

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

Petro Mohyla Black Sea National University

Medical Institute

Department of Therapeutic and Surgical Disciplines



CURRICULUM / WORK PROGRAM

"NEUROLOGY"

Specialty 222 "Medicine"

Developed by

Head of developer's department

Guarantor of the educational program

Director of institute

Head of SMD

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Mycolayv – 2019

1. Description of subject

Index	Characteristic of subject	
Name of subject	Neurology	
Field of knowledge	22 «Health care»	
Specialty	222 «Medicine»	
Specialization (if available)		
Educative program	Neurology	
Level of high education	Master	
Status of subject	Normative	
Year of studies	4 th year	
Study year	2020/2021	
Numbers of terms	Day study	Distance learning
	7 th , 8 th	
ECTS/hours	4 credits (2 / 2) / 120 hours	
Structure of course: – Lecture – Practical classes – Hours of independent students' work	Day study	Distance learning
	10 (6 / 4) год.	
	70 (36 / 34) год. 40 (20 / 20) год.	
Percentage of auditory load	66,6%; ISW 33,3%	
Language of teaching	English	
Form of intermediate control (if available)	Attestation for 7 th term	
Form of final control	Exam – 8 th term	

2. Purpose, tasks and results of studying the discipline

The general purpose of teaching the discipline "Neurology" is to provide students with knowledge of the etiology, pathogenesis, classification, clinic, diagnosis, differential diagnosis of the most common neurological diseases; study of the main symptoms and syndromes of lesions of the nervous system, determination of etiological factors and pathogenetic mechanisms of development of major neurological diseases, planning tactics of neurological patients.

The task of study - the acquisition by the student of competencies, knowledge, skills and abilities to carry out professional activities in the specialty of:

1. Analysis of examination data of neurological patients;
2. Determination of the leading symptoms and syndromes in the most common neurological pathology;
3. Providing emergency medical care in urgent neurological conditions
4. Planning tactics of neurological patient management;
5. Examination and differential diagnosis of diseases;
6. Diagnosis of emergencies in the clinic of nervous diseases;
7. Establishment of a preliminary clinical diagnosis of neurological pathology;

Prerequisites for studying the discipline (interdisciplinary connections). Neurology as a discipline:

a) is based on students' understanding of basic principles and knowledge of anatomy and topographic anatomy, histology, medical and biological physics, bioinorganic, bioorganic and biological chemistry, biology, normal physiology, microbiology and integrates with these disciplines;

b) creates a theoretical basis for students to master clinical disciplines (internal medicine, surgery, obstetrics and gynecology, pediatrics, anesthesiology, etc.), which involves both the integration of teaching with basic clinical disciplines and the acquisition of in-depth knowledge of neurology, the ability to use this knowledge in the process of further training and in the professional activity of a doctor;

c) forms and consolidates the methodological foundations of clinical thinking;

Expected learning outcomes. As a result of studying the discipline, students should understand:

- a) theoretical foundations, modern principles of evidence-based medicine;
- b) theoretical foundations of general neurology (basic neurological symptoms and syndromes of lesions of different parts of the nervous system);
- c) laboratory - instrumental research methods in neurological practice.

As a result of studying the discipline the student should know:

1. Anatomical and physiological features and pathology of the olfactory analyzer.
2. Anatomical and physiological features and pathology of the visual analyzer.
3. Interpret the syndromes of oculomotor nerve damage.
4. To determine the anatomical and physiological features and pathology of the trigeminal nerve.
5. Anatomical features and pathological manifestations of facial nerve damage.
6. Symptoms of damage to the parietal nerve.
7. Pathology of IX-XII pairs of cranial nerves, bulbar and pseudobulbar syndromes.
8. Pathology of the autonomic nervous system.
9. Syndromes of lesions of the cerebral cortex.
10. Changes in cerebrospinal fluid and meningeal symptom complex.
11. Neuroimaging, ultrasound and electrophysiological methods of examination of neurological patients.

12. Indications for blockades
13. Master the protocols of the treatment program.
14. The main symptoms and syndromes of neurological diseases

must be able to:

1. To determine the place of neurology as a science, a field of practical medicine and a subject.
2. Analyze the stages of formation of neurology.
3. Interpret the principles of structure and functioning of the nervous system.
4. Interpret the implementation of arbitrary movements.
5. Explain the symptoms of central and peripheral paresis.
6. Interpret motor disorders in motor lesions at different levels.
7. Explain the anatomical and physiological, biochemical data of the extrapyramidal system and the syndromes of its lesion.
8. Analyze the anatomical and physiological features of the cerebellum and syndromes of its lesions.
9. Interpret the concept of reception, clinical classification of sensitivity, types of sensitive disorders, topical types of sensitive disorders.
10. To master the skills of examination of patients with motor and sensory disorders.
11. Identify the main symptoms and syndromes of different parts of the nervous system
12. Interpret the data of functional anatomy and clinical physiology of the nervous system.
13. To determine the etiological factors and pathogenetic mechanisms of the development of major neurological diseases.
14. Make a preliminary diagnosis of major neurological diseases.
15. Analyze the main indicators of laboratory and instrumental research methods in neurological practice.
16. To plan tactics of management of the patient with neurologic pathology.
17. To master the skills of examination of cranial nerves, autonomic nervous system, functions of the cerebral cortex.

must have the competencies:

- on the application of knowledge in neurology to promote a healthy lifestyle, as well as to prevent the occurrence and development of diseases;
- about the main perspective directions of development of neurology and pathology.

The developed program corresponds to the educational-professional program (OPP) and is focused on formation I competencies:

general (ZK) - ZK1-ZK3 OPP:

- ZK1. Ability to abstract thinking, analysis and synthesis, the ability to learn and master modern knowledge.
- ZK2. Ability to apply knowledge in practical situations.
- ZK3. Knowledge and understanding of the subject area and understanding of professional activity.

professional (FC) - FC1 - 9; 11; 16; 18

- FC1. Patient interviewing skills.
- FC2. Ability to determine the required list of laboratory and instrumental studies and evaluate their results.
- FC3. Ability to establish a preliminary and clinical diagnosis of the disease.
- FC4. Ability to determine the required mode of work and rest in the treatment of diseases.

- FC5. Ability to determine the nature of nutrition in the treatment of diseases.
 FC6. Ability to determine the principles and nature of disease treatment.
 FC7. Ability to diagnose emergencies.
 FC8. Ability to determine the tactics of emergency medical care.
 FC9. Emergency care skills.
 FC11. Skills to perform medical manipulations.
 FC16. Ability to determine the tactics of management of persons subject to dispensary supervision.
 FC18. Ability to keep medical records.

