

| Syllabus of discipline<br><b>"NEUROLOGY" OK37</b><br>2023-2024 academic year                                   |   |
|--|---|
| The name of the faculty  | Dental  |
| Educational program (area, specialty, level of higher education, form of education)                            | 22 Healthcare, 222 Medicine, second (master's) level of higher education, full-time   |
| Academic year  | 2023-2024   |
| Name of discipline, code   | <b>OK 37 «Neurology»</b><br><b>Kaf_neurology@meduniv.Lviv.ua</b>  |
| Department   | 79010, Lviv, LRCH, Y.Rufa str., 6<br>тел. +38 (032)2769325, 2368297, 2368397, 2368261,<br>2368326<br><b>Kaf_neurology@meduniv.Lviv.ua</b>   |
| Head of the department (contact e-mail)  | Professor, Dr Med Sci, Nehrych Tetyana<br><b>Kaf_neurology@meduniv.Lviv.ua</b>  |
| Year of study (year in which the study of the discipline is carried out)                                       | 4th year, medical faculty   |
| Semester (semester in which the study of the discipline is implemented)  | 7-8 semester  |
| Type of course / module (mandatory / optional)   | Mandatory discipline  |
| Teachers (names, surnames, scientific degrees and titles of teachers who teach the discipline, contact e-mail) | Nehrych Tetyana, Dr Med Sci, Professor, Head of the Department of Neurology<br>Maryenko Lidiya, Dr Med Sci, Professor of the Department of Neurology<br>Natalia Malyarska, PhD, Associate Professor of the Department of Neurology<br>Matvienko Yuriy, PhD, Associate Professor of the Department of Neurology<br>Bozhenko Natalia, PhD, Associate Professor of the Department of Neurology<br>Shorobura Maria, PhD, Associate Professor of the Department of Neurology<br>Pshyk Roman, PhD, Lecture Assistant of the Department of Neurology<br>Wiwchar Roman, Lecture Assistant of the Department of Neurology<br>Bozhenko Myroslav, Lecture Assistant of the Department of Neurology<br><b>Kaf_neurology@meduniv.Lviv.ua</b> |
| Person responsible for the syllabus (person to be commented on the syllabus, contact e-mail)                   | Nataliya Malyarska<br><b>Kaf_neurology@meduniv.Lviv.ua</b>  |
| Number of ECTS credits   | 4,5   |
| Number of hours  | 135 hours - total:<br>12 hours - lectures<br>56 hours - practical classes,<br>67 hours - independent work   |
| Language of instruction  | Ukrainian, English  |
| Information about consultations  | Consultations are conducted by all teachers according to the schedule approved at the meeting of the department and posted on the website of the department.  |

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| Address, telephone and regulations of the clinical base   | 79010, Lviv, LRCH, Y.Rufa str., 6<br>tel. +38 (032)2769325, 2368297, 2368397, 2368261, 2368326 |
| <b>2. Short annotation to the course</b>  |  |
| <p>The program of the obligatory discipline "Neurology" is intended for preparation of experts of the second (master's) level of higher education in the field of knowledge 22 "Health care", specialty 222 "Medicine" for students of IV course of medical faculty. The working curriculum of the discipline is a normative document of the university, which is developed by the staff of the department for each academic discipline on the basis of the branch standard of higher education in accordance with the curriculum. The working curriculum should ensure: compliance of the content of industry standards of higher education through the direct connection of the discipline with the goals of higher education; compliance with licensing and accreditation conditions and requirements; compliance with "Standards and recommendations for quality assurance in the European Higher Education Area"; the possibility of using disciplinary competencies as an information base for the formation of diagnostic tools; unambiguous criteria for assessing academic achievement. The working curriculum of the discipline in its content is a document that determines the amount of knowledge that must be mastered by the student in accordance with the requirements of educational qualifications of the future specialist, the algorithm for studying the discipline, taking into account interdisciplinary links. different courses of problems, the necessary methodological support, components and technology of assessment of students' knowledge. The working curriculum as a normative document that lays down the ideology of the content of education and the organization of the educational process, determines the educational and methodological principles of the department; on its basis all educational and methodical materials for maintenance of educational process, including for independent work of students are developed.</p>  |  |
| <b>3. The purpose and objectives of the course</b>  |  |
| <p>The purpose of teaching the compulsory discipline "Neurology" (the ultimate goal) is to prepare a master's degree in the specialty. The description of goals is formulated through skills in the form of target tasks (actions). On the basis of the final goals to the test, specific goals are formulated in the form of certain skills (actions), target tasks that ensure the achievement of the ultimate goal of studying the discipline.</p> <p>The knowledge that students receive from the discipline "Neurology" is basic for the block of disciplines that provide natural science and professional-practical training.</p> <p>Learning objectives: to determine the tactics of examination of the patient and formulate a clinical diagnosis (conduct a neurological examination, evaluate its results, make a differential diagnosis, use scales to determine the severity of the disease, prescribe the necessary laboratory and instrumental research methods, provide emergency care for vascular diseases, develop rehabilitation and preventive measures from the standpoint of evidence-based medicine, to master the knowledge of filling out letters of recommendation for the patient and his caregivers, to demonstrate mastery of the principles of deontology.</p> <p>The study of the discipline provides competencies (general and special competencies):</p> <ul style="list-style-type: none"> <li>- general: <ul style="list-style-type: none"> <li>• ability to act responsibly and consciously;</li> <li>• ability to apply knowledge in different practical situations;</li> <li>• ability to abstract thinking, analysis and synthesis. ;</li> <li>• ability to communicate in the native language orally and in writing;</li> <li>• ability to communicate with representatives of other specialties.</li> </ul> </li> <li>- special (professional, subject): <ul style="list-style-type: none"> <li>• determine the tactics of examination and management of the patient with different nosologies;</li> <li>• interpret the results of laboratory and instrumental research methods in various neurological diseases and comorbid conditions;</li> <li>• formulate a preliminary clinical diagnosis of the disease;</li> <li>• prescribe and interpret treatment tactics;</li> <li>• demonstrate the ability to keep medical records for patients with different nosologies;</li> <li>• demonstrate mastery of the principles of clinical deontology.</li> </ul> </li> </ul> |  |
| <b>4. Course details</b>  |  |
| <p>To successfully study and master the competencies of the discipline "Neurology" the student needs basic knowledge and learning outcomes in the disciplines: medical biology, biological and bioorganic chemistry, histology, normal and pathological physiology, human anatomy and pathological anatomy</p>  |  |

