

MINISTRY OF HEALTH OF UKRAINE
KHARKIV NATIONAL MEDICAL UNIVERSITY

Department of Neurosurgery

2021/2022 academic year

SYLLABUS
CURRENT NEUROSURGERY ISSUES

Mandatory or additional course component: optional

Educational program: Full-time

field of study 22 «Healthcare»

specialty 222 «Medicine» the second (master's) level

course: VI

The program of discipline approved at a meeting of the Neurosurgery Department

Approved by the methodical Commission of KHNMU on problems of surgical profile

Protocol from.
“30” August 2021 year № 1

Head of department

(signature)

Professor Pyatykop V.O.
(surname and initials)

“30” August 2021 year № 1

Protocol from.
“31” August 2021 year № 1

Head of department

(signature)

Professor Syplyvyy V.O.
(surname and initials)

“31” August 2021 year № 1

DEVELOPERS OF THE PROGRAM:

Head of Department, Doctor of Medicine, Professor Pyatykop V.O.

Assistant professor, Candidate of Medical Sciences Serhiyenko J.G.

1. Data about the teacher who teaches the discipline

Surname, name, patronymic of the teacher	Pyatykop Vladimir Alexandrovich
Contact phonenumber .	+380503035092
E-mail:	pyatikopv@gmail.com
Schedule of classes	according to the schedule
Consultation	according to the stand

Last name, first name and patronymic of the teacher	Tsygankov Alexander Vasylyevich
Contact phonenumber .	+380505196240
E-mail:	
Schedule of classes	according to the schedule
Consultations	according with the stand

Last name, first name and patronymic	Chmut Victor Alekseyevich
Contact phonenumber .	+30672995889
E-mail:	
Schedule of classes	according to the schedule
Consultations	according with the stand

Surname, name, patronymic of the teacher	Kutovoy Igor Alexandrovich
Contact phonenumber .	+380503002550
E-mail:	igorkutovoy@gmail.com
Schedule of classes	according to the schedule
Consultation	according to the stand

Surname, name, patronymic of the teacher	Masalitin Igor Nikolaevich
Contact phonenumber .	+380503003906
E-mail:	Im.masalitin@kntmu.edu.ru
Schedule of classes	according to the schedule
Consultation	according to the stand

Surname, name, patronymic of the teacher	Yulia Genadievna Sergienko
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Contact phonenumber .	+380509603676
E-mail:	Yh.serhiienko@gmail.com
Schedule of classes	according to the schedule
Consultation	according to the stand

Surname, name, patronymic of the teacher	Babalyan Yuri Alexandrovich
Contact phonenumber .	+30506549404
E-mail:	Babalyan_y@ukr.net
Schedule of classes	according to the schedule
Consultation	according to the stand

Surname, name, patronymic of the teacher	Natalia Igorevna Zavgorodnaya
Contact phonenumber .	+380957173508
E-mail:	Ni.zavgorodnia@kntmu.edu.com
Schedule of classes	according to the schedule
Consultation	according to the stand

Surname, first name and patronymic of the teacher	Kravtsova Anna Vitalievna
Contact phonenumber .	+380509478939
E-mail:	Av.kravtsova@kntmu.edu.com
Schedule of classes	according to the schedule
Consultation	according to the stand

Surname, name, patronymic of the teacher	Stogniy Artem Volodimirovich
Contact phonenumber .	+380506549404
E-mail:	Av.stohnii@kntmu.edu.com
Schedule of classes	according to the schedule
Consultation	according to the stand

Location of the Department: Kharkiv, Independence ave. 13

INTRODUCTION

The program of study of the “Neurosurgery” discipline is made according to the Standard of higher education of Ukraine (hereinafter – the Standard) _____ specialists _____

(a name of higher education level)

academic discipline _____ field of study 22 «Healthcare» _____

(code and name of the field of knowledge)

specialties _____ specialty 222 «Medicine» the second (master’s) level _____

(code and name of specialty)

specialization (s) _____.