According to the educational-professional program, the expected program learning outcomes (PLO) include PLO skills – **10; 13 – 18;22;25;28;30;32;33;35;41**

PLO10	Know the problems of environmental protection and ways to preserve it. Be able to form requirements for themselves and others to preserve the environment. Make proposals to the relevant authorities and institutions on measures to preserve and protect the environment. Be responsible for the implementation of environmental protection measures within its competence.
PLO 13	In the conditions of the health care institution, its subdivision and among the attached population: <ul style="list-style-type: none"> • Be able to identify and record the leading clinical symptom or syndrome (according to list 1) by making an informed decision, using preliminary data of the patient's anamnesis, physical data of patient's examination, knowledge about the human, his organs and systems, adhering to the relevant ethical and legal norms. • Be able to establish the most probable or syndromic diagnosis disease (according to list 2) by taking a reasonable solutions, by comparison with standards, using preliminary patient history and examination data patient, based on the leading clinical symptom or syndrome, using knowledge about human, his organs and systems, adhering to the relevant ethical and legal norms.
PLO14	In the conditions of a health care institution, its subdivision: <ul style="list-style-type: none"> • Assign laboratory and / or instrumental examination of the patient (according to list 4) by making an informed decision, on the basis of the most probable or syndromic diagnosis, according to standard schemes, using knowledge about man, his organs and systems, adhering to the relevant ethical and legal norms. • Carry out differential diagnosis of diseases (according to list 2) by making an informed decision, according to a certain algorithm, using the most probable or syndromic diagnosis, data of laboratory and instrumental examination of the patient, knowledge of man, his organs and systems, adhering to the relevant ethical and legal norms. • Establish a preliminary clinical diagnosis (according to list 2) by making an informed decision and logical analysis, using the most probable or syndromic diagnosis, data of laboratory and instrumental examination of the patient, conclusions about differential diagnosis, knowledge of human, his organs and system, adhering to the relevant ethical and legal norms.
PLO15	Determine the necessary mode of work and rest in the treatment of the disease (according to list 2), in a health care facility, at home and at the stages of medical evacuation, including in the field, based on a preliminary clinical diagnosis, using knowledge of man, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes.
PLO16	Determine the necessary medical nutrition in the treatment of the disease

	(according to list 2), in a health care facility, at home and at the stages of medical evacuation, including in the field on the basis of a preliminary clinical diagnosis, using knowledge about the person, his bodies and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes.
PLO17	Determine the nature of treatment (conservative, operative) of the disease (according to list 2), in a health care facility, at the patient's home and at the stages of medical evacuation, including in the field on the basis of a previous clinical diagnosis, using knowledge about the person , its bodies and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes. Determine the principles of treatment of the disease (according to list 2), in a health care facility, at the patient's home and at the stages of medical evacuation, including field conditions, based on a preliminary clinical diagnosis, using knowledge about the person, his organs and systems , adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes.
PLO18	Establish a diagnosis (according to list 3) by making an informed decision and assessing the human condition, under any circumstances (at home, on the street, health care facility, its units), including in an emergency, in the field , in conditions of lack of information and limited time, using standard methods of physical examination and possible anamnesis, knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms.
PLO22	Perform medical manipulations (according to list 5) in a medical institution, at home or at work on the basis of previous clinical diagnosis and / or indicators of the patient's condition, using knowledge about the person, his organs and systems, adhering to relevant ethical and legal norms, by making informed decisions and using standard techniques.
PLO25	To form, in the conditions of a health care institution, its division on production, using the generalized procedure of an estimation of a state of human health, knowledge of the person, its bodies and systems, adhering to the corresponding ethical and legal norms, by acceptance of the reasonable decision, among the fixed contingent of the population. dispensary groups of patients; groups of healthy people subject to dispensary supervision (newborns, children, adolescents, pregnant women, representatives of professions that must undergo a mandatory dispensary examination).
PLO28	Organize secondary and tertiary prevention measures among the assigned contingent of the population, using a generalized procedure for assessing human health (screening, preventive medical examination, seeking medical care), knowledge about the person, his organs and systems, adhering to relevant ethical and legal norms, by making an informed decision, in a health care facility, in particular: to form groups of dispensary supervision; to organize medical and health-improving measures differentiated from the group of medical examination.
PLO30	Carry out in the conditions of a health care institution, its subdivision: • detection and early diagnosis of infectious diseases (according to list2); * primary anti-epidemic measures in the center of an infectious disease.
PLO32	In the health care facility, or at the patient's home on the basis of the obtained data on the patient's health, using standard schemes, using knowledge about the person, his organs and systems, adhering to relevant ethical and legal norms, by making an informed decision: • determine the tactics of examination and secondary prevention of patients that

	subject to dispensary supervision; <ul style="list-style-type: none"> • determine the tactics of examination and primary prevention of healthy people persons subject to dispensary supervision; • calculate and prescribe the necessary food for children of the first year of life.
PLO33	Determine the presence and degree of limitations of life, type, degree and duration of disability with the issuance of relevant documents, in a health care facility on the basis of data on the disease and its course, features of professional activity.
PLO35	On the territory of service according to standard methods of descriptive, analytical epidemiological and medical-statistical researches: <ul style="list-style-type: none"> • conduct screening to identify the most important non-infectious diseases; • evaluate in the dynamics and in comparison with the average static data on morbidity, including chronic non-communicable diseases, disability, mortality, integrated health indicators; identify risk factors for the occurrence and course of diseases; to form risk groups of the population.
PLO41	In the conditions of a health care institution or its subdivision according to standard methods: <ul style="list-style-type: none"> • select and use unified clinical protocols on the provision of medical care, developed on the basis of evidence based medicine; • participate in the development of local protocols for medical care assistance; • to control the quality of medical care on the basis of statistical data, expert evaluation and sociological data research using indicators of structure, process and performance results; • identify factors that hinder the improvement of quality and safety of medical care.

3. Syllabus of educative subject

The educational process is organized according to the European Credit Transfer and Accumulation System (ECTS).

The curriculum consists of two blocks:

Block 1. General neurology.

1. Introduction.
2. Symptoms of motor and sensory disorders.

Block 2. Special neurology

1. Pathology of cranial nerves.
2. Disorders of the autonomic nervous system and higher brain functions.
3. Meningeal syndrome.
4. Additional research methods in neurology.

Block 1

Topic 1. The main stages of development of neurological science. Principles of structure and functioning of the nervous system. The first studies of diseases of the nervous system (Hippocrates, Galen, Avicenna) The study of neurology in the universities of the Middle Ages and the Renaissance. Organization of the first departments of neurology at universities (Moscow, Kharkiv, St. Petersburg, Kyiv, Lviv, etc.). Domestic and foreign neurological schools.

Topic 1.1. Functional unit of the nervous system. Representation of reflex and reflex arc. Modern directions of neurology development: differentiation of neurological science (creation of separate centers and scientific subdivisions for the study of cerebrovascular, demyelinating diseases, epilepsy, neuromuscular pathology, etc.) and integration with other sciences (somatoneurology, vertebral neurology).

Topic 2. Implementation of arbitrary movements. Pyramid system. Central and peripheral motor neurons. Cortico-nuclear and cortico-spinal pathways. Symptoms of central (spastic) paralysis. Pathophysiology of muscular hypertension, hyperreflexia, pathological reflexes, decreased abdominal reflexes.

Topic 2.1. Syndromes of motor disorders in motor lesions at different levels Symptoms of peripheral (flaccid) paralysis. Pathophysiology of atony, areflexia, atrophy. Paralysis, paresis, monoplegia, paraplegia, hemiplegia, triplegia, tetraplegia.