and integrates with these disciplines; knowledge based on the study by students of propaedeutic disciplines of therapeutic profile, pharmacology, radiology and integrated with these disciplines; integrate with other clinical disciplines (internal medicine, neurosurgery, oncology, psychiatry, medical genetics, etc.); are differentiated - the formation of certain areas of neurological science, which have independent international organizations: epileptology; cerebrovascular pathology; neuromuscular diseases; migraine and headache; parkinsonology; the doctrine of multiple sclerosis and demyelinating diseases; degenerative - dystrophic diseases of the brain.

### 5. Program learning outcomes

The study of the discipline "Neurology" provides the following program learning outcomes:

**Knowledge:** anatomical and functional features and the main syndromes of lesions of the pyramidal, extrapyramidal, cerebellar, sensory systems, cranial nerves, integrative systems of the brain and autonomic nervous system; methods of studying the neurological status; basic research methods in neurology (EEG, ultrasound of cerebral vessels, ENMG, evoked potentials, CT, MRI, etc.), their advantages and diagnostic capabilities; independently examine patients with neurological pathology with the compilation of medical history, the establishment of topical and clinical neurological diagnoses; etiology, pathogenetic features, clinical manifestations, diagnostic and differential diagnostic signs, modern directions and algorithms of treatment of various diseases of the nervous system.

**Skills:** to evaluate the data of functional anatomy and clinical physiology of the human nervous system; collect medical information about the patient's condition; according to standard methods to identify the leading neurological symptoms and syndromes; to establish a topical diagnosis and levels of damage to the nervous system by logical analysis and substantiation; to determine the etiological factors and pathogenetic mechanisms of the development of major neurological diseases; evaluate the results of laboratory and instrumental research; by making an informed decision, to make the most probable clinical diagnosis; diagnose emergencies; determine the tactics and provision of emergency medical care; keeping medical records; constantly process state, social and medical information.

**Communication:** Establish appropriate connections to achieve goals; to form a communication strategy in professional activity; use information technology in professional activities; adhere to the provisions of the Code of Ethics of the doctor and the current legal norms of the doctor-patient relationship; maintain a healthy psychological microclimate in the team; interact with medical staff in the neurology clinic.

**Autonomy and responsibility:** continuous professional development with a high level of autonomy; the validity of the decisions made to solve problems of professional activity; observance of moral and ethical principles of the medical specialist and rules of professional subordination; their civic position and activities; observance of the current legal norms of the "doctor → patient" relationship; responsibility for the correctness and timeliness of care to the patient. Adhere to the requirements of ethics, bioethics and deontology, legal norms in their professional activities.

