



Syllabus «Neurosurgery»

1. General information	
Name of the faculty	Medical number 1, 2, foreign students
Educational program (industry, specialty, level of higher education, form of education)	22 Health care, 222 Medicine, second (master's) level of higher education, full-time
Academic year	2024 year
Name of discipline, code (e-mail address on the website of Danylo Halytsky Lviv National Medical University)	Neurosurgery kaf_neuropathology_FPGE@meduniv.lviv.ua
Department (name, address, telephone, e-mail)	Neuropathology and neurosurgery FPDO
Head of the department (contact e-mail)	Prof., PhD, MD Anzhelika Volodymyrivna Payenok kaf_neuropathology_fpge@meduniv.lviv.ua
Year of study (the year in which the discipline is studied)	5th year Medical faculty
Semester (the semester in which the discipline is studied)	10th semester, Faculty of Medicine
Type of discipline/module (mandatory / optional)	mandatore
Teachers (names, surnames, scientific degrees and titles of teachers who teach the discipline, contact e-mail)	Prof., PhD, MD Andrey Mykhailovych Netlyukh, Associate Professor, PhD Oleg Yaroslavovych Kobyletskyi, assistant Shchybovyk Dmytro Volodymyrovych kaf_neuropathology_fpge@meduniv.lviv.ua
Erasmus yes / no (discipline availability for students within the Erasmus + program)	no
The person responsible for the syllabus (the person to whom comments regarding the syllabus should be provided, contact e-mail)	assistant Andriy Ruslanovych Kulyk andriy_kulyk@ukr.net
Number of ECTS credits	1,5
Number of hours (lectures / practical classes / independent work of students)	Total hours: 45 Lectures: 6 Practical: 17 Independent work: 22
Language of education	English
Information about consultations	Consultations are conducted by all teachers according to the schedule approved at the department's meeting and posted on the department's website
Address, phone number and regulations work of the clinical base, office (if necessary)	Saint Panteleimon Hospital of the First Territorial Medical Association of Lviv, 79059, Lviv, st. I. Mykolajchuk, 9 Tel. / fax 252-75-90, reception department 258-70-11, emergencyhospital_uoz_lviv@ukr.net

2. A short abstract of the course

The program of the compulsory discipline «Neurosurgery» is intended for the training of specialists of the second (master's) level of higher education in the field of knowledge 22 «Health care», specialty 222 «Medicine» for students of the 5th year of the medical faculty (foreign faculty).

The neurosurgery course includes 17 hours of practical classes, 6 lectures and 22 hours of independent work.

In the course of studying the discipline, the student must acquire the theoretical and practical knowledge necessary for the diagnosis and treatment of neurosurgical pathology. The specialty of the discipline «Neurosurgery» is that it takes place on the basis of a clinical hospital and allows students to closely interact with patients, to acquire a sufficient amount of practical skills that are necessary for the further practical activities of a doctor.

3. Purpose and objectives of the course

The purpose of the course is to acquaint students with the main neurosurgical pathologies, to master the skills of diagnosis and differential diagnosis of these diseases, as well as to study modern approaches to the treatment of neurosurgical pathology.

1.2 The main tasks of studying the discipline "Neurosurgery" are to acquaint students with the features of modern detection of neurosurgical pathology and surgical treatment, with etiology, pathogenesis, clinical picture, principles of diagnosis, prevention and treatment of the most common neurosurgical pathologies, methods of examining neurosurgical patients and providing effective assistance in different clinical situations.

1.3 Competences and learning outcomes, the formation of which ensures the study of the discipline (general and professional):

Integral competencies:

- Ability to solve complex problems, including those of a research and innovation nature in the field of medicine.
- Ability to continue learning with a high degree of autonomy.

General competences (GC):

1. Ability to abstract thinking, analysis and synthesis.
2. Ability to learn and master modern knowledge.
3. Ability to apply knowledge in practical situations.
4. Knowledge and understanding of the subject area and understanding of professional activity.
5. Ability to adapt and act in a new situation.
6. Ability to make informed decisions.
7. Ability to work in a team.
8. Ability to interpersonal interaction.
9. Ability to communicate in a foreign language.
10. Ability to use information and communication technologies.
11. Ability to Судинні захворювання ЦНС. Гостре порушення мозкового кровообігу. Хірургічне лікування інсультів. search process and analyze information from various sources.
12. Determination and persistence in relation to assigned tasks and assumed responsibilities.
13. Awareness of equal opportunities and gender issues.
15. The ability to preserve and multiply moral, cultural, scientific values and achievements of society based on an understanding of the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of social technology and technologies, to use various types and forms of motor activity for active recreation and leading a healthy lifestyle.