Topic 3. Extrapyramidal system and syndromes of its lesions Anatomical data: basal ganglia (lenticular, caudate nucleus, fence, subthalamus), brainstem formation (red nucleus, substantia nigra, reticular formation). Connections of the subcortical ganglia with different parts of the brain and spinal cord. Physiology of the extrapyramidal system, its participation in providing unconditional reflexes, realization of stereotyped automated movements, readiness of muscles for action. Biochemistry of the extrapyramidal system. Modern ideas about the metabolism and concentration of catecholamines in the nigrostriatal system. Syndromes of lesions of the extrapyramidal system. Akinetic-rigid syndrome, or parkinsonism syndrome, its biochemical aspects.

Topic 3.1. Key clinical manifestations of parkinsonism: oligo-bradykinesia, muscle rigidity, parkinsonic tremor, postural instability. Differential diagnosis of spasticity and rigidity. Hyperkinetic syndrome. Types of hyperkinesia: athetosis, choreic, hemiballism, tics. Muscular dystonias (focal (blepharospasm, facial hemispasm, spastic crooked neck, oromandibular dystonia, hand dystonia, foot dystonia, torsional dystonia), segmental, generalized).

Topic 4. Sensitive system and symptoms of its lesion. Types and types of sensitivity disorders. The concept of reception. Types of receptors. Extrareceptive, proprioceptive, interoceptive sensitivity. Clinical classification of sensitivity. Leading ways of sensitivity. Research methodology.

Topic 4.1. Types of sensitive disorders: anesthesia, hypoesthesia, hyperesthesia, hyperpathy, dysesthesia. Synesthesia, dissociated disorders, polysthesia, paresthesia. Pain and its classification .. The concept of nociceptive and antinociceptive systems of the brain.

Topical types of sensitive disorders: mononeuritic, polyneuritic, radicular, posterior horn, conductive (lesions of the leading sensitive pathways at the level of the spinal cord, lemniscus medialis, thalamus, inner capsule); cortical type

Topic 5. Principles of structure and functioning of the nervous system. The functional unit of the nervous system is a neuron. Motor system. Representation of reflex and reflex arc. The main stages of phylogeny and ontogenesis of the nervous system. Structural and functional unit of the nervous system. The main anatomical and topographic departments of the nervous system: hemispheres of the brain, subcortical nodes, brain stem, spinal cord, roots, spinal ganglia, plexuses, peripheral nerves.

Topic 5.1. The functional unit of the nervous system is a neuron. Types of neurons, their functional significance. Neuroglia, its functional significance. Autonomic nervous system, its suprasegmental and segmental departments. Limbic-reticular complex. Cortex. Cytoarchitectonic fields. Localization of functions in the cortex of the large hemispheres. The concept of functional systems. Blood supply to the brain and spinal cord. Meninges and spinal cord. Cerebrospinal fluid. Representation of reflex and reflex arc, conditioned and unconditioned reflexes, levels of closure of skin, tendon and periosteal reflexes. Anatomical features and neurophysiology of the system of arbitrary movements, extrapyramidal system and cerebellum. Methods of research of the motor system.

Topic 6. Functional diagnosis of diseases of the nervous system. X-ray (cranio-, spondylography); Contrast radiological examinations (myelography, angiography, ventriculography); Ultrasound (echoencephalography, Doppler);

Topic 6.1. Functional diagnosis of diseases of the nervous system. Electrophysiological (electroencephalography, rheoencephalography, echo-encephalography, electromyography, etc.); Methods of neuroimaging (computed tomography, magnetic resonance imaging, including vascular).

Topic 7. Anatomical and physiological data, pathology and methods of research of the autonomic nervous system. Anatomical and physiological features and functions of the autonomic nervous system: Segmental department of the autonomic nervous system. Sympathetic nervous system: lateral horns of the spinal cord, sympathetic trunk, ganglia.

Topic 7.1. Parasympathetic nervous system: Craniobulbar, sacral (sacral) departments. Suprasegmental department of autonomic functions: hypothalamus, limbic system, reticular formation of the brainstem. Ergotropic and trophotropic activity. Methods of research of vegetative functions.

Topic 8. Localization of functions in the cerebral cortex. Syndromes of lesions. Cerebrospinal fluid, its changes. Meningeal syndrome. The structure of the large hemispheres of the brain. Cyto- and myeloarchitectonics of the cortex. Localization of functions in the cerebral cortex. Dynamic localization of functions. Motor and sensory representations in the cortex. The concept of functional asymmetry of the hemispheres. Gnostic functions. Types of disorders of gnostic functions: visual, olfactory, gustatory, auditory agnosia, astereognosis, autotopagnosia, anosognosia. Praxis. Types of apraxia: constructive, ideational, motor. Language. Speech disorders: motor, sensory, amnesic aphasia.

Topic 8.1. Localization of functions in the cerebral cortex. Syndromes of lesions of individual lobes of the large hemispheres: frontal, temporal, parietal, occipital, limbic cortex. Syndromes of irritation of the cortex of the large hemispheres. Syndromes of lesion of the right and left hemispheres. The concept of interhemispheric asymmetry. Chronic autonomic syndrome. Syndrome of "locked" patient. Brain death syndrome. Meninges and spinal cord. Physiology of cerebrospinal fluid formation. The composition of cerebrospinal fluid is normal, its changes in meningitis, tumors, hemorrhagic stroke, tuberculosis. Cell-protein, protein-cell dissociation. Pleocytosis. Meningeal symptoms: headache, vomiting, general hyperesthesia, photophobia, occipital muscle rigidity, Kernig's symptom, Brudzinski's symptoms (upper, middle, lower), trismus, local reactive pain phenomena: Mendel's symptom, zygomatic symptom, ankylosing spondylitis exit of small and big occipital nerves. Meningeal posture of the patient. Lessage's symptom.

Topic 9. Anatomical and physiological features of the cerebellum. Connections of the cerebellum with different parts of the brain and spinal cord (homo- and heterolateral). Afferent and efferent pathways. Vermiculus and cerebellar hemispheres. Cerebellar functions: balance, coordination, synergism, regulation of muscle tone.

Topic 9.1. Anatomical and physiological features of the cerebellum. Syndromes of cerebellar lesions. Representation of static and locomotor ataxia, asynergy, muscle atony, intentional tremor, adiadochokinesis, dysmetria, hypermetria, nystagmus, chanting. Types of ataxia: (cerebellar, cortical, vestibular, sensitive).

Topic 10. Syndrome of motor disorders in motor lesions at different levels. Motor disorders syndrome with motor pathway lesions at different levels: anterior central torsion (irritation and prolapse syndromes), radial crown, inner capsule, brainstem (alternating paralysis),

Topic 10.1 Syndrome of motor disorders in motor pathway lesions at different levels. Different levels of the spinal cord (above the cervical thickening, at the level of the cervical thickening, thoracic, lumbar thickening, cone), different levels of peripheral motor neuron (anterior horn, anterior root, nerve plexuses, individual peripheral nerves).

