. Conduct and monitor preventive medical examinations of the population and medical check-ups taking into account age, health status, profession in accordance with regulatory legal acts for the purpose of early detection of chronic non-communicable diseases and (or) conditions in the “therapy” profile, the main risk factors for their development.<br>**AI** PC- 8.5. Conduct and monitor dispensary observation of patients with identified chronic non-infectious diseases and (or) conditions in the “therapy” profile<br>**AI** PC-8 .6. To prescribe preventive measures to patients taking into account risk factors for the prevention and early detection of diseases and (or) conditions in the profile of "therapy", including socially significant ones |
| **A/06.7.** Conducting activities on prevention and formation of a healthy lifestyle and sanitary and hygienic education of the population | **PC-9** . Readiness to carry out activities on prevention and formation of a healthy lifestyle and sanitary and hygienic education of the population | **AI** PC- 9.4. Develop and implement programs for the formation of a healthy lifestyle, including programs for reducing alcohol and tobacco consumption, preventing and combating non-medical use of narcotic drugs and psychotropic substances, optimizing physical activity, rational nutrition, and normalizing body mass index |
| **A/07.7.** Conducting analysis of medical and statistical information, | **PC-11.** Ability to maintain medical records and control the quality of their maintenance | **AI** PC-11.1. Fill out medical documentation, including in the form of an electronic document, monitor the quality of its maintenance<br>**AI** PC-11.2. Use in work personal data of patients and information constituting a medical secret |

| | | |
|---|---|---|
| maintaining medical records, organizing the activities of medical personnel at their disposal | | **AI** PC-11.3. Use medical information systems and the Internet information and telecommunications network in professional activities. |
| **A/08.7.** Provision of emergency and urgent medical care to patients | **PC-12.** Ability to provide medical care in emergency and urgent situations | **AI** PC-12.1. Recognize conditions requiring emergency medical care, including clinical signs of sudden cessation of blood circulation and (or) breathing, requiring emergency and urgent medical care<br>**AI** PC-12.2. Provide emergency medical care to patients in conditions that pose a threat to the life of patients, including clinical death (cessation of vital functions of the human body (circulation and (or) respiration)<br>**AI** PC-12.3. Use medicinal products and medical devices when providing medical care to patients in emergency and urgent cases |

**Section of the discipline (or module) and the code of the competence being formed**

| Item No. | Section name | Code of the competence being formed |
|---|---|---|
| | General neurology, topical diagnostics | **UC 1, 3**<br>**GPC 5, 6**<br>**PC 1-3, 9, 11,12** |
| | Private neurology, neurosurgery | **UC 1, 3**<br>**GPC 5, 6**<br>**PC 1 – 9, 11, 12** |

## 1.7. Stages of formation of competencies and descriptions of assessment scales




The first stage is knowledge of topics (presented in the form of questions at each lesson, which the student must know), sections (questions for the final lesson), and discipline (questions submitted for midterm assessment).

The second stage is skills in practical manipulations based on knowledge (is presented in the form - the student must be able to).

The third stage is mastering the skills of application in a specific clinical situation (solving a clinical situation (problem), with a demonstration of practical implementation).

To assess the mastery of competencies, a binary competency assessment scale is adopted: satisfactory – mastered the competency (marked as passed), unsatisfactory – did not master the competency (marked as failed).

## 1.8. Forms of organization of students' training and types of control

| Form of organization of students' training | Brief description |
|---|---|
| Lectures | The lecture material contains key and most problematic issues of the discipline, which are most significant in the training of a specialist. |
| Clinical practical classes | They are intended for the analysis (reinforcement) of theoretical principles and monitoring their assimilation with subsequent application of the acquired knowledge during the study of the topic. |
| Interactive forms of education | - Brainstorming,<br>- "case studies",<br>- business role play<br>- discussions,<br>- testing in the Moodle system .<br>- clinical analyses of thematic patients,<br>- solving situational problems,<br>- simulation of the situation,<br>- subject Olympiad in the discipline,<br>- defense of the educational medical history |
| Participation in the department's research work, student circle and conferences | - preparation of oral presentations and poster reports for presentation at a student club or scientific conference;<br>- writing theses and abstracts on the chosen scientific field;<br>- preparation of a literature review using educational, scientific, reference literature and Internet sources. |
| **Types of control** | **Brief description** |
| Incoming inspection | Testing theoretical knowledge and practical skills developed during the study of previous disciplines.<br>The entrance knowledge control includes:<br>- testing in the Moodle system (test of incoming knowledge control)<br>The results of the incoming inspection are systematized, analyzed and used by the teaching staff of the department to develop measures to improve and update the teaching methods of the discipline. |
| Current control | Current control (initial, output) of knowledge includes:<br>- checking the solution of situational problems and exercises completed independently (extracurricular independent work);<br>- assessment of the assimilation of theoretical material (oral survey and testing );<br>- testing in the Moodle system on all topics of the discipline (tests include questions of a theoretical and practical nature);<br>- individual assignments (practical and theoretical) for each topic of the discipline being studied.<br>- checking the acquisition of practical skills ( examination of neurological status, work at the patient's bedside, preparation of a medical history) |

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|---|---|
| | - defense of the educational history of the thematic patient<br>- checking the design of the medical history, abstract |
| Border control : | Testing in the "Moodle" system,<br>checking the acquisition of practical skills in current and final classes (methodology for examining a neurological patient, identifying and assessing neurological symptoms, establishing a topical and clinical diagnosis, describing the neurological status, drawing up the medical history of the supervised patient, drawing up appointment sheets (examination plan and treatment), recommendations for rehabilitation and primary and secondary prevention of neurological diseases).<br>Interim assessment: |
| Intermediate certification | The midterm assessment is represented by an exam at the end of the 8th semester and includes:<br>- assessment of knowledge of theoretical material<br>- testing in the Moodle system (final testing). |

**Explanation.** Students receive theoretical knowledge on the subject at lectures, practical classes, taking part in the research work of the department, thematic rounds of patients with a teacher. During practical classes, the learned material is consolidated and monitored. Interactive forms of training are used in the learning process: business games, situation modeling, brainstorming, etc. Practical application of theoretical material in everyday work is logical in the process of cognition, helps to acquire practical skills and abilities. In the process of patient supervision, students consolidate and improve their skills in examining patients, including neurological status, skills in making topical and clinical diagnoses, interpreting the results of clinical, laboratory and instrumental examination, conducting differential diagnosis, prescribing an examination and treatment plan, rehabilitation, preventive measures, medical deontology, medical ethics.

**The entrance control** is carried out at the first lesson, is intended to determine the level of preparedness of students and includes testing on previously completed disciplines. In addition, basic knowledge (on previously completed disciplines) is checked at each lesson.

**Current control** is carried out at each practical lesson and includes an assessment of the theoretical knowledge and practical skills developed by students during the lesson and includes: an oral and test survey (similar theoretical and test questions will be offered at the final and midterm control), solving topical (in the 7th semester) and situational problems (in the 8th semester); control of acquisition of practical skills (methodology of examination of neurological status, establishment of topical diagnosis, identification of symptoms and syndromes, interpretation of results of clinical, laboratory and instrumental examination, formulation of clinical diagnosis, preparation of plan of examination and treatment of the patient), report on supervised patient (complaints, anamnesis of disease, life, data of somatic and neurological examination, formulation and justification of topical and clinical diagnosis, differential diagnosis, plan of examination and treatment taking into account individual characteristics), as well as control of supervision of the patient and preparation of educational medical history. To control each type of educational work (oral and written answer, testing, supervision of patients, educational medical history, abstract, etc.) a minimum and maximum grade is introduced.

During the current knowledge control, the final mark (the arithmetic mean result) for all types of activities provided for in a given lesson by the work program of the discipline is set on the day of the lesson for all students who are present at the lesson, since everyone must show how he/she has mastered the knowledge, skills and abilities of the topic. The mark for individual types of work (written) is entered into the study journal for the next lesson, with the exception of the mark for the essay, educational medical history - no more than 3 days later. Midterm control is carried out after studying the logically completed part of the educational material.

Based on the marks for the current control of knowledge, skills, and abilities, the average score of the current academic performance is calculated, which is recorded in the academic journal. The current control of knowledge is taken into account during the midterm assessment. Students who have not completed the discipline/practice program are not allowed to the midterm assessment. The control knowledge test is held at the end of the cycle: at the end of the study of general neurology in the 7th semester and specific neurology and neurosurgery in the 8th semester and includes: test control in the "Moodle" system, passing practical skills in the methodology of studying the neurological status in the 7th semester and defending the case history in the 8th semester.

**The midterm control** includes control classes in sections in the VII and VIII semesters and consists of an assessment of the practical skills, abilities and theoretical knowledge developed by students during the cycle of classes, test control in the "Moodle" system,

**The midterm assessment** (exam) is designed to assess the degree of achievement of the planned learning outcomes upon completion of the study in the 8th semester and includes an oral answer to an examination ticket, which includes 3 questions: on topical diagnostics, private neurology and neurosurgery, and on diagnostics, treatment, and prevention of neurological diseases.

During the midterm assessment, the average grade of the current academic performance, the academic discipline, the active and high-quality performance of students in various types of activities, including educational and research, are taken into account. Based on the results, a grade is given - "excellent", "good", "satisfactory", "unsatisfactory". A student can claim to receive the grade "excellent" automatically if he/she has won a prize in disciplinary or interdisciplinary Olympiads (university, regional) and has an average grade based on the results of the current academic performance of at least 4.8 points **.**

## 2. STRUCTURE AND CONTENT OF THE DISCIPLINE

2.1. **Scope of the discipline and types of academic work**

| **Types of educational work** | **Total hours** | **Semesters** | |
|---|---|---|---|
| | | **7** | **8** |
| Lectures | **34** | 14 | 20 |
| Clinical practical classes | **86** | 34 | 52 |
| Independent work of students | **60** | 24 | 36 |
| Exam | **36** | | 36 |
| **Total classroom hours** | **120** | **48** | **72** |
| **Total labor intensity in hours** | **216** | **72** | **108+36** |
| **Total workload in credit units** | **6** | **2** | **4** |

## 2 .2. Thematic plan of lectures and their brief content

| Item No. | Lecture topics and their summary | Codes of formed competencies | Labor intensity (hours) |
|---|---|---|---|
| | **Lecture course in the 7th semester** | | |
| **1.** | Sensitivity and its disorders.<br>Objectives and tasks of the subject, the place of neurology among other disciplines. Sensitive sphere. Anatomy and physiology. Symptoms of damage to the sensitive analyzer at various levels. Pain, classification, types. | UC 1, 3<br>GPC 5, 6<br>PC 1, 2, 3, 11 | 2 |
| **2.** | Organization of movements. Movement disorders<br>Motor sphere. Pyramidal and extrapyramidal system. Anatomical and physiological data, organization of movements. Syndromes of motor tract damage, central and peripheral paresis. Syndromes of motor tract damage at various levels. | UC 1, 3<br>GPC 5, 6<br>PC 1, 2, 3, 11, 12 | 2 |
| **3.** | Extrapyramidal system and syndromes of its damage<br>Extrapyramidal system. Anatomy and physiology. Symptoms and syndromes of damage to the extrapyramidal system. Cerebellum, physiology. Coordination and balance, their disorders, types of ataxia | UC 1, 3<br>GPC 5, 6<br>PC 1, 2, 3, 11 | 2 |
| **4.** | Brain stem, damage syndromes.<br>The brainstem, anatomical and physiological data. Symptoms and syndromes of damage. Alternating syndromes, their topical significance. Disorders of the medial longitudinal fasciculus system, coordination disorders. Quantitative and qualitative disorders of consciousness, pseudo-comatose states. Syndromes of damage to the brainstem at various levels. | UC 1, 3<br>GPC 5, 6<br>PC 1, 2, 3, 11, 12 | 2 |
| **5.** | Syndromes of higher brain function impairment<br>The cerebral cortex, anatomical and physiological data. Syndromes of higher brain functions (speech, gnosis, praxis, memory). Syndromes of damage to the lobes of the brain (frontal, parietal, temporal, occipital). Functional asymmetry of the brain | UC 1, 3<br>OPC 5, 6<br>PC 1, 2, 3, 9, 11, 12 | 2 |
| **6.** | Hypertensive syndrome<br>Anatomy of cerebrospinal fluid-containing spaces. Types of dropsy. Hypertensive syndrome. Causes, clinical picture. Examination in case of suspected hypertensive syndrome. Dislocation syndromes, clinical manifestation. | UC 1, 3<br>GPC 5, 6<br>PC 1, 2, 3, 11, 12 | 2 |
| **7.** | Diseases of the autonomic nervous system, autonomic dystonia. Headaches.<br>Autonomic nervous system, anatomical and physiological data. Symptoms and syndromes of damage to the suprasegmental and segmental parts of the autonomic nervous system . **Main** syndromes of damage to the autonomic nervous system. Syndrome of vegetative dystonia, hypothalamic syndrome. Headaches. | UC 1, 3<br>GPC 5, 6<br>PC 1, 2, 3, 9, 11, 12 | 2 |
| **Total hours in semester VII** | | | **14** |

| | Lecture course in the VIII semester | | |
|---|---|---|---|
| 1. | Diseases of the peripheral nervous system.<br>Diseases of the peripheral nervous system. Classification. Mono- and polyneuropathies. Tunnel syndromes. Etiology, clinical features, diagnostics, treatment. | UC 1, 3<br>GPC 5, 6<br>PC 1 - 7, 8, 9, 11,12 | 2 |
| 2. | Dorsalgia. Neurological manifestations of vertebral osteochondrosis<br>**To** rsalgia, causes, differential diagnostics. Vertebral osteochondrosis, etiology, pathogenesis, neurological manifestations. Clinic of reflex, compression syndromes, diagnostics, treatment. | UC 1, 3<br>GPC 5, 6<br>PC 1-9, 11,12 | 2 |
| 3. | Vascular diseases of the brain and spinal cord. Chronic cerebrovascular diseases. Dyscirculatory encephalopathy.<br>Vascular diseases of the brain and spinal cord. Etiology, clinical features, classification of cerebrovascular pathology. Chronic forms of cerebrovascular insufficiency – initial manifestations of cerebral circulatory failure, discirculatory encephalopathy. Clinic, diagnostics, treatment. Vascular dementia. | UC 1, 3<br>OPC 5, 6<br>PC 1-9, 11,12 | 2 |
| 4. | Acute cerebrovascular diseases. Transient ischemic attacks. Strokes.<br>Acute cerebrovascular accidents (TIA, ischemic, hemorrhagic strokes), pathogenesis, clinical presentation, diagnostics, organization of care, staged treatment, prevention. | UC 1, 3<br>GPC 5, 6<br>PC 1-9, 11,12 | 2 |
| 5. | Acute neuroinfections. Meningitis, encephalitis.<br>Acute infectious diseases of the nervous system. Meningitis: serous, purulent, tuberculous. Clinical picture, diagnostics, differential diagnostics, treatment. Encephalitis, primary, secondary. Tick-borne encephalitis. Herpes encephalitis. Clinical picture, diagnostics, differential diagnostics, treatment. | UC 1, 3<br>GPC 5, 6<br>PC 1-9, 11,12 | 2 |
| 6. | Chronic neuroinfections. Multiple sclerosis<br>Chronic infectious diseases of the nervous system – neurorheumatism, neurosyphilis, neuroAIDS. Classification, diagnostics, principles of therapy. Slow infections, spongiform encephalopathies. Multiple sclerosis. Etiology, pathogenesis, clinical picture, diagnostics, treatment. | UC 1, 3<br>GPC 5, 6<br>PC 1-9, 11,12 | 2 |
| 7. | Paroxysmal disorders. Epilepsy. Syncope.<br>Paroxysmal conditions. Epilepsy, classification, clinical features, diagnostics, differential diagnostics, treatment. Syncope, classification, clinical features, assistance, prevention **.** | UC 1, 3<br>GPC 5, 6<br>PC 1-9, 11,12 | 2 |
| 8. | Hereditary diseases affecting the nervous system.<br>Hereditary diseases with damage to the nervous system. General characteristics, pathogenesis, principles of treatment. Neuromuscular diseases, classification, Clinic, diagnostics, therapy. Myasthenia - clinic, diagnostics, treatment.<br>Hepato-cerebral degeneration, Huntington's chorea, Parkinson's disease - clinical features, diagnostics, principles of therapy. | UC 1, 3<br>GPC 5, 6<br>PC 1-9, 11,12 | 2 |
| 9. | Traumatic brain injury.<br>Traumatic brain injury, classification, pathogenesis, pathomorphology, clinical presentation of | UC 1, 3<br>GPC 5, 6 | 2 |