### 6. Course format and scope

|                        |                        |                             |
|------------------------|------------------------|-----------------------------|
| Course format          | Full-time              |                             |
| <b>Kind of classes</b> | <b>Number of hours</b> | <b>Number of groups</b>     |
| Lectures               | 12                     | (according to the schedule) |
| Practical classes      | 56                     |                             |
| Seminars               | -                      |                             |
| Independent            | 67                     |                             |

### 7. Topics and content of the course (appendix attached)

In the process of studying the discipline "Neurology" teaching methods are used:

- by type of cognitive activity: explanatory-illustrative, analytical, synthetic, inductive, deductive;
- the main stages of the process of knowledge formation, their application in clinical practice, generalization, formation of skills, consolidation, testing;
- system approach: stimulation and motivation, control and self-control;
- by sources of knowledge: verbal - story, conversation, visual - demonstration, illustration.

### 8. Verification of learning outcomes

### Current control

is carried out during training sessions and aims to check the assimilation of students of educational material (it is necessary to describe the forms of current control during training sessions). Forms of assessment of current educational activities should be standardized and include control of theoretical and practical training. The final grade for the current educational activity is set on a 4-point (national) scale

| Learning outcome code              | Code type of the class             | Method of verifying learning outcomes   | Acceptance criteria  |
|------------------------------------|------------------------------------|---|--|
| <i>3H-1-15, VM-1-15, K-1, AB-1</i> | <i>II-12<br/>II-56,<br/>CPC-67</i> | <p>Test control: the student receives 10 tests, answers and receives the result in points (from 0 to 10) and percent (from 0 to 100).<br/>Individual oral examination of theoretical material, which is included in methodological developments on relevant topics;</p> <ul style="list-style-type: none"> <li>- solving situational problems;</li> <li>- ability to differentiate different forms and manifestations of diseases;</li> <li>- Demonstration of practical skills: the student must be able to demonstrate practical skills in neurological status, which is listed.</li> <li>- drawing up a protocol of medical history</li> </ul> | <p>Test control:<br/>from 5-6 (50-60%) - satisfactory;<br/>7-8 (70-80%) - good;<br/>9-10 (90-100%) - excellent.</p> <p>Demonstration of practical skills: the student must be able to demonstrate all the structures that are in the list of practical skills.<br/>Answer to the teacher's question: the student answered all the teacher's questions, demonstrated the ability to think logically - excellent.<br/>The student answered all the questions of the teacher, demonstrated the ability to think logically, made 1-2 mistakes or inaccuracies - well. The student answered some questions of the teacher, demonstrated the ability to think logically, but is confused in the conduct of topical diagnostics - satisfactory.</p> |

### Final control

Final control is carried out upon completion of the study of all topics in the discipline. For the discipline "Neurology" the form of final control is an exam. The student is admitted to the exam provided that the requirements of the curriculum are met and if for the current academic activity he received positive grades and scored a minimum number of points - 72 points. The maximum number of points that a student can score for the current academic activity for the semester for admission to the exam is 120 points. The calculation of the number of points is based on the grades obtained by the student on the traditional scale during the study of the discipline, by calculating the arithmetic mean (CA), rounded to two decimal places. The resulting value is converted into points on a multi-point scale as follows:

$$x = \frac{CA \times 120}{5}$$

Methods of the semester exam and examination questions in the discipline "Neurology": The semester exam is conducted in writing during the examination session, according to the schedule. The form of the exam is standardized and includes control of theoretical and practical training.

There are 4 questions in the exam tickets:

1. Questions from general neurology (topical diagnosis of levels of damage to the nervous system).
2. Diseases of the nervous system (etiology, pathogenesis, clinic, diagnosis, treatment, prognosis, etc.).
3. Solving the situational problem (indicate pathological symptoms, syndromes; establish the level of damage; clinical diagnosis, treatment).
4. Practical skills in examining the neurological status.

The maximum number of points that a student can score when taking the exam is 80.

The minimum number of points in the exam - 50.

#### **Evaluation table and system of distribution of examination points.**

| <i>Answers</i> | <i>1 question: Topical diagnosis of levels of damage to the nervous system.</i> | <i>2 questions: Diseases of the nervous system.</i> | <i>Question 3: Solving the situational problem.</i> | <i>Question 4: Practical skills in the examination of neurological status</i> |
|----------------|---|---|---|---|
| (91-100%)      | <b>20 points</b>  | <b>30 points</b>                                    | <b>20 points</b>                                    | <b>10 points</b>  |
| (71-90%)       | <b>15 points</b>  | <b>24 points</b>                                    | <b>15 points</b>                                    | <b>8 points</b>   |
| (50-70%)       | <b>12 points</b>  | <b>20 points</b>                                    | <b>12 points</b>                                    | <b>6 points</b>   |
| less than 50%  | <b>0 points</b>   | <b>0 points</b>                                     | <b>0 points</b>                                     | <b>0 points</b>   |

| Points in the discipline | Score on a 4-point scale |
|--------------------------|--------------------------|
| 170 - 200                | 5                        |
| 140 - 169                | 4                        |
| 120 - 139                | 3                        |
| Less than 120            | 2                        |

The ECTS score is not converted to the traditional scale, as the ECTS scale and the four-point scale are independent. The objectivity of the assessment of students' learning activities is checked by statistical methods (correlation coefficient between ECTS assessment and assessment on a national scale).