(code and name of specialization)

educational program _____.

(name of the educational program)

Discipline program (optional course) "Current Neurosurgery Issues" for higher educational establishments of Ukraine of the III-IV accreditation levels is compiled for the specialty 22 «Healthcare» for subject are 222 "Medicine". The program reflects the current state of development of the discipline and takes into account the need to educate students in accordance with the requirements of training the general practitioner. The discipline program consists of 120 hours, 4 credits.

Types of educational activities of students according to the curriculum are:

a) practical classes;

b) student individual work.

Thematic plans of practical classes and student individual work provide implementation of all topics that are part of the discipline in the educational process. The academic discipline belongs to non-compulsory subjects.

1. Purpose and objectives of the discipline

Provide academic training in neurosurgery and training graduates for the professional activity of a doctor in the relevant primary position by acquiring general and special competencies, the scope of which is at least described by certain lists of syndromes and symptoms of diseases, emergencies, physiological conditions and diseases that require special patient management tactics; laboratory and instrumental research, medical manipulations; issues of labor, forensic and military expertise.

1.2. The main objectives of studying neurosurgery are:

1. Identify and locate the leading clinical neurosurgical symptoms and syndromes; according to standard methods, using preliminary data of the patient's medical history, patient examination data, knowledge about the person, his organs and systems, establish a probable nosological or syndromic preliminary clinical diagnosis of a neurosurgical disease.

2. Prescribe and analyze additional (mandatory and optional) examination methods (laboratory, radiological, functional and/or instrumental) for patients with diseases of internal organs involving the nervous system for differential diagnosis of diseases.

3. Determine the final clinical neurosurgical diagnosis adhering to the relevant ethical and legal norms, by making an informed decision and logical analysis of the obtained subjective and objective data of clinical, additional examination, conducting differential diagnostics under the supervision of a doctor-manager in a medical institution.

4. Establish the diagnosis of emergency conditions in neurosurgery under any circumstances (at home, on the street, in a medical institution), in conditions of emergency, martial law, lack of information and limited time.

5. Determine the approach, plan, type and principle of treatment of neurosurgical diseases by making an informed decision according to existing algorithms and standard schemes.

6. Determine the management tactics of a neurosurgical patient with somatic pathology by making an informed decision according to existing algorithms and standard schemes.

7. Carry out treatment of major neurosurgical diseases according to existing algorithms and standard schemes under the supervision of a doctor-manager in a medical institution

8. Perform neurosurgical manipulations based on a preliminary and/or final clinical diagnosis for different segments of the population and under different conditions.

1.3 Competencies and learning outcomes

According to the requirements of the standard the discipline provides students with the acquisition of competencies:

integral: the ability to solve typical and complex specialized tasks and practical problems in professional activities in the field of healthcare, or in the course of training, which involves research and/or innovation and is characterized by complexity and uncertainty of conditions and requirements;

general competencies:

GC1 – ability to abstract thinking, analysis and synthesis, the ability to learn and be modernly trained

GC2-ability to apply knowledge in practical situations

GC3 - knowledge and understanding of the subject area and understanding of professional activities

GC4 – ability to adapt and act in a new situation

GC5 - ability to make an informed decision; work in a team; interpersonal skills

GC6-ability to communicate in the state language both orally and in writing; ability to communicate in a foreign language

GC7 - skills in using information and communication technologies

GC8 – certainty and perseverance in relation to the tasks set and responsibilities assumed

GC9 – ability to act socially responsibly and consciously

GC10-strive to preserve the environment.

special (professional) competencies:

PC1-survey skills

PC2-ability to determine the necessary list of laboratory and instrumental studies and evaluate their results

PC3-ability to establish a preliminary and clinical diagnosis of the disease

PC4-ability to determine the necessary mode of work and rest, the nature of nutrition in the treatment of diseases

PC5-ability to determine the principles and nature of treatment of diseases

PC6 – ability to diagnose emergency conditions

PC7 – ability to determine tactics and skills in providing emergency medical care