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|---|---|---|---|
| | various forms, diagnostics, differential diagnostics. Treatment of various forms. Brain compression. Clinical presentation, diagnostics of hematomas, treatment tactics. | PC 1-9, 11,12 | |
| 10. | Neuro-oncology.<br>Tumors of the brain and spinal cord. Histological and clinical classification. General symptoms of tumors, clinical features of tumors of various localizations, early diagnostics. | UC 1, 3<br>GPC 5, 6<br>PC 1-9, 11,12 | 2 |
| **Total hours in semester VII I** | | | **20** |
| ***Total hours*** | | | **34** |

## 2.3. Thematic plan of clinical practical classes and their brief content

| **Topic No.** | **Name of the topics of practical classes** | **Contents of practical classes of the discipline** | **Codes of formed competencies and indicators of their achievement** | **Forms of control** | **Labor intensity (hours)** |
|---|---|---|---|---|---|
| **Practical classes in the 7th semester** | | | | | |
| **1** | Research methods and syndromes of damage to the sensitive sphere | **Theoretical part:** Structure of the sensitive analyzer. Symptoms of loss and irritation in the sensitive sphere. Types and kinds of sensitivity disorders. Basic aspects of pain, types of pain syndromes. Paraclinical research methods.<br>**Practical part:** be able **to** collect and evaluate patient complaints, examine superficial, deep and complex types of sensitivity, determine tension symptoms, pain points, type and kind of sensitivity disorder, make a topical diagnosis, determine a pathological focus based on disturbances in the sensitive sphere, design a workbook, solve topical problems, analyze a thematic patient, work with educational, scientific and reference literature. | **UC 1, AI UC-1.1, -1.2** , 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC 1,** AI PC-1 .1, 1.2<br>**PC 2,** AI PC-2 .1, 2 .2, 2 .4, 2 .5, 2.6, 2.7. 2.8<br>**PC 3,** AI PC-3.1.<br>**PC 9.** PC AI 9.4.<br>**PC 11** , AI PC-11.1.<br>**PC 12,** AI PC-12.3 .. | Testing<br>Frontal survey<br>Interactive survey<br>Topical tasks<br>Inspection technique | 3.4 |
| **2.** | Voluntary movements and their disorders; symptoms of damage to the corticomuscular tract at various levels; central and | **Theoretical part:** Levels of muscle tone regulation, levels of reflex closure in the spinal cord and trunk, structure and functioning of the pyramidal tract, central and peripheral motor neurons. Signs of central and peripheral paresis, origin of each symptom, symptoms of damage to the pyramidal tract and peripheral motor neuron at different levels. Paraclinical methods and studies. Design of a workbook, solving topical problems, analysis of a thematic patient, work with educational, scientific and reference literature.<br>**Practical part:** Mastering the methodology of studying the motor sphere and identifying motor disorders. Learn to distinguish between types of paralysis - central, peripheral, understand the syndromes of loss and irritation of the central and peripheral motor neurons, learn to determine the focus based on disorders in | **UC 1, AI UC-1.1, -1.2** , 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC 6.3.<br>**PC 1,** AI PC-1 .1., 1.2<br>**PC 2,** AI PC-2 .1, 2 .2, 2 .4, 2 .5, 2.6, 2.7. 2.8<br>**PC 3,** AI PC-3.1.<br>**PC 11** , AI PC-11.1. | Testing<br>Frontal survey<br>Interactive survey<br>Topical tasks<br>Inspection technique | 3.4 |

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| | peripheral paresis | the motor and reflex spheres. | | | |
| **3.** | Symptoms and syndromes of damage to the spinal cord, its roots and peripheral nerves | **Theoretical part:** Syndromes of transverse spinal cord lesions at various levels, syndromes of peripheral lesions, dysfunction of the pelvic organs, causes, topical diagnostics, paraclinical research methods. Design of a workbook, solution of topical problems, analysis of a subject patient, work with educational, scientific and reference literature.<br>**Practical part** : Based on the data from the study of the motor sphere, determine the nature of motor disorders and the level of damage to the spinal cord or peripheral nervous system. | **UC 1, AI UC-1.1, -1.2** , 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC 1,** AI PC-1 .1., 1.2<br>**PC 2,** AI PC-2 .1, 2 .2, 2 .4, 2 .5, 2.6, 2.7. 2.8<br>**PC 3,** AI PC-3.1.<br>**PC 11** , AI PC-11.1.<br>**PC 12,** AI PC-12.3 . | Testing<br>Frontal survey<br>Interactive survey<br>Topical tasks<br>Inspection technique | 3.4 |
| **4.** | Extrapyramidal system and syndromes of its damage. Coordination of movements and its disorders | **Theoretical part:** the main formations and connections of the extrapyramidal system, its role in organizing movements, ensuring posture, standing, walking and other stereotypical automated movements, regulating muscle tone. The main syndromes of damage to the extrapyramidal system (Parkinsonism, choreic) and coordination of movements, types of ataxia. About the design of the workbook, solving topical problems, analysis of the thematic patient, working with educational, scientific and reference literature.<br>**Practical part:** Peculiarities of complaints of patients with extrapyramidal disorders and ataxia, basic terms. Identify disorders of muscle tone, coordination of movements, symptoms and syndromes of damage to the extrapyramidal system. | **UC 1, AI UC-1.1, -1.2** , 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC 1,** AI PC-1 .1., 1.2<br>**PC 2,** AI PC-2 .1, 2 .2, 2 .4, 2 .5, 2.6, 2.7. 2.8<br>**PC 3,** AI PC-3.1.<br>**PC 11** , AI PC-11.1.<br>**PC 12,** AI PC-12.3 | Testing<br>Frontal survey<br>Interactive survey<br>Topical tasks<br>Inspection technique | 3.4 |
| **5.** | Symptoms and syndromes of damage to the brainstem and I-VI pairs of cranial nerves | **Theoretical part** : Anatomy and physiology of the brainstem. Symptoms of dysfunction of the I-VI pairs of cranial nerves at different levels. Brainstem lesion syndromes (midbrain, pons), alternating syndromes and their topical significance. Reticular formation lesion syndromes, quantitative disorders of consciousness. Design of a workbook, solution of topical problems, analysis of a thematic patient, work with educational, scientific and reference literature.<br>**Practical part:** Study the methodology of examination of the I-VI pairs of cranial nerves, the main syndromes of damage, their significance for establishing a topical diagnosis. Study the symptoms and syndromes of brainstem damage. Check the sense of smell, visual acuity, visual fields, eye movements, pupillary reactions, facial sensitivity, and the function of the masticatory muscles. Identify dysfunction of the I-VI pairs of cranial nerves, determine the symptoms of brainstem damage, and determine the degree of quantitative impairment of consciousness. | **UC 1, AI UC-1.1, -1.2** , 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC 1,** AI PC-1 .1., 1.2<br>**PC 2,** AI PC-2 .1, 2 .2, 2 .4, 2 .5, 2.6, 2.7. 2.8<br>**PC 3,** AI PC-3.1.<br>**PC 11** , AI PC-11.1.<br>**PC 12,** AI PC-12.1, 12.3 .. | Testing<br>Frontal survey<br>Interactive survey<br>Topical tasks<br>Inspection technique | 3.4 |
| **6.** | Symptoms and syndromes of damage to the brainstem and VII - | **Theoretical part:** Anatomy and physiology of the brainstem. Symptoms of dysfunction of the VII-XII pairs of cranial nerves at different levels. Syndromes of damage to the pons and medulla oblongata, alternating syndromes of the pons and medulla oblongata, their topical significance. Bulbar and pseudobulbar syndromes, their manifestation, difference, features of care for such patients. About the design of the workbook, solving topical problems, analysis of the thematic patient, work with educational, scientific and reference literature. | **UC 1, AI UC-1.1, -1.2** , 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC 1,** AI GPC-1 .1., 1.2<br>**PC 2,** AI PC-2 .1, 2 .2, 2 .4, 2 .5, 2.6, 2.7. 2.8 | Testing<br>Frontal survey<br>Interactive survey<br>Topical tasks<br>Inspection | 3.4 |

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| | XII pairs of cranial nerves | **Practical part:** To study the methodology of examination of the VII-XII pairs of cranial nerves, the main syndromes of damage, their significance for establishing a topical diagnosis. To check the functions of the facial muscles, muscles of the pharynx, larynx, hearing, taste sensitivity, to identify disorders of the functions of the cranial nerves, to determine the symptoms of damage to the brainstem. Features of management of patients with bulbar disorders. | **PC 3,** AI PC-3.1.<br>**PC 11** , AI PC-11.1.<br>**PC 12,** AI PC-12.1, 12.3 . | technique | |
| **7.** | Higher brain functions and their disorders. Syndromes of damage to individual lobes of the brain | **Theoretical part:** Higher brain functions, localization of functions in the cerebral cortex. Symptoms and syndromes that occur with damage to each lobe of the brain. Know the methodology for studying speech, praxis, writing, reading, memory. Design of a workbook, solving topical problems, analysis of a thematic patient, work with educational, scientific and reference literature.<br>**Practical part:** Learn to conduct neurological and neuropsychological research of higher brain functions, determine the topical focus in the cerebral cortex. Examine the patient's speech functions, gnosis, praxis, identify disorders of speech, writing, reading, praxis, memory. | **UC 1, AI UC-1.1, -1.2** , 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC 1,** AI PC-1 .1., 1.2<br>**PC 2,** AI PC-2 .1, 2 .2, 2 .4, 2 .5, 2.6, 2.7. 2.8<br>**PC 3,** AI PC-3.1.<br>**PC 9.** AI PC 9.1, 9.4.<br>**PC 11** , AI PC-11.1. | Testing<br>Frontal survey<br>Interactive survey<br>Topical tasks<br>Inspection technique | 3.4 |
| **8.** | Vegetative nervous system, syndromes of its disorders. Research methods. Headaches | **Theoretical part:** Anatomy, physiology, symptoms and syndromes of lesions of segmental and suprasegmental levels of the autonomic nervous system. Signs of central and peripheral disorders of the pelvic organs. Methods of studying vegetative tone, vegetative reactivity, vegetative support of activity. Causes, classification, pathogenesis of headaches. About the design of the workbook, solving topical problems, analysis of the thematic patient, work with educational, scientific and reference literature.<br>**Practical part:** Based on the nature of the patient's complaints, carry out an objectification of vegetative disorders. Determine vegetative tone, reactivity , and support of activity. Collect anamnesis from a patient with headache, determine its main type. | **UC 1, AI UC-1.1, -1.2** , 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC 1,** AI PC-1 .1., 1.2<br>**PC 2,** AI PC-2 .1, 2 .2, 2 .4, 2 .5, 2.6, 2.7. 2.8<br>**PC 3,** AI PC-3.1.<br>**PC 9.** PC AI 9.4.<br>**PC 11** , AI PC-11.1.<br>**PC 12,** AI PC-12.3 . | Testing<br>Frontal survey<br>Interactive survey<br>Topical tasks<br>Inspection technique | 3.4 |
| **9.** | WITH increased intracranial pressure syndrome, meningeal symptom complex | **Theoretical part:** Anatomy and physiology of the cerebrospinal fluid system, cerebrospinal fluid circulation pathways, membranes of the brain, blood-brain barrier.<br>Types of dropsy, classification. Subjective and objective symptoms of hypertension syndrome, its early diagnostics. Clinical manifestations of dislocation syndrome. Hydrocephalus in children, causes, clinical picture. About the design of the workbook, solving topical problems, analysis of the thematic patient, work with educational, scientific and reference literature.<br>Meningeal symptom complex, causes and manifestations. Pathological cerebrospinal fluid syndromes. Indications for lumbar puncture and cerebrospinal fluid dynamic tests. Research methods for suspected meningeal syndrome. Examination plan for suspected hypertensive syndrome.<br>**Practical part:** Identify meningeal symptoms, conduct an examination of a patient with hypertension syndrome. Be able to evaluate paraclinical examination data: | **UC 1, AI UC-1.1, 1.2** , 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC 1,** AI PC-1 .1., 1.2<br>**PC 2,** AI PC-2 .1, 2 .2, 2 .4, 2 .5, 2.6, 2.7. 2.8<br>**PC 3,** AI PC-3.1.<br>**PC 11** , AI PC-11.1.<br>**PC 12,** AI PC-12.1, 12.3 .. | Testing<br>Frontal survey<br>Interactive survey<br>Topical tasks<br>Inspection technique | 3.4 |