Block 2

Topic 1. Pathology of olfactory and visual analyzers. Syndromes of oculomotor nerve damage. And the pair - the olfactory nerve (sensory nerve): basic anatomical and physiological data. Olfactory analyzer: the first neuron (ganglion cells of the nasal mucosa); second neuron (olfactory bulbs, olfactory pathway); third neuron (primary subcortical olfactory centers - olfactory triangle, transparent septum, anterior perforated substance); cortical olfactory center (medial surface of the temporal lobe of the brain). Research of the olfactory analyzer. Syndromes of lesion - hyposmia, anosmia, hyperosmia, olfactory hallucinations. Second pair - optic nerve (sensory nerve). Anatomical and physiological features: departments - peripheral (rods and cones, bipolar cells, ganglion cells, nerve, chiasm, visual tract), central (lateral geniculate bodies, upper mounds of quadrupedal body, pillow of healthy mound (subcortical centers), Gracile bundle spur furrow of the occipital lobe (cortical center of the analyzer) Symptoms of lesions: amaurosis, amblyopia, homonymous and heteronymous hemianopsia (binasal, bitemporal), temporal), visual hallucinations. Changes in the optic disc (changes in the fundus). III, IV, VI pairs - oculomotor (mixed), block, abductor (motor) nerves: localization of nuclei, exit of roots from a skull, a zone of innervation on periphery.

Topic 1.1. Symptoms: ptosis, strabismus, diplopia, convergence and accommodation disorders, ophthalmoplegia (partial and complete); pupillary reactions, reflex arc of the pupillary reflex, impaired pupillary reactions (Argyle-Robertson syndrome), miosis, mydriasis, anisocoria.

Topic 2. Trigeminal, facial, vestibule-cochlearic nerves and symptoms of their lesion. V pair - trigeminal nerve (mixed): nerve nuclei, the output of the roots at the base of the brain, skull, nerve branches and areas of their innervation (optic nerve, maxillary, mandibular nerves).

Symptoms of trigeminal nerve damage: lesion of the trigeminal nerve branches (shooting pains, violation of all types of sensitivity in the area of innervation of the corresponding branches, loss of corneal reflex, paresis of the masticatory muscles, loss of mandibular reflex); lesions of the trigeminal nerve node (herpetic rashes, pain, violation of all types of sensitivity on half of the face, decreased corneal, mandibular reflexes); lesions of the sensitive nucleus of the trigeminal nerve - the nucleus of the spinal tract (segmental-dissociated type of violation of pain and temperature sensitivity in half of the face); lesions of the thalamus (hemianesthesia of all types of sensitivity, thalamic pain on the opposite side of the focus; lesions of the cortex of the postcentral gyrus).

Topic 2.2. VII pair - facial nerve (mixed). Anatomical and physiological features; components of the nerve branch (large stony nerve, stirrup nerve, eardrum, facial nerve itself).

Symptoms of facial nerve damage: peripheral facial muscle paresis (nerve damage in the canal, cerebellar angle, brainstem (alternating bridge syndromes)) and central facial muscle paresis (inner capsule; lower anterior central gyrus).

VIII pair – vestibulo-cochlear nerve (sensitive). Anatomical and physiological data, cochlear and vestibular nerves. Pathology of the cochleo-vestibular apparatus: lesions of the sound-perceiving apparatus (hearing disorder at high tones), lesions of the sound-conducting apparatus (hearing disorder at low tones); lesions of the parietal part (dizziness, nystagmus, imbalance, coordination of movements, autonomic disorders, lesions of the temporal lobe (sometimes irritation-auditory hallucinations)).

Topic 3. Pathology of IX-XII pairs of cranial nerves. Bulbar and pseudobulbar syndromes. IX pair - lingual-pharyngeal nerve (mixed); X pair - vagus nerve (mixed); XI pair - additional nerve (motor); XII pair - sublingual nerve (motor).

Topic 3.1. Anatomical and physiological features. Localization of nuclei in the medulla oblongata. Bulbar and pseudobulbar syndromes: common symptoms (dysphagia, dysphonia, dysarthria) and differences (fibrillation and atrophy of the muscles of the tongue, reflexes of oral automatism, forced laughter, crying). Impaired innervation of the muscles of the tongue - peripheral and central paresis.

Topic 4. Cerebellum, syndromes of cerebellar lesions. (syndromes of irritation and loss). Half-spinal cord injury syndrome (Brown-Sequard syndrome). Anatomical data: basal ganglia (lenticular, caudate nucleus, fence, subthalamus), brainstem formation (red nucleus, substantia

nigra, reticular formation). Connections of subcortical ganglia with different parts of the brain and spinal cord. Physiology of the extrapyramidal system, its participation in providing unconditional reflexes, realization of stereotyped automated movements, readiness of muscles for action.

Topic 4.1. Biochemistry of the extrapyramidal system. Modern ideas about the metabolism and concentration of catecholamines in the nigrostriatal system. Syndromes of lesions of the extrapyramidal system. Akinetic-rigid syndrome, or Parkinson's syndrome, its biochemical aspects. Key clinical manifestations of parkinsonism: oligo-bradykinesia, muscle rigidity, parkinsonic tremor, postural instability. Differential diagnosis of spasticity and rigidity

Hyperkinetic syndrome. Types of hyperkinesia: athetosis, choreic, hemiballism, tics. Muscular dystonias (focal (blepharospasm, facial hemispasm, spastic crooked neck, oromandibular dystonia, hand dystonia, foot dystonia, torsional dystonia), segmental, generalized). Anatomical and physiological features of the cerebellum.

Topic 5. Anatomical and physiological features and functions of the autonomic nervous system: Segmental department of the autonomic nervous system. Sympathetic nervous system: lateral horns of the spinal cord, sympathetic trunk, ganglia. Parasympathetic nervous system: Craniobulbar, sacral (sacral) departments. Suprasegmental department of autonomic functions: hypothalamus, limbic system, reticular formation of the brainstem. Ergotropic and trophotropic activity.

Topic 5.1. Methods of research of vegetative functions. Syndromes of lesions of the suprasegmental part of the autonomic nervous system. Autonomic dystonia syndrome. Permanent and paroxysmal course. Hypothalamic syndromes. Vegetative-vascular paroxysms: sympatho-adrenal, vago-insular, mixed. Syndrome of lesions of the segmental autonomic nervous system. Lesions of the brainstem, lateral horns of the spinal cord, ganglia of the border trunk, plexuses, nerves. Claude-Bernard-Gorner syndrome. Visceral symptoms. Levels of regulation of pelvic functions and their disorders.

Topic 6.0 The structure of the large hemispheres of the brain.

Cyto- and myeloarchitectonics of the cortex. Localization of functions in the cerebral cortex. Dynamic localization of functions. Motor and sensory representations in the cortex. The concept of functional asymmetry of the hemispheres. Gnostic functions. Types of disorders of gnostic functions: visual, olfactory, gustatory, auditory agnosia, astereognosis, autotopagnosia, anosognosia. Praxis. Types of apraxia: constructive, ideational, motor. Language. Speech disorders: motor, sensory, amnesic aphasia. Syndromes of lesions of individual lobes of the large hemispheres: frontal, temporal, parietal, occipital lobes, limbic cortex. Syndromes of irritation of the cortex of the large hemispheres. Syndromes of lesions of the right and left hemispheres. The concept of interhemispheric asymmetry. Chronic autonomic syndrome. Syndrome of "locked" patient. Brain death syndrome. Meninges and spinal cord. Physiology of cerebrospinal fluid formation. The composition of the disease is normal, its changes in meningitis, tumors, hemorrhagic stroke, tuberculosis. Cell-protein, protein-cell dissociation. Pleocytosis. Meningeal symptoms: headache, vomiting, general hyperesthesia, photophobia, occipital muscle rigidity, Kernig's symptom, Brudzinski's symptoms (upper, middle, lower), trismus, local reactive pain phenomena of Mendel, zygomatic Bechterev's pain, when pressing the exit points of the small and large occipital nerves. Meningeal posture of the patient. Lessage's symptom.

