Level of higher education: second (master's)

Field of knowledge: 22 «Health care»

Specialty: 222 «Medicine»

Educational and professional program: «Medicine»
The work program consisted on the basis of the educational-professional program of the second level of higher education for the preparation of masters in the specialty 222 "Medicine" ONMedU, approved by the Academic Council of ONMedU from 04.06.2020 (protocol №11).

Developers: Doctor of medical sciences, Prof. Son A.S., Ph.D., Assoc. Prof. Dobrovolskyi V.V.

The curriculum is discussed at the method conference of the department
Protocol № 11 20.06.21
The head of the department __________________________ Prof. A.S.Son

The curriculum is approved at the conference of the subject cyclic method committee of therapeutic disciplines
Protocol № 27.08.21
Chairman of the subject cyclic method committee __________________________ Prof. N.A.Matsegora

The curriculum is approved at the session of Central Coordination-Method Council of the university
Protocol № 30.08.21
1. Description of the discipline:

<table>
<thead>
<tr>
<th>Name of indicators</th>
<th>Characteristics of discipline</th>
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<tbody>
<tr>
<td></td>
<td>Full-time education</td>
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<tr>
<td>Total:</td>
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<tr>
<td>Credits – 4,0</td>
<td>Year of study 4</td>
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<tr>
<td>Hours – 120</td>
<td>Semestr VII - VIII</td>
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<td>Sections – 2</td>
<td>Lectures 10</td>
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<td>Units – 5</td>
<td>Practical 70 hours</td>
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<td>ISW 40 hours</td>
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<td>Individual 0</td>
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<td>Final control Exam</td>
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2. The purpose and objectives of the discipline

**Objective:** Mastering the student's knowledge and formation of elements of professional competencies in neurology, improving skills and competencies acquired in the study of previous disciplines.

**Task:**
1. Formation of skills and abilities: from differential diagnosis, the most common diseases of the nervous system.
2. Improving the skills of substantiation of clinical diagnosis, drawing up a plan of laboratory and instrumental research,
3. Mastering the ability to determine the tactics of treatment and prevention of the most common diseases of the nervous system.

The process of studying the discipline is aimed at forming elements of the following competencies:
- IC - Ability to solve complex problems and problems in a particular field of professional activity or in the learning process, which involves research and / or innovation and is characterized by complexity and uncertainty of conditions and requirements.
- ZK1 – Ability to abstract thinking, analysis and synthesis.
- ZK2 - Ability to know and understand the subject area and professional activity.
- ZK3 - Ability to communicate in the state language.
- ZK4 - Ability to learn and master modern knowledge, use information and communication technologies; ability to search, process and analyze information from various sources.
- ZK5 - Ability to adapt and make an informed decision in a new situation.
- ZK6 - Ability to work in a team.
- ZK8 - Ability to assess and ensure the quality of work performed.
- ZK9 - Ability to act on the basis of ethical considerations, socially, responsibly and consciously.
- SC1 - Communication skills and clinical examination of the patient during diagnosis and treatment.
- SC2 - Ability to determine the necessary list of clinical, laboratory and instrumental studies and evaluate their results during diagnosis and treatment.
- SC3 - Ability to establish a preliminary and clinical diagnosis.
- SC4 - The ability to determine the principles of treatment, the required mode of work and rest and the nature of nutrition.
- SC5 - Ability to diagnose emergencies
- SC6 - Ability to determine tactics and provide emergency medical care.
- SC8 - Ability to perform medical manipulations.
- SC10 - Ability to plan and carry out sanitary and preventive measures.
- SC12 - Ability to determine the tactics of management of persons subject to dispensary supervision.
- SC14 - Ability to keep medical records.
Expected learning outcomes. As a result of studying the discipline the student must:

**Know:** clinic, diagnosis, treatment of the most common diseases of childhood.

**Be able:**
- Collect data on complaints, medical history, life history of common diseases of the nervous system
- Evaluate information on the diagnosis using a standard procedure, based on the results of laboratory and instrumental studies. Determine the list of necessary clinical, laboratory and instrumental studies and evaluate their results in common diseases of the nervous system (according to list 4).
- Identify the leading clinical symptom or syndrome (according to list 1). Establish a preliminary diagnosis, make a differential diagnosis and determine the clinical diagnosis of common diseases of the nervous system (list 3).
- To determine the principles of treatment of diseases, the necessary mode of work and rest, the nature of nutrition (according to list 2) in common diseases of the nervous system.
- Diagnose emergencies (according to list 3) in common diseases of the nervous system.
- Determine tactics and provide emergency medical care (according to list 3) for common diseases of the nervous system.
- To determine the tactics of management of persons subject to dispensary supervision in common diseases of the nervous system.
- Adhere to the requirements of ethics, bioethics and deontology in their field

**Master the skills:**
- Communication and clinical examination of the patient.
- Perform a neurological examination of the patient.
- Keep medical records

### 3. Contents of the curriculum

**Section 1 «General neurology».**

**Unit 1. Introduction. Reflexes. Symptoms of the motor, coordinatory and sensory disorders.**

**The specific goals:**

1. To define a place of neurology as a science, the branches of practical medicine and subject.
2. To analyze the stages of formation of neurology.
3. To interpret the principles of the structure and functioning of the nervous system. Reflex arches and their clinical meaning.
4. To interpret the realization of voluntary motions.
5. To explain the symptoms of central and peripheral pareses.
6. To interpret motor disorders with affection of the motor path at different levels.
7. To explain the anatomic-physiological, biochemical data of the extrapyramidal system and syndromes of its affection.
8. To analyze the anatomic-physiological peculiarities of the cerebellum and the syndromes of its affection.
9. To interpret the concept of the reception, the clinical classification of sensitivity, the forms of sensory disorders, topic types of sensitive disorders.
10. To master the skills of examination of patients with motor, coordinatory and sensory disorders.

**Theme 1. Principles of structure and functioning of the nervous system. Functional unit of the nervous system - neuron. Motor system. Concept about the reflex and reflex arch.**

Main stages of phylo- and ontogenesis of the nervous system. Structural and functional unit of the nervous system. Main anatomic-topographical divisions of the nervous system: the hemisphere of the brain, subcortical units, brain stem, spinal cord, radices, spinal ganglia, plexes, peripheral nerves. Functional unit of the nervous system - neuron. Types of neurons, their functional significance. Neuroglia, its functional value.
Concept about the reflex and reflex arch, the conditional and unconditional reflexes, the levels of closing of the dermal, tendon and periosteal reflexes. Methodics of reflexes examination. Anatomic peculiarities and neurophysiology of the system of the voluntary motions, voluntary extrapyramidal system and cerebellum.

**Theme 2. Voluntary motions and their impairment. The pyramidal system. Cortico-nuclear and cortico-spinal paths. Symptoms of central and peripheral pareses.**

Realization of voluntary motions. The pyramidal system. Central and peripheral motor neurons. Cortico- nuclear and cortico-spinal paths.