#### **10. References:**

1. Neurology = Неврологія : textbook for students of higher education establishments - medical universities, institutes and academies. / edit by L.A.Hryhorova, L. I. Sokolova. - K. : AUS Medicine Publishing, 2017. - 624 c.
2. Neurology: Clinical Cases [Текст] = Неврологія=Клінічні задачі : A practical guide for students of higher medical education institutions of the IV level.of accred. (Recom.MHU №2 as of Juli 1, 2012) / L. Sokolova, L. Panteleienko, T. Dovbonos, V. Krylova ; edit by L. Sokolova. - K. : AUS Medicine Publishing, 2016. - 96 c.
3. Stuhan Davis. Neurology: NEUROLOGY CLINICAL PRACTICE AND CRITICAL CARE: The Clinical Practice of Neurology (Kindle Edition) Amazon Digital Services LLC (August 22, 2019).
4. Mervat Wahba. The Clinical Practice of Critical Care Neurology: clinical localization, Diagnosis & Treatment in Clinical Neurology and Neuroanatomy, of
5. Neurological disorders and the investigative modalities (Kindle Edition) Amazon Digital

6. Pietro Mazzoni, Toni Pearson, Lewis P Rowland. Merritt's Neurology Handbook (Hardcover) LWW; Thirteenth edition (October 3, 2015).
7. Coronavirus Disease 2019 (COVID-19). CASES, DATA & SURVEILLANCE. Data on COVID-19 during Pregnancy. Updated July 23, 2020.
8. Coronavirus: These maps show risk levels for every county and every state in real time. By KURT SNIBBE | Southern California News Group. PUBLISHED: July 13, 2020.

**Information resources:**

Internet sources

[http://meduniv.lviv.ua/index.php?option=com\\_content&view=article&id=137&Itemid=173&lang=uk](http://meduniv.lviv.ua/index.php?option=com_content&view=article&id=137&Itemid=173&lang=uk)  
Nevrologi.com.ua

1. <http://www.mif-ua.com/archive/mezhdunarodnyj-nevrologicheskij-zhurnal/numbers>
2. <http://neuronews.com.ua>

**Survey:** Questionnaires to assess the quality of the course will be conducted at the end of the course.

**11. Equipment, material and technical and software of the course** - Multimedia projector, personal computer, stimulation techniques, MISA distance learning platform.

**12. Additional Information**

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Head of the Department of Neurology: prof., Dr Med Sci, Negrych Tetyana  
Responsible for the educational process at the department: Assoc. Prof. Natalia Malyarska  
Head of the scientific student group: Lecturer Ass. Bozhenko Myroslav  
Responsible for safety at the department: Lecturer Ass. Wiwchar Roman

Syllable's author

Malyarska Natalia, PhD, Associate Professor



(Signature)

Head of Department

Nehrych Tetyana, Dr Med Sci, professor



(Signature)

ADDITION

scheme of the discipline "Neurology"

| Class type code | Topic  | Learning content   | Learning outcome code | Teacher  |
|-----------------|--|--|-----------------------|--|
| Л-1             | Introduction to neurology. Arbitrary movements and their violation. Pyramid system. Cortico-nuclear and cortico-spinal pathways. Bulbar and pseudobulbar paralysis. Alternating syndromes. | The main stages of development of neurological science, neurology in Ukraine, Lviv school of neurology. Structure, functions of the nervous system. Syndromes of defeat of various levels of CNS and PNS. Structure, functions of the ANS. Pathological syndromes. Cytoarchitectonics of the cerebral cortex. Syndromes of lesions and irritation of the cortex. | 3H -1<br>3H -2        | <u>According to the schedule</u><br><br>Professor Nehrych T. (Professor Maryenko L.) |