Topic 7.0. To acquire skills of examination of patients with motor and sensory disorders. Identify the main symptoms and syndromes of lesions of different parts of the nervous system Interpret the data of functional anatomy and clinical physiology of the nervous system. To determine the etiological factors and pathogenetic mechanisms of the development of major neurological diseases. Make a preliminary diagnosis of major neurological diseases.

Topic 7.1. Analyze the main indicators of laboratory and instrumental research methods in neurological practice. To plan tactics of management of the patient with neurologic pathology.

Master the skills of examination of cranial nerves, autonomic nervous system, cerebral cortex function.

3.1. Structure of educative subject

Block 1. General neurology

№	Theme	Lectures	Practical classes	ISW	IISW
<i>Introduction. Symptoms of motor and sensory disorders.</i>					
1	Topic 1. The main stages of development of neurological science. Principles of structure and functioning of the nervous system. Functional unit of the nervous system. Representation of reflex and reflex arc	1	2	2	-
2	Topic 2. Arbitrary movements and their violations. Pyramid system. Cortico-nuclear and cortico-spinal pathways. Symptoms of central and peripheral paresis.	1	2	2	-
3	Topic 3. Syndromes of motor disorders in motor lesions at different levels		2		
4	Topic 4. Extrapyramidal system and syndromes of its lesion. Cerebellum, syndromes of cerebellar lesions		2	2	-
5	Topic 5. Extrapyramidal system and syndromes of its lesion. Cerebellum, syndromes of cerebellar lesions	1	2		
6	Topic. 6. Sensitive system and symptoms of its lesion. Types and types of sensitivity disorders		2	2	-
7	Topic. 7. Sensitive system and symptoms of its lesion. Types and types of sensitivity disorders		2		
8	Topic 8. Principles of structure and functioning of the nervous system.	1	2		-
9	Topic 9. Functional unit of the nervous system - a neuron. Motor system. Functional diagnosis of diseases of the nervous system.		4	2	
10	Topic 10. Functional diagnosis of diseases of the nervous system.		2	2	-
11	Topic. 11. Anatomical and physiological data, pathology and methods of research of the autonomic nervous system		2	2	-
12	Topic 12. Anatomical and physiological data, pathology and methods of research of the autonomic		2		

	nervous system				
13	Topic 13. Localization of functions in the cerebral cortex. Syndromes of lesion. Cerebrospinal fluid, its changes. Meningeal syndrome Localization of functions in the cerebral cortex. Syndromes of lesions. Cerebrospinal fluid, its changes. Meningeal syndrome		4	2	-
14	Topic 14. Anatomical and physiological features of the cerebellum. Connections of the cerebellum with different parts of the brain and spinal cord (homo- and heterolateral). Anatomical and physiological features of the cerebellum. Afferent and efferent pathways.		2	2	-
15	Topic 15. Syndrome of motor disorders in lesions of motor pathways at different levels.	2	2	2	-
16	Final control work № 1		2		-
	Totally 62 hours /2,0 ECTS credits	6	36	20	-

Block 2. Special neurology

№	Theme	Lecture	Practical classes	ISW	IISW
Pathology of cranial nerves. Disorders of the autonomic nervous system and higher brain functions. Meningeal syndrome. Additional methods of the research in neurology.					
1	Topic 1.0. Pathology of olfactory and visual analyzers.	1	2	2	-
2	Topic 1.1. Syndromes of oculomotor nerve damage		2	2	
3	Topic 2.0. Triple, facial, vestibulo-cochlear nerves and syndromes of their lesion.	1	2		-
4	Topic 2.1. Triple, facial, vestibulo-cochlear nerves and syndromes of their lesion.		2	2	
5	Topic 3.0. Pathology of IX-XII pairs of cranial nerves. Bulbar and pseudobulbar syndromes.		2	2	-
6	Topic 3.1. Cerebellum, cerebellar lesion syndromes (irritation and deficit syndromes).		2	2	-
7	Topic 4.0. Half-spinal cord injury syndrome (Brown-Sequard syndrome).		2	2	
8	Topic 4.1 Anatomical and physiological features and functions		2	2	-

	of the autonomic nervous system				
9	Topic 5.0. Localization of functions in the cerebral cortex. Syndromes of lesions.	1	2	2	
10	Topic 5.1. Localization of functions in the cerebral cortex. Syndromes of lesions.	1	2	2	-
11	Topic 6.0. The structure of the large hemispheres of the brain. Cerebrospinal fluid, its changes. Meningeal syndrome.		2	2	
12	Topic 7.0. Practical skills		6		
13	Topic 7.1. Practical skills		4		-
14	Final control work №2		2		
	Totally 60 hours /2,0 ECTS credits	4	34	20	
	Totally(blocks 1, 2) 120 hours /4 ECTS credits	10	70	40	

4. Content of syllabus

4.1. Plan of lectures

Thematic plan of lectures of block 1. General neurology

№	Topic	Hours
1	The main stages of development of neurological science. Principles of structure and functioning of the nervous system. 1. The first studies of diseases of the nervous system (Hippocrates, Galen, Avicenna) 2. The study of neurology in the universities of the Middle Ages and the Renaissance. The modern stage. 3. Arbitrary movements and their violations. Pyramid system. 4. Symptoms of central and peripheral paresis. 5. Extrapyramidal system and syndromes of its lesion Connections of subcortical ganglia with different parts of the brain and spinal cord. Physiology of the extrapyramidal system, its participation in realization of unconditional reflexes.	2
2	Principles of structure and functioning of the nervous system. The functional unit of the nervous system is a neuron. 1. Motor system. Representation of reflex and reflex arc. 2. The main stages of phylogeny and ontogenesis of the nervous system. 3. Structural and functional unit of the nervous system. 4. The main anatomical and topographic departments of the nervous system 5. Principles of structure and functioning of the nervous system.	2
3	Localization of functions in the cerebral cortex. Syndromes of lesion. 1. Cerebrospinal fluid, its changes. Meningeal syndrome. The structure of the large hemispheres of the brain. 2. Cyto- and myeloarchitectonics of the cortex. Localization of functions in the cerebral cortex. Dynamic localization of functions. Motor and sensory representations in the cortex.	2

3. Anatomical and physiological features of the cerebellum.	
4. Connections of the cerebellum with different parts of the brain and spinal cord (homo- and heterolateral).	
5. Principles of structure and functioning of the nervous system.	
Totally:	6

Thematic plan of lectures, Block2. Special neurology

№	Topic	Hours
1	Pathology of olfactory and visual analyzers. 1. Syndromes of oculomotor nerve damage. 2. Trigeminal, facial, parietal-curlly nerves and symptoms of their lesion. V pair - trigeminal nerve (mixed): nerve nuclei, the output of the roots at the base of the brain, skull, nerve branches and areas of their innervation (orbital nerve, maxillary, mandibular nerves). 3. Pathology of IX-XII pairs of cranial nerves. 4. Bulbar and pseudobulbar syndromes. 5. IX pair – glosso-pharyngeal nerve (mixed).	2
2.	Anatomical and physiological features and functions of the autonomic nervous system: 1. Segmental department of the autonomic nervous system. 2. Sympathetic nervous system: lateral horns of the spinal cord, sympathetic trunk, ganglia. 3. Parasympathetic nervous system: Craniobulbar, sacral departments. 4. Methods of research of vegetative functions. Syndromes of lesions of the suprasegmental part of the autonomic nervous system. 5. Syndrome of vegetative dystonia. Permanent and paroxysmal course. Hypothalamic syndrome.	2
Totally:		4