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| | | changes in cerebrospinal fluid analysis, fundus, skull radiography, ECHO-EG, condition of fontanelles, sutures, measure the circumference of the skull and evaluate the increase in circumference in accordance with age standards. | | | |
| **10.** | Additional research methods in neurology and neurosurgery. Credit | **Theoretical part:** Paraclinical research methods in neurology and neurosurgery, their essence, indications for implementation, interpretation. Lumbar puncture, cerebrospinal fluid dynamics tests, cerebrospinal fluid analysis. X-ray research methods: skull, spine. Contrast research methods: myography, pneumoencephalography, ventriculography, angiography. Neuroimaging: CT, MRI. Ultrasound methods: ECHO-EG, neurosonography, transcranial Dopplerography, duplex and triplex scanning of vessels. Neurophysiological methods: electroencephalography, rheoencephalography, electromyography, electroneuromyography. About the design of the workbook, analysis of the subject patient, work with educational, scientific and reference literature.<br>**Practical part:** Determine indications for additional examination methods, be able to interpret them. Independently perform ECHO-EG. | **UC 1, AI UC-1.1, -1.2** , 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC 2,** AI PC-2 .1, 2 .2, 2 .4, 2 .5, 2.6, 2.7.<br>**PC 3,** AI PC-3.1.<br>**PC 11** , AI PC-11.1. | Rubicon | 3.4 |
| | | **Practical classes in the VIII semester** | | | |
| **11.** | Diseases of the peripheral nervous system | **Theoretical part:** Classification, etiology, clinical picture of the most important diseases of the peripheral nervous system, principles of diagnostics and treatment at different stages of the disease, issues of examination of working capacity, primary and secondary prevention. The concept of mono- and polyneuropathies, their etiology, pathogenesis, clinical picture, diagnostics, treatment. Tunnel syndromes , pathogenesis of tunnel neuropathies. Clinical manifestations of polyneuropathies in diabetes mellitus, collagenoses and vasculitis, in diphtheria. Clinic, emergency therapy for acute demyelinating polyradiculoneuropathy of Guillain-Barré. The importance of additional examination methods in the diagnosis of diseases of the peripheral nervous system.<br>**Practical part:** Collect anamnesis, find symptoms of damage, make topical and clinical diagnosis in diseases of the peripheral nervous system. Outline a plan of examination and treatment, evaluate data from additional examination methods, analysis of thematic patients, supervision, solving situational problems, designing a workbook, educational medical history, working with educational, scientific, medical and reference literature. | **UC 1,** AI UC-1.1, -1.2, 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>GPC **6,** AI GPC-6.1, 6.3.<br>**PC – 1,** PC AI – 1.1, 1.2,<br>**PC 2,** AI PC-2 .1. 2,2,2,4, 2.5, 2.6, 2.7, 2.8,2.9.<br>**PC 3,** AI PC-3.1. 3.2.<br>**PC 4,** AI PC-4.1. 4.2, 4.3.<br>**PC 5,** AI PC-5. 1., 5.2, 5.3.<br>**PC 6,** AI PC-6.1, 6.3, 6.4.<br>**PC 7** , AI PC-7.1<br>**PC8,** AI PC-8.4, 8.5, 8.6.<br>**PC 9,** AI PC- 9.4<br>**PC 11** , PC AI 11.1, 11.2, 11.3.<br>**PC 12,** AI PC-12.1, 12.2, 12.3. | Testing<br>Frontal survey<br>Interactive survey<br>Solving situational problems, defending medical histories, testing practical skills | 5.2 |
| **12.** | Vertebrogenic neurological disorders and other musculoskeletal disorders | **Theoretical part:** The concept of osteochondrosis: etiology, pathogenesis, neurological manifestations, clinical picture, diagnostics, treatment, prevention. Classification of vertebrogenic neurological disorders, reflex and compression syndromes, clinical picture, diagnostics, treatment. Dorsalgia, differential diagnosis of back pain. The concept of fibromyalgia, myofascial syndrome, clinical picture, treatment.<br>**Practical part:** Collect anamnesis, examine a patient with back pain, check the statics of the spine, symptoms of tension, pain points, identify symptoms of prolapse. Make a plan for examining a patient with back pain, provide assistance to a patient with acute pain syndrome, make a plan for treatment and preventive | **UC 1,** AI UC-1.1, -1.2, 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>GPC **6,** AI GPC-6.1, 6.3.<br>**PC – 1,** PC AI – 1.1, 1.2,<br>**PC 2,** AI PC-2 .1. 2,2,2,4, 2.5, 2.6, 2.7, 2.8,2.9.<br>**PC 3,** AI PC-3.1. 3.2.<br>**PC 4,** AI PC-4.1. 4.2, 4.3.<br>**PC 5,** AI PC-5. 1., 5.2, 5.3. | Testing<br>Frontal survey<br>Interactive survey<br>olving situational problems, defending medical histories, | 5.2 |

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| | | measures. Reading X-rays of the spine. Formatting a workbook, solving topical problems, analyzing a thematic patient, working with educational, scientific and reference literature. | **PC 6,** AI PC-6.1, 6.3, 6.4.<br>**PC 7** , AI PC-7.1<br>**PC8,** AI PC-8.4, 8.5, 8.6.<br>**PC 9, AI** PC- 9.4<br>**PC 11** , PC AI 11.1, 11.2, 11.3.<br>**PC 12, AI** PC-12.1, 12.2, 12.3. | testing practical skills | |
| **13.** | Vascular diseases of the brain and spinal cord | **Theoretical part:** Blood supply to the brain and spinal cord, etiology, risk factors, classification of cerebrovascular pathology, pathomorphology, pathogenesis, clinical presentation, diagnostics and differential diagnostics of the main forms of *chronic cerebrovascular insufficiency* . Methods of examination in cerebrovascular pathology, treatment of various forms of cerebrovascular disorders, issues of prevention - primary and secondary, labor examination, rehabilitation.<br>**Practical part:** Conduct a survey, identify complaints, examine a patient with various forms of cerebrovascular pathology, conduct a differential diagnosis, prescribe an examination and treatment plan.<br>On the design of a workbook, solving topical problems, analyzing a thematic patient, working with educational, scientific and reference literature. | **UC 1,** AI UC-1.1, -1.2, 1.5.<br>**UC 3,** AI UC -3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC – 1,** PC AI – 1.1, 1.2,<br>**PC 2,** AI PC-2 .1. 2,2,2,4, 2.5, 2.6, 2.7, 2.8,2.9.<br>**PC 3,** AI PC-3.1. 3.2.<br>**PC 4,** AI PC-4.1. 4.2, 4.3.<br>**PC 5,** AI PC-5. 1., 5.2, 5.3.<br>**PC 6,** AI PC-6.1, 6.3, 6.4.<br>**PC 7** , AI PC-7.1<br>**PC8,** AI PC-8.4, 8.5, 8.6.<br>**PC 9,** AI PC- 9.4<br>**PC 11** , PC AI 11.1, 11.2, 11.3.<br>**PK12,** AI PC-12.1, 12.2, 12.3. | Testing<br>Frontal survey<br>Interactive survey<br>olving situational problems, defending medical histories, testing practical skills | 5.2 |
| **14.** | Cerebrovascular diseases, acute cerebrovascular accidents | **Theoretical part:** *Classification* , risk factors, pathomorphology, clinical picture of strokes, subtypes of ischemic disorders. Issues of primary and secondary prevention. Additional examination methods confirming the diagnosis, principles of treatment depending on the features of pathogenesis. Organization of assistance to patients with strokes, provision of assistance at various stages, principles of treatment depending on pathogenesis, basic and differentiated therapy for strokes. Rehabilitation for various focal symptoms.<br>**Practical part:** Conduct a survey, identify complaints, examine a patient with various forms of cerebrovascular pathology, conduct a differential diagnosis, prescribe an examination and treatment plan.<br>Provide emergency care for acute cerebrovascular accidents. Determine the depth of consciousness disorder, identify paralysis in a comatose patient, prevent somatic complications and bedsores. Create a plan for primary and secondary stroke prevention. Create a rehabilitation plan.<br>About the design of the workbook, solving topical problems, analyzing thematic patients, working with educational, scientific and reference literature | **UC 1,** AI UC-1.1, -1.2, 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC – 1,** PC AI – 1.1, 1.2,<br>**PC 2,** AI PC-2 .1. 2,2,2,4, 2.5, 2.6, 2.7, 2.8,2.9.<br>**PC 3,** AI PC-3.1. 3.2.<br>**PC 4,** AI PC-4.1. 4.2, 4.3.<br>**PC 5,** AI PC-5. 1., 5.2, 5.3.<br>**PC 6,** AI PC-6.1, 6.3, 6.4.<br>**PC 7** , AI PC-7.1<br>**PC8,** AI PC-8.4, 8.5, 8.6.<br>**PC 9,** AI PC- 9.4<br>**PC 11** , PC AI 11.1, 11.2, 11.3.<br>**PC 12,** AI PK-12.1, 12.2, 12.3. | Testing<br>Frontal survey<br>Interactive survey<br>Solving situational problems, defending medical histories, testing practical skills | 5.2 |
| **15.** | Acute neuroinfections, meningitis, encephalitis | **Theoretical part:** Etiology, classification, clinical picture of acute infectious diseases of the nervous system – meningitis, encephalitis, as well as: poliomyelitis, acute infectious myelitis, acute primary polyradiculoneuritis Guillain-Barré. Classification of acute neuroinfections, clinical picture of the main forms of meningitis – serous, purulent, tuberculous. Differential diagnostics by clinical | **UC 1,** AI UC-1.1, -1.2, 1.5.<br>**UK 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC – 1,** PC AI – 1.1, 1.2, | Testing<br>Frontal survey<br>Interactive survey | 5.2 |

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| | | manifestations and cerebrospinal fluid, treatment features, possible complications, examination issues, rehabilitation.<br>Classification, clinical features of encephalitis, diagnostics. Tick-borne encephalitis: epidemiology, clinical features, treatment, prevention. Clinic, diagnostics of herpes encephalitis, poliomyelitis, acute infectious myelitis, acute polyradiculoneuritis of Guillain-Barré.<br>**Practical part:** Collect anamnesis and epidemiological anamnesis, check meningeal symptoms, evaluate cerebrospinal fluid analysis, draw up an examination and treatment plan.<br>On the design of a workbook, solving topical problems, analyzing a thematic patient, working with educational, scientific and reference literature. | **PC 2,** AI PC-2 .1. 2,2,2,4, 2.5, 2.6, 2.7, 2.8,2.9.<br>**PC 3,** AI PC-3.1. 3.2.<br>**PC 4,** AI PC-4.1. 4.2, 4.3.<br>**PC 5,** AI PC-5. 1., 5.2, 5.3.<br>**PC 6,** AI PC-6.1, 6.3, 6.4.<br>**PC 7** , AI PC-7.1<br>**PC8,** AI PC-8.4, 8.5, 8.6.<br>**PC 9,** AI PC- 9.4<br>**PC 11** , PC AI 11.1, 11.2, 11.3.<br>**PC 12,** AI PC -12.1, 12.2, 12.3. | Solving situational problems, defending medical histories, testing practical skills | |
| **16.** | Chronic neuroinfections, multiple sclerosis | **Theoretical part:** Definition of chronic and slow neuroinfections. Etiology, clinical picture of early and late neurosyphilis, neuro AIDS, issues of diagnostics, treatment, prevention. Etiology, pathogenesis, pathomorphology of multiple sclerosis, early diagnostics, clinical manifestations, principles of treatment at various stages of the disease. Acute disseminated encephalomyelitis, clinical picture, diagnostics, treatment. Additional examination methods allowing to clarify the diagnosis, principles of treatment, rehabilitation<br>**Practical part:** Collect anamnesis, examine a patient with suspected chronic neuroinfection, draw up a plan for examination and treatment of patients with multiple sclerosis, disseminated encephalomyelitis, neurosyphilis , neuro sclerosis.<br>On the design of a workbook, solving topical problems, analyzing a thematic patient, working with educational, scientific and reference literature. | **UC 1,** AI UC-1.1, -1.2, 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC – 1,** PC AI – 1.1, 1.2,<br>**PC 2,** AI PC-2 .1. 2,2,2,4, 2.5, 2.6, 2.7, 2.8,2.9.<br>**PC 3,** AI PC-3.1. 3.2.<br>**PC 4,** AI PC-4.1. 4.2, 4.3.<br>**PC 5,** AI PC-5. 1., 5.2, 5.3.<br>**PC 6,** AI PC-6.1, 6.3, 6.4.<br>**PC 7** , AI PC-7.1<br>**PC8,** AI PC-8.4, 8.5, 8.6.<br>**PC 9,** AI PC- 9.4<br>**PC 11** , AI AI 11.1, 11.2, 11.3.<br>**PC 12,** AI PC -12.1, 12.2, 12.3. | Testing<br>Frontal survey<br>Interactive survey<br>Solving situational problems, defending medical histories , testing practical skills | 5.2 |
| **17.** | Paroxysmal disorders of consciousness – epilepsy, fainting, vegetative crises. Vegetative dystonia syndrome, hypothalamic syndrome | **Theoretical part:** Classification of epilepsy and epileptic seizures. Etiology and pathogenesis of epilepsy and epileptic syndromes. Clinical picture - paroxysmal and constant symptoms. Differential diagnostics of epilepsy and other paroxysmal conditions. Syncope, classification, clinical picture. Vegetative crises. Additional methods used in examination of patients with attacks of loss of consciousness and convulsive syndrome. Treatment of epilepsy, military and labor examination. Vegetative dystonia syndrome, hypothalamic syndrome - etiology, clinical manifestations, differential diagnostics, principles of therapy.<br>**Practical part:** Collect the patient's medical history with loss of consciousness, conduct differential diagnostics. Be able to provide assistance during a hysterical, epileptic seizure, fainting. Make a plan for examining a patient with convulsive and syncopal states, evaluate the results of additional methods (EEG, ECHO-EG, CT, MRI, cerebrospinal fluid, etc.), prescribe therapy.<br>On the design of a workbook, solving topical problems, analyzing a thematic patient, working with educational, scientific and reference literature. | **UC 1,** AI UC -1.1, -1.2, 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC -5.1, 5.2, 5.4<br>**GPC 6,** AI GPC -6.1, 6.3.<br>**PC – 1,** PC AI – 1.1, 1.2,<br>**PC 2,** AI PC-2 .1. 2,2,2,4, 2.5, 2.6, 2.7, 2.8,2.9.<br>**PC 3,** AI PC-3.1. 3.2.<br>**PC 4,** AI PC-4.1. 4.2, 4.3.<br>**PC 5,** AI PC-5. 1., 5.2, 5.3.<br>**PC 6,** AI PC-6.1, 6.3, 6.4.<br>**PC 7** , AI PC-7.1<br>**PC8,** AI PC-8.4, 8.5, 8.6.<br>**PC 9,** AI PC- 9.4<br>**PC 11** , PC AI 11.1, 11.2, 11.3.<br>**PC 12,** AI PC-12.1, 12.2, 12.3. | Testing<br>Frontal survey<br>Interactive survey<br>Solving situational problems, defending medical histories, testing practical skills | 5.2 |
| **18.** | Hereditary | **Theoretical part:** definition of hereditary diseases, their general characteristics, | **UC 1,** AI UC-1.1, -1.2, 1.5. | Testing | 5.2 |