|         |  |   |  |  |
|---------|--|---|--|--|
| ЛІ-2    | Anatomical and physiological data, pathology of the autonomic nervous system. Cortex. Disorders of higher brain functions (aphasia, agnosia, apraxia).   | Structure, functions of the ANS. Pathological syndromes. Cytoarchitectonics of the cerebral cortex. Syndromes of lesions and irritation of the cortex.  | ЗН-1<br>ЗН-2   | <u>According to the schedule</u><br><br>Professor Shevaga V. (professor Nehrych T.)  |
| ЛІ-3    | Vascular diseases of the brain and spinal cord. Transient ischemic attacks.  | Blood supply to the brain. Risk factors for vascular pathology. Classification, etiology, diagnosis, rehabilitation and prevention from the standpoint of evidence-based medicine.  | ЗН-1<br>ЗН-2   | <u>According to the schedule</u><br><br>Professor Nehrych T. (Professor Maryenko L.) |
| ЛІ-4    | Demyelinating diseases of the nervous system. Amyotrophic lateral sclerosis. Myasthenia. Parkinson's disease.  | Modern ideas about the pathogenesis, types of course, diagnosis and treatment of multiple sclerosis and other neurodegenerative diseases.   | ЗН-1<br>ЗН-2   | <u>According to the schedule</u><br><br>Professor Nehrych T. (Professor Maryenko L.) |
| ЛІ-5    | Epilepsy and non-epileptic paroxysmal conditions.  | Modern classification, diagnosis and approaches to the treatment of epilepsy. Differential diagnosis of paroxysmal conditions.  | ЗН-1<br>ЗН-2   | <u>According to the schedule</u><br><br>Professor Nehrych T. (Professor Maryenko L.) |
| ЛІ-6    | Diseases of the peripheral nervous system.   | The structure of PNS, classification of disorders, features of clinical manifestations, treatment at all stages.  | ЗН-1<br>ЗН-2   | <u>According to the schedule</u><br><br>Professor Shevaga V. (professor Nehrych T.)  |
| ІІ-1(2) | Principles of structure and functioning of the nervous system. Functional unit of the nervous system. Clinical classification sensitivity. Anatomy of sensitive pathways. Methods of sensitivity research. Types and types of sensitive disorders. | The main stages of phylogeny and ontogenesis of the nervous system. Structural and functional unit of the nervous system. Types of neurons, their functional significance. Neuroglia, its functional significance. The concept of functional systems. Blood supply to the brain and spinal cord. Meninges and spinal cord. Cerebrospinal fluid. | ЗН-1<br>ЗН-2<br>УМ-1<br>УМ-2<br>УМ-3<br>УМ-4<br>К-1<br>К-2 | <u>According to the schedule</u>   |
| ІІ-3    | Pathology of olfactory and visual analyzers.   | Olfactory nerve, optic and vestibule-cochlear   | ЗН-1<br>ЗН-2   | <u>According to the schedule</u>   |

|        |  |   |  |                                  |
|--------|--|---|--|----------------------------------|
|        | Trigeminal, facial, vestibocochlear nerves and symptoms of their defeat.   | nerves: basic anatomical and physiological data. Investigation of the analyzer function. Syndromes of defeat and irritation.  | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2   |                                  |
| II-4   | Representation of reflex and reflex arc. Pathological reflexes, research methods. Arbitrary movements and their violations. Pyramid system. Cortico-spinal and cortico-nuclear pathways. Symptoms of central and peripheral paresis. Symptom complexes of movement disorders at defeat of various levels cortico-muscular pathway. | Representations of reflex and reflex arc, conditioned and unconditioned reflexes. Anatomical features and neurophysiology of the system of arbitrary movements. Methods of research of the motor system. Syndromes of motor disorders in the lesion of the motor pathway at different levels, the level of the peripheral motor neuron.   | 3 <sub>H</sub> -1<br>3 <sub>H</sub> -2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <u>According to the schedule</u> |
| II-5   | Syndromes of oculomotor nerve damage. Trigeminal (motor portion), facial nerves and symptoms of their defeat. Pathology of IX-XII pairs of cranial nerves. Bulbar and pseudobulbar syndromes.  | Oculomotor nerves: localization of nuclei, exit of roots from a skull, a zone of innervation on periphery. Symptoms of defeat. Facial nerve. Symptoms of facial nerve damage and different levels. Bulbar and pseudobulbar syndromes. Disorders of innervation of the muscles of the tongue - peripheral and central paresis.   | 3 <sub>H</sub> -1<br>3 <sub>H</sub> -2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <u>According to the schedule</u> |
| II - 6 | Extrapyramidal system and syndromes of its defeat. Cerebellum. Syndromes of cerebellar lesions. Types of ataxia.   | 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. | 3 <sub>H</sub> -1<br>3 <sub>H</sub> -2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <u>According to the schedule</u> |