4.2. Plan of practical classes

№	Topic	Hours
	Block 1.	
1	Topic 1. The main stages of development of neurological science. Principles of structure and functioning of the nervous system. Functional unit of the nervous system. Representation of reflex and reflex arc	2
2	Topic 2. Arbitrary movements and their violations. Pyramid system. Cortico-nuclear and cortico-spinal pathways. Symptoms of central and peripheral paresis.	2
3	Topic 3. Syndromes of motor disorders in lesions of motor pathway at different levels	2
4	Topic 4. Extrapyramidal system and syndromes of its lesion. Cerebellum, syndromes of cerebellar lesions	2
5	Topic 4. Extrapyramidal system and syndromes of its lesion. Cerebellum, syndromes of cerebellar lesions	2
6	Topic. 6. Sensitive system and symptoms of its lesion. Types and types of sensitivity disorders	2
7	Topic. 7. Sensitive system and symptoms of its lesion. Types and types of sensitivity disorders	2
8	Topic 8. Principles of structure and functioning of the nervous system.	2

9	Topic 9. Functional unit of the nervous system - a neuron. Motor system. Functional diagnosis of diseases of the nervous system.	2
10	Topic 9. Functional unit of the nervous system - a neuron. Motor system. Functional diagnosis of diseases of the nervous system.	2
11	Topic 10. Functional diagnosis of diseases of the nervous system.	2
12	Topic. 11. Anatomical and physiological data, pathology and methods of research of the autonomic nervous system	2
13	Topic 12. Anatomical and physiological data, pathology and methods of research of the autonomic nervous system	2
14	Topic 13. Localization of functions in the cerebral cortex. Syndromes of lesion. Cerebrospinal fluid, its changes. Meningeal syndrome Localization of functions in the cerebral cortex. Syndromes of lesion. Cerebrospinal fluid, its changes. Meningeal syndrome	2
15	Topic 13. Localization of functions in the cerebral cortex. Syndromes. Of lesion Cerebrospinal fluid, its changes. Meningeal syndrome Localization of functions in the cerebral cortex. Syndromes of lesion. Cerebrospinal fluid, its changes. Meningeal syndrome	2
16	Topic 14. Anatomical and physiological features of the cerebellum. Connections of the cerebellum with different parts of the brain and spinal cord (homo- and heterolateral). Anatomical and physiological features of the cerebellum. Afferent and efferent pathways.	2
17	Topic 15. Syndrome of motor disorders in lesions of motor pathways at the different levels. Syndrome of motor disorders in motor lesions at different levels	2
18	Final control work № 1	2
	Totally:	36
	Block 2.	
1	Topic 1.0. Pathology of olfactory and visual analyzers.	2
2	Topic 1.1. Syndromes of oculomotor nerve damage	2
3	Topic 2.0. Trigeminal, facial, vestibulo-cochlear nerves and syndromes of their lesion.	2
4	Topic 2.1 Trigeminal, facial, vestibulo-cochlear nerves and syndromes of their lesion.	2
5	Topic 3.0. Pathology of IX-XII pairs of cranial nerves. Bulbar and pseudobulbar syndrome	2
6	Topic 3.1. Cerebellum, cerebellar lesion syndromes (irritation and deficit syndromes).	2
7	Topic 4.0. Incomplete spinal cord injury syndrome (Brown-Sequard syndrome).	2
8	Topic 4.1. Anatomical and physiological features and functions of the autonomic nervous system	2
9	Topic 5.0. Localization of functions in the cerebral cortex. Syndromes of lesions.	2
10	Topic 5.1. . Localization of functions in the cerebral cortex. Syndromes of lesions.	2
11	Topic 6.0. The structure of the large hemispheres of the brain. Cerebrospinal fluid, its changes. Meningeal syndrome.	2
12	Topic 7.0. Practical skills	2
13	Topic 7.0. Practical skills	2
14	Topic 7.0. Practical skills	2
15	Topic 7.1. Practical skills	2

16	Тема 7.1. Практичні навички	2
17	Final control work № 2	2
	Totally in block 2, hours:	34
	Totally (in blocks 1 and 2) hours:	70

4.3. Independent work

№	Topic	Hours
Block 1.		
1.	Preparation for practical classes (theoretical training, development of practical skills)	5
2.	Online courses and online testing	4
3.	Independent elaboration of topics that are not included in the classroom plan Block 1 (list attached)	7
4.	Individual work	2
5.	Preparation for the final test	2
Total:		20
Block 2		
1.	Preparation for practical classes (theoretical training, development of practical skills)	4
2.	Online courses and online testing	4
3.	Independent elaboration of topics that are not included in the classroom plan Block 2 (list attached)	8
4.	Individual work	2
5.	Preparation for the final test	2
Разом:		20
Разом блок 1 та 2		40

Tasks for independent work

Block 1. General neurology.

1. Domestic and foreign neurological schools.
2. Modern directions of development of neurology: differentiation of neurological science
3. Implementation of arbitrary movements. Pyramid system.
4. Central and peripheral motor neurons. Cortico-nuclear and cortico-spinal pathways.
5. Symptoms of central (spastic) paralysis.
6. Pathophysiology of muscular hypertension, hyperreflexia, pathological reflexes, decreased abdominal reflexes.
7. Extrapyramidal system and syndromes of its lesion. Anatomical data.
8. Physiology of the extrapyramidal system, its participation in providing unconditional reflexes, realization of stereotypical automated movements, readiness of muscles for action.
9. Biochemistry of the extrapyramidal system.
10. Modern ideas about the metabolism and concentration of catecholamines in the nigrostriatal system.
11. Key clinical manifestations of parkinsonism: oligo-bradykinesia, muscle rigidity, parkinsonic tremor, postural instability.
12. Differential diagnosis of plastic and spastic (elastic) hypertension. Hyperkinetic syndrome.

13. Types of hyperkinesia: athetosis, choreic, hemiballism, tics. Muscular dystonias (focal (blepharospasm, facial hemispasm, spastic crooked neck, oromandibular dystonia, hand dystonia, foot dystonia, torsional dystonia), segmental, generalized).
14. Sensitive system and symptoms of its lesion. Types and types of sensitivity disorders.
15. Leading ways of sensitivity. Research methodology.
16. Types of sensitive disorders: anesthesia, hypoesthesia, hyperesthesia, hyperpathy, dysesthesia.
17. Pain and its classification .. The concept of nociceptive and antinociceptive systems of the brain.
18. Representation of reflex and reflex arc. The main stages of phylogeny and ontogenesis of the nervous system.
19. Anatomical and physiological features of the cerebellum. Syndromes of cerebellar lesions.
20. Types of ataxia: (cerebellar, cortical, vestibular, sensitive).
21. Syndrome of motor disorders in motor lesions at different levels.