**Theme 3. Symptoms of central and peripheral pareses.**

Paralyses, pareses, monoplegia, paraplegia, hemiplegia, triplegia, tetraplegia. Procedure of the study of the motor system. Symptoms of central (spastic) paralysis. Pathophysiology of muscular hypertension, hyperreflex, pathologic reflexes, reduction of the abdominal reflexes.

Symptoms of peripheral (sluggish) paralysis. Pathophysiology of atony, areflexion, atrophy.

Syndromes of affection of the motor path at different levels. Clinical anatomy, physiology of the spinal cord. Syndrome of motor disorders with affection of the motor path at different levels: frontal central twist (syndromes of irritation and precipitation), radiate crown, internal capsule, the brain stem (alternating paralyses), different levels of the spinal cord (higher cervical thickening, at the level of cervical thickening, thoracic, lumbar thickening, cone), different levels of the peripheral motor neuron (anterior horn, anterior radix, nervous plexus, separate peripheral nerves). Pelvic reservoir dysfunction, symptoms of horsetail damage.

**Theme 4. Automated involuntary movements. Movements coordination. The extrapyramidal system and syndromes of its affection**

Anatomic data: basal ganglia (lentiform, caudate nucleus, claustrum, sub-thalamus), formation of the brain stem (red nucleus, substantia nigra, reticular formation). Connections of the subcortical ganglia with different sections of the brain and spinal cord. Physiology of the extrapyramidal system, its participation in providing unconditional reflexes, realization of the stereotype automated motions, readiness of muscles to the action.

Syndromes of affection of the extrapyramidal system. Akinetic-rigid syndrome, or the syndrome of parkinsonism, its biochemical aspects. Key clinical manifestations of parkinsonism: oligo-bradykinesia, rigidity of the muscles, parkinsonic tremor, postural instability.

Hyperkinetic syndrome. Forms of hyperkineses: athetosis, choreic, hemibalizm, ticks. Muscular dystonias (focal [blepharospasm, facial hemispasm, spastic torticollis, oromandibular dystonia, dystonia of the hand, dystonia of the foot, torsion dystonia], segmental, generalized).

**Theme 5. The cerebellum, syndromes of affection of the cerebellum.**


**Theme 6. The sensitive system and symptoms of its affection. Kinds and types of sensitive disorder**


Topical types of the sensor disorders: mononeuritic, polineuritic, radical, posterior horn, conductive (with affection of the amin sensitive paths at the level of the spinal cord, medial loop, thalamus, internal capsule); cortical type (syndromes of irritation and precipitation). Syndrome of half affection of the spinal cord (Brown-Sequard syndrome).


Specific goals:
1. To analyze anatomic-physiological peculiarities and pathology of the olfactory analyzer.
2. To analyze anatomic-physiological peculiarities and pathology of the visual analyzer.
3. To interpret syndromes of affection of the perimotor nerves.
4. To determine anatomic-physiological peculiarities and pathology of the trigeminal nerve.
5. To interpret anatomic peculiarities and pathologic manifestations of affection of the facial nerve.
6. To explain the symptoms of affection of parietal - cochlear nerve.
7. To interpret pathology of IX - XII pairs of the cranial nerves, bulbar and pseudobulbar syndromes. Alternation paralysis.
8. To determine pathology of the vegetative nervous system.
9. To analyze syndromes of affection of the cerebral cortex.
10. To interpret changes in the cerebrospinal fluid and meningeal complex of symptoms.
11. To treat neurovization, ultrasound and electro-physiological methods of examination of neurologic patients.
12. To master the skills of examination of the craniocerebral nerves, vegetative nervous system, function of the cerebral cortex.
13. To interpret the blood supply of brain and spinal cord.

Theme 7. The cranial nerves I, II, VII and syndromes of its affection.

CN I – the olfactory nerve (sensitive nerve): basic anatomic-physiological data.
The olfactory analyzer: the first neuron (ganglionic cells of the mucous membrane of the nose); the second neuron (olfactory bulbs, olfactory tract); the third neuron (primary subcortical olfactory centres - olfactory triangle, transparent septum, anterior perforated substance); cortical olfactory centre (medial surface of the temporal lobe of the brain). Investigations of the olfactory analyzer.
Syndromes of affection - hyposmia, anosmia, hyperosmia, olfactory hallucinations.

CN II - the optical nerve (sensitive nerve).
Anatomic-physiological peculiarities: sections- peripheral (rods and cones, bipolar cells, ganglionic cells, nerve itself; chiasmus, visual tract), central (lateral geniculate bodies, the upper tubers of quadrigeminal plate, cushion of the healthy tuber (subcortical centres), Gratiole fascicle, cancarine sulcus of the occipital lobe (cortical centre of the analyzer).
Symptoms of affection: amaurosis, amblyopia, homonymous and heteronymous hemianopsia (binasal, bitemporal), visual hallucinations. Changes of the optical nerve disk (change in the fundus).

CN VIII - parietal-cochlear nerve (sensitive).
Anatomic-physiological data, cochlear and vestibular nerves. Pathology of the cochlear-vestibular apparatus: affection of sound perception apparatus (disorder of hearing to high tones), affection of the sound perception apparatus (disorder of hearing to low tones); affection of the parietal part (vertigo, nystagmus, disequilibrium, motor coordination, vegetative disturbances, affection of the cortex of the temporal lobes (in case of irritation- hearing hallucinations).

Theme 8. The cranial nerves III, IV, VI and syndromes of its affection.
**Theme 9. The cranial nerves V, VII and syndromes of its affection.**

**CN V** - the trigeminal nerve (mixed): the nuclei of the nerve, the outlet of radices on the basis of the brain, skull, branch of the nerve and zone of their innervation (optic nerve, upper maxillary, mandibular nerves).

Symptoms of affection of the system of the trigeminal nerve: affection of the branches of the trigeminal nerve (shooting pains, disturbance of all forms of sensitivity in the zone of innervation of the corresponding branches, loss of the corneal reflex, paresis of the masticatory muscles, loss of the mandibular reflex); affection of the node of the trigeminal nerve (herpetic rash, pain, disturbance of all forms of sensitivity on half of the face, reduction of the corneal, mandibular reflexes); affection of the sensitive nucleus of the trigeminal nerve - the nucleus of the cerebrospinal tract (segmental – dissociated type of disturbance of painful and temperature sensitivity on half of the face); affection of the thalamus (hemianesthesia of all forms of sensitivity, thalamic pain on the opposite side of the focus; affection of the cortex of postcentral gyrus.

**CN VII** - the facial nerve (mixed).

Anatomic-physiological peculiarities; the components of the branch of the nerve (large petrosal nerve, stapedius nerve, tympanic chord, facial nerve itself).

Symptoms of affection of the facial nerve: peripheral paresis of the mimic muscles (affection of the nerve in the canal, cerebellopontine angle, brain stem (alternating syndromes of the pons) and central paresis of the mimic muscles (internal capsule; the lower sections of anterior central gyrus).

**Theme 10. The cranial nerves IX, X, XI, XII and syndromes of its affection. Bulbar and pseudobulbar syndromes. Alternative syndromes.**

**CN IX** - the glossopharyngeal nerve (mixed);
**CN X** - the vagus (mixed);
**CN XI** - the accessory nerve (motor);
**CN XII** - the hypoglossal nerve (motor).