|        |   |  |  |                                  |
|--------|---|--|--|----------------------------------|
|        |   | Anatomical and physiological features of the cerebellum. Functions of the cerebellum. Syndromes of cerebellar lesions. Types of ataxia: (cerebellar, cortical, vestibular, sensitive).   |  |                                  |
| II-7   | Anatomical and physiological data, pathology and methods of study of the autonomic nervous system. Anatomical and physiological data, syndromes of lesions and irritation of the cortex. Disorders of higher brain functions. | Segmental department of the autonomic nervous system. Suprasegmental department of autonomic functions: limbic system, Methods of research of autonomic functions. Hypothalamic syndrome. Vegetative-vascular paroxysms. Motor and sensory representation in the cortex. The concept of functional asymmetry of the hemispheres. Gnostic functions. Praxis. Language. Syndromes of lesions of individual lobes of the large hemispheres, limbic cortex. Syndromes and lesions of the irritation of the cortex of the large hemispheres. The concept of interhemispheric asymmetry. | 3H-1<br>3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <u>According to the schedule</u> |
| II-8   | Liquor diagnostics. Meningeal syndrome. Functional diagnosis of diseases of the nervous system. Practical skills experience.  | Meninges and spinal cord. Physiology of cerebrospinal fluid formation. Meningeal symptoms. X-ray, contrast X-ray examinations. Ultrasonic. Electrophysiological; Methods of neuroimaging (computed tomography, magnetic resonance imaging).  | 3H-1<br>3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <u>According to the schedule</u> |
| II - 9 | Independent curation of patients with a case history writing. Headache. Intracranial hypertension. Sleep disorders.   | Etiology and mechanisms of headache. Classification. Nosological forms of headache: migraine, tension headache, cluster headache. Differential   | 3H-1<br>3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1        | <u>According to the schedule</u> |

|       |   |  |  |   |
|-------|---|--|--|---|
|       |   | diagnosis, principles of treatment. Disorders of sleep and awakening.  | K-2  |   |
| II-10 | Vascular diseases of the brain and spinal cord. Transient ischemic attacks.   | Acute cerebrovascular disorders. Chronic cerebrovascular disorders. Vascular dementia. Differential diagnosis of different types of acute cerebral circulatory disorders. Modern methods of undifferentiated and differentiated therapy of acute cerebrovascular disorders. The period of the "therapeutic window". Indications and contraindications for surgical treatment of cerebrovascular disorders. | 3H-1<br>3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <u>According to the schedule</u>            |
| II-11 | Epilepsy and non-epileptic paroxysmal conditions.   | Epilepsy. Pathogenesis of the disease. Classification of epileptic seizures. Principles of differentiated treatment of epilepsy. Status epilepticus (diagnosis, emergency care). Non-epileptic paroxysmal conditions.  | 3H-1<br>3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| II-12 | Neurological aspects of traumatic brain injury. Spinal trauma. Occupational and domestic neurointoxication. Defeat nervous system under the influence of physical factors.  | Modern aspects of classification of craniocerebral trauma. Complications of traumatic brain injury. Emergency care for traumatic brain injury.   | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2                 | <i>Current control in practical classes</i> |
| II-13 | Meningitis. Classification. Etiology. Clinic, diagnosis, treatment. Encephalitis. Poliomyelitis. Acute myelitis. Classification. Etiology. Clinic, diagnosis, treatment. Acute viral COVID infection of the nervous | Meningitis. Classification of meningitis: primary and secondary, purulent and serous. Purulent meningitis. Clinic, diagnosis, cerebrospinal fluid indicators, treatment, prevention. Serous meningitis. Clinic, diagnosis, the importance of   | 3H-1<br>3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |

|        |   |  |  |  |
|--------|---|--|--|--|
|        | system.   | cerebrospinal fluid research in differential diagnosis, treatment, prevention. Features of acute disorders of the nervous system in COVID infection.   |  |  |
| II -13 | Neurosyphilis. Neurological manifestations of polymyositis. Neuroborreliosis. Lesions of the nervous system in the of HIV infection. Tuberculosis of the nervous system. Neurological manifestations of COVID infection in the lesion of CNS and PNS. | Neurosyphilis. Early neurosyphilis. Late neurosyphilis. Diagnosis, treatment methods. Neurological disorders of polymyositis-dermatomyositis: etiology, pathogenesis, clinical manifestations, additional methods of examination, differential diagnosis, treatment, prevention.   | 3H-1<br>3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i>        |
| II -13 | Amyotrophic lateral sclerosis. Demyelinating diseases nervous system.   | Amyotrophic lateral sclerosis. Etiology Pathogenesis. Pathomorphology. Clinic. Differential diagnosis. Treatment. Acute disseminated encephalomyelitis. Multiple sclerosis. Modern theory of pathogenesis. Pathomorphology. Early symptoms. Charcot Triad. Marburg pentad. Forms of the disease. Differential diagnosis. | 3H-1<br>3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <u><i>Current control in practical classes</i></u> |
| II -13 | Diseases of the peripheral nervous system. Practical skills.  | Vertebrogenic lesions of the peripheral nervous system. Lesions of the cranial nerves. Infectious polyneuropathy, polyradiculoneuropathy (Landry, Guillain-Barre).   | 3H-1<br>3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i>        |
| II -14 | Perinatal lesions of the nervous system. Congenital defects of the spinal cord. Syringomyelia.  | Etiological factors. Hypoxic-ischemic encephalopathy. Cerebral palsy. Diagnosis. Treatment. Prevention.  | 3H-1<br>3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i>        |
| II -14 | Hereditary  | Modern principles of   | 3H-1   |  |