Block 2. Special neurology

22. Syndromes of oculomotor nerve damage. And the pair - the olfactory nerve (sensory nerve): basic anatomical and physiological data.
23. Changes in the optic disc (changes in the fundus). III, IV, VI pairs - oculomotor (mixed), block, abductor (motor) nerves: localization of nuclei, exit of roots from a skull, a zone of innervation on periphery.
24. Trigeminal, facial, parietal-curlly nerves and symptoms of their lesion.
V pair - trigeminal nerve (mixed): nerve nuclei, the output of the roots at the base of the brain, skull, nerve branches and areas of their innervation (optic nerve, maxillary, mandibular nerves).
25. Symptoms of damage to the trigeminal nerve system: lesions of the branches of the trigeminal nerve.
26. Cerebellum, syndromes of cerebellar lesions. (syndromes of irritation and loss). Half-spinal cord injury syndrome (Brown-Sekara syndrome).
27. Anatomical data: basal ganglia (lenticular, caudate nucleus, fence, subthalamus), brainstem formation (red nucleus, substantia nigra, reticular formation).
28. Physiology of the extrapyramidal system, its participation in providing unconditional reflexes, realization of stereotyped automated movements, readiness of muscles for action.
29. Anatomical and physiological features and functions of the autonomic nervous system: Segmental department of the autonomic nervous system.
30. Sympathetic nervous system: lateral horns of the spinal cord, sympathetic trunk, ganglia.
31. Parasympathetic nervous system: Craniobulbar, sacral (sacral) departments. 32. Suprasegmental department of autonomic functions: hypothalamus, limbic system, reticular formation of the brainstem. Ergotropic and trophotropic activity.
33. Methods of research of vegetative functions. Syndromes of lesions of the suprasegmental part of the autonomic nervous system.

Typical test problems to be solved in practical classes:

TEST №

in General Neurology for 4th year students

Motor System

Choose one correct answer:

1. Muscle tone in the lesion of the peripheral motor neuron:
 - a. Decreases
 - b. Rising
 - c. Does not change

2. *Muscle tone in the lesion of the central motor neuron:*
- a. *Decreases*
 - b. *Rising*
 - c. *Does not change*
3. *Pathological pyramidal symptoms on the upper extremity - reflexes:*
- a. *Babinsky*
 - b. *Oppenheim*
 - c. *Rossolimo*
 - d. *Scheffer*
4. *Muscle malnutrition is characteristic of the lesion:*
- a. *Central motor neuron*
 - b. *Peripheral motor neuron*
 - c. *Cerebellum*
5. *Pathological reflexes are characteristic of lesion:*
- a. *Peripheral motor neuron*
 - b. *Central motor neuron*
 - c. *Brain*
6. *Deep reflexes at lesion of the central motor neuron:*
- a. *Increasing*
 - b. *Do not change*
 - c. *Decrease*
7. *Deep reflexes at lesion of a peripheral motor neuron:*
- a. *Increasing*
 - b. *Decrease*
 - c. *Do not change*
8. *At lesion of a peripheral motor neuron of a muscle trophism:*
- a. *Reduced*
 - b. *Increased*
 - c. *Not changed*
9. *At lesion of the central motor neuron pathological synkinesias:*
- a. *Can be observed*
 - b. *Always observed*
 - c. *Not observed*
10. *A sign of damage to the inner capsule:*
- a. *Hemiparesis*
 - b. *Paraparesis*
 - c. *Monoplegia*

Choose all the correct answers

11. *Signs of damage to the central motor neuron:*
- a. *Fibrillation*
 - b. *Hyporeflexia*
 - c. *Atonia of muscles*

- d. Pathological reflexes
- e. Protective reflex
- k. Synkinesia
- l. Clonus
- F. Lack of skin reflexes
- g. Lack of tendon reflexes

12. Signs of damage to the peripheral motor neuron:

- a. Spastic tone
- b. Muscular hypotension
- c. Decreased tendon reflexes
- d. Muscle malnutrition
- f. Muscle degeneration reaction in the study of electrical excitation

13. Signs of peripheral nerve damage:

- a. Muscle malnutrition
- b. Pathological reflexes
- c. Protective reflexes
- d. Areflexia

14. Signs of damage to the pyramidal path:

- a. Hemiparesis
- B. Increased muscle tone in the paretic muscles
- c. .Increased tendon reflexes
- 4. Decreased muscle tone
- d. Decrease in skin reflexes
- f. Protective reflexes

15. Signs of damage to the anterior horns of the spinal cord:

- a. Muscular hypotension
- b. Fibrillar twitching
- c. Lack of tendon reflexes
- d. Muscle malnutrition
- f. Pathological reflexes

4.4. Ensuring the educational process

Lectures are provided with technical support:

- computer
- projection screen
- multimedia projector
- presentation programs (lectures);

Practical training:

- at the patient's bedside.

4. Final control

List of questions to prepare students for the final control (exam)

1. Neurology as a science, a branch of practical medicine and a subject.
2. The main stages of development of neurological science.
3. The main stages of development of the nervous system.

4. Anatomical and topographic departments of the nervous system.
5. Basic principles of functioning of the nervous system.
6. Reflex apparatus of the spinal cord. Reflex, reflex arc. Unconditional reflexes.
7. Tendon and periosteal reflexes, arcs of their closure.
8. Cortico-spinal and cortico-nuclear pathways.
9. Central (spastic) paralysis.
10. Peripheral (flaccid) paralysis. Pathogenesis of atony, areflexia, atrophy.
11. Topical diagnosis of pathology of voluntary movements.
12. Alternating paralysis. Syndromes of lesions of the legs of the brain, pons-cerebellar angle, varoliev bridge.
13. Syndromes of motor pathway lesions at different levels of the spinal cord.
14. Extrapyramidal system, anatomical features, functions.
15. Parkinsonism syndrome, biochemical mechanisms of pathogenesis.
16. Types of hyperkinesia.
17. Cerebellum, anatomical and physiological features, lesion syndromes.
18. Types of ataxia.
19. Sensitivity. Types of sensitivity, types of sensitive disorders.
20. Types of sensitivity disorders. Brown-Sekara syndrome.
21. Anatomical and physiological data, research methods, syndromes of lesions I-XII pairs cranial nerves.
22. Central and peripheral paresis of the facial nerve.
23. Bulbar and pseudobulbar syndromes.
24. Alternating syndromes.
25. Suprasegmental and segmental departments of the autonomic nervous system, their functions, lesion syndromes.
26. Bernard-Gorner syndrome.
27. Bark of large hemispheres, cytoarchitectonic fields, lesion syndromes.
28. Agnosia, apraxia, aphasia.
29. Speech disorders (dysarthria, aphasia).
30. Cerebrospinal fluid formation, cerebrospinal fluid composition is normal, its changes in meningitis, tumors, hemorrhagic stroke, tuberculosis.
31. Clinic of meningeal syndrome.
32. Electrophysiological research methods.
33. Methods of neuroimaging in the clinic of nervous diseases.
34. Ultrasound research methods.
35. Blood supply to the brain and spinal cord.
36. Classification of vascular diseases of the nervous system.
37. Variants of cerebral vascular crises.
38. Syndromes of transient ischemic attacks.
39. Transient disorders of cerebral circulation.
40. Hemorrhagic stroke (parenchymal and subarachnoid hemorrhage).
41. Ischemic (thrombotic and non-thrombotic) strokes.
42. Principles of undifferentiated and differentiated treatment of strokes.
43. Spinal strokes.
44. Prevention of strokes.
45. Modern classification of paroxysmal conditions in the clinic of nervous diseases.
46. Pathogenetic essence of epilepsy, classification of epileptic seizures, principles differentiated treatment.
47. Status epilepticus, clinic, diagnosis, treatment.