Anatomic-physiological peculiarities. Localization of the nuclei in the medulla. Bulbar and pseudobulbar syndromes: common signs (dysphagia, disphonia, dysarthria) and differences (fibrillations and atrophy of the lingual muscles, reflexes of the oral automatism, forced laughter, weeping). Impairment of innervation of the lingual muscles - peripheral and central pareses. Alternation paralysis.

**Theme 11. Pathology of the vegetative nervous system.**

Anatomical-physiological peculiarities and function of the vegetative nervous system:
Segmental section of the vegetative nervous system.


Super-segmental section of the vegetative functions: hypothalamus, limbic system, the reticular formation of the brain stem. Ergotropic and trophotropic activity.

Methods of investigation of the vegetative functions.


Vegetative-vascular paroxysms: sympathoadrenal, Vagoinsular, mixed.

Syndrome of affection of the segmental vegetative nervous system. Affections of the brain stem, lateral horns of the spinal cord, ganglia of the marginal stem, plexuses, nerves.

**Theme 12. Localization of functions in the cerebral cortex. Syndromes of affection.**
Structure of the large cerebral hemispheres.
Syndromes of affection of separate parts of the large hemispheres: frontal, temporal, parietal, occipital lobes, limbic cortex.
Syndromes of irritation of the cortex of the large hemispheres. Syndromes of affection of the right and left hemispheres. Concept about interhemispheric asymmetry.

**Theme 13. Cerebro-spinal fluid, its change. Meningeal syndrome.**
Cerebrospinal puncture.
Meningeal symptoms: headache, vomiting, general hyperesthesia, photophobia, rigidity of the occipital muscles, Kernig's symptom, signs of Brudzinsky (upper, median, lower), trismus, local reactive painful phenomena- Mendel’s syndrome, Bekhterev's zygomatic syndrome, pain on pressure of the exit points of the small and large occipital nerves. Meningeal pose of a patient. Symptom of Lessage

**Theme 14. Functional diagnosiss of diseases of the nervous system.**
Roentgenologic (cranio-, spondilography);
Contrasting roentgenologic examinations (mielography, angiography, ventriculography);
Ultrasound (echoencephaloscopy, dopplerography);
Electro-physiological (electroencephalography, rheoencephalography, echo- encephalography, electromyography and others);
Methods of neurovisualization (computer tomography, magnetic- resonance tomography, including in the vascular regimen).

**Theme 15. Blood supply of brain and spinal cord.**
Vertebrobassillar, carotid blood supply and the signs of its affection.

**Theme 16. Practical skills.**

**Section 2 «Special neurology».**
Unit 3. Vascular diseases of the brain and spinal cord, paroxysmal states, cephalgias, sleep disorders, neurointoxications. Traumatic affections of the nervous system.

**The specific goals:**
1. To master the principles of classification of the cerebral vascular diseases.
2. To interpret peculiarities of the transient disturbances of the cerebral blood circulation.
3. To interpret peculiarities of haemorrhagic strokes.
4. To analyze peculiarities of ischemic strokes.
5. To master the principles of undifferentiated and differentiated treatment of strokes.
6. To master the principles of prevention of acute disturbances of the cerebral blood circulation.
7. To interpret modern classification of epileptic and nonepileptic paroxysmal states.
8. To diagnose epileptic status and render emergency aid.
9. To interpret the basic forms of cephalgias and their treatment.
10. To explain modern concepts of mechanisms of action of chemical and physical agents on the nervous system.
11. To diagnose the neurologic manifestations of craniocerebral and spinal injury.
12. To carry out the examination of patients, to formulate preliminary and to carry out a differentiated diagnosis of neurologic diseases.

**Theme 17. Vascular diseases of the brain and spinal cord. Chronic disturbances of the cerebral blood circulation.**

**Theme 18. Ischemic stroke. Transitory ischemic attacks.**
Acute cerebrovascular accident, stroke and disturbances of the cerebral blood circulation (transitory ischemic attacks and cerebral hypertonic crises). Etiological factors and pathogenesis.
The differential diagnosis of different types of acute cerebrovascular accidents.
Modern methods of undifferentiated (basic) and differentiated treatment of acute cerebrovascular events. The concept of the "therapeutic window".

**Theme 19. Hemorrhagic stroke.**
Treatment in the period of residual effects after cerebral and spinal strokes. Rehabilitation and examination of capacity of patients.
Prevention of vascular diseases of the brain and spinal cord.

**Theme 20. Epilepsy and nonepileptic paroxysmal states.**

**Theme 21. Headache. Sleep disorder and state of cheerfulness.**
Migraine - etiology, modern mechanisms of pathogenesis. Clinical forms (simple migraine - without the aura, associated), diagnosis, a differentiated diagnosis, principles of treatment (during the attack and between attacks).
Headache with the syndrome of intracranial hypotension and syndrome of intracranial hypertension (etiopathogenetic factors, subjective data, clinical and instrument data).


**Theme 22. Professional and everyday neurointoxications. Affection of the nervous system under the effect of physical factors.**

Poisoning by the industrial poisons of neurotropic effect (lead, mercury, manganese, tetraethyl lead, arsenic, carbon monoxide, methyl alcohol, carbon disulfide, organophosphorus compounds). Clinical course, neurologic syndromes, treatment, preventive measures.

Food intoxications, botulism.


Vibration sickness, radiation injuries, electrotrauma of the nervous system, influence of constant and internating currents, affection of the nervous system by thermal and sunstroke. Clinical picture, neurologic syndromes, treatment, preventive measures.

**Theme 23. Neurologic aspects of the craniocerebral injury. Spinal injury.**


Injury of the spinal cord. Clinical course, diagnosis, treatment. Injuries of the peripheral nerves.

**Unit 4. Infectious, infectious- allergic, demielinizing and parasitic diseases of the nervous system, prion infection, neuroborreliosis. Lateral amyotrophic sclerosis.**

The specific goals:

1. To master the principles of classification of infectious diseases of the nervous system.
2. To master the clinical course of the basic nosologic forms of infectious diseases.
3. To interpret the forms of neurosyphilis.
4. To analyze affection of the nervous system in presence of HIV- infection.
5. To master modern aspects of etiopathogenesis, clinical forms, treatment of demyelinating diseases.
6. To make a plan of treatment, preventive measures of infectious diseases of the nervous system.

**Theme 24. Meningitis.**

Meningites. Classification of meningites: primary and secondary, purulent and serous.

Purulent meningites. Primary meningococcal meningitis, clinical course, diagnosis, peculiarities of the course, atypical forms. Secondary meningites: pneumococcal, staphylococcal. Clinical course, diagnosis, indices of the liquor, treatment, preventive measures.


**Theme 25. Arachnoiditis. Encephalitis**

Encephalites. Classification. Primary encephalitis: epidemic, tick-borne, spring-summer, herpetic. Secondary encephalitis: rheumatic (small chorea), postvaccinal, in chickenpox, measles, rubella. Clinical course, the form of the disease, diagnosis.