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|       | degenerative nervous diseases systems. Somatoneurological syndromes. Practical experience.  | classification. Neuromuscular diseases. Myotonia. Paroxysmal myoplegia. Extrapyramidal degeneration. Muscular dystonia.  | 3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2         |   |
| C – 1 | The main stages of development of neurological science.   | 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. 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). | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2                 | <i>Current control in practical classes</i> |
| C – 2 | Principles of structure and functioning of the nervous system. Functional unit of the nervous system. Clinical classification of sensitivity. Anatomy of sensitive pathways. Research methodology. Types and types of sensitive disorders (symptom complexes of sensitive disorders in the defeat of different levels of sensitive pathways). | The concept of reception. Types of receptors. Extrareceptive, proprioceptive, interoceptive sensitivity. Clinical classification of sensitivity. Leading ways of sensitivity. Research methodology. Types of sensitive disorders: anesthesia, hypoesthesia, hyperesthesia, hyperpathy, dysesthesia. Synesthesia, dissociated disorders, polysthesia, paresthesia. Pain and its classification. The   | 3H-1<br>3H-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |

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|       |  | concept of nociceptive and antinociceptive systems of the brain. Topical types of sensitive disorders: mononeuritic, polyneuritic, radicular, posterior horn, conductive (in the defeat of the leading sensitive pathways at the level of the spinal cord, medial loop, visual hump, inner capsule); cortical type (irritation and prolapse syndromes). Half-spinal cord injury syndrome (Brown-Sequard syndrome). |  |   |
| C – 3 | Representation of reflex and reflex arc. Pathological reflexes, research methods.  | Levels of closing of reflex arcs, physiological reflexes, pathological reflexes. Research methodology.   | 3H-1<br>3H-2<br>YM-1<br>YM-2<br>YM-3<br>YM-4               | <i>Current control in practical classes</i> |
| C – 4 | Arbitrary movements and their violations. Pyramid system. Cortico-nuclear and cortico-spinal pathways. Symptoms of central and peripheral paresis, pathogenesis of symptoms. | The structure of the pyramid path. Pareses, their manifestations depending on the level of damage to the pyramidal pathway.  | 3H-1<br>3H-2<br>YM-1<br>YM-2<br>YM-3<br>YM-4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -5  | Symptom complexes of movement disorders at defeat of various levels of a cortico-muscular way.   | Pathological syndromes at defeat of a pyramidal way at different levels.   | 3H-1<br>3H-2<br>YM-1<br>YM-2<br>YM-3<br>YM-4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C – 6 | Extrapyramidal system and syndromes of its defeat.   | Biochemical theory of extrapyramidal rigidity. Differential diagnostics at different levels of CNS.  | YM-1<br>YM-2<br>YM-3<br>YM-4<br>K-1<br>K-2                 | <i>Current control in practical classes</i> |
| C – 7 | Cerebellum. Syndromes of cerebellar lesions. Types of ataxia.  | Differential diagnosis of ataxia. Types of hyperkinesia.   | YM-1<br>YM-2<br>YM-3<br>YM-4<br>K-1                        | <i>Current control in practical classes</i> |

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|        |   |   | K-2  |   |
| C -8   | Pathology of olfactory and visual analyzers. Syndromes of oculomotor nerve damage.  | Symptoms of the olfactory analyzer. Symptoms of a visual analyzer. Symptoms of oculomotor nerves.   | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -9   | Trigeminal, facial, vestibulo-cochlear nerves and syndromes of their defeat.  | Symptoms of a ternary analyzer. Symptoms of parietal-curler analyzer. Symptoms of the facial nerve, diagnosis at different levels of the analyzer.                          | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -10  | Pathology of IX-XII pairs of cranial nerves. Bulbar and pseudobulbar syndromes.   | Symptoms of the bulbar group of cranial nerves, diagnosis at different levels of the analyzer. Features of manifestations of peripheral and central paresis.                | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -11  | Anatomical and physiological data, pathology and methods of research of the autonomic nervous system.   | Modern notions about the pathology of the ANS. Pathological syndromes of the limbic-reticular complex.  | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -12  | Anatomical and physiological data, methods of studying cortical functions. Syndromes of lesions and irritation of the cortex. Disorders of higher brain functions (aphasia, agnosia, apraxia and others). | Hemispheric asymmetry of the brain. Disorders of speech, movement, arithmetic, reading and others with lesions of the cerebral cortex. Left and right hemisphere syndromes. | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C - 13 | Liquor diagnostics. Meningeal syndrome. Functional diagnosis of diseases of the nervous system.   | Normal cerebrospinal fluid content. Liquor diagnosis in various pathological conditions. Diagnostic methods in neurology.   | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -14  | Practical experience.   | Neurological status. Situational tasks, test tasks, description of the presented research results for preliminary diagnosis. Treatment protocols.                           | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -15  | Headache. Sleep disorders.  | Types of headache, diagnostic algorithm and modern approaches to  | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3                                    | <i>Current control in practical classes</i> |