Professional competences of the specialty (PC):

1. Ability to collect medical information about the patient and analyze clinical data.
2. Ability to determine the necessary list of laboratory and instrumental studies and evaluate the

<p>results.</p> <ol style="list-style-type: none"> 3. The ability to establish a preliminary and clinical diagnosis of the disease. 4. The ability to determine the necessary regime of work and rest in the treatment and prevention of diseases. 5. The ability to determine the nature of nutrition in the treatment and prevention of diseases. 6. Ability to determine the principles and nature of treatment and prevention of diseases. 7. Ability to diagnose emergency conditions. 8. Ability to determine tactics and provide emergency medical care. 9. Ability to carry out medical evacuation measures. 10. Ability to perform medical manipulations. 11. Ability to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility. 15. Ability to carry out an examination of work capacity. 16. Ability to maintain medical documentation, including electronic forms. 20. Ability to conduct epidemiological and medical-statistical studies of the health of the population; processing of social, economic and medical information. 21. Clearly and unambiguously communicate one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists, in particular to students. 22. Ability to manage healthcare workflows that are complex, unpredictable and require new strategic approaches. 23. Ability to develop and implement scientific and applied projects in the field of health care. 24. Compliance with ethical principles when working with patients and laboratory animals. 25. Observance of professional and academic integrity, bear responsibility for the reliability of the obtained scientific results.

4. Course prerequisites

In order to successfully study and master the competencies in the discipline «Neurosurgery», the student needs basic knowledge and learning outcomes in the following disciplines: human anatomy and pathological anatomy; medical biology, biological and bioorganic chemistry, histology, physiology and pathological physiology, and to a sufficient extent the skills of clinical combination of this knowledge; knowledge based on students' study of propaedeutics of surgery and internal diseases, therapeutic profile disciplines, pharmacology, radiology, which are integrated with other clinical disciplines (internal medicine, neurology, oncology, psychiatry, medical genetics, etc.).

5. Program learning outcomes (PLO)

List of learning outcomes

Learning outcome code	Content of the learning outcome	Link to competency matrix code
The code is created when filling out the syllabus (category: Zn – knowledge, Sk – skill, Co – competences, AB – autonomy and responsibility)	Learning outcomes determine what the student should know, understand and be able to do after completing the discipline. The learning outcomes follow from the set learning goals. To enroll in a discipline, it is necessary to confirm the achievement of each learning outcome.	Symbol of the Program Learning Outcome code in the Higher Education Standard
Zn –1	To create in the student a modern idea about the main types of neurosurgical pathology in the case of gunshot combat neurotrauma.	PLO–1 PLO–4 PLO–5

Zn –2	Knowledge of types and degrees of severity of brain injury, their diagnosis and neurosurgical treatment.	PLO–6 PLO–7
Zn –3	Know the current information about vascular diseases of the brain and spinal cord and the types and volumes of necessary surgical interventions for them.	PLO–8 PLO–15 PLO–16
Zn –4	Have knowledge of the basics of diagnosis and treatment of tumors of the nervous system.	PLO–19
Zn –5	To know the mechanism of development of degenerative-dystrophic diseases of the spine, the basics of diagnosis and modern neurosurgical treatment.	
Zn –6	Explain the basic principles of diagnosis and treatment of inflammatory and parasitic diseases of the brain and spinal cord.	
Zn –7	Know the current information about congenital anomalies of the central nervous system and surrounding structures.	
Zn –8	Know the modern basics of radiosurgery, radiation therapy, cranioplasty and functional neurosurgical treatment methods.	
Sk –1	Conduct a neurological and syndromological examination of the patient.	PLO–2 PLO–9
Sk –2	To justify the diagnosis.	PLO–10
Sk –3	Carry out differential diagnosis.	PLO–14
Sk –4	Draw up a detailed plan for the treatment and rehabilitation of a specific patient (taking into account neurological symptoms, age, concomitant diseases).	PLO–17 PLO–18
Sk –5	Be able to provide emergency aid.	
Co–1	To carry out professional activities in social interaction based on humanistic and ethical principles.	PLO–3 PLO–24
Co–2	Identify, set and solve tasks.	PLO–25
Co–3	Adapt to new clinical situations.	PLO–26
AB–1	Demonstrate the ability to independently search, analyze and process medical information.	PLO–4 PLO–21
AB–2	Adhere to the principles of deontology and professional ethics in practical work.	PLO–22 PLO–27
AB–3	Possess the ability to act socially responsibly and consciously in standard and non-standard clinical situations.	PLO–28