Affection of the nervous system in influenza (influenza hemorrhagic encephalitis, encephalopathy).

Infectious encephalopathy - discirculatory - dystrophic changes in the brain without marked focal affections with prevalence of asthenic manifestations in the clinical course, vegetative dystonia, intra-cranial hypertension.

The course, diagnosis, differential diagnosis, treatment, preventive measures.

**Theme 26. Poliomyelitis. Acute myelitis. Lateral amyotrophic sclerosis.**


Poliomyelitis-like diseases in children, caused by viruses Coxsackie and ECHO, parotitis, herpes simplex, adenoviruses. Clinical forms, course, prognosis, diagnosis, treatment, preventive measures.


**Theme 27. Neurosyphilis. Early and late clinical forms.**

Neurosyphilis. Early neurosyphilis (mesodermal): generalized syphilitic meningitis, meningovascular syphilis, gums of the brain and spinal cord, latent asymptomatic meningitis (liquorosyphilis).

Late neurosyphilis (parenchymatous): tabes dorsalis, progressive paralysis. Diagnosis, methods of treatment.

**Theme 28. Affection of the nervous system in presence of HIV- infection.**

NeuroAIDS. Etiology, pathogenesis, the key clinical manifestations: dementia, acute meningoencephalitis and atypical aseptic meningitis, myelopathy, affection of the peripheral nervous system.

Affection of the nervous system associated with infections, which developed against the background of immunodeficiency, caused by toxoplasmosis, virus of herpes simplex, cyomegaloviral infection, papovavirus, fungi (criptococci, candidiasis). Tumours of the central nervous system in AIDS: primary lymphoma, Kaposi's sarcoma. Disturbance of the cerebral blood circulation in patients with AIDS. Diagnosis of the neurologic manifestations of AIDS. Treatment. Prognosis. Preventive measures.

**Theme 29. Tuberculosis of the nervous system.**

Tuberculosis of the nervous system. Tuberculous meningitis (clinical course, data of the liquor). Tubercular spondylitis, solitary tuberculomas of the brain. Diagnosis, modern methods of treatment, preventive measures.
Theme 30. Demyelinating diseases of the nervous system.

Unit 5. Diseases of the peripheral nervous system, the perinatal affections of the nervous system, somatoneurologic syndromes. Hereditary diseases of the nervous system, congenital defects of the spine and spinal cord. Medicines used in neurology.

The specific goals:
1. To master the principles of vertebrogenic and nonvertebrogenic diseases of the peripheral nervous system.
2. To interpret clinical peculiarities of the perinatal affection of the nervous system.
3. To analyze the neurologic manifestations of the hereditary-degenerative diseases of the neuromuscular, extrapyramidal, pyramidal, cerebellar systems.
4. To interpret neurologic syndromes with diseases of the internal organs, the paraneoplastic syndromes.
5. To analyze congenital defects of the spine and spinal cord.
6. To master the medicines, which are used in patients of the neurologic profile.

Theme 31. Structure and function of the peripheral nervous system. Symptoms of nerve tension.
Roots, ganglions, spinal nerves, plexuses, peripheric nerves; nuclii, radixes and cranial nerves. Symptoms of intention: Lasseg, Behterev, Broghard, Sokolyansky, “sitting”, Nery, Dezherina, Wasserman, Matsckevich.

Theme 32. Disease of the peripheral nervous system. Paraneoplastic polyneuropathy, palliative therapy.
Clinical classification of diseases of the peripheral nervous system.
Vertebrogenic affection of the peripheral nervous system.
Cervical level: reflex syndromes (cervicago, cervicalgia; cervicocranioalgia or the syndrome of the posterior vertebral artery and cervicobrachialgia with muscular-tonsic, vegetative-vascular or neuro – dystrophic manifestations). The radicular syndromes (discogenic affections of the radices - radiculopathies). Radicular-vascular syndromes (radiculoischemia).
Thoracic level; reflex syndromes (thoracago, thoracalgia with muscular-tonsic, vegetative -visceral or neurodystrophic manifestations).
Radicular syndromes (discogenic affections of the radices - radiculopathies).Radicular-vascular syndromes (radiculoischemia).
Lumbar-sacral level: reflex syndromes (lumbago, lumbalgia, lumboischalgia with musculo-tonic, vegetative-vascular or neurodystrophic manifestations).
Affection of the cranial nerves. Neuralgia of the trigeminal and other cranial nerves. Neuropathy of the facial nerve, neuropathy of other cranial nerves.
Affection of separate cerebrospinal nerves.
Traumatic. On the upper extremities: radius, ulnar, elbow, medial –muscular and other nerves. On the lower extremities: femoral, gluteal, fibular, tibial, etc.
Plexopathies. Injuries of the plexes: cervical, upper humeral (paralysis of Erb-Dushen); lower humeral (Degerine-Klumpke paralysis); humeral (totally); lumbo-sacral (partially or totally).

Compression - ischemic mononeuropathies (most frequently tunnel syndromes). On the upper extremities: the syndrome of wrist canal (medial nerve); the syndrome of the canal of Guiyen (ulnar nerve). On the lower extremities: the syndrome of tarsal canal (fibular nerve); parestetic meralgia of Rott-Berngardt (jamming of the lateral skin nerve of the thigh under the inguinal ligament).

Multiple affections of the nerve radices.

Infectious polyneuropathies, infectious-allergic polyradiculoneuropathies (Landry, Guiyen-Barre).

Polyneuropathies. Toxic: in chronic everyday or production intoxications (alcoholic, lead, trichlorfon and others); in toxicoinfections (diphtheria, botulism); allergic (medicamental and others); dismetabolic: hypo- or avitaminosis, endocrine diseases - diabetes mellitus, diseases of the liver, kidneys, etc.; discirculatory: in nodular periarteritis, rheumatic and other vasculites, idiopathic and hereditary forms, Paraneoplastic polyneuropathy (PNP). Paliative treatment of PNP.

Treatment of diseases of the peripheral nervous system: medicamental, orthopedic, surgical, sanitorium-health resort.

Treatment by gymnastics. Preventive measures and examination for fitness to work.

**Theme 33. Somatoneurological syndromes.**

Somatoneurologic syndromes, which develop as a result of metabolism disturbance of the nervous system, hypoxia, pathologic reflex impulses in somatical diseases of man.

Somatoneurologic syndromes, which are most often encountered: asthenic, vegetative dystonia, polyneuropathic, neuromuscular disturbances.

Somatoneurologic syndromes in diseases of the lungs, heart, blood system, digestive tract, liver, kidneys, endocrine system, collagenoses.

Paraneoplastic syndrome.

Treatment. Preventive measures.

**Theme 34. Hereditary- degenerative diseases of the nervous system.**


Myasthenia. Myastenic syndromes. Extensive medical urgency of the problem, a feature of palliative care.

Paroxysmal myoplegia. Syndrome of paroxysmal myoplegia.


Modern biochemical aspects of the disease of Parkinson and its treatment.

Muscular dystonias (primary hereditary, secondary due to organic diseases of the brain), etiology, principles of treatment.


Principles of treatment. Goal of treatment not only improve the patient's condition, but also improve the quality of life (palliative neurology).