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|       |   | treatment.<br>Polysomnography as a method of diagnosing sleep pathology.   | Y <sub>M</sub> -4<br>K-1<br>K-2  |   |
| C -16 | Vascular diseases of the brain and spinal cord. Transient ischemic attacks.   | Protocols for diagnosis, treatment, prevention and rehabilitation after stroke.  | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -17 | Epilepsy and non-epileptic paroxysmal conditions.   | Modern classification of epilepsy, diagnosis, first- and second-line drugs. Outcome.   | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -18 | Occupational and domestic neurointoxication. Defeat of the nervous system under the influence of physical factors.  | Influence of ionizing radiation on NS  | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -19 | Neurological aspects of traumatic brain injury. Spinal cord injury.   | Algorithm for diagnostics of closed TBI. Assistance at the trauma center according to the protocol.                                  | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -20 | Meningitis.<br>Encephalitis. Acute viral COVID infection.   | Diagnosis of primary and secondary meningitis.   | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -21 | Poliomyelitis. Acute myelitis.<br>Neurosyphilis.<br>Neurological manifestations of polymyositis-dermatomyositis.  | Differential diagnosis of inflammatory conditions in the defeat of peripheral structures, spinal cord, connective tissue structures. | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -22 | Lesions of the nervous system in the of HIV infection. Tuberculosis of the nervous system. Neuroberellosis.<br>Neurological manifestations of acute COVID infection on its consequences for the nervous system. | Complications (opportunistic) diseases in AIDS; complications of neurotuberculosis; neurological manifestations of neuroborreliosis. | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |
| C -23 | Parasitic diseases of the nervous system, prion   | Modern theories of prion diseases, diagnostics at  | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2   | <i>Current control in practical</i>         |

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|       | infections.   | the present stage.   | Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2   | <i>classes</i>                              |
| C -24 | Amyotrophic lateral sclerosis.                                  | Modern theories of amyotrophic lateral sclerosis, diagnosis at the present stage, treatment options and slowing down of progression. | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2                 | <i>Current control in practical classes</i> |
| C -25 | Demyelinating diseases of the nervous system.                   | Modern theories of multiple sclerosis, diagnosis at the present stage.   | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2                 | <i>Current control in practical classes</i> |
| C -26 | Diseases of the peripheral nervous system.                      | Vertebrogenic and non-vertebrogenic, traumatic and inflammatory lesions of the PNS, clinical features, diagnosis and treatment.      | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2                 | <i>Current control in practical classes</i> |
| C -27 | Perinatal lesions of the nervous system.                        | Fetal hypoxia, neonatal asphyxia and the consequences of nervous system damage.  | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2                 | <i>Current control in practical classes</i> |
| C -28 | Congenital defects of the spine and spinal cord. Syringomyelia. | Risk factors for congenital malformations of spine and spinal cord.  | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2                 | <i>Current control in practical classes</i> |
| C -29 | Somatoneurological syndromes.                                   | Manifestations of clinical symptoms in various acute and chronic conditions of internal diseases.                                    | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2                 | <i>Current control in practical classes</i> |
| C -30 | Hereditary and degenerative diseases of the nervous system.     | Modern classification of diseases. Features of differential diagnostics and modern methods of treatment.                             | Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2                 | <i>Current control in practical classes</i> |
| C -31 | Drugs used in neurology.  | Pharmacokinetics of drugs used in neurology in various conditions. Prescription.   | ЗН-1<br>ЗН-2<br>Y <sub>M</sub> -1<br>Y <sub>M</sub> -2<br>Y <sub>M</sub> -3<br>Y <sub>M</sub> -4<br>K-1<br>K-2 | <i>Current control in practical classes</i> |



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| C -32   | Practical experience. | Examination of the patient, registration of medical history, algorithm of diagnostics, treatment with use of instructions (protocols) on each nosology. Drawing up a rehabilitation plan for the patient. Secondary prevention. | 3H-1<br>3H-2<br>УМ-1<br>УМ-2<br>УМ-3<br>УМ-4<br>К-1<br>К-2 |  |
| <b>Total:</b><br><b>Lectures - 12 hours.</b><br><b>Practical classes - 56 hours.</b><br><b>Independent students' work - 67 hours.</b> |                       |   |  |  |