6. Format and scope of the course

Course format (indicate full-time or part-time)	full-time	
Type of lessons	Number of hours	Number of groups
lectures (L)	6	
practical (P)	17	
seminars (S)	-	
independent work (IW)	22	

7. Topics and content of the course

Class type code	Topic	Learning content	Learning outcome code	Teacher
L-1	Traumatic brain injury (TBI). Classification, periods. Concussion. Mild to moderate brain contusion. Severe brain contusion. Diffuse axonal damage.	Classification of TBI. Clinic, diagnosis and treatment of concussion and cerebral hemorrhage. Principles of providing emergency care. Diagnosis and treatment of skull base fractures. Classification of brain impingement and their diagnosis. Clinical manifestations and diagnosis of injuries of diffuse axonal damage. Basic approaches to the treatment of craniocerebral injuries.	Zn-1 Zn-2 Sk-1 Sk-2 Sk-3	According to the schedule
L-2	Brain tumors. Hydrocephalus. Tumors of the spine and spinal cord	Classification of brain tumors. Principles of diagnosis of brain tumors. Peculiarities of the clinical picture in different types of brain tumors. Basics of neurosurgical and radiological treatment of brain tumors. Types of hydrocephalus and their clinical symptoms. Diagnosis and treatment of hydrocephalus. Classification of brain tumors. Principles of diagnosis of spinal cord tumors. Peculiarities of the clinical picture in different types of spinal cord tumors. Basics of neurosurgical and radiological treatment of spinal cord tumors.	Zn-1 Zn-4 Zn-7 Zn-8 Sk-1 Sk-2 Sk-3	According to the schedule
L-3	Vascular diseases of the central nervous system. Hemorrhagic stroke. Ischemic stroke. Principles of diagnosis.	Classification of disorders of cerebral circulation. Principles of diagnosis and provision of emergency care. Thrombolysis. Indications and contraindications for surgical treatment of strokes. Protocol for providing care to a patient with acute cerebrovascular accident. Secondary prevention of strokes.	Zn-1 Zn-3 Sk-1 Sk-2 Sk-3 Co-1,2,3 AB-1,2,3	According to the schedule
P-1	Traumatic brain injury (TBI). Classification, periods. Concussion. Mild to moderate brain contusion. Severe brain contusion. Diffuse axonal damage.	To acquaint students with the classification of TBI, the basics of diagnosis and emergency care. Conduct surveys and physical examinations of patients. Determine the tactics of providing assistance to patients. Interpret the data of instrumental and laboratory examinations. Formulate a preliminary neurosurgical diagnosis and draw up the patient's further clinical route based on it. Determine the tactics of patient management, as well as, if necessary, the volume of neurosurgical intervention. Ability to maintain medical records.	Zn-1 Zn-2 Zn-8 Sk-1 Sk-2 Sk-3 Sk-4 Sk-5 Co-1,2,3 AB-1,2,3	According to the schedule
P-2	Intracranial lesions: hematomas, complex skull fractures. Brain wedging. Fractures of the base of the	To acquaint students with the features of brain slaughter, the features of brain impingement. Conduct surveys and physical examinations of patients. Determine the tactics of providing assistance to patients. Interpret the data of	Zn-1 Zn-3 Sk-1 Sk-2 Sk-3	According to the schedule