PC8-ability to carry out medical and evacuation measures

PC9-skills in performing medical manipulations

PC10-ability to determine the tactics of managing physiological pregnancy, physiological childbirth and the postpartum period. Family planning and counter-perception consulting skills

PC11-ability to plan and carry out sanitary and hygienic, preventive and anti-epidemic measures, including in relation to infectious diseases

PC12-ability to determine the management tactics of persons subject to dispensary supervision

PC13 - ability to conduct an expert examination of working capacity

PC14 - ability to maintain medical records

PC15-ability to conduct epidemiological and medical-statistical studies of Population Health; processing state, social,economic and medical information

PC16-ability to assess the impact of the environment, socio-economic and biological determinants on the health of an individual, family, or population

PC17-ability to analyze the activities of a doctor, department, or health care institution, carry out measures to ensure the quality and safety of medical care, and improve the efficiency of using medical resources

PC18-ability to carry out measures to organize and integrate the provision of medical care to the population, and conduct marketing of medical services.

COMPETENCE MATRIX

Classification of competencies according to National qualifications framework (NQF)	Knowledge	Skills	Communication	Autonomy and responsibility
General competences				
1. Ability to abstract thinking, analysis and synthesis; ability to learn and be modernly trained.	+	+	+	+
2. Ability to apply knowledge in practical situations.	+	+	+	+
3. Knowledge and understanding of the subject area and understanding of the profession.	+	+	+	+
4. Ability to adapt and act in a new situation.	+	+	+	+
5. Ability to work in a team. Interpersonal skills.	+	+	+	+
6. Ability to communicate in the state language both orally and in writing; ability to communicate in a second language.	+	+	+	+
7. Skills in the use of information and communication technologies	+	+	+	+

8. Ability to assess and ensure the quality of work performed.	+	+	+	+
9. Ability to act in a socially responsible and civic conscious manner.	+	+	+	+
10. The desire to save the environment.				

Special (professional) competences				
1. Collection of medical information on the patient's condition.	+	+	+	+
2. Evaluation of the results of laboratory and instrumental research.	+	+	+	+
3. Establishment of a clinical diagnosis of disease.	+	+	+	+
4. Planning and conducting of the profile of the actives of diseases.	+	+	+	+
5. Determination of the nature and principles of treatment of diseases.	+	+	+	+
6. Diagnosis of urgent conditions.	+	+	+	+
7. Definition of tactics and provision of emergency medical care.	+	+	+	+
8. Determination of the necessary mode of work and rest, diet and the treatment of diseases.	+	+	+	+
9. Performance of medical diagnostic and therapeutic manipulations.	+	+	+	+
10. Ability to determine the tactics of physiological pregnancy, physiological childbirth and the postpartum period. Counseling skills on family planning and contraception.				
11. Ability to plan and conduct sanitary, preventive and anti-epidemic measures, including infectious diseases.				
12. Clinical examination of persons subject to dispensary supervision.				
13. Organization of medical and evacuation activities.				
14. Maintaining medical records.	+	+	+	+

15. Ability to conduct epidemiological and medical-statistical studies of public health; processing of state, social, economic and medical information				
16. Assessment of the environmental impact on the health of the population (individual, family, population).				
17. Ability to analyze the activities of a doctor, department, health care institution, to take measures to ensure the quality and safety of medical care and increase the efficiency of medical resources.				
18. Ability to carry out activities for the organization and integration of medical care, and marketing of medical services				

Learning outcome:

Integrative final program learning outcomes, the formation of which contributes to the academic discipline.

Learning outcomes for the discipline.

Matrix of compliance of learning outcomes and competencies defined by the Standard.