48. Non-epileptic paroxysmal states - convulsive and non-convulsive.
49. Vegetative-vascular paroxysms.
50. Syncopal states.
51. Cephalgia - pathogenetic mechanisms of occurrence, clinic, diagnosis, treatment.
52. Migraine: pathogenesis, clinic, treatment.
53. Insomnia, hypersomnia.
54. Basic clinical syndromes and principles of treatment for exogenous intoxications.
55. Stages of damage to the nervous system in acute and chronic radiation sickness.
56. Vibration disease.
57. Closed traumatic brain injury, concussion, contusion, compression of the brain.
Emergency aid.
58. Spinal cord injury.
59. Classification, syndromes of brain and spinal cord tumors. Changes in cerebrospinal fluid.
60. Classification of diseases of the peripheral nervous system.
61. Reflex vertebrogenic syndromes of cervical, thoracic, lumbar levels.
62. Radical syndromes of cervical, thoracic, lumbar localization.
63. Trigeminal neuralgia.
64. Neuropathy of the facial nerve.
65. Variants of shoulder plexopathies.
66. Neuropathy of the elbow, radial, medial, tibial, tibial nerves.
67. Compression-ischemic syndromes. Tunnel syndromes.
68. Polyneuropathy (infectious, toxic), modern methods of treatment.
69. Hypoxic-ischemic encephalopathy.
70. Cerebral palsy, clinical options, treatment.
71. Somatoneurological syndromes in diseases of the digestive tract, lungs, cardiovascular system, blood, endocrine diseases. Paraneoplastic syndrome.
72. Progressive muscular dystrophies-primary (myopathies) and secondary (amyotrophies).
73. Myotonia.
74. Myasthenia. Myasthenic syndromes. Paroxysmal myoplegia.
75. Hepatocerebral degeneration (Konovalov-Wilson disease).
76. Huntington's disease.
77. Modern biochemical aspects of Parkinson's disease and its treatment.
78. Muscular dystonia.
79. Spinocerebellar ataxias. Hereditary ataxia of Friedrich.
80. Hereditary spastic paraplegia. Strumpel's disease.

"0" version of the exam ticket

**Petro Mohyla Black Sea National University
Educational qualification level - master
Area of knowledge: 22 Health
specialty 222 Medicine
Course - Neurology**

Option № 0

- 1. Anatomical and topographic departments of the nervous system. (Maximum number of points - 15).**
- 2. Classification of vascular diseases of the nervous system (Maximum number of points - 15).**
- 3. Neuropathy of the facial nerve. (Maximum number of points - 15).**
- 4. Modern biochemical aspects of Parkinson's disease and its treatment. (Maximum number of points - 15).**
- 5. Examine a patient with a diagnosis of transverse sacral radiculitis (history, objective status, symptoms). Report the results. (Maximum number of points - 20).**

Approved at the meeting of the Department of Therapeutic and Surgical Disciplines, minutes № ___ from " __ " _____ 2020.

Head of the department: Professor Zak M. Yu.

Examiner:

6. Evaluation criteria and tools for diagnosing learning outcomes

Control methods

- Survey (testing of theoretical knowledge and practical skills).
- Test control.
- Writing a review of scientific literature (abstracts), performing individual tasks, their defense.

Current control. Testing in practical classes of theoretical knowledge and the acquisition of practical skills, as well as the results of independent work of students. Supervised by teachers according to the specific purpose of the curriculum. Assessment of the level of students' training is carried out by: interviewing students, solving and analyzing situational tasks and test tasks, interpreting the results of clinical-instrumental and clinical-laboratory research, monitoring the acquisition of practical skills.

Intermediate control. Checking the possibility of students using for clinical and diagnostic analysis of theoretical knowledge and practical skills on all topics studied, as well as the results of independent work of students. Carried out in the last lesson on the topic / section by passing practical skills, solving situational problems and testing.

The final test (RCC) is carried out upon completion of the study of all topics of the block

in the last, control, semester. Students who have attended all lectures, classroom classes, completed full-time independent work and scored at least 70 points in the fall semester in the autumn semester and 40 points in the spring semester are admitted to the RCC.

Distribution of points received by students

In the autumn semester, a positive assessment in each practical session can be from 4.1 to 7 points. A score below 4.1 points means "unsatisfactory", the lesson is not credited and must be practiced in the prescribed manner. At PKR №1 a student can get a maximum of 80 points. PKR is considered credited if the student scored at least 50 points.

In the spring semester, a positive assessment in each practical session can be from 2.5 to 5 points. A score below 2.5 points means "unsatisfactory", the lesson is not credited and is subject to practice in the prescribed manner. At PKR № 2 a student can get a maximum of 40 points. PKR is considered credited if the student scored at least 30 points.

In order to assess the results of training in neurology, the final control is carried out in the form of an exam, which is recommended for academic disciplines, which is part of the integrated test exams EDKI and "Step-2". Only students who have both PKRs (№№ 1 and 2) in the discipline are admitted to the exam. At the exam, a student can get a maximum of 80 points. The exam is considered passed if the student received at least 50 points. Distribution of points on the exam - see above in the example of the exam ticket.

Assessment of student performance

Type of activity (task)	Maximum scores
Block 1	
Practical classes 1-17	7 score at each class
Totally for 17 classes	120
Final control work №1 (class № 18)	80
Total for block 1	200
Block 2	
Practical classes 1-16	5
Totally for 16 classes	80
Final control work № 2 (practical class № 17)	40
Total for block 2	120
Екзамен	80
Разом за блоком 2 та екзаменом	200

Criteria for assessing knowledge

A score of 6.1-7 points in the fall semester (4.1-5 points in the spring semester), 71-80 points on the RCC in the fall semester (38-40 points in the spring semester) and 71-80 points on the exam ECTS scale and 5 on the national scale) the student's answer is evaluated if it demonstrates a deep knowledge of all theoretical principles and the ability to apply theoretical material for practical analysis and has no inaccuracies.

A score of 5.1-6 points in the fall semester (3.1-4 points in the spring semester), 61-70 points on the RCC in the fall semester (35-37 points on the RCC in the spring semester) and 61-70 points on the exam B and C on the ECTS scale and 4 on the national scale) the answer is evaluated if it shows knowledge of all theoretical principles, the ability to apply them in practice, but some fundamental inaccuracies are allowed.

A score of 4.1-5 points in the fall semester (2.5-3 points in the spring semester), 50-60 points on the RCC in the fall semester (30-34 points on the RCC in the spring semester) and 50-60 points

on the exam (D and E on the ECTS scale and 3 on the national scale) the student's answer is evaluated provided that he knows the main theoretical principles and can use **them in practice**.

7. Recommended references

Basic

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4. Линдсей П., Норман Д. Переработка информации у человека. – М.: Мир, 1974. – 550 с.
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