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| | and degenerative diseases affecting the nervous system | classification of hereditary diseases with damage to the nervous system. The main clinical manifestations of neuromuscular diseases, hereditary diseases with predominant damage to the extrapyramidal system, phakomatoses. The importance of paraclinical diagnostic methods, principles of treatment, prevention. The main clinical manifestations, early diagnostics of myasthenia, syringomyelia, amyotrophic lateral sclerosis. Principles of diagnostics and treatment of myasthenia, assistance during crises.<br>**Practical part:** Collect the patient's medical and life history, make topical and clinical diagnoses, conduct differential diagnosis, draw up a pedigree, determine the type of inheritance, draw up an examination and treatment plan. About the design of the workbook, solving topical problems, analyzing the subject patient, working with educational, scientific and reference literature. | **UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC – 1,** PC AI – 1.1, 1.2,<br>**PC 2,** AI PC-2 .1. 2,2,2,4, 2.5, 2.6, 2.7, 2.8,2.9.<br>**PC 3,** AI PC-3.1. 3.2.<br>**PC 4,** AI PC-4.1. 4.2, 4.3.<br>**PC 5,** AI PC-5. 1., 5.2, 5.3.<br>**PC 6,** AI PC-6.1, 6.3, 6.4.<br>**PC 7** , AI PC-7.1<br>**PC8,** AI PC-8.4, 8.5, 8.6.<br>**PC 9,** AI PC- 9.4<br>**PC 11** , PC AI 11.1, 11.2, 11.3.<br>**PC 12,** AI PC -12.1, 12.2, 12.3. | Frontal survey<br>Interactive survey<br>Solving situational problems, defending medical histories, testing practical skills | |
| **19.** | Traumatic brain injury | **Theoretical part:** Classification of TBI, main symptoms, pathogenesis, pathomorphology, clinical manifestations, differential diagnosis of various forms of TBI, possible complications and long-term consequences. Causes of brain compression (hematomas, depressed skull fractures, subdural hydromas, pneumocephalus). Types of hematomas. Differential diagnosis between contusion and compression of the brain. Principles of treatment of all forms of TBI, prognosis , rehabilitation.<br>**Practical part:** examination methods for patients with TBI, determine the nosological form and management tactics, prescribe an examination plan and drug treatment for each nosological form, eliminate vital function disorders in severe TBI, determine indications for surgical treatment for intracranial hematomas. Rehabilitation after TBI.<br>On the design of a workbook, solving topical problems, analyzing a thematic patient, working with educational, scientific and reference literature. | **UC 1,** AI UC -1.1, -1.2, 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC -5.1, 5.2, 5.4<br>**GPC 6,** AI GPC -6.1, 6.3.<br>**PC – 1,** PC AI – 1.1, 1.2,<br>**PC 2,** AI PC -2 .1. 2,2,2,4, 2.5, 2.6, 2.7, 2.8,2.9.<br>**PC 3,** AI PC-3.1. 3.2.<br>**PC 4,** AI PC-4.1. 4.2, 4.3.<br>**PC 5,** AI PC-5. 1., 5.2, 5.3.<br>**PC 6,** AI PC-6.1, 6.3, 6.4.<br>**PC 7** , AI PC-7.1<br>**PC8,** AI PC-8.4, 8.5, 8.6.<br>**PC 9,** AI PC- 9.4<br>**PC 11** , PC AI 11.1, 11.2, 11.3.<br>**PC 12,** AI PC-12.1, 12.2, 12.3. | Testing<br>Frontal survey<br>Interactive survey<br>Solving situational problems, defending medical histories, testing practical skills | 5.2 |
| **20.** | Tumors of the brain and spinal cord | **Theoretical part:** classification and clinical presentation of brain and spinal cord tumors of various localizations, additional research methods in outpatient and central regional hospital settings, in neurological and neurosurgical departments. Pathogenesis of general cerebral, focal and dislocation symptoms, changes in radiographs and fundus in hypertension syndrome,<br>Stages of development of focal symptoms in extra- and intramedullary tumors of the spinal cord, tumors of the cerebellopontine angle, pituitary gland and equine tail.<br>**Practical part:** Collect anamnesis and examine the neurological status of a patient with tumors of the nervous system, outline an examination plan in a polyclinic and specialized department, identify signs of increased intracranial pressure based on complaints, radiographs and fundus examination, perform ECHO-EG.<br>On the design of a workbook, solving topical problems, analyzing a thematic | **UC 1,** AI UC -1.1, -1.2, 1.5.<br>**UC 3,** AI UC-3.1, 3.3.<br>**GPC 5,** AI GPC-5.1, 5.2, 5.4<br>**GPC 6,** AI GPC-6.1, 6.3.<br>**PC – 1,** PC AI – 1.1, 1.2,<br>**PC 2,** AI PC-2 .1. 2,2,2,4, 2.5, 2.6, 2.7, 2.8,2.9.<br>**PC 3,** AI PC-3.1. 3.2.<br>**PC 4,** AI PC-4.1. 4.2, 4.3.<br>**PC 5,** AI PC-5. 1., 5.2, 5.3.<br>**PC 6,** AI PC-6.1, 6.3, 6.4.<br>**PC 7** , AI PC-7.1<br>**PC8,** AI PC-8.4, 8.5, 8.6. | Rubicon | 5.2 |

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| | | patient, working with educational, scientific and reference literature. | **PC 9,** AI PC- 9.4<br>**PC 11** , PC AI 11.1, 11.2, 11.3.<br>**PC 12,** AI PC -12.1, 12.2, 12.3. | | |
| | **Total hours** | | | | 86 |

## 2.4 . Interactive forms of learning

| Item No. | Topic of practical lesson, lecture | Labor intensity in hours | Interactive form of learning | Labor intensity in hours, in % of the lesson |
|---|---|---|---|---|
| **Clinical practical lesson** | | | | |
| 1. | Research methods and syndromes of damage to the sensitive sphere | 3.4 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 2. | Voluntary movements and their disorders; symptoms of damage to the corticomuscular tract at various levels; central and peripheral paresis | 3.4 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 3. | Symptoms and syndromes of damage to the spinal cord, its roots and peripheral nerves | 3.4 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 4. | Extrapyramidal system, symptoms of its damage. Coordination of movements and its disorders | 3.4 | Interactive survey, brainstorming | 30 min. (0.5 hours)/14.7% |
| 5. | Symptoms and syndromes of damage to the brainstem and I-VI pairs of cranial nerves | 3.4 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 6. | Symptoms and syndromes of damage to the brainstem and VII-XII pairs of cranial nerves. | 3.4 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 7. | Higher brain functions and their disorders. Syndromes of damage to individual lobes of the brain | 3.4 | Interactive survey, brainstorming | 30 min. (0.5 hours)/14.7% |
| 8. | Vegetative nervous system syndromes of its disorders. Research methods | 3.4 | Interactive survey Brainstorming | 30 min. (0.5 hours)/14.7% |
| 9. | Meningeal symptom complex, hypertensive syndrome | 3.4 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 10. | Additional research methods in neurology and neurosurgery". | 3.4 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 11. | Diseases of the peripheral nervous system. | 5.2 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 12. | Dorsalgia. Neurological manifestations of vertebral osteochondrosis | 5.2 | Business game | 30 min. (0.5 hours)/14.7% |
| 13. | Vascular diseases of the brain and spinal cord. Chronic cerebrovascular diseases. Dyscirculatory encephalopathy. | 5.2 | Business game | 30 min. (0.5 hours)/14.7% |
| 14. | Acute cerebrovascular diseases. Transient ischemic attacks. Strokes. | 5.2 | Business game, brainstorming | 30 min. (0.5 hours)/14.7% |
| 15. | Acute infectious diseases of the | 5.2 | Business game | 30 min. (0.5 |

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| | nervous system. Meningitis, encephalitis. | | | hours)/14.7% |
| 16. | Chronic infectious diseases of the nervous system. Multiple sclerosis | 5.2 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 17. | Paroxysmal disorders of consciousness. Epilepsy. | 5.2 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 18. | Hereditary and degenerative diseases affecting the nervous system. | 5.2 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 19. | Traumatic brain injury | 5.2 | Interactive survey | 30 min. (0.5 hours)/14.7% |
| 20. | Tumors of the brain and spinal cord | 5.2 | Interactive survey | 30 min. (0.5 hours)/14.7% |

## 2.5. Criteria for assessing learning outcomes

The basis for determining the level of knowledge, skills, and abilities are the assessment criteria - completeness and correctness:

- correct, precise answer;
- correct, but incomplete or inaccurate answer;
- incorrect answer;
- no answer.

When assigning marks, the classification of errors and their quality are taken into account:

- gross errors;
- similar errors;
- minor errors;
- shortcomings.

### Distribution of marks in practical classes, VII - VIII semesters

| No. p/p | Topic of the practical lesson | Theoretical skaya part | Practical part | Overall rating |
|---|---|---|---|---|
| 1. | Research methods and syndromes of damage to the sensitive sphere | 2-5 | 2-5 | 2-5 |
| 2. | Voluntary movements and their disorders; symptoms of damage to the corticomuscular tract at various levels; central and peripheral paresis | 2-5 | 2-5 | 2-5 |
| 3. | Symptoms and syndromes of damage to the spinal cord, its roots and peripheral nerves | 2-5 | 2-5 | 2-5 |
| 4. | Extrapyramidal system, symptoms of its damage. Coordination of movements and its disorders | 2-5 | 2-5 | 2-5 |
| 5. | Symptoms and syndromes of damage to the brainstem and I-VI pairs of cranial nerves | 2-5 | 2-5 | 2-5 |
| 6. | Symptoms and syndromes of damage to the brainstem and VII-XII pairs of cranial nerves. | 2-5 | 2-5 | 2-5 |
| 7. | Higher brain functions and their disorders. Syndromes of damage to individual lobes of the brain | 2-5 | 2-5 | 2-5 |

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| 8. | Vegetative nervous system syndromes of its disorders. Research methods | 2-5 | 2-5 | 2-5 |
| 9. | Meningeal symptom complex, hypertensive syndrome | 2-5 | 2-5 | 2-5 |
| 10. | Additional research methods in neurology and neurosurgery." | 2-5 | 2-5 | 2-5 |
| 11 | Diseases of the peripheral nervous system | 2-5 | 2-5 | 2-5 |
| 12. | Dorsalgia. Neurological manifestations of vertebral osteochondrosis | 2-5 | 2-5 | 2-5 |
| 13. | Vascular diseases of the brain and spinal cord. Chronic cerebrovascular diseases. Dyscirculatory encephalopathy. | 2-5 | 2-5 | 2-5 |
| 14. | Acute cerebrovascular diseases. Transient ischemic attacks. Strokes. | 2-5 | 2-5 | 2-5 |
| 15. | Acute infectious diseases of the nervous system. Meningitis, encephalitis. | 2-5 | 2-5 | 2-5 |
| 16. | Chronic infectious diseases of the nervous system. Multiple sclerosis | 2-5 | 2-5 | 2-5 |
| 17. | Paroxysmal disorders of consciousness. Epilepsy. | 2-5 | 2-5 | 2-5 |
| 18. | Hereditary and degenerative diseases affecting the nervous system. | 2-5 | 2-5 | 2-5 |
| 19. | Traumatic brain injury | 2-5 | 2-5 | 2-5 |
| 20. | Tumors of the brain and spinal cord | 2-5 | 2-5 | 2-5 |

**Incoming inspection**

Conducted during the first lesson, includes testing in the Moodle system.
Access mode: https://educ-amursma.ru/mod/quiz/view.php?id=11466

**Current control**

Current control includes initial and final control of knowledge.
Initial control **is** carried out by the teacher at the beginning of each lesson in the form of a frontal survey and testing on the given topic.
Final control – includes control over the methodology of performing practical skills , solving topical and situational problems.
The final grade during the current knowledge assessment is given on the day of the lesson, as the arithmetic mean result for all types of activities provided for in the given lesson of the discipline's work program.

**Midterm control** includes control classes in sections in the 7th and 8th semesters and consists of an assessment of practical skills, abilities and theoretical knowledge developed by students during the cycle of classes, test control in the "Moodle" system, Access mode in the 7th semester https://educ-amursma.ru/mod/quiz/view.php?id=11244 , Access mode in the 8th semester - https://educ-amursma.ru/mod/quiz/view.php?id=11245 .

**The midterm assessment** (exam) is conducted upon completion of the studies in the VIII semester and includes: **a final test,** conducted in the Moodl system **, e-mail address: https://educ-amursma.ru/mod/quiz/view.php?id=11236 ,** an oral answer to the examination ticket, including 3 questions: on topical diagnostics, private neurology and neurosurgery, and on the organization of care for neurological patients (principles of diagnosis, treatment, prevention of neurological diseases).

During the midterm assessment, the average grade of the current academic performance, the academic discipline, the active and high-quality performance of students in various types of activities, including educational and research, are taken into account. Based on the results, a grade is given - "excellent", "good", "satisfactory", "unsatisfactory". A student can claim to receive the grade "excellent" automatically if he/she has won a prize in disciplinary or interdisciplinary Olympiads (university, regional) and has an average grade based on the results of the current academic performance of at least 4.8 points .

**Interim assessment is carried out through a 3-stage exam system:**

1. Final control – includes testing in the Moodle system. The total number of tests posted in the system is 100.
2. Completion of the practical part of the discipline in full: involves attending all practical classes, practicing practical skills, and defending a case history. Passing practical skills (control of the level of competence development) occurs during final classes and includes in the 7th semester - checking the skills of examining the neurological status, in the 8th semester - defending the case history, skills of examining neurological patients, making a topical, clinical diagnosis, drawing up an examination and treatment plan. Based on the assessments for the current control of knowledge, skills, and abilities in practical classes, the average score of current academic performance is calculated, which is recorded in the educational (electronic) journal. The average score of the current knowledge control is taken into account during the midterm certification.
3. Includes answers to 3 questions on the examination ticket, 2 of which are theoretical in nature and one is practical in nature.

**Rating scales for ongoing knowledge control**

The success of students in mastering the discipline (topics/sections), practical skills and abilities is characterized by a qualitative assessment and is assessed on a 5-point system: “5” - excellent, “4” - good, “3” - satisfactory, “2” - unsatisfactory.

**2.5.1. Assessment scales for current knowledge monitoring and midterm assessment**

The success of students in mastering the discipline (topics/sections), practical skills and abilities is characterized by a qualitative assessment and is assessed on a 5-point scale: “5” - excellent, “4” - good, “3” - satisfactory, “2” - unsatisfactory, “passed”, “failed”. The conversion of the mark into a point scale is carried out according to the following scheme:

| Mark on a 5-point scale | Binary system mark |
|---|---|
| "5" | passed |
| "4" | |
| "3" | |
| "2" | not credited |

**Assessment criteria (grades) of the theoretical part**

The mark "5" is received by the student if he demonstrates a deep and complete mastery of the content of the educational material, correctly and logically presents the answer, is able to connect theory with practice, express and substantiate his judgments **,** and formulates independent conclusions and generalizations when answering. When testing, allows up to 10% of erroneous answers.

The mark "4" is given to a student if he/she has fully mastered the educational material, navigates the studied material consciously, applies knowledge to solve practical problems, correctly states the answer, but the content and form of the answer have some inaccuracies or the answer is incomplete. When testing, up to 20% of erroneous answers are allowed.

The mark "3" is given to a student if he/she demonstrates knowledge and understanding of the main provisions of the educational material, but presents it incompletely, inconsistently, makes

inaccuracies, and is unable to substantiate his/her judgments with evidence. When testing, he/she makes up to 30% of erroneous answers.

The mark "2" is given to a student if he/she has fragmented, unsystematic knowledge, is unable to distinguish between the main and the secondary, presents the material in a disorderly and uncertain manner, and cannot apply knowledge to solve practical problems. When testing, makes more than 30% of incorrect answers.

**Assessment criteria for the practical part**

**"5" -** the student has fully mastered the practical skills and abilities provided for by the course work program (correctly interprets the patient's complaints, anamnesis, objective examination data, has mastered the methods of examination and interpretation of neurological status.

Formulates a topical and clinical diagnosis, prescribes examination and treatment, interprets data from additional examination methods.

"4" – the student has fully mastered the practical skills and abilities provided for in the course's work program, but makes some inaccuracies.

"3" – the student has only some practical skills and abilities.

*"2"* - practical skills and abilities are performed with gross errors or there was no attempt to demonstrate theoretical knowledge and practical skills.

**Criteria for evaluation of educational medical history**

**"5"** – preparation of the educational medical history in accordance with the requirements.

**"4" -** in the educational medical history, the student makes inaccuracies in the description of the neurological status, the formulation of the topical and clinical diagnosis, the conduct of a differential diagnosis, the appointment of examination and treatment.