Program learning outcomes	Competences										
	General competences										
	competence integral										
		1. Ability to abstract thinking, analysis and synthesis; ability to learn and be modernly trained.	2. Ability to apply knowledge in practical situations.	3. Knowledge and understanding of the subject area and understanding of the profession.	4. Ability to adapt and act in a new situation.	5. Ability to work in a team. Interpersonal skills.	6. Ability to communicate in the state language	7. Skills in the use of information and communication technologies	8. Ability to assess and ensure the quality of work	9. Ability to act in a socially responsible and civic conscious manner.	10. The desire to save the environment.

14. Analyze and evaluate public, social and health information using standard approaches and computer information technologies.	+	+	+	+	+	+	+		+		
15. Assess the impact of the environment on the health of the population in a medical institution using standard methods.	+	+	+	+		+	+	+			
16. To form goals and determine the structure of personal activity on the basis of the result of the analysis of certain social and personal needs.	+	+	+	+	+	+	+	+	+	+	
17. Adhere to a healthy lifestyle, use self-regulation and self-control.	+	+	+	+		+	+				
18. To be aware of and guided in their activities by civil rights, freedoms and duties, to improve the general cultural level.	+				+	+	+			+	
19. Comply with the requirements of ethics, bioethics and deontology in their professional activities.	+	+	+	+	+					+	
20. To organize the necessary level of individual safety (own and persons who are taken care of) in case of typical dangerous situations in the individual field of activity.	+	+	+	+		+				+	
21. Perform medical manipulations based on a preliminary and/or final clinical diagnosis for different segments of the population and under different conditions.	+	+	+	+				+		+	
22. Perform medical dental procedures based on a preliminary and/or final clinical diagnosis for different segments of the population and under different conditions .	+	+	+			+	+		+	+	
23. Perform manipulation of emergency medical care, using standard schemes, under any circumstances, based on the diagnosis of an emergency condition in a limited time .	+	+	+	+	+	+	+		+	+	

Program learning outcomes	Competences										
	General competences										

	1. Collection of medical information on the patient's condition	2. Establishment of a clinical diagnosis of	3. Establishment of a clinical diagnosis of	4. Planning and conducting of the profile of the	5. Determination of the nature and principles of	6. Diagnosis of urgent conditions.	7. Definition of tactics and provision of	8. Determination of the necessary mode of	9. Performance of medical diagnostic and	10. Ability to determine the tactics of	11. Ability to plan and conduct sanitary,	12. Clinical examination of persons subject to	13. Organization of medical and	14. Maintaining medical records.	15. Ability to conduct epidemiological and	16. Assessment of the environmental	17. Ability to analyze the activities of a	18. Ability to carry out activities for the
1. To distinguish and identify the leading clinical symptoms and syndromes; for standard techniques, using preliminary data of the patient's history, the patient's examination data, knowledge about the person, his organs and systems, to establish a probable nosological or syndromic preliminary clinical diagnosis of a neurosurgical disease.	+	+	+	+	+	+	+	+	+					+				
2. To collect information about the general condition of the patient, based on the results of laboratory and instrumental studies to evaluate information regarding the diagnosis.	+	+	+	+	+	+	+	+	+					+				
3. Assign and analyze laboratory, functional and/or instrumental examination of the patient in neurosurgical diseases for differential diagnosis of diseases.	+	+	+	+	+	+	+	+	+					+				
4. To determine the final clinical diagnosis, adhering to the relevant ethical and legal norms, by making an informed decision and logical analysis of the obtained subjective and objective data of clinical additional examination, differential diagnosis under the supervision of a physician-Manager in a medical institution.	+	+	+	+	+	+	+	+	+					+				
5. Establish a diagnosis of emergency conditions under any circumstances (at home, on the street, in a medical institution), in an emergency, martial law, lack of information and limited time.	+	+	+	+	+	+	+	+	+					+				
6. Plan and implement measures to prevent diseases among the population to prevent the spread of I diseases.	+	+	+	+	+	+	+	+	+					+				
7. To analyze the epidemiological state and carry out measures of mass and individual,	+	+	+	+	+	+	+	+	+					+				

environment on the health of the population.																		
17. Maintaining medical records, processing of state, social and medical information	+	+	+	+	+	+	+	+	+					+				
18. To be aware of and guided in their activities by civil rights, freedoms and duties, to improve the general cultural level.	+	+	+	+	+	+	+	+	+					+				
19. Ability to assess the sanitary and hygienic condition of the environment in order to determine the sanitary and hygienic and preventive measures																		
20. To form goals and determine the structure of personal activity on the basis of the result of the analysis of certain social and personal needs.	+	+	+	+	+	+	+	+	+					+				
21. Comply with the requirements of ethics, bioethics and deontology in their professional activities.	+	+	+	+	+	+	+	+	+					+				