**Theme 35. Practical skills.**
ISW 1. The main stages of neurological science.

The first study of nervous system diseases (Hippocrates, Galen, Avicenna) study neuroscience at the universities of the Middle Ages and the Renaissance. The organization of the first Department of Neurology at universities (Moscow, Kharkov, St. Petersburg, Kyiv, Lviv, etc.). Domestic and international neurological school. Current areas of neuroscience: the differentiation of neurological science (creation of separate departments and research centers for the study of cerebrovascular, demyelinating diseases, epilepsy, neuro-muscular pathology etc.) And integration with other sciences (somatoneurology, vertebral neurology, neurosurgery).

ISW 2. Independent management of patients and making up the case history.

ISW 3. Tumours of the brain and spinal cord. Abscess of the brain.

Classification (topical and pathomorphological). Clinical course: general cerebral, focal and dislocation syndromes.
Differential diagnosis of tumours of the brain and spinal cord.
Extra- and intramedullar tumours. Diagnostic value of ophthalmoscopy, study of the liquor, EEG, echoscopy, craniography, angiography, ventriculography, MRT- CT, spondylography, myelography and other methods in tumours of the brain and spinal cord. Principles of surgical and conservative treatment of the tumours of the brain and spinal cord.

ISW 4. Parasitic diseases of the nervous system, prion infections, neuroborreliosis.

Prion infections. Disease of Kreitsfeld- Jakob (etiology, pathogenesis, clinical course, diagnosis, preventive measures).

ISW 5. Congenital defects of the spine and spinal cord. Syringomyelia.

Syringomyelia - etiology, pathogenesis, pathomorphology, clinical forms, basic clinical syndromes (affection of the posterior horn, anterior and lateral horns, syndromes of affection of the conduction paths of the white substance of the lateral and posterior columns of the spinal cord, disrrhaphic status). Diagnostic criteria. Differential diagnosis. Principles of therapy.

ISW 6. Perinatal affections of the nervous system.

Etiological factors (intratraumeine, ancestral injury, affection of the brain in the early postpartum period).
Hypoxic- ischemic encephalopathy (acute period, recovering period).


The groups of medicines, which are used for treatment of the neurologic diseases: neuroprotectors; the drugs, which improve cerebral hemodynamics; antiparkinisonic; anticonvulsant; antimigraine, vegetotropic, anti-therosclerotic, biogenic stimulators; neuroleptics; anti-stress preparations; interferons; the drugs, which are used in neuromuscular diseases, in autoimunne and demyelinating diseases, muscular dystonias and hyperkineses and others.
## 4. Structure of the discipline «Neurology».
### Section 1. «General neurology»

<table>
<thead>
<tr>
<th>Theme</th>
<th>Lectures</th>
<th>Practical classes</th>
<th>Semi-nars</th>
<th>ISW</th>
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<td>1. Introduction. Symptoms of motor, coordinatory and sensory disorders.</td>
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<tr>
<td>1. Principles of structure and functioning of the nervous system. Functional unit of the nervous system - neuron. Notion about the reflex and reflex arc. Procedure of their examinations.</td>
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<tr>
<td>2. Voluntary motions and their impairment. The pyramidal system. Cortical - nuclear and cortico - spinal paths.</td>
<td></td>
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<td>1</td>
</tr>
<tr>
<td>3. Symptoms of central and peripheral pareses. Methods of the voluntary movements examination. Syndromes of affection of the motor way at different levels</td>
<td>1</td>
<td>2</td>
<td></td>
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<tr>
<td>4. Automated involuntary movements. Movements coordination. The extrapyramidal system and syndromes of its affection.</td>
<td>1</td>
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<tr>
<td>5. The cerebellum. Syndromes of affection of the cerebellum.</td>
<td></td>
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<td>1</td>
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<tr>
<td>6. The sensory system and symptoms of its affection. Kinds and types of the sensor disorders.</td>
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<tr>
<td>7. Cranial nerves: I, II, VIII and syndromes of its affection.</td>
<td></td>
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<tr>
<td>8. Cranial nerves: III, IV, VI and syndromes of its affection.</td>
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</tr>
<tr>
<td>9. Cranial nerves: V, VII and syndromes of its affection.</td>
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<td>1</td>
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<tr>
<td>10. Cranial nerves: IX, X, XI, XII and syndromes of its affection. Bulbar, pseudobulbar and alternative syndromes.</td>
<td></td>
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<tr>
<td>11. Methods of investigation of the vegetative nerve system. Pathology of the vegetative nervous system.</td>
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<tr>
<td>12. Localization of functions in the cerebral cortex. Syndromes of affection.</td>
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<tr>
<td>13. Cerebro-spinal fluid, its change. Meningeal syndrome.</td>
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<td></td>
<td>1</td>
</tr>
<tr>
<td>14. Functional diagnosis of diseases of the nervous system.</td>
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<td>2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>15. Blood supply of brain and spinal cord.</td>
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<td>2</td>
<td></td>
<td>1</td>
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<tr>
<td>16. Practical skills.</td>
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<tr>
<td>ISW 1. Main stages of development of neurologic science.</td>
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<tr>
<td>Total - 48</td>
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</table>

Credits ECTS –

Auditory training – 69,23%, ISW – 30,77%
### Section 2. «Special neurology».

<table>
<thead>
<tr>
<th>Theme</th>
<th>Lectures</th>
<th>Practical classes</th>
<th>Seminars</th>
<th>ISW</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Vascular diseases of the brain and spinal cord, paroxysmal states, cephalgias, sleep disorder, neuro-intoxications. Traumatic affections of the nervous system.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>17. Vascular diseases of the brain and spinal cord.</td>
<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>Chronic disturbances of the cerebral blood circulation.</td>
<td></td>
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</tr>
<tr>
<td>18. Ischemic stroke. Transient ischemic attack (TIA).</td>
<td>1</td>
<td>2</td>
<td>-</td>
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<tr>
<td>19. Hemorrhagic stroke.</td>
<td>1</td>
<td>2</td>
<td>-</td>
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</tr>
<tr>
<td>20. Epilepsy and nonepileptic paroxysmal states.</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>21. Headache, sleep disorder.</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>22. Professional and everyday neuro-intoxications.</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Affection of the nervous system under the effect of the physical factors.</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>23. Neurologic aspects of the craniocerebral injury.</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>The spinal injury.</td>
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<td></td>
<td></td>
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<tr>
<td>24. Meningitis.</td>
<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>25. Arachnoiditis. Encephalitis.</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>27. Neurosyphilis. Early and late clinical forms.</td>
<td>-</td>
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<td>-</td>
<td>1</td>
</tr>
<tr>
<td>28. Affection of the nervous system in presence of HIV-infection.</td>
<td>-</td>
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<td>-</td>
<td>1</td>
</tr>
<tr>
<td>29. Tuberculosis of the nervous system.</td>
<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>30. Demyelinating diseases of the nervous system.</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>5. Diseases of the peripheral nervous system, the perinatal affections of the nervous system, somatoneurologic syndromes. Hereditary- degenerative diseases of the nervous system, congenital defects of the spine and spinal cord. The medicines, which are used in neurology.</td>
<td></td>
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<tr>
<td>31. Structure and function of the peripheral nervous system. Symptoms of nerve tension.</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>32. Diseases of the peripheral nervous system.</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>1</td>
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<tr>
<td>33. Somatoneurologic syndromes.</td>
<td>-</td>
<td>2</td>
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<td>1</td>
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<tr>
<td>34. Hereditary- degenerative diseases of the nervous system, neuromuscular illnesses with the pyramid, extrapyramid and cerebellar impairment.</td>
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<td>2</td>
<td>-</td>
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<tr>
<td>35. The practical skills.</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ISW 2. Independent management with making up a case history.</td>
<td>-</td>
<td></td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>ISW 3. Tumours of the brain and spinal cord. Abscess of the brain.</td>
<td>-</td>
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<td>-</td>
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<td>ISW 4. Parasitic diseases of the nervous system, prion infections.</td>
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</table>
ISW 5. Congenital affections of the spine and spinal cord. Syringomielia.  -  -  -  1