	skull. Traumatic facial injuries.	instrumental and laboratory examinations. Formulate a preliminary neurosurgical diagnosis and draw up the patient's further clinical route based on it. Determine the tactics of patient management, as well as, if necessary, the volume of neurosurgical intervention. Ability to maintain medical records.	Sk-4 Sk-5 Co-1,2,3 AB-1,2,3	
P-3	Spinal cord and spinal cord injury.	Conduct surveys and physical examinations of patients. Determine the tactics of providing assistance to patients. Interpret the data of instrumental and laboratory examinations. Formulate a preliminary neurosurgical diagnosis and draw up the patient's further clinical route based on it. Determine the tactics of patient management, as well as, if necessary, the volume of neurosurgical intervention. Ability to maintain medical records.	Zn-1 Zn-2 Sk-1 Sk-2 Sk-3 Sk-4 Sk-5 Co-1,2,3 AB-1,2,3	According to the schedule
P-4	Brain tumors. Hydrocephalus. Tumors of the spine and spinal cord	Briefly acquaint students with the classification of brain tumors, talk about the main points of clinical and instrumental diagnostics. Types of hydrocephalus and their clinical symptoms. Diagnosis and treatment of hydrocephalus. Conduct surveys and physical examinations of patients. Determine the tactics of providing assistance to patients. Interpret the data of instrumental and laboratory examinations. Formulate a preliminary neurosurgical diagnosis and draw up the patient's further clinical route based on it. Determine the tactics of patient management, as well as, if necessary, the volume of neurosurgical intervention. Ability to maintain medical records.	Zn-1 Zn-4 Zn-8 Sk-1 Sk-2 Sk-3 Sk-4 Sk-5 Co-1,2,3 AB-1,2,3	According to the schedule
P-5	Surgical treatment of brain and spinal cord tumors. Radiation therapy and chemotherapy in the complex treatment of tumors of the central and peripheral nervous system. Radiosurgery.	To acquaint students with the basic principles of treatment of tumors of the nervous system. Select the necessary groups of drugs and their combinations. Determine treatment tactics and combine different methods of treating tumors of the nervous system. To study the main types of surgical interventions and their indications in the treatment of tumors of the nervous system. Determine the necessary volume of surgical treatment. Combine different types of treatment in patients with tumors of the nervous system.	Zn-1 Zn-2 Zn-4 Zn-8 Sk-1 Sk-2 Sk-3 Sk-4 Sk-5 Co-1,2,3 AB-1,2,3	According to the schedule
P-6	Vascular diseases of the central nervous system. Hemorrhagic stroke. Ischemic stroke.	To acquaint students with the classification of disorders of cerebral blood circulation, the basics of providing emergency care. Explain the patient's clinical route. Conduct surveys and physical examinations of patients.	Zn-1 Zn-3 Zn-7 Sk-1 Sk-2	According to the schedule

	Principles of diagnosis.	Determine the tactics of providing assistance to patients. Interpret the data of instrumental and laboratory examinations. Formulate a preliminary neurosurgical diagnosis and draw up the patient's further clinical route based on it. Determine the tactics of patient management, as well as, if necessary, the volume of neurosurgical intervention. Ability to maintain medical records.	Sk-3 Sk-4 Sk-5 Co-1,2,3 AB-1,2,3	
P-7	Vascular diseases of the central nervous system. Treatment of acute cerebrovascular accident. Surgical treatment of strokes.	To acquaint students with the classification of disorders of cerebral blood circulation, the basics of providing emergency care. Explain the patient's clinical route. Conduct surveys and physical examinations of patients. Determine the tactics of providing assistance to patients. Interpret the data of instrumental and laboratory examinations. Formulate a preliminary neurosurgical diagnosis and draw up the patient's further clinical route based on it. Determine the tactics of patient management, as well as, if necessary, the volume of neurosurgical intervention. Ability to maintain medical records.	Zn-1 Zn-3 Zn-7 Sk-1 Sk-2 Sk-3 Sk-4 Sk-5 Co-1,2,3 AB-1,2,3	According to the schedule
P-8	Degenerative-dystrophic-destructive diseases of the spine. General principles of treatment.	Briefly acquaint students with the modern approach to the treatment of degenerative-dystrophic-destructive (DDD) diseases of the spine. To describe the modern possibilities of providing neurosurgical care for pain syndromes on the basis of DDD of spine disease. Conduct surveys and physical examinations of patients. Determine the tactics of providing assistance to patients. Interpret the data of instrumental and laboratory examinations. Formulate a preliminary neurosurgical diagnosis and draw up the patient's further clinical route based on it. Determine the tactics of patient management, as well as, if necessary, the volume of neurosurgical intervention. Ability to maintain medical records.	Zn-1 Zn-6 Zn-7 Sk-1 Sk-2 Sk-3 Sk-4 Sk-5 Co-1,2,3 AB-1,2,3	According to the schedule
P-9	Pain syndromes in neurosurgical practice and their treatment. Functional and restorative neurosurgery. ZALIK.	To acquaint students with the main types of pain syndromes and their pathogenesis. To study the main pathologies accompanied by pain syndrome and requiring neurosurgical treatment. Conduct surveys and physical examinations of patients. Determine the tactics of providing assistance to patients. Interpret the data of instrumental and laboratory examinations. Formulate a preliminary neurosurgical diagnosis and draw up the patient's further clinical route based on it.	Zn-1 Zn-6 Zn-7 Sk-1 Sk-2 Sk-3 Sk-4 Sk-5 Co-1,2,3 AB-1,2,3	According to the schedule