**"3" -** the medical history is filled with errors, written in illegible handwriting, is uninformative, there are inaccuracies in the formulation of the topical and clinical diagnosis, its justification and differential diagnosis, and in the preparation of the examination and treatment plan.

**"2" -** the medical history is filled with gross errors, written in illegible handwriting, is uninformative, and gross errors have been made in all main sections.

**Working off disciplinary debts**

If a student misses a class for a valid reason, he/she has the right to make it up and receive the maximum grade provided for by the course work program for that class. A valid reason must be documented.

If a student misses a class for an unjustified reason or receives a "2" mark for all activities in the class, he/she is required to make it up. In this case, the mark received for all activities is multiplied by 0.8.

If a student is excused from a class at the request of the dean's office (participation in sports, cultural and other events), then he is given a grade of "5" for this class, provided that he submits a report on the completion of mandatory extracurricular independent work on the topic of the missed class.

**Criteria for evaluation of test control and control in the "Moodle" system.**

"Excellent" - correct answers to 90% or more questions

"good" - correct answers from 80 to 89%

"Satisfactory" - from 70 to 79%

"unsatisfactory" - less than 70% correct answers.

**Criteria for final assessment (midterm assessment) at the exam**

**Excellent –** for the depth and completeness of mastering the content of the educational material, in which the student easily navigates, for the ability to connect theoretical questions with practical ones, express and justify their judgments, and present the answer competently and logically. Practical skills and abilities provided for by the working program of the discipline are fully mastered.

**"Good" -** the student has fully mastered the educational material, is oriented in it, correctly states the answer, but the content and form have some inaccuracies. The practical skills and abilities provided by the working program of the discipline have been fully mastered, but allow some inaccuracies

**"Satisfactory"** - the student has mastered the knowledge and understanding of the main provisions of the educational material, but presents it incompletely, inconsistently, and does not know how to express and justify his/her judgments. Has only some practical skills and abilities.

**"Unsatisfactory" -** the student has fragmented and unsystematic knowledge of the educational material, is unable to distinguish between the main and secondary, makes mistakes in defining concepts, distorts their meaning, presents the material in a disorderly and uncertain manner . Performs practical skills and abilities with gross errors.

A student can claim to receive an "excellent" grade automatically if he/she has won a prize in disciplinary or interdisciplinary Olympiads (university, regional) and has an average grade for the current academic performance of at least 4.8 points **.** A student can refuse the "automatic" grade and take an exam or test together with a group on a general basis.

**Regulations on holding the Olympiad in the discipline "Neurology, neurosurgery" at the Department of Nervous Diseases, Psychiatry and Narcology.**

The Olympiad in the discipline "Neurology, neurosurgery" is organized and held by the Department of Nervous Diseases, Psychiatry and Narcology for fourth-year students completing the study of this discipline.

**The aim of the Olympiad is:**

- encouraging students to study neurology and neurosurgery
- development of logic, clinical thinking.

**Olympiad objectives:**

- identifying students interested in in-depth study of the discipline
- development of students' cognitive abilities
- encouragement of students who have demonstrated deep knowledge of the subject and the ability to apply the acquired knowledge in practice

**Procedure for holding the Olympiad**

Students of the 4th year of the medical and pediatric faculties are allowed to participate in the Olympiad. Students with an average score in the discipline for two semesters of at least 4.5 points can participate in the Olympiad. Students applying for participation in the Olympiad should not have academic debt in the discipline and missed lectures without good reason. The decision of students to participate in the Olympiad is confirmed by an application.

From the moment of registration, the participant is prohibited from using a telephone, microphone or other means of communication. A student caught using such means of communication at any stage is disqualified from participating in the Olympiad.

**Basic requirements for holding the Olympiad**

The Olympiad will include the following competitions and tasks

1. Test control
2. Clinical case (Situational tasks)

Answers to competition tasks are submitted in writing. The results are announced after the summing up.

**Regulations of the Olympiad**

1. Test control – 1 hour
2. Clinical case (Situational tasks) – 30 minutes

**Criteria for evaluating competition tasks**

**Criteria for assessing test assignments.** When assessing the completion of test assignments, the following is taken into account:

70% -79% of correct answers corresponds to the grade "Satisfactory"
80 – 89% - “Good”
90% or more – “Excellent”

**Criteria for assessing the solution of topical, situational problems:**

- “5” (excellent) is awarded to a student if all questions are answered correctly, in full, and their justification is given;
- “4” (good) is given to a student whose answers to all questions are correct, but there is no clear justification and isolated errors in the details.
- “3” (satisfactory) is given to a student if not all questions are answered correctly, the explanation of the solution is incomplete, inconsistent, contains errors, and has a weak theoretical basis.
- “2” (unsatisfactory) is given to a student if the problem is not solved correctly, the explanation of the solution is incomplete, inconsistent, contains errors, and lacks theoretical justification.

## 2.6. INDEPENDENT WORK OF STUDENTS
(CLASSROOM, EXTRACURRICULAR)

Independent work of students consists of two components: classroom and extracurricular (mandatory for all students and optional) work.

### Independent classroom work of students

Independent classroom work of students makes up 25% of the time allocated for the lesson. The main didactic tasks of independent work of students under the guidance of the teacher: consolidation of knowledge and skills acquired in the course of studying the academic discipline in lectures and practical classes; prevention of their forgetting; expansion and deepening of the educational material; formation of the ability and skills of independent work; development of independent thinking and creative abilities of students. The classroom work of students includes: checking current knowledge on the topic of the practical lesson in the form of an oral or written survey, test control, solving situational problems, interpreting laboratory and instrumental indicators, drawing up a plan for examination, treatment and prevention. Familiarization with the teaching aids, tables, diagrams, stands available at the department. Supervision of patients and registration of the educational medical history, practicing practical skills and abilities. Individual work with the development and implementation of practical skills.

### Extracurricular independent work of students

The following can be used as the main forms of extracurricular independent work: studying the main and additional educational and scientific literature; solving situational problems, tests, working in an online classroom; preparing oral reports (reports) , essays, presentations; writing an educational case history; performing diagnostic manipulations; observing and self-observing specific clinical phenomena being studied, etc. Also, students' research work: conducting research on a selected topic, preparing abstract reports, presentations on a selected topic for club meetings, working with archival materials, mastering paraclinical research methods, preparing reports on the results of the research for the final student conference. This type of educational activity should be based on the activity, initiative, consciousness and independence of students.

## EXTRACURRICULAR INDEPENDENT WORK OF STUDENTS

| No. | Topic of the practical lesson | Preparation time (hours) | Form | |
|---|---|---|---|---|
| | | | Mandatory and the same for all students | At the students' choice |
| 1. | Sensitive sphere and syndromes of its disturbance | 3 | Preparation for the practical lesson. Mastering the methodology for studying the sensitive sphere. Draw in your notebook the types of sensory disorders Solving topical problems | |
| 2. | Motor sphere and symptoms of its disorders | 3 | Preparation for the practical lesson. Mastering the methodology for studying the motor sphere. Solving topical problems | Abstracts, computer presentation: organization of motor act; regulation of muscle tone. Selection of illustrations on the topic |
| 3. | Syndromes of motor analyzer damage, syndromes of spinal cord damage | 3 | Preparation for the practical lesson. Mastering the methodology for studying the motor sphere. | Abstracts, computer presentation: regulation of pelvic organs function; organization of motor act |
| 4. | Extrapyramidal system and syndromes of its disorders. Coordination system and its disorders. | 3 | Preparation for the practical lesson. Mastering the methodology of research and identification of symptoms of damage to the extrapyramidal system. Solving topical problems Draw a diagram of muscle tone regulation | Abstracts, presentations: types of extrapyramidal disorders |
| 5. | Syndromes of the brainstem and 1-6 pairs of cranial nerves | 3 | Preparation for the practical lesson. Mastering the methodology for studying the functions of the cranial nerve. Solving topical problems Sketch the topical lesions of the trunk at different levels | Abstracts, presentations: disorders of consciousness; gaze regulation; facial pain. Tables, selection of illustrations on the topic |
| 6. | Syndromes of the trunk and 7-12 pairs of cranial nerves | 3 | Preparation for the practical lesson. Mastering the methodology for studying the functions of the cranial nerve. Solving topical problems | Abstracts: dizziness; reticular formation; bulbar disorders, disorders of consciousness. Tables, selection of illustrations on |

| | | | | |
|---|---|---|---|---|
| | | | Sketch the topical lesions of the trunk at different levels | the topic |
| 7. | Syndromes of higher brain function impairment | 3 | Preparation for the practical lesson.<br>Mastering the methodology for studying higher brain functions.<br>Solving topical problems. | Abstracts: theories of localization of higher brain functions in the cortex; speech disorders; praxis disorders.<br>Production of tables, tablets, video clips. |
| 8. | Symptoms and syndromes of autonomic nervous system damage | 3 | Preparation for the practical lesson.<br>Mastering the methodology for studying the autonomic nervous system.<br>Solving topical problems<br>Determine your vegetative tone | Abstracts, presentations: Methods of research of the autonomic nervous system; autonomic dystonia syndrome; panic attacks. |
| 9. | Hypertensive syndrome, meningeal symptom complex. | 3 | Preparation for the practical lesson.<br>Mastering the methodology for studying meningeal symptoms, mastering the examination algorithm for suspected hypertensive syndrome, reading meningeal radiographs, CT, MRI.<br>Solving topical problems, test assignments. | Abstracts, presentations: types of hydrocephalus, pathogenesis of meningeal symptoms, diagnosis of hypertension syndrome. |
| 10 | Additional research methods. Credit lesson | 3 | Preparation for the practical lesson.<br>Reading X-rays, CT, MRI.<br>Solving topical problems, test assignments. | Abstracts, presentations:<br>Additional research methods in neurology. Mastering the ECHO-EG technique. |
| 11. | Diseases of the peripheral nervous system | 3 | Preparation for the practical lesson.<br>Solving situational problems<br>Patient supervision, medical history preparation. | Abstracts, presentations: Tunnel syndromes; Diagnosis of polyneuropathies; Inflammatory polyneuropathies.<br>Production of tables, tablets, video clips. |
| 1 2. | Dorsalgia. Neurological manifestations of vertebral osteochondrosis | 3 | Preparation for the practical lesson.<br>Solving situational problems<br>Make a plan for examining a patient with back pain | Abstracts, presentations: Dorsalgia. Indications for surgical treatment of osteochondrosis; fibromyalgia and myofascial syndromes. |

| | | | | |
|---|---|---|---|---|
| | | | Patient supervision, medical history preparation. | Production of tables, tablets, video clips. |
| 13. | Chronic cerebrovascular diseases | 3 | Preparation for the practical lesson. Solving situational problems Create a plan for examining a patient with initial manifestations of CVP. Patient supervision, medical history preparation. | Abstracts, presentations: Preclinical stage of CVP; Clinical symptoms of cerebrovascular insufficiency |
| 14. | Acute cerebrovascular diseases | 3 | Preparation for the practical lesson. Solving situational problems Create a plan for patient care at the pre-hospital stage, in the emergency room, and rehabilitation measures. Patient supervision, medical history preparation. | Abstracts, presentations: Transient ischemic attacks; Treatment of strokes at the evacuation stages; Basic therapy of strokes; Indications for thrombolysis; Secondary prevention of stroke. Reviews of magazines and newspapers on the topic. |
| 15. | Acute neuroinfections | 3 | Preparation for the practical lesson. Solving situational problems Make a plan for examining a patient with a meningeal symptom complex Patient supervision, medical history preparation. | Abstracts, presentations: herpes encephalitis, epidemiology of tick-borne encephalitis. Production of tables, tablets, video clips. |
| 16. | Chronic neuroinfections | 3 | Preparation for the practical lesson. Solving situational problems Patient supervision, medical history preparation. | Abstracts: Neurological manifestations of AIDS, Pathogenesis of MS; Therapy of multiple sclerosis; Early and late forms of neurosyphilis; Slow infections Production of tables, tablets, video clips. |
| 17 . | Epilepsy and other paroxysmal disorders. Diseases of the autonomic nervous system. Headache | 3 | Preparation for the practical lesson. Solving situational problems Make a plan for examining a patient with new-onset loss of consciousness. Patient supervision, medical history | Abstracts, presentations: Temporal epilepsy; Syncopal states. Primary headache; Cluster headache. Production of tables, tablets, video clips. |

| | | | | |
|---|---|---|---|---|
| | | | preparation. | |
| 18. | Hereditary and degenerative diseases of the nervous system | 3 | Preparation for the practical lesson.<br>Solving situational problems<br>Patient supervision, medical history preparation. | Abstracts, presentations: medical and genetic counseling; Phakomatoses; Hereditary ataxias; Chromosomal diseases.<br>Production of tables, tablets, video clips. |
| 19. | Traumatic brain injury | 3 | Preparing for the lesson.<br>Solving situational problems<br>Make a plan for examining a patient with TBI.<br>Patient supervision, medical history preparation. | Abstracts: Severe TBI; Consequences of TBI; Principles of rehabilitation in TBI.<br>Production of tables, tablets, video clips. |
| 20 | Tumors of the brain and spinal cord | 3 | Preparing for the lesson.<br>Solving situational problems<br>Make a plan for examining a patient with suspected hypertension syndrome.<br>Patient supervision, medical history preparation. | Abstracts, presentations: Early diagnostics of CNS tumors; Spinal cord tumors; brain tumors of various localizations.<br>Production of tables, tablets, video clips. |
| | **Labor intensity in hours** | 60 | 40 | 20 |
| **Total labor intensity (in hours)** | | **60 hours** | | |

### 2.7. Research work of students

Research work (RW ) of students is a mandatory section of the discipline and is aimed at the comprehensive formation of general cultural, general professional, professional competencies of students and provides for the study of specialized literature and other scientific and technical information on the achievements of domestic and foreign science and technology in the relevant field of knowledge, participation in scientific research, etc. RW includes:

1. Independent study of additional literature on the chosen topic
2. Compiling reviews of literature and Internet resources on selected topics
3. Reports and presentations on the history of the study of the issue
4. Mastering paraclinical examination methods: ultrasound, neuropsychological, etc. Examination of healthy people and patients with analysis of results.
5. Analysis of radiological and neuroimaging examination methods for various pathologies.
6. Working with archival documents, analysis of the clinic, examination results, etc.
7. Collection and analysis of clinical data for a specific pathology, analysis of treatment methods.
8. Preparation of thematic meetings of the student circle with abstract reports and results of independent work.
9. Preparing reports for the final student conference.

To evaluate research work, a binary assessment scale is adopted: “passed” and “failed”.

The topics of research work can be chosen by students independently in consultation with the teacher or from the list below (taking into account the scientific direction of the department). Approximate topics of research work of students:

1. Functional asymmetry of the brain.
2. Cognitive impairment, detection and prevention.
3. Prevalence and types of headaches
4. Frequency of extrapyramidal disorders in the Amur region.
5. Epidemiology of demyelinating diseases in the Amur region.
6. Strokes in young people.
7. Surgical treatment for stroke.
8. Outcomes of traumatic brain injury, causes influencing them.