ISW 6. Perinatal affections of the nervous system.  -  -  -  1

ISW 7. The medicines, which are used in neurology. Procedure for palliative care of incurable patients. Order № 41 from 01.21.2013.  -  -  -  1

Total - 87  6  38  -  24

Exam (out of auditory)  6

Auditory training – 64.71%, ISW- 35.29%

5. Subject plan of the lectures of the discipline «Neurology»

<table>
<thead>
<tr>
<th>№</th>
<th>THEME</th>
<th>Quantity of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Section 1. «General neurology»</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Introduction into neurology. Principles of structure and functions of</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>the nervous system. Syndromes of motion. Syndrome of parkinsonism and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>neurochemical mechanisms of its development.</td>
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</tr>
<tr>
<td>2</td>
<td>Higher cerebral functions and their impairment.</td>
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<td><strong>Total</strong></td>
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<tr>
<td></td>
<td><strong>Section 2. «Special neurology»</strong></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Vascular diseases of the brain and spinal cord.</td>
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<tr>
<td>4</td>
<td>Paroxysmal states in the clinical picture of the nervous diseases.</td>
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<tr>
<td></td>
<td>Neurologic aspects of the craniocebral injury</td>
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<tr>
<td>5</td>
<td>Demyelinating diseases of the nervous system</td>
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<td><strong>Total hours of the discipline</strong></td>
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6. Subject plan of practical classes of the discipline «Neurology»

<table>
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<th>№</th>
<th>THEME</th>
<th>Quantity of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Section 1. «General neurology»</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Principles of structure and functioning of the nervous system.</td>
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<tr>
<td></td>
<td>Functional unit of the nervous system - neuron. Notion about the</td>
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<td></td>
<td>reflex and reflex arch. Procedure of their examinations.</td>
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<td>2</td>
<td>Voluntary motions and their impairment. The pyramidal system.</td>
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<td></td>
<td>Cortical - nuclear and cortico - spinal paths.</td>
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<tr>
<td>3</td>
<td>Symptoms of central and peripheral pareses. Methods of the voluntary</td>
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<tr>
<td></td>
<td>movements examination. Syndromes of affection of the motor way at</td>
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<td>different levels</td>
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<td>4</td>
<td>Automated involuntary movements. Movements coordination. The</td>
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<tr>
<td></td>
<td>extrapyramidal system and syndromes of its affection.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>The cerebellum. Syndromes of affection of the cerebellum.</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>The sensory system and symptoms of its affection. Kinds and types of</td>
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<tr>
<td></td>
<td>the sensor disorders.</td>
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</tr>
<tr>
<td>7</td>
<td>Cranial nerves: I, II, VIII and syndromes of its affection.</td>
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<td>8</td>
<td>Cranial nerves: III, IV, VI and syndromes of its affection.</td>
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<td>9</td>
<td>Cranial nerves: V, VII and syndromes of its affection.</td>
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<tr>
<td>10</td>
<td>Cranial nerves: IX, X, XI, XII and syndromes of its affection.</td>
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<tr>
<td></td>
<td>Bulbar, pseudobulbar and alternative syndromes.</td>
<td></td>
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<tr>
<td>11</td>
<td>Methods of investigation of the vegetative nerve system. Pathology</td>
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</tr>
<tr>
<td></td>
<td>of the vegetative nervous system.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Localization of functions in the cerebral cortex. Syndromes of</td>
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<tr>
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<td>affection.</td>
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</tr>
<tr>
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<td>THEME</td>
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<tr>
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</tr>
<tr>
<td>13</td>
<td>Cerebro-spinal fluid, its change. Meningeal syndrome.</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>Functional diagnostis of diseases of the nervous system.</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>Blood supply of brain and spinal cord.</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>Practical skills.</td>
<td>2</td>
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<td></td>
<td><strong>Total</strong></td>
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### Section 2. «Special neurology»

<table>
<thead>
<tr>
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<th>THEME</th>
<th>Quantity of hours</th>
<th>Kind of control</th>
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<tbody>
<tr>
<td>17</td>
<td>Vascular diseases of the brain and spinal cord.</td>
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<tr>
<td>18</td>
<td>Ischemic stroke. Transient ischemic attack (TIA).</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Hemorrhagic stroke.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Epilepsy and nonepileptic paroxysmal states.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Headache, sleep disorder.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Professional and everyday neuro-intoxications. Affection of the nervous system under the effect of the physical factors.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Neurologic aspects of the craniocerebral injury.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Meningitis.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Arachnoiditis. Encephalitis.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Poliomyelitis. Acute myelitis. Lateral amyotrophic sclerosis. Palliative therapy.</td>
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<tr>
<td>27</td>
<td>Neurosyphilis. Early and late clinical forms.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Affection of the nervous system in presence of HIV- infection.</td>
<td>2</td>
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</tr>
<tr>
<td>29</td>
<td>Tuberculosis of the nervous system.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Demyelinating diseases of the nervous system.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Structure and function of the peripheral nervous system. Symptoms of nerve tension.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Diseases of the peripheral nervous system.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Somatoneurologic syndromes.</td>
<td>2</td>
<td></td>
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<tr>
<td>34</td>
<td>Hereditary- degenerative diseases of the nervous system, neuromuscular illnesses with the pyramid, extrapyramid and cerebellar impairment.</td>
<td>2</td>
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</tr>
<tr>
<td>35</td>
<td>The practical skills.</td>
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<tr>
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<td><strong>Total</strong></td>
<td><strong>38</strong></td>
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</table>

|    | **Total in discipline**                                              | **70**            |                                          |

### 7. The forms of the individual students’ work (ISW) in the discipline «Neurology» and its control.

<table>
<thead>
<tr>
<th>№.</th>
<th>THEME</th>
<th>Quantity of hours</th>
<th>Kind of control</th>
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<tbody>
<tr>
<td>1.</td>
<td>Preparation to practical classes - <em>theoretical preparation and training of the practical skills</em></td>
<td>15</td>
<td>Current control at practical classes</td>
</tr>
<tr>
<td>2.</td>
<td>Independent study which is not included in the plan of the class-room training:</td>
<td></td>
<td>Exam</td>
</tr>
<tr>
<td>2.1</td>
<td>ISW 1. Main stages of development of the neurologic science</td>
<td>1</td>
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### Section 2. «Special neurology»