<i>Independent work of student</i>			
Class type code	Topic	Learning content	Learning outcome code
IW-1	History of neurosurgery, stages of scientific development.	Independent extracurricular work of students precedes preparation for practical classes and includes independent study of the material with the help of methodical instructions, additional sources of literature, writing a printed synopsis in the form of an essay followed by its oral defense in preparation for the final assessment class.	Zn-1,2,3,4,5,6,7,8 Sk-1,2,3,4,5 Co-1,2,3 AB-1,2,3
IW-2	Diagnostic methods in neurosurgery.		Zn-1,2,4,7 Sk-1,2,3,4,5 Co-1,2,3 AB-1,2,3
IW-3	Multiple head injury.		Zn-1,2,7 Sk-1,2,3,4,5 Co-1,2,3 AB-1,2,3
IW-4	Multiple spinal injury.		Zn-1,7 Sk-1,2,3,4,5 Co-1,2,3 AB-1,2,3
IW-5	Multiple injuries to the body, limb and other parts of the human body.		Zn-1,5,6,7 Sk-1,2,3,4,5 Co-1,2,3 AB-1,2,3
IW-6	Injuries of the peripheral nervous system.		Zn-1,4,5,7 Sk-1,2,3,4,5 Co-1,2,3 AB-1,2,3
IW-7	Fire injury of the skull and brain, spine and spinal cord.		Zn-1,6 Sk-1, 2, 3, 4, 5 AB-1, 2, 3
IW-8	Abscesses of the brain and spine.		Zn-1,6 Sk-1, 2, 3, 4, 5 Co-1,2,3 AB-1,2,3
IW-9	Epiduritis.		Zn-1,6 Sk-1, 2, 3, 4, 5 Co-1,2,3 AB-1,2,3
IW-10	Tumors of the peripheral nervous system.		Zn-1,4,7 Sk-1,2,4,3,4,5 Co-1,2,3 AB-1,2,3
IW-11	Peculiarities of management of incurable patients and the use of palliative treatment methods in neurosurgical practice.		Zn-1,2,3,4,5,6,7 Sk-1, 2, 3, 4, 5 Co-1,2,3 AB-1,2,3

In the process of studying the discipline «Neurosurgery», the following teaching methods are used:

- by type of cognitive activity: explanatory and illustrative, analytical, synthetic, reproductive, research;
- by sources of knowledge: verbal - story, conversation, visual - demonstration, illustration according to the system approach: stimulation and motivation, control and self-control.

In the process of studying the discipline «Neurosurgery», modern methods of presenting material in the form of presentations, summarizing tables, modeling of clinical situations are used.

8. Verification of training results

Current control

is carried out during training sessions and is aimed at checking the students' assimilation of educational material (it is necessary to describe the forms of ongoing control during training sessions). Assessment forms for current educational activities should be standardized and include control of theoretical and practical training. The final grade for the current educational activity is given on a 4-point (national) scale.