## 3. EDUCATIONAL, METHODOLOGICAL AND INFORMATION SUPPORT FOR DISCIPLINE "NEUROLOGY, NEUROSURGERY"

Primary and additional literature, teaching aids and methodological recommendations developed by the teaching staff of the department

| **3.1. BASIC LITERATURE :** | |
|---|---|
| 1. Gusev, E. I. Neurology and neurosurgery. T. 1. Neurology: textbook: in 2 volumes / E. I. Gusev, A. N. Konovalov, V. I. Skvortsova. - 5th ed. , add. - Moscow: GEOTAR-Media, 2022. - 672 p. - ISBN 978-5-9704-7064-0. - Text: electronic // EBS “Student Consultant”: [website]. - URL: | https://www.studentlibrary.ru/book/ISBN9785970470640.html (date of access: 27.01.2023). - Access mode: by subscription. |

| | |
|---|---|
| 2. Gusev, E. I. Neurology and neurosurgery. Vol. 2. Neurosurgery: textbook: in 2 volumes / E. I. Gusev, A. N. Konovalov, V. I. Skvortsova; edited by A. N. Konovalov, A. V. Kozlov. - 5th ed., suppl. - Moscow : GEOTAR-Media, 2022. - 384 p. - ISBN 978-5-9704-7065-7. - Text: electronic // Electronic Library System "Student Consultant": [site]. - URL: | https://www.studentlibrary.ru/book/ISBN9785970470657.html (date of access: 27.01.2023). - Access mode: by subscription. |
| 3. Karpov S.M.Topical diagnosis of diseases of the nervous system/ Karpov S.M., Dolgova I.N. - M.: GEOTAR-Media, 2018. - 896 p.- ISBN 978-5-9704-4501-3. - Text: electronic // Electronic Library System "Student Consultant": [site]. - URL: | http://www.studentlibrary.ru/book/ISBN9785970445013.html (date of access:10.12.2019). - Access mode: by subscription. |
| **4.** Nikiforov, A. S. General neurology / A. S. Nikiforov, E. I. Gusev. - 2nd ed. ,corr. and additional - Moscow: GEOTAR-Media, 2015. - 704 p. - ISBN 978-5-9704-3385-0. | http://www.studmedlib.ru/book/ISBN9785970433850.html |
| **4.2. ADDITIONAL REFERENCES:** | |
| 5. Clinical neurology: monograph / R. P. Simon, M. J. Aminoff, D. A. Greenberg; trans. from English. edited by A. A. Skoromets. - Moscow: GEOTAR-Media, 2021. - 560 p. - ISBN 978-5-9704-6299-7. - Text: electronic // Electronic Library System "Student Consultant": [website]. - URL: | https://www.studentlibrary.ru/book/ISBN9785970462997.html (date of access: 03/28/2023). - Access mode: by subscription. |
| 6. Guide to practical classes on topical diagnostics of diseases of the nervous system: a tutorial / edited by L. V. Stakhovskaya. - 3rd ed., revised and enlarged. - Moscow: GEOTAR-Media, 2021. - 272 p. - ISBN 978-5-9704-6224-9. - Text: electronic // Electronic Library System "Student Consultant" [website]. - URL: | http://www.studmedlib.ru/book/ISBN9785970462249.html (date of access: 06.05.2021). - Access mode: by subscription. |
| 7. Fedin, A. I. Outpatient neurology. Selected lectures for primary care physicians: monograph / Fedin A. I. - Moscow: GEOTAR-Media, 2019. - 464 p. - ISBN 978-5-9704-5159-5. - Text: electronic // EBS "Student Consultant": [website]. - URL: | https://www.studentlibrary.ru/book/ISBN9785970451595.html (date of access: 03/28/2023). - Access mode: by subscription. |
| 8. Kolesnikov, L. L. Human anatomy: atlas: in 3 volumes. Volume 3. Neurology, esthesiology: atlas / Kolesnikov L. L. - Moscow: GEOTAR-Media, 2018. - 624 p. - ISBN 978-5-9704-4176-3. - Text: electronic // Electronic Library System "Student Consultant": [website]. - URL: | https://www.studentlibrary.ru/book/ISBN9785970441763.html (date of access: 15.03.2023). - Access mode: by subscription. |
| 9. Methods of functional diagnostics in neurology: a tutorial / edited by E. A. Koltsova. - Moscow: GEOTAR-Media, 2023. - 144 p. - ISBN 978-5-9704-7598-0, DOI: 10.33029/9704-7598-0-FDN-2023-1-144. - The electronic version is available on the website of the Electronic Library System "Student Consultant": [site]. URL: | https://www.studentlibrary.ru/book/ISBN9785970475980.html (date of access: 15.03.2023). - Access mode: by subscription. - Text: electronic |
| 10. Neurology and neurosurgery in general medical | https://www.books- |

| | |
|---|---|
| practice: a teaching aid / N.N. Usova, N.I. Belousova, V.Ya. Latysheva et al. - Gomel: Gomel State Medical University, 2022. - 166 p. - ISBN 9789855882511. - Text: electronic // EBS "Bukap": [site]. - URL: | up.ru/ru/book/nevrologiya-i-nejrohirurgiya-v-obcshevrachebnoj-praktike-14534391 . - Access mode: by subscription. |

## 3.3. Educational and methodological support of the discipline, prepared by the staff of the department

**Electronic and digital technologies:**

**Multimedia presentations:**

1. Sensitive sphere and syndromes of its disturbance
2. Motor sphere and syndromes of its disorders
3. Extrapyramidal disorders, coordination system and its disorders
4. Trunk lesion syndromes
5. Disorders of higher brain functions
6. The autonomic nervous system, syndromes of its disorders
7. Main symptoms and syndromes of autonomic nervous system disorders
8. Hypertensive syndrome
9. Meningeal symptom complex
10. Additional research methods in neurology and neurosurgery
11. Diseases of the peripheral nervous system
12. Dorsalgia, neurological manifestations of vertebral osteochondrosis
13. Cerebrovascular diseases, etiology, classification, chronic forms of CVD
14. Acute forms of CVP
15. Acute neuroinfections, meningitis
16. Acute neuroinfections, encephalitis
17. Chronic neuroinfections, multiple sclerosis
18. Hereditary diseases affecting the nervous system
19. Epilepsy and other paroxysmal disorders of consciousness
20. Traumatic brain injury
21. Diagnosis, treatment of traumatic brain injury
22. Tumors of the brain and spinal cord
23. Stroke prevention
24. Stroke Treatment
25. Treatment of acute cerebral stroke
26. Treatment of multiple sclerosis
27. Neuropathic pain
28. Acute hypertensive encephalopathy
29. Prevention of somatic complications of stroke
30. Pharmacotherapy of emergency conditions
31. Additional methods of research of the nervous system.

**Video films, video clips used in teaching students (prepared by department staff)**

**Educational videos:**

1. Methodology for studying cranial nerves
2. Methodology for studying the motor sphere
3. Investigation of meningeal symptoms
4. Lumbar puncture and cerebrospinal fluid dynamics tests
5. The patient's gait

**Videos , video clips, clinical cases:**

1. Brain tumor
2. Bone-plastic craniotomy
3. Temporal lobe epilepsy

4. Tick-borne encephalitis
5. Extrapyramidal disorders
6. Tourette syndrome
7. Progressive muscular dystrophy
8. Akinetic mutism
9. Types of epileptic seizures

## 3.4.Equipment used for the educational process

| Item No. | Name | Quantity |
|---|---|---|
| **1** | **Head of Department's Office** | |
| **2** | Personal computer | **1** |
| **3** | Printer | **1** |
| **4** | Laptop | **1** |
| **5** | System block | **1** |
| | **Educational workshops** | |
| **6** | Multimedia projector | **1** |
| **7** | Screen | **1** |
| **8** | ***Electrified stands*** Conducting pathways of the brain and spinal cord | **2** |
| **9** | ***Electrified stands*** The cerebral cortex | **3** |
| **10** | ***Electrified stand*** Syndromes of damage of oculomotor nerves | **1** |
| **11** | ***Stands:*** Conducting pathways and topical sections of the central nervous system | **2** |
| **12** | Brain dummy | **5** |
| **13** | Model: Brain in sagittal section | **1** |
| **14** | Scull | **2** |
| **15** | Set of vertebrae | **1** |
| **16** | Kits for the study of sensitivity, taste, smell, | **4** |
| **17** | Neurological mallets | **12** |
| **18** | Negatoscope | **4** |
| **19** | Sets of tables by lesson topics | |

**Tables, stands on the anatomy of the nervous system, general and specific neurology, additional research methods in neurology**

**Handouts:** *Sets of skull radiographs, spondylograms, contrast examination methods (PEG, ventriculography, myelography, angiography), CT, MRI* tomograms , *EEG, REG, EMG. CSF analyses.*

**Video lectures ( CDs )**

1. Stroke
2. Emergency diagnosis of stroke
3. Pathogenesis of multiple sclerosis
4. Treatment of multiple sclerosis
5. Epilepsy
6. Dizziness
7. Psychosomatic disorders
8. Alzheimer's disease
9. Post-stroke dementia

10. Diagnosis and treatment of Parkinson's disease
11. Neurological complications of diabetes mellitus

**3. 5. List of software**
**(commercial software products)**

| No. p/p | List of software (commercial software products) | Details of confirming documents documents |
|---|---|---|
| 1 | Operating system MSWindows 7 Pro | License number 48381779 |
| 2 | Operating system MSWindows 10 Pro | AGREEMENT No. UT-368 dated 09.21.2021 |
| 3 | MS Office | License number: 43234783, 67810502, 67580703, 64399692, 62795141, 61350919 |
| 4 | Kaspersky Endpoint Security for Business – Standard Russian Edition.<br>50-99 Node 2 year Educational Renewal License | Agreement 165A dated November 25, 2022 |
| 5 | 1C Accounting and 1C Salary | LICENSE AGREEMENT 612/L dated 02.02.2022 |
| 6 | PROF University | LICENSE AGREEMENT No. ЦБ-1151 dated 01.14.2022 |
| 7 | 1C: PROF Library | LICENSE AGREEMENT No. 2281 dated 11.11.2020 |
| 8 | Consultant Plus | Agreement No. 37/C dated 02/25/2022 |
| 9 | Contour.Tolk | Agreement No. K007556/22 dated 09/19/2022 |
| 10 | E-learning environment 3KL (Russian Moodle) | Agreement No. 1362.3 dated November 21, 2022 |
| 11 | AstraLinuxCommonEdition | Agreement No. 142 A dated September 21, 2021 |
| 12 | Information system "Plans" | Agreement No. 9463 dated May 25, 2022 |
| 13 | 1C: Document Management | Agreement No. 2191 dated 10/15/2020 |
| 14 | R7-Office | Agreement No. 2 KS dated 12/18/2020 |

**List of freely distributed software**

| No. p/p | List of freely distributed software | Links to license agreement |
|---|---|---|
| 1 | Yandex Browser | Freely distributed<br>License agreement for the use of Yandex Browser programs<br>https://yandex.ru/legal/browser_agreement/ |
| 2 | Yandex.Telemost | Freely distributed<br>License Agreement for the Use of Programs<br>https://yandex.ru/legal/telemost_mobile_agreement/ |
| 3 | Dr.WebCureIt! | Freely distributed<br>License Agreement: https://st.drweb.com/static/new-www/files/license_CureIt_ru.pdf |
| 4 | OpenOffice | Freely distributed<br>License: http://www.gnu.org/copyleft/lesser.html |
| 5 | LibreOffice | Freely distributed<br>License: https://ru.libreoffice.org/about-us/license/ |
| 6 | VK Calls | Freely distributed<br>https://vk.com/license |

**3.6. Professional databases, information reference systems, electronic educational resources.**

| No. p/p | Resource name | Resource Description | Access | Resource address |
|---|---|---|---|---|
| Electronic library systems | | | | |
| 1 | "Student Consultant" Electronic library of the medical university. | For students and teachers of medical and pharmaceutical universities. Provides access to electronic versions of textbooks, teaching aids and periodicals. | library, individual access | http: //www.studmedlib.ru/ |
| 2 | "Doctor's Consultant" Electronic Medical Library. | The materials posted in the library have been developed by leading Russian specialists based on modern scientific knowledge (evidence-based medicine). The information has been prepared taking into account the position of the scientific and practical medical society (world, European and Russian) in the relevant specialty. All materials have undergone mandatory independent review. | library, individual access | http://www.rosmedlib.ru/cgi-bin/mb4x |
| 3 | PubMed | Free search system in the largest medical bibliographic database MedLine. Documents medical and biological articles from specialized literature, and also provides links to full-text articles. | library, free access | http://www.ncbi.nlm.nih.gov/pubmed/ |
| 4 | OxfordMedicine Online. | A collection of Oxford Press medical publications, bringing together over 350 titles into a single, cross-searchable resource. Publications include The Oxford Handbook of Clinical Medicine and The Oxford Textbook of Medicine , with electronic versions continually updated. | library, free access | http://www.oxfordmedicine.com |
| 5 | Human Biology Knowledge Base | Reference information on physiology , cell biology , genetics , biochemistry , immunology , pathology . (Resource of the Institute of Molecular Genetics of the Russian Academy of Sciences .) | library, free access | http://humbio.ru/ |
| 6 | Medical online library | Free reference books, encyclopedias, books, monographs, abstracts, English-language literature, tests. | library, free access | http://med-lib.ru/ |
| Information systems | | | | |
| 7 | Russian Medical Association | Professional Internet resource. Objective: to promote effective professional activity of medical personnel. Contains the charter, personnel, structure, rules of entry , information about the Russian Medical Union. | library , free access | http://www.rmass.ru/ |
| 8 | Web medicine. | The site presents a catalog of professional | library, free | http: |

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|---|---|---|---|---|
| | | medical resources, including links to the most authoritative subject sites, journals, societies, as well as useful documents and programs. The site is intended for doctors, students, employees of medical universities and scientific institutions. | access | //webmed.irkutsk.ru/ |
| Databases | | | | |
| 9 | World Health Organization | The site contains news, statistics on countries that are members of the World Health Organization, fact sheets, reports, WHO publications and much more. | library, free access | http://www.who.int/ru/ |
| 10 | Ministry of Science and Higher Education of the Russian Federation. | The website of the Ministry of Science and Higher Education of the Russian Federation contains news, newsletters, reports, publications and much more. | library, free access | http://www.minobrnauki.gov.ru |
| 11 | Ministry of Education of the Russian Federation. | The website of the Ministry of Education of the Russian Federation contains news, newsletters, reports, publications and much more. | library, free access | https://edu.gov.ru/ |
| 12 | Federal portal "Russian education" | A single window for access to educational resources. This portal provides access to textbooks on all areas of medicine and health care. | library, free access | http: //www.edu.ru/ http://window.edu.ru/catalog/?prubr=2.2.81.1 |
| Bibliographic databases | | | | |
| 13 | Database "Russian Medicine" | It is created in the Central Scientific and Methodological Library and covers the entire collection, starting from 1988. The database contains bibliographic descriptions of articles from domestic journals and collections, dissertations and their abstracts, as well as domestic and foreign books, collections of institute proceedings, conference materials, etc. Thematically, the database covers all areas of medicine and related areas of biology, biophysics, biochemistry, psychology, etc. | library, free access | http://www.scsml.rssi.ru/ |
| 14 | eLIBRARY.RU | Russian information portal in the field of science, technology, medicine and education, containing abstracts and full texts of more than 13 million scientific articles and publications. The eLIBRARY.RU platform provides electronic versions of more than 2,000 Russian scientific and technical journals, including more than 1,000 open access journals. | library , free access | http://elibrary.ru/defaultx.asp |

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|---|---|---|---|---|
| 15 | Portal Electronic library of dissertations | Currently, the Electronic Library of Dissertations of the Russian State Library contains more than 919,000 full texts of dissertations and abstracts. | library, free access | http://diss.rsl.ru/?menu=disscatalog/ |
| 16 | Medline.ru | Medical and biological portal for specialists. Biomedical journal. Last updated February 7, 2021. | library, free access | http://www.medline.ru |

3.7. **Resources of the information and telecommunications network "Internet"**

1 http://www.consultant.ru/document/cons_doc_LAW_141711 Standards and procedures for the provision of medical care, clinical recommendations

2 https://evidence-neurology.ru society of evidence-based neurology

3 https://mirvracha.ru/journal world of the doctor

4 Methodology of neurological examination:
https://vk.com/video-45377300_171737770
https://vk.com/video-72465226_171653141

5. Technique for performing lumbar puncture:
https://www.youtube.com/watch?v=KGZpL0gY-EA

## 4. ASSESSMENT TOOLS FUND

### 4.1. Examples of test tasks, entrance control

Conducted in the Moodle system, email address: https://educ-amursma.ru/mod/quiz/view.php?id=11466 , total number of test tasks – 50.