<table>
<thead>
<tr>
<th>№.</th>
<th>THEME</th>
<th>Quantity of hours</th>
<th>Kind of control</th>
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</thead>
<tbody>
<tr>
<td>3.</td>
<td>Preparation to practical classes - <em>theoretical preparation and training of the practical skills</em></td>
<td>18</td>
<td>Current control at practical classes</td>
</tr>
<tr>
<td>4</td>
<td>Individual study of the themes which are not included into the plan of the class-room training:</td>
<td></td>
<td>Exam</td>
</tr>
<tr>
<td>4.1</td>
<td>ISW 2. Independent management with making up a case history.</td>
<td>1</td>
<td>- “ “ -</td>
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<tr>
<td>4.2</td>
<td>ISW 3. Tumours of the brain and spinal cord. Abscess of the brain.</td>
<td>1</td>
<td>- “ “ -</td>
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</table>
4.3 ISW 4. Parasitic diseases of the nervous system, prion infections. 1 - “-“ -

4.4 ISW 5. Congenital affections of the spine and spinal cord. Syringomyelia. 1 - “-“ -

4.5 ISW 6. Perinatal affections of the nervous system. 1 - “-“ -

4.6 ISW 7. The medicines, which are used in neurology. Procedure for palliative care of incurable patients. Order № 41 from 01.21.2013. 1 - “-“ -

| Total | 24 |
| Total in discipline | 40 |

8. Individual task

Not provided.

9. Teaching methods

Practical classes: conversation, solving clinical situational problems, practicing patient examination skills, demonstration and practice of neurological examination skills, training exercises on differential diagnosis of the most common diseases of the nervous system.

Independent work: independent work with the textbook, independent work with the bank of test tasks Step-2, independent solution of clinical problems.

10. Methods of control and criteria for evaluating learning outcomes

Current control: oral examination, testing, assessment of practical skills, solving situational clinical problems, assessment of activity in the classroom.

Final control: oral exam, testing.

The structure of the current assessment in the practical lesson:

2. Assessment of practical skills on the topic of the lesson: - methods: assessment of the correctness of practical skills - maximum score - 5, minimum score - 3, unsatisfactory score - 2;
3. Evaluation of work with the patient on the topic of the lesson:
   - methods: assessment of: a) communication skills of communication with the patient, b) the correctness of the appointment and evaluation of laboratory and instrumental studies, c) compliance with the algorithm of differential diagnosis, d) justification of clinical diagnosis, e) treatment plan - maximum grade - 5, minimum grade - 3, unsatisfactory grade - 2;

Criteria for current assessment in the practical lesson:

| «5» | The student is fluent in the material, takes an active part in the discussion and solution of the situational clinical problem, confidently demonstrates practical skills during the examination of a sick child and interpretation of clinical, laboratory and instrumental studies, expresses his opinion on the topic of the lesson, demonstrates clinical thinking. |
| «4» | The student is well versed in the material, participates in the discussion and solution of situational clinical problems, demonstrates practical skills during the examination of a sick child and interpretation of clinical, laboratory and instrumental studies with some errors, expresses his opinion on the topic, demonstrates clinical thinking. |
| «3» | The student does not have enough material, uncertainly participates in the discussion and solution of the situational clinical problem, demonstrates practical skills during the examination of a sick child and interpretation of clinical, laboratory and instrumental studies with significant errors. |
| «2» | The student does not have the material, does not participate in the discussion and solution of the situational clinical problem, does not demonstrate practical skills during the examination of a sick child and the interpretation of clinical, laboratory and instrumental studies. |
The student is admitted to the exam if he meets the requirements of the curriculum and if for the current academic activity, he received at least 3.00 points and passed the test control for the tests "Step-2" by at least 90% (10 tasks).

**Exam structure**

<table>
<thead>
<tr>
<th>The content of the evaluated activity</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solving a clinical problem with the assessment of additional research methods.</td>
<td>2</td>
</tr>
<tr>
<td>Answer to theoretical questions.</td>
<td>3</td>
</tr>
</tbody>
</table>

**Criteria for assessing the learning outcomes of students in the exam:**

| «5» | It is presented to a student who systematically worked during the semester, showed during the exam versatile and deep knowledge of the program, is able to successfully perform the tasks provided by the program, mastered the content of basic and additional literature, realized the relationship of individual sections of the discipline, their importance for future profession, showed creative abilities in understanding and using educational material, showed the ability to independently update and replenish knowledge; level of competence - high (creative); |
| «4» | It is presented to a student who has shown full knowledge of the curriculum, successfully performs the tasks provided by the program, mastered the basic literature recommended by the program, showed a sufficient level of knowledge of the discipline and is able to independently update and update during further study and professional activities; level of competence - sufficient (constructive-variable) |
| «3» | Exhibited to a student who has shown knowledge of the basic curriculum in the amount necessary for further study and further work in the profession, copes with the tasks provided by the program, made some mistakes in answering the exam and when performing exam tasks, but has the necessary knowledge to overcoming mistakes under the guidance of a research and teaching staff; level of competence - average (reproductive) |
| «2» | Exhibited to a student who did not show sufficient knowledge of the basic curriculum, made fundamental mistakes in performing the tasks provided by the program, can not without the help of the teacher to use the knowledge in further study, failed to master the skills of independent work; level of competence - low (receptive-productive) |

11. Distribution of points received by applicants for higher education

The grade for the discipline consists of 50.0% of the grade for the current performance and 50.0% of the grade for the exam. 

**The average score for the discipline is translated into a national grade and converted into scores on a multi-point scale.**

Conversion of the traditional grade for the discipline in the 200-point is carried out by the information and computer center of the university program «Contingent».

<table>
<thead>
<tr>
<th>National assessment for the discipline</th>
<th>The sum of points for the discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td>«5»</td>
<td>185 – 200</td>
</tr>
<tr>
<td>«4»</td>
<td>151 – 184</td>
</tr>
<tr>
<td>«3»</td>
<td>120 – 154</td>
</tr>
</tbody>
</table>

Points from the discipline are independently converted into both the ECTS scale and the four-point scale. ECTS scale scores are not converted to a four-point scale and vice versa. Further accounts are carried out by the information and computer center of the university.
Conversion of traditional assessment in the discipline and the amount of points on the ECTS scale

<table>
<thead>
<tr>
<th>Assessment on the ECTS scale</th>
<th>Statistical indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>The best 10% students</td>
</tr>
<tr>
<td>B</td>
<td>The following 25% students</td>
</tr>
<tr>
<td>C</td>
<td>The following 30% students</td>
</tr>
<tr>
<td>D</td>
<td>The following 25% students</td>
</tr>
<tr>
<td>E</td>
<td>The following 10% students</td>
</tr>
</tbody>
</table>

The ECTS scale is given by the ONMedU educational subdivision or the dean's office after ranking the grades in the discipline among students studying in one course and in one specialty. According to the decision of the Academic Council, the ranking of students - citizens of foreign countries is recommended to be carried out in one array.