Study result code	Study type code	Method of verification of study results	Enrollment criteria
Zn-1 Zn-2 Zn-3 Zn-4 Zn-5 Zn-6 Zn-7 Sk-1 Sk-2 Sk-3 Sk-4 Sk-5	L-1 L-2 L-3 P-1 P-2 P-3 P-4 P-5 P-6 P-7 P-8 P-9	– individual survey according to theoretical questions, which are set out in methodological recommendations for preparation for practical training; – test questions based on recommended literature sources; – written clinical and situational tasks.	The student has mastered the theoretical material, can describe the etiology, pathogenesis and clinical features of the main nosological forms, variants of their clinical course. Can carry out a differential diagnosis of the disease in a specific clinical situation and establish a preliminary diagnosis. Makes a detailed examination plan and clinical route of a patient with neurosurgical pathology. Draws up a preliminary plan of treatment and rehabilitation of the patient. Can assess risks and give an approximate prognosis in a specific clinical situation. Provides emergency neurosurgical care both at the pre-hospital and in-hospital stages. Answers oral and written questions in detail and fully, solves clinical and situational problems.
Zn-1 Zn-7 Sk-1 Sk-2 Sk-3 Co-1 Co-2 Co-3 AB-1 AB-2 AB-3	IW-1 IW-2 IW-3 IW-4 IW-5 IW-6 IW-7 IW-8 IW-9 IW-10 IW-11	– design of independent work on topics in the form of an essay; – defense of independent work in the form of answers to oral questions on the topic of independent work.	The student conducted a literature search, processed a sufficient number of literary sources. With references to the authors, he issued an essay on the topic of independent work. Student clearly and clearly answers theoretical questions on the topic of the written work, conducts differential diagnosis and shows the ability of logical clinical thinking.

Current control		
General assessment system	Participation in work during the semester on a 200-point scale	
Rating scales	traditional 4-point scale, multi-point (200-point) scale, ECTS rating scale	
Conditions for admission to the final examination	The student attended all practical classes and received at least 120 points for the current academic performance	
Type of final control	Methodology of final control	Enrollment criteria
Zalik	All subjects submitted for current control must be credited. Grades from a 4-point scale are converted into points on a multi-point (200-point) scale in accordance with the Regulation «Criteria, rules and procedures for evaluating the results of students' educational activities».	The maximum number of points is 200. The minimum number of points is 120.
<p>The maximum number of points that a student can score for the current educational activity for admission to the exam (differentiated credit) is 120 points.</p> <p>The minimum number of points that a student must score for the current educational activity for admission to the exam (differentiated credit) is 72 points.</p> <p>The calculation of the number of points is carried out on the basis of the grades received by the student on a 4-point (national) scale during the study of the discipline, by calculating the arithmetic mean (CA), rounded to two decimal places. The obtained value is converted into points on a multi-point scale as follows:</p> $x = \frac{CA \times 120}{5}$		
9. Course policy		
<p>Academic Integrity: Each higher education student is expected to independently prepare for practical classes and solve individual tasks, think through and present their own arguments for their legal position.</p> <p>Failure to cite used sources, fabrication of sources, plagiarism, interference with the work of other students are, but are not limited to, examples of possible academic dishonesty.</p> <p>The detection of signs of academic dishonesty in the written work of a student of higher education is grounds for not enrolling it by the teacher, regardless of the scale of plagiarism or deception; in case the work is not accepted, the student of higher education must re-do the written work and submit it to the teacher for evaluation within the terms agreed with the teacher.</p>		
10. Literature		
<u>Basic:</u>		
<ol style="list-style-type: none"> 1. Aminoff's Neurology and General Medicine. 6th Edition. Editors: Aminoff MS, Josephson A. Academic Press; 2021. 1230 p. 2. Daroff R. Bradley's Neurology in Clinical Practice 7th Edition. Editors: Jankovic J, Mazziotta J, Pomeroy S. Elsevier; 2015. 2348 p. 3. Ivamoto HS, Lemos HP Jr, Atallah AN. Surgical Treatments for Chronic Subdural Hematomas: A Comprehensive Systematic Review. World Neurosurg 2016;86:399-418. 4. Jääskeläinen J.E. Guideline 00760. Intracranial aneurysm and subarachnoid hemorrhage. 2017. 11 p. Available on: https://guidelines.moz.gov.ua/documents/3547 5. Joaquim AF, Ghizoni E, Tedeschi H, Ferreira MAT, editors. Fundamentals of Neurosurgery. A Guide for Clinicians and Medical Students. Springer International Publishing; 2019. 302 p. 6. Kallio M, Mäenpää H. Guideline 00784. Tumors of the brain and spinal cord. 2015. 13 p. Available 		