**1. Pseudounipolar neurons are located:**
A. In the spinal ganglia
B. In the posterior horns of the spinal cord
B. In the cerebral cortex
G. In the nuclei of Goll and Burdach

**2. The intersection of the pyramids occurs at the level:**
A. Spinal cord segments
B. At the border of the spinal cord and the medulla oblongata
B. At the bridge level
G. At the level of the internal capsule

**3. Synapse is:**
A. The area of contact between nerve cells and each other or with tissues
B. A substance released by the action of a nerve impulse
B. Ending of sensory nerve fibers
G. "Energy station" of the cell

**4. In the spinal cord the number of segments is equal:**
A. 28
B. 31
V. 25
G. 35

**5. The segments of the spinal cord at the level of the cervical enlargement innervate:**
A. Upper limbs
B. Lower limbs
V. Neck muscles
G. Muscles of the trunk

Answer standards: 1-A; 2-B; 3A; ;b; 5 A;

### 4.2. Examples of test tasks for current knowledge control (with standard answers)

№1. The following are not considered types of sensitivity disorder:
A. Segmental;
B. Conductor;
B. Polyneuritic;
G. Diabetic;

#2. Sensory Jacksonian seizures occur:
A. When the frontal lobe is destroyed;
B. With irritation of the precentral gyrus of the frontal lobe;
B. With irritation of the postcentral gyrus of the parietal lobe;
G. With irritation of the anterior horns of the spinal cord;

No. 3. The patient has central hemiparesis on the right, this pathology does not develop with damage to:
A. Anterior central gyrus on the left;
B. Capsule on the left;
V. Talyamus on the left;
G. Lateral columns of the spinal cord at the level of the upper cervical segments on the right

№4. The following is not typical for plexus damage:
A. Pain in the area of innervation;
B. Peripheral paresis and paralysis;
B. Vegetative-trophic disorders.
G. Disorders of sensitivity of the polyneuritic type;

№5. The patient complains of weakness in the right leg, difficulty walking. On examination: decreased strength in the right leg, increased muscle tone in it, reflexes from the legs D>S, Babinski reflex on the right, abdominal reflexes on the right are absent. Decreased deep sensitivity in the toes of the right foot, decreased pain sensitivity is noted on the left from the level of D5:
A. Half-spinal cord lesion in the thoracic region on the right;
B. Transverse lesion of the spinal cord in the thoracic region;
B. Half of the spinal cord lesion in the thoracic region on the left;
G. Lateral columns at the level of the thoracic region on the right.

No. 6. When the equine tail is affected, the following is observed:
A. Flaccid paresis of the legs with impaired sensitivity of the radicular type and severe pain, pelvic disorders;
B. Spastic paresis of the legs and pelvic disorders;
B. Impaired sensitivity of the distal parts of the legs and urinary retention, pain;
G. Lower spastic paraparesis without pelvic disorders and sensory disturbances.

**Answers:** No. 1 - G; No. 2 - B; No. 3 - B; No. 4 - G; No. 5 - A; No. 6 - A;

## 4.3. Examples of situational tasks of current control (with standard answers)

**Task #1**
A 55-year-old patient complained of short-term attacks of severe pain in the forehead on the left, accompanied by redness of the eye and lacrimation. On examination: hyperesthesia of the forehead on the left, pain at the exit point of the first branch of the trigeminal nerve on the left. Otherwise, no special features.

**Questions** :

**What was damaged?**
A) 1st branch of the trigeminal nerve on the left
B). 2nd branch of the trigeminal nerve on the left
B). Left pterygopalatine ganglion
D) Facial nerve on the left

**Treatment for pain relief**
A) B vitamins
B). Finlepsin, analgesics
B). Nicotinic acid
D) Massage

**A more likely cause of the disease?**
A). Sinusitis
B) Frontitis
B). Pulpitis

D) Conjunctivitis

**Task #2**

The patient developed severe girdle pains in the left half of the chest against the background of a rise in temperature. No changes were detected on the ECG. On examination: hyperemia, vesicular rashes, and hyperesthesia along the 5th-6th intercostal spaces on the skin.

**Questions** :

**Topical diagnosis?**

A) Anterior roots D5-6 on the left
B). Posterior roots D5-6 on the left
B). Spinal ganglia D5-6 on the left
D) Spinal ganglia D5-6 on the right

**Etiology of the disease?**

A) Measles virus
B) Enteroviruses
B). Herpes virus
D) Influenza virus

**What is your diagnosis?**

A) Intercostal neuralgia
B) Radicular syndrome D5-6 on the left
B). Ganglionitis D5-6 on the left

**Treatment?**

A) Dry heat, analgesics
B). Acyclovir, analgesics
B). Physiotherapy, massage

**Task number 3.**

Patient M., 25, disabled person of the 2nd group. Complaints of weakness in the limbs, especially the lower ones, difficulty walking. From the anamnesis it is known that from the age of 6-7 he lagged behind in physical development, ran poorly, did not play active games. From the age of 12, the weakness in the legs became clear, the gait changed, he often fell. Parents are healthy, has a healthy older brother.
Somatically healthy. "Duck" gait. Weakness of the orbicularis oris muscle, weakness and hypotrophy of the pelvic and shoulder girdle muscles, scoliosis. Hypertrophy of the calf muscles. Gets up from a low seat holding on to foreign objects, cannot get up from the floor. Reflexes from the upper limbs, knee - low, Achilles absent. No sensory disorders. Blood and urine tests are normal. The level of creatinine phosphokinase is increased 4 times.

**Questions:**

**Topical diagnosis?**

A) Muscle damage
B) Multiple peripheral nerve lesions.
B) Lesion of the gray matter of the spinal cord
D) Lesion of the pyramidal tracts of the spinal cord

**Type of inheritance?**

A) Dominant
B) Recessive
B) Gender related

**Clinical diagnosis?**

A) Progressive muscular dystrophy
B) Spinal amyotrophy
B) Neural amyotrophy
D) Myasthenia

**Task number 4.**

Patient M., 29 years old, was admitted to hospital with complaints of double vision when looking in all directions, difficulty swallowing, severe weakness in the limbs, which worsened with physical exertion.
Sick for a year, when after a cesarean section, severe general weakness appeared, which persisted after discharge and increased in the afternoon and after physical exertion. Worsening of the condition during the week, when double vision and difficulty eating joined in.
Somatically healthy. Neurological status: ptosis on the left, diplopia when looking in all directions, mild divergent strabismus on the left, movements of the left eye are limited inwards. Weakness of the facial muscles. The voice is quiet, "fading", swallowing is difficult, the soft palate vibrates weakly, fatigue of the masticatory muscles when eating. Muscle tone is diffusely reduced, moderate reduction in muscle strength in the hands and lower extremities, reflexes are uniformly reduced. Sensitivity is not impaired.
Examination: clinical blood, urine, cerebrospinal fluid tests – within normal limits, skull X-ray, EEG, ECHO-EG – without pathology.

**Questions:**

**Probable diagnosis?**

A) Progressive muscular dystrophy
B) Spinal amyotrophy
B) Neural amyotrophy
D) Myasthenia

**What causes muscle weakness?**
A) With primary muscle damage
B) With multiple lesions of peripheral nerves.
B) Violation of neuromuscular transmission
D) Due to muscle spasticity

**Additional tests to confirm the diagnosis?**
A). CT, MRI of the brain and spinal cord
B). ENMG, prozerin test
B). REG, ultrasound dopplerography

***Answers to the tasks:***
Problem №1: №1 - A, №2 - B; №3 - B. The patient has neuropathy of the first branch of the trigeminal nerve, it is necessary to exclude frontal sinusitis, the treatment includes finlepsin, analgesics, and treatment of the underlying disease.
Problem №2: №1– B, №2–B; №3–B; №4–B. The patient has shingles (ganglionitis D5-6 on the left) caused by the herpes virus. Acyclovir and analgesics are indicated for treatment.
Problem №19: №1 – A, №2 –B, №3 – A. The patient has progressive muscular dystrophy, primary muscle damage, type of inheritance – recessive.
Task No. 20: Question No. 1 – G, question No. 2 – B, question No. 3 – B. The patient has myasthenia, generalized form, disorder of neuromuscular transmission, additional examination – proserin test, ENMG.

## 4.4. Examples of test tasks for midterm and intermediate assessment (with sample answers)

Midterm assessment in semesters 7 and 8 is conducted in the Moodl system . E-mail address in semester 7 is https://educ-amursma.ru/mod/quiz/view.php?id=11244 , the total number of test tasks in general neurology is 119. E-mail address in semester 8 is https://educ-amursma.ru/mod/quiz/view.php?id=11245 . the total number of test tasks in specific neurology is 284.

**Midterm assessment, final test,** is conducted in the Moodl system **, email address: https://educ-amursma.ru/mod/quiz/view.php?id=11236 , total number of test tasks – 390.**

### 4.4.1. Examples of test tasks in general neurology (with standard answers)

**Please indicate one correct answer.**

**No. 1. When the anterior horns of the spinal cord are damaged, the following occurs:**
A. Central paresis below the site of the lesion on the side of the lesion;
B. Peripheral paresis in the corresponding myotomes on the affected side;
B. Peripheral paresis on the opposite side in the corresponding myotomes;
G. Peripheral paresis below the site of the lesion on the side of the lesion.

**No. 2. Contraindications for lumbar puncture are:**
A. Presence of meningeal symptoms;
B. Edema of the optic disc;
B. Suspected subarachnoid hemorrhage; D. Patient in a comatose state

**№3. What symptom is manifested by damage to the inferior parietal lobe:**
A. A alternating type of sensitivity disorder;
B. A stereognosis;
IN. CONDUCTIVE sensory disturbances;
G. R disorders of sensitivity of the polyneuritic type;

**№4. Where is the body of the first sensitive neuron for all types of sensitivity located:**
A. IN the skin;
B. IN mucous membranes;
IN THE intervertebral ganglion;
G. IN the posterior horn of the spinal cord;
D. IN the ventrolateral nucleus of the thalamus.

**№5. The following are not considered quantitative changes in consciousness syndromes:**
B. FROM supports;
IN. WITH moderate conditions;
G. TO oma.

**No. 6. Vestibular syndrome includes:**
A. DIFFUSE headache;
B. NON- systemic dizziness;
V. SYSTEMIC dizziness;

**No. 7. The ECHO-EG method allows to determine:**
A. The presence of a volumetric formation of any localization;

B. The presence of a volumetric formation of the cerebral hemispheres;
B. Presence of a space-occupying lesion in the posterior cranial fossa;
G. Localization of the volumetric formation.

**Answer standards: No. 1 - B. No. 2 - B. No. 3 - B. No. - C. No. 5 - C. No. 6 - C. No. 7 - B**

### 4.4.2. Examples of test tasks on private neurology (with standard answers)

**Please indicate one correct answer.**

**No. 1. The main differential diagnostic criterion that allows distinguishing cerebral coma from metabolic coma:**

1. Bilateral pathological symptoms
2. Degree of depth of impairment of consciousness
3. Presence of focal neurological symptoms
4. Bilateral mydriasis
5. Respiratory and cardiac dysfunction

**No. 2. The diagnosis of initial manifestations of cerebral circulatory failure is established if there are:**

1. Cerebral complaints occurring once a month over the past year.
2. Cerebral complaints occurring 1-2 times a week over the past 3 months.
3. Unstable scattered focal microsymptoms.
4. Persistent diffuse focal microsymptoms.
5. Persistent focal symptoms.

**No. 3. The decisive clinical symptom that allows us to distinguish ischemic stroke from hemorrhagic stroke:**

1. The rate of development of the disease.
2. Age of the patient.
3. Presence of meningeal symptoms.
4. Depth of impairment of consciousness.
5. Presence of focal symptoms.

**No. 4. Treatment of ischemic stroke is primarily aimed at:**

1. To improve microcirculation.
2. Treatment of the underlying disease.
3. Combating cerebral edema.
4. Elimination of risk factors.
5. Restoration of motor activity.

**№5. Radicular syndrome in lumbar osteochondrosis is not typical**

1. Pain syndrome localized in the lumbar region.
2. Pain syndrome radiating to the lower limb.
3. Sensory disturbances, paresthesia.
4. Decreased or absent reflexes.
5. Muscle hypotonia, paresis.

**No. 6. Diagnosis of meningitis is primarily based on:**

1. On the general infectious syndrome.
2. On meningeal syndrome.
3. On changes in cerebrospinal fluid.
4. The presence of focal symptoms.
5. The presence of disturbances of consciousness.

**№7. The appearance of focal neurological symptoms in traumatic brain injury after some period of time may primarily indicate**

1. Concussion.
2. Mild contusions.
3. Traumatic subarachnoid hemorrhage.
4. Subdural hematoma.
5. Secondary meningitis.

Answer standards: No. 1 – 3; No. 2 – 2; No. 4 – 1; No. 5 – 1; No. 6 – 3; No. 7 – 4.

### 4.5. List of practical skills required to pass the test

**The student should know** :

1. Etiology, pathogenesis, main symptoms and syndromes of damage to the nervous system, clinical picture, diagnosis, treatment and prevention of the most common diseases of the nervous system.

2. The clinical picture, features of the course and possible complications of the most common diseases of the nervous system, occurring in a typical form in children, adolescents and adults.

3. Modern methods of clinical, laboratory and instrumental diagnostics of diseases of the nervous system in children, adolescents and adults. Indications and contraindications for additional clinical and paraclinical research methods for diseases of the nervous system:

- Lumbar puncture and examination of cerebrospinal fluid;
- Craniography and spondylography;
- Electromyography and electroneuromyography;
- Electroencephalography (EEG) and the method of studying evoked potentials;
- X-ray computed tomography (CT) and spiral computed tomography (SCT), magnetic resonance imaging (MRI) of the brain and spinal cord;
- Ultrasound Dopplerography, duplex and triplex scanning of the carotid and vertebral arteries, transcranial Dopplerography, angiography of the cerebral vessels;
- ECHO encephaloscopy and neurosonography;

4. Organization and implementation of rehabilitation measures for diseases of the nervous system among children, adolescents and adults, indications and contraindications for the appointment of physiotherapy, exercise therapy, reflexology, massage and other non-drug methods.