12. Enumeration of questions for training the students for the exam.

**Discipline: «Neurology»**

**Section 1. «General neurology»”**

**Unit 1. Introduction. Symptoms of the motor, coordinatory and sensory disorders.**
1. Neurology as a science, a branch of practical medicine and subject.
2. Main stages of development of the neurologic science.
3. Basic stages of the development of the nervous system.
5. Basic principles of functioning of the nervous system.
7. Tendon and periostal reflexes, the arch of their closing.
9. Central (spastic) paralysis.
11. Topical diagnosis of pathology of the voluntary motions.
12. Syndromes of affection of the motor path at different levels of the spinal cord.
13. The extrapyramidal system, anatomic peculiarities, function.
14. Syndrome of parkinsonism, the biochemical mechanisms of pathogenesis.
15. Kinds of hyperkineses.
16. The cerebellum, anatomic-physiological peculiarities, syndromes of affection.
17. Forms of ataxia.

**Unit 2. Pathology of the cranial nerves. Disorder of the vegetative nervous system and higher cerebral functions. Meningeal and liquoral syndromes. Additional methods of investigation in neurology. Signs of the peripheric nerves intension.**
1. Anatomic-physiological data, methods of investigation, syndromes of affection of I - XII pairs of the cranial nerves.
2. Central and peripheral paresis of the facial nerve.
3. Bulbar and pseudobulbar syndromes.
4. Alternating syndromes.
5. Super-segmental and segmental divisions of the vegetative nervous system, their functions, syndromes of affection.
7. Cerebral cortex, cytoarchitectonic fields, t syndromes of affection.
8. Agnosia, apraxia, aphasia.
10. Liquororformation, composition of the liquor in the norm, its changes in meningitis, tumours, hemorrhagic stroke, tuberculosis.
11. Clinical course of the meningeal syndrome.
14. Ultrasonic techniques of investigation.

Section 2. «Special neurology»

Unit 3. Vascular diseases of the brain and spinal cord, paroxysmal states, cephalgias, sleep disorders, neurointoxications. Traumatic affections of the nervous system.

1. Blood supply of the brain and spinal cord.
2. Classification of vascular diseases of the nervous system.
4. Transient disorder of the cerebral blood circulation. Transitory ischemic attack.
5. Hemorrhagic stroke (parenchymatous and subarachnoidal hemorrhage).
6. Ischemic (thrombotic and nonthrombotic) strokes.
8. Spinal strokes.
12. Nopileptic paroxysmal states - convulsive and unconvulsive
17. Insomnia, hypersomnia.
18. Basic clinical syndromes and principles of treatment under the condition of exogenous intoxications.
19. Stages of affection of the nervous system under the condition of acute and chronic radiation disease.
22. Spinal injury.
23. Classification, syndromes of the manifestation of the brain and spinal cord tumours. Changes in the cerebrospinal fluid.

Unit 4. Infectious, infective-allergic, demyelinizing, parasitic diseases of the nervous system, prion infection. Lateral amyotrophic sclerosis.

1. Meningitis (purulent-primary, secondary; serous).
2. Arachnoitis (adhesive, cystic), basal, convex.
3. Encephalitis (primary, secondary)
5. Poliomyelitis (clinical forms, stages, diagnosis, treatment, preventive measures).
6. Acute myelitis.
7. Lateral amyotrophic sclerosis. Principles of palliative care
8. Neurosyphilis, early and late forms.
9. Affection of the nervous system in presence of HIV- infection.
10. Tuberculosis of the nervous system.
11. Multiple sclerosis (etiopathogenesis, variants of the clinical course, modern methods of treatment).
12. Parasitic diseases of the nervous system (cysticercosis, echinococcosis, toxoplasmosis).
13. Prion infection.

Unit 5. Diseases of the peripheral nervous system, perinatal affections of the nervous system, somatoneurologic syndromes. Hereditary-degenerative diseases of the nervous system, congenital defects of the spine and spinal cord. The medicines, which are used in neurology.
1. Classification of diseases of the peripheral nervous system.
2. Reflex vertebrogenic syndromes of the cervical, thoracic, lumbar levels.
3. Radicular syndromes of the cervical, thoracic, lumbar localization.
4. Neuralgia of the trigeminal nerve.
5. Neuropathy of the facial nerve.
7. Neuropathy of the ulnar, radius, medial, tibular, fibular nerves.
13. Progressive muscular dystrophias -primary (myopathies) and secondary (amyotrophy).
14. Myotonia.
17. Disease of Huntington.
19. Muscular dystonias.
23. Syringomyelia (etiopathogenesis, clinical course, diagnosis, treatment).
24. Groups of the medicines, which are used in neurology.
25. Features of incurable patients and the use of palliative care practices in neurological practice. The order of palliative care (Order № 41).

Enumeration of practical work and tasks.
Section 1. «General neurology»
1. Examination of the scope of active and passive motions.
2. Examination of tone and force of muscles.
3. Examination of tendon, periostal, skin reflexes (stylo-carpo-radial, of the biceps, based on the triceps, knee, achilles, abdominal).
4. Examination of pathologic reflexes (Babinsky, Oppenheim, Gordon, Schaeffer, Rossolimo, Bekhterev, Zhukovskyi, etc) and synkinesias.
5. Examination of the motor coordination (finger-nose, knee-heel tests, diadochokinesis, test for dysmetria), development of static, dynamic ataxia.
6. Examination of sensitivity (surface, deep and folded configurations).
7. Examination of the symptoms of tension for the ischiadic and femoral nerves.
8. Examination of the function of the cranial nerves.
9. Examination of the vegetative nervous system.
10. Examination of meningeal symptoms (rigidity of the occipital muscles, signs of Kernig, Brudzinski).
11. Examination of speech, praxis, gnosis, writing, reading, calculation.
12. Treatment of the basic indices of the auxiliary methods of examination in the neurologic clinic (electro-physiological, ultrasonic, roentgenologic, computer-tomographic).

Section 2 «Special neurology»

1. Independent management of patients with neurologic pathology with making up a case history.
2. Determination of the leading neurologic syndrome in a present patient.
3. Substantiation of topical diagnosis in the patient, who is examined.
5. Substantiation of the clinical diagnosis.
6. Determination of etiology of the disease, peculiarities of pathogenesis, course of the disease and its complications in the examined patient.
7. Substantiation of treatment, which is administered to a patient.
8. Determination of the prognosis of the disease course in this patient.

13. Methodical support:
   - Working program of the discipline
   - The syllabus of the discipline
   - Textbooks:
       - Multimedia presentations
       - Situational clinical tasks
       - Methodical development of practical classes
       - Electronic bank of test tasks by divisions of the discipline.

   Basic literature:

Additional literature:


Information resources

- Web resources for neurologists and neurosurgeons
  https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4117098/

- American academy of neurology / TOOLS & RESOURCES
  https://www.aan.com/tools-and-resources/

- The National Institute of Neurological Disorders and Stroke
  https://www.ninds.nih.gov