on: <https://guidelines.moz.gov.ua/documents/3566>

7. Koivisto T, Jääskeläinen JE. Guideline 00750. Increased intracranial pressure. 2017. 8 p. Available on: <https://guidelines.moz.gov.ua/documents/3537>
8. Koivisto T, Luoto T. Guideline 00364. Contusion of the brain. 2017. 6 p. Available on: <https://guidelines.moz.gov.ua/documents/3241>
9. Koivisto T, Luoto T. Guideline 00367. Intracranial traumatic hematomas. 2017. 7 p. Available on: <https://guidelines.moz.gov.ua/documents/3244>
10. Nikkhah G, Pinsker M, editors. Stereotactic and Functional Neurosurgery. Springer-Verlag Wien; 2013. 112 p.
11. Norusi AA, Shokouhi JJ. Neuro-Oncology. Berlin: Urban & SINA; 2020.268 p.
12. Piatyko VO, Piatyko IB, Sergiienko YuH, Zavgorodnya NI, Kaliuzhka VYu. Neurosurgery: study guide. K.: Медицина; 2021. 112 с.
13. Pouratian N, Sheth S, editors. Stereotactic and Functional Neurosurgery. Springer International Publishing; 2020. 563 p.
14. Sokolova L, Panteleienko L, editors. Neurology: Clinical Cases: study guide. K.: Медицина; 2016. 96 с.
15. Steiner T, Al-Shahi Salman R, Beer R et al. European Stroke Organisation (ESO) guidelines for the management of spontaneous intracerebral hemorrhage. Int J Stroke 2014;9(7):840-55.
16. Toliaas CM, Giamouriadis A, Hogg F, Ghimire P. Neurosurgery: A Case-Based Approach. Springer International Publishing; 2019. 218 p.
17. Ylinen A. Guideline 00803. Consequences of traumatic brain injury. 2014. 4 p. Available on: <https://guidelines.moz.gov.ua/documents/3584>
18. Shevaga V, Payenok A, Netlyukh A, Yavors'ka N. Neurosurgery. Lviv: PE "Quart"; 2009. 252 p.
19. Roine RO. Guideline 00761. Intracerebral hemorrhage. 2017. 6 p. Available on: <https://guidelines.moz.gov.ua/documents/3548>
20. Koivisto T, Luoto T. Guideline 00366. Brain injury. 2017. 7 p. Available on: <https://guidelines.moz.gov.ua/documents/3243>
21. Dahlberg A. Guideline 00804. Damage to the spinal cord. 2018. 9 p. Available on: <https://guidelines.moz.gov.ua/documents/3585>

Additional:

1. CT Teaching Manual: A Systematic Approach to CT Reading. 5th Edition. Kindle Edition; 2021. 232 p.
2. Hetts S, Cooke D. Interventional Neuroradiology, Volume 176. 1st Edition. Elsevier; 2021. 444 p.
3. Kurki MI, Gaál EI, Kettunen J et al. High risk population isolate reveals low frequency variants predisposing to intracranial aneurysms. PLoS Genet 2014;10(1):e1004134.
4. Lindgren AE, Räisänen S, Björkman J et al. De Novo Aneurysm Formation in Carriers of Saccular Intracranial Aneurysm Disease in Eastern Finland. Stroke 2016;47(5):1213-8.
5. Netter's Neurology, 3rd Edition. Editors: Srinivasan J, Chaves C, Scott B, Small J. Elsevier; 2020. 768 p.

11. Equipment, logistical and software support of the discipline/course

Diagrams, tables, mockups, multimedia presentations, multimedia projector, distance learning platform Misa

12. Additional information

Attending classes is an important part of learning. All students are expected to attend all lectures and practical activities of the course. Students of higher education must inform the teacher about the impossibility to attend classes. In any case, students are obliged to comply with all deadlines for the completion of all types of written work provided for by the course. The teacher records the student's non-attendance at the practical session, which is considered an academic debt, which the student must

complete within the approved schedule of consultations with the teacher or at another time agreed with the teacher. The practice consists in checking the student's preparation of those tasks that were assigned to the practical session, at which the student was absent.

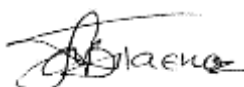
Укладач силабуса:

асистент



Кулик Андрій Русланович

Завідувач кафедри, д. мед. н., професор



Паснок Анжеліка Володимирівна