5. Principles and methods of providing medical care in emergency neurological conditions.

**The student should be able to:**

1. Collect anamnesis, interview the patient and his relatives, conduct a physical examination for a neurological disease, refer for laboratory and instrumental examination, for consultation with specialists.

2. Collect family history and genealogical information, create a pedigree in graphic form and analyze the inheritance of a disease or trait in a family.

3. To examine the neurological status. To identify symptoms and syndromes of nervous system damage, to establish neurological syndromes, topical diagnosis.

4. Interpret the examination results, make a preliminary diagnosis, outline an examination plan to clarify the diagnosis, formulate a clinical diagnosis.

5. Develop a treatment plan for a patient with a neurological disease taking into account the course of the disease, prescribe drug therapy, use non-drug treatment methods, and draw up a rehabilitation plan.

6. Identify life-threatening disorders and provide first aid in emergency neurological conditions:

- Ischemic stroke;
- Cerebral hemorrhage and subarachnoid hemorrhage;
- Acute cranial and spinal trauma;
- Epileptic status;
- Myasthenic and cholinergic crisis;
- Meningitis;
- Encephalitis.

7. Organize care for neurological patients.

8. To prevent major neurological diseases, including hereditary ones

**The student must have the following skills :**

1. Collection of complaints and anamnesis from a neurological patient
2. Methods of studying neurological status :
3. To identify disturbances of consciousness, to determine the level of its disturbance;
4. Be able to explore:

- Meningeal symptoms;
- Higher brain functions; speech, reading, writing, counting, gnosis, praxis, memory and intelligence;
- Functions of the cranial nerves;
- Motor sphere; determine the volume, strength and tempo of voluntary movements; examine muscle tone and reflexes; identify muscle atrophy, symptoms of Parkinsonism;
- Coordination: Romberg test, coordination tests in the limbs (finger-nose, heel-knee, dysdiadochokinesia);
- Sensitivity: pain, temperature, proprioceptive; identify paresthesia and causalgia, determine the type of sensitivity disorder;
- Symptoms of tension of nerve trunks and roots, reflex muscle syndromes;
- Vegetative functions; identify disturbances of thermoregulation, sweating, vasomotor and trophic disorders, orthostatic hypotension, Raynaud's syndrome, pelvic organ dysfunction;
- Examine a patient in a comatose state, assess pupillary reactions, identify focal neurological symptoms, and conduct oculocephalic tests.

5. AND interpretation of the results of laboratory, instrumental, and radiological diagnostic methods .

6. An algorithm for establishing a preliminary diagnosis with subsequent referral for additional examination and to specialist doctors; an algorithm for establishing a detailed clinical diagnosis for neurological patients .

7. An algorithm for performing basic medical diagnostic and therapeutic measures to provide first aid in emergency neurological conditions.

## 4.6 . List of questions for the exam
## General neurology

1. Types of sensitivity disorders (all).
2. Central and peripheral paralysis, characteristics.
3. Brown-Sequard syndrome, syndromes of transverse spinal cord lesions at various levels.
4. Cauda equina syndrome
5. Pelvic organ dysfunction. Types of disorders, their causes.
6. Trunk damage syndromes.
7. Alternating syndromes, topical significance. Weber syndrome.
8. Foster-Kennedy syndrome.
9. Superior orbital fissure syndrome.
10. Visual pathway, damage syndromes.
11. Syndromes of oculomotor nerve damage.
12. Anatomy, physiology and syndromes of trigeminal nerve damage.
13. Innervation of the facial muscles, central and peripheral paresis.
14. Dizziness, types, causes.
15. Bulbar, pseudobulbar syndromes, their causes, features of patient care.

16. Impaired consciousness, stages of quantitative impairment of consciousness, plan for examining a patient in a comatose state.
17. Anatomy, physiology of basal ganglia, syndromes of damage (choreic, parkinsonism). Differential diagnosis of parkinsonism syndrome.
18. Types of ataxia, topical significance.
19. Internal capsule lesion syndrome.
20. Theories of localization of functions in the cerebral cortex. Functional asymmetry of the hemispheres.
21. Syndromes of damage to individual lobes of the brain (frontal, parietal, temporal, occipital) .
22. Jacksonian epilepsy, topical significance.
23. Types of aphasia.
24. Praxis, gnosis, their violations.
25. Paths of cerebrospinal fluid circulation. Types of dropsy. Hypertensive syndrome (subjective, objective symptoms of intracranial hypertension), meningeal symptom complex, patient complaints, their pathogenesis, clinical manifestations, examination plan.
26. Dislocation syndromes in neurology and neurosurgery, clinical features, tactics.
27. Research methods in neurology: electrophysiological, ultrasound, radiological, contrast. Modern visualization methods (CT, MRI). The importance of fundus examinations
28. Diagnostic value of fundus examination in neurology and neurosurgery.
29. Analysis of cerebrospinal fluid in norm, cell-protein and protein-cell dissociation. Evaluation of cerebrospinal fluid analysis in various diseases.
30. Methods of studying the autonomic nervous system, the concept of autonomic tone, autonomic response.
31. Anatomy, physiology of the hypothalamic region, syndromes of damage.
32. Vegetative dystonia syndrome.
33. Headaches in neurology and neurosurgery, pathogenesis, differential diagnosis.
34. St. Petersburg and Moscow neurological schools.

## Private neurology, neurosurgery

1. Diseases of the peripheral nervous system.

Etiology, clinical picture of polyneuropathy, polyneuropathy in diabetes mellitus, diphtheria, acute inflammatory polyradiculoneuropathy of Guillain-Barré, diagnostics, principles of treatment. Neuropathies of the radial, facial, trigeminal nerves. Iatrogenic neuropathies, tunnel syndromes, clinical manifestations, diagnostics, treatment. Osteochondrosis of the spine. The concept of the vertebral-motor segment. Pathomorphology of osteochondrosis of the spine at various stages of the pathological process. Neurological manifestations of vertebral osteochondrosis, reflex and compression syndromes at the cervical, thoracic and lumbosacral levels. Clinical picture, diagnostics , differential diagnostics, treatment. Radiculoischemia, radiculomyeloischemia of the lumbosacral level, their causes, clinical picture, diagnostics, treatment. Primary, secondary prevention of neurological manifestations of vertebral osteochondrosis. Dorsalgia, plan of examination and survey for back pain. Radiological manifestations of vertebral osteochondrosis. Providing assistance for pain syndromes. Principles of treatment of diseases of the peripheral nervous system. Labor examination.

2. Vascular diseases of the nervous system.

Etiology, risk factors. Classification. All forms of chronic and acute cerebrovascular accidents (pre-clinical stage, initial manifestations, discirculatory encephalopathy stages I, II, III, transient disorders, ischemic stroke, hemorrhagic stroke, subarachnoid hemorrhage, minor stroke). Pathogenesis, clinical picture, diagnostics, differential diagnostics, treatment. Providing assistance to patients with strokes at the pre-hospital stage. Prevention of primary and secondary vascular diseases of the nervous system. Principles of treatment of vascular diseases of the nervous system, undifferentiated and differentiated treatment of strokes. Labor examination for vascular diseases of the nervous system.

3. Infectious diseases of the nervous system.

Classification. Meningitis (serous, tuberculous, purulent - meningococcal and secondary), tick-borne encephalitis, herpes encephalitis, acute polyradiculoneuritis; etiology, clinical picture, diagnostics, differential diagnostics, treatment, prevention, examination. Meningeal symptom complex, examination plan for patients with meningeal symptom complex, evaluation of cerebrospinal fluid in various neuroinfections. Consequences of past neuroinfections, labor and military examination.

Chronic neuroinfections: multiple sclerosis, chorea minor, neurosyphilis, neuroAIDS, clinical features, diagnostics, treatment. Slow infections, definition, etiology, clinical features, examination.

4. Epilepsy.

Etiology. Classification, clinical presentation, paroxysmal and constant symptoms, diagnostics, differential diagnostics of symptomatic and idiopathic epilepsy. Classification of seizures. Modern principles of epilepsy treatment, first aid during a seizure, differential diagnostics of seizures. Jacksonian epilepsy. Epileptic status, treatment. Examination plan for a patient with a first-time epileptic seizure, with attacks of loss of consciousness, labor examination.

5. Hereditary diseases affecting the nervous system.

General characteristics, pathogenesis, principles of treatment. Classification of hereditary diseases with damage to the nervous system. Progressive muscular dystrophies. Myasthenia. Classification, clinical picture, treatment. Parkinsonism syndrome, differential diagnosis, treatment. Syringomyelia, clinical picture, treatment.

6. Neuro-oncology.

Classification of tumors of the nervous system (clinical, histological, by the degree of atypia). Symptoms of brain tumors (general cerebral, focal, dislocational), their pathogenesis depending on the localization and initial growth of the tumor (intra- and extracerebral, sub- and supratentorial). Clinical picture of tumors of various localizations (frontal, parietal, temporal, occipital lobes, cerebellopontine angle - acoustic neuromas, pituitary gland), diagnostics. Examination plan for patients with hypertension syndrome in the outpatient clinic and hospital. Clinical picture and early diagnostics of extramedullary tumors.

7. Neurotrauma.

Classification of craniocerebral trauma. Characteristics of all clinical forms of craniocerebral trauma (concussion, mild, moderate and severe contusions, compression, subdural hematoma) pathogenesis, diagnostics, clinical presentation, treatment. Examination plan for a patient with craniocerebral trauma in the emergency room. Complications of the acute period of craniocerebral trauma, remote consequences, labor examination.

8. Diseases of the autonomic nervous system.

Migraine. Hypothalamic syndrome. Vegetative dystonia syndrome. Causes, clinical features, differential diagnostics, treatment.

9. Somatogenic nervous disorders are damage to the nervous system due to diseases of the cardiovascular system, lungs, liver, kidneys, and blood diseases.

APPROVED
at a meeting of the Department of Nervous Diseases, Psychiatry and Narcology, protocol No. 11 of June 17, 2022.
Head of Department Karnaukh A.I.

**ADDITIONS AND CHANGES TO THE WORK PROGRAM IN THE DISCIPLINE "NEUROLOGY. NEUROSURGERY" SPECIALTY: MEDICAL CARE FOR THE 2022-2023 ACADEMIC YEAR**

Make changes to page 42, section **Resources of the information and telecommunications network "Internet":** the work program for the discipline "Neurology, neurosurgery" for the medical faculty has been supplemented with links to Internet sources:

1. Stroke Recognition, Assistance, CT Scan for Stroke

https://www.youtube.com/watch?v=vmmUHSOo00Y
https://www.youtube.com/watch?v=g80TGQAxY-Y
https://www.youtube.com/watch?v=Vs6PQ-uUSek
https://www.youtube.com/watch?v=T_rKHhF-4r0

2. Polyneuropathies, neuromuscular diseases

https://www.youtube.com/watch?v=iIOIZma2QOY

https://www.youtube.com/watch?v=j2LxFSH0OWM
https://www.youtube.com/watch?v=jHxacZX_rjA

3. Osteochondrosis, treatment of neurological complications
https://www.youtube.com/watch?v=G1jQt3gAfvo&list=PLZ7xEFnb-ItsZcU09or5BxSl7ZO1MRpsM&index=101
https://www.youtube.com/watch?v=1vic8dM80_U&list=PLZ7xEFnb-ItsZcU09or5BxSl7ZO1MRpsM&index=152

4. Lumbar puncture. The cerebrospinal fluid analysis is normal.
https://www.youtube.com/watch?v=Xvm69fp-Cxc
https://www.youtube.com/watch?v=fXj3c117DdQ

5. Circulation of cerebrospinal fluid. Hypertensive syndrome
https://www.youtube.com/watch?v=x8fHoqL0y2U
https://www.youtube.com/watch?v=OOF9gSHvLGk
https://www.youtube.com/watch?v=HT-fbkE9kzw

6. The Moodle system has been updated with methodological materials for independent student preparation on all topics. Test assignments and tasks have been updated.

7. The regulations for the Olympiad have been drawn up and tasks for holding the Olympiad have been prepared.

APPROVED
at a meeting of the Department of Nervous Diseases, Psychiatry and Narcology, protocol No. 11 dated June 7, 2023.
Head of Department Karnaukh A.I.

**ADDITIONS AND CHANGES TO THE WORK PROGRAM IN THE DISCIPLINE "NEUROLOGY. NEUROSURGERY" SPECIALTY: MEDICAL CARE FOR THE 2023-2024 ACADEMIC YEAR**

1. Make a change to Article 39, update the table in the section “Licensed and freely distributed software used in the educational process.”

**List of software (commercial software products)**

| No. p/p | List of software (commercial software products) | Details of supporting documents |
|---|---|---|
| 1 | Operating system MSWindows 7 Pro | License number 48381779 |
| 2 | Operating system MSWindows 10 Pro | AGREEMENT No. UT-368 dated |

| | | |
|---|---|---|
| | | 09.21.2021 |
| 3 | MS Office | License number: 43234783, 67810502, 67580703, 64399692, 62795141, 61350919 |
| 4 | Kaspersky Endpoint Security for Business – Standard Russian Edition.<br>50-99 Node 2 year Educational Renewal License | Agreement 165A dated November 25, 2022 |
| 5 | 1C Accounting and 1C Salary | LICENSE AGREEMENT 612/L dated 02.02.2022 |
| 6 | PROF University | LICENSE AGREEMENT No. ЦБ-1151 dated 01.14.2022 |
| 7 | 1C: PROF Library | LICENSE AGREEMENT No. 2281 dated 11.11.2020 |
| 8 | Consultant Plus | Agreement No. 37/C dated 02/25/2022 |
| 9 | Contour.Tolk | Agreement No. K007556/22 dated 09/19/2022 |
| 10 | E-learning environment 3KL (Russian Moodle) | Agreement No. 1362.3 dated November 21, 2022 |
| 11 | Astra Linux Common Edition | Agreement No. 142 A dated September 21, 2021 |
| 12 | Information system "Plans" | Agreement No. 9463 dated May 25, 2022 |
| 13 | 1C: Document Management | Agreement No. 2191 dated 10/15/2020 |
| 14 | R7-Office | Agreement No. 2 KS dated 12/18/2020 |

**List of freely distributed software**

| No. p/p | List of freely distributed software | Links to license agreement |
|---|---|---|
| 1 | Yandex Browser | Freely distributed<br>License agreement for the use of Yandex Browser programs<br>https://yandex.ru/legal/browser_agreement/ |
| 2 | Yandex.Telemost | Freely distributed<br>License Agreement for the Use of Programs<br>https://yandex.ru/legal/telemost_mobile_agreement/ |
| 3 | Dr.WebCureIt! | Freely distributed<br>License Agreement: https://st.drweb.com/static/new-www/files/license_CureIt_ru.pdf |
| 4 | OpenOffice | Freely distributed<br>License: http://www.gnu.org/copyleft/lesser.html |
| 5 | LibreOffice | Freely distributed<br>License: https://ru.libreoffice.org/about-us/license/ |
| 6 | VK Calls | Freely distributed<br>https://vk.com/license |