2. Information volume of the discipline

"Current issues of Neurosurgery"

(specialty 221 " Medicine")

Total hours: 120/4 credits

(lectures 0 practical – 20 and SRS-100).

The program on neurosurgery in the 6th year in the specialty 221 "Medicine", provides for the study of topical issues of Neurosurgery in its main sections: history of Neurosurgery, anatomy of the nervous system, examination in neurosurgery, traumatic lesions of the nervous system, vascular diseases of the nervous system, neoplasms, functional disorders.

According to the curriculum, the discipline "topical issues of Neurosurgery" (120 hours/4 credits) is studied by students in the 6th year of study in the specialty 221 "Medicine". The approximate duration of lectures, practical and seminar classes is 2 hours.

The program of the discipline consists of only 120/4 hours (classroom – 20: lectures - 0, practical - 20 and SRS - 100), which includes 5 blocks of content modules.

The topics of the lecture course reveal problematic issues of the relevant sections of topical issues of Neurosurgery. In the lecture course, didactic tools are used as much as possible (multimedia presentations, graphological structures, demonstration of working with computer programs for calculating statistical

quantities). The lecture and practical stages of students' training are mainly designed in such a way that lectures either precede the corresponding practical classes, or, when rotating modules, are read in one block.

Practical classes are conducted at the clinical bases of the Department. The approximate duration of practical classes is 2 hours.

The department when teaching the course "topical issues of neurosurgery" is a professional training of a doctor, which involves mastering the issues of theory and practice in all sections of Neurosurgery, starting with the organization of the work of the polyclinic and hospital department to providing urgent care for emergencies and qualified neurosurgical care.

The program is structured into sections:

Section **CURRENT ISSUES OF NEUROSURGERY**

Specific objectives:

- Determine etiology, pathogenesis, classification and clinical diagnosis of traumatic lesions of the brain, spinal cord and peripheral nerves, vascular diseases of the brain and spinal cord, neuro-oncological diseases;
- Interpret mechanisms of occurrence of different types of CNS damage - traumatic brain injuries, vascular and neuro-oncological diseases;
- Determine methods of clinical and instrumental diagnostics depending on the type of damage of the nervous system and its possible complications;
- Evaluate the results of laboratory and instrumental examination of patients with CNS pathology;
- Carry out preliminary assessment of the severity of the condition of patients depending on the type of lesions of the nervous system;
- Determine algorithms of medical care of patients with lesions of the nervous system;
- Determine algorithms for conservative and surgical treatment of nervous system lesions and their complications,
- Identify indications for immediate surgery and explain their basic principles;
- Explain the principles of postoperative treatment and rehabilitation of patients;
- Demonstrate proficiency in methods of rehabilitation of patients;
- Demonstrate the ability to provide emergency medical care for emergency conditions in patients with lesions of the nervous system;

Topic 1

Anatomical and physiological features of the central and peripheral nervous system.

Central nervous system anatomy, anatomy and physiology of peripheral nervous system. Ventricular system of the brain, physiology of blood circulation. Brain and spinal cord membranes. Twelve pairs of cranial nerves.

Vascular basins involved in the blood supply to the brain. Features of spinal blood supply. Venous collectors of the brain and spinal cord. Willis artery and other inter-systemic brain anastomoses.

Peripheral nerves of the upper and lower extremities. Cervical plexus. Shoulder plexus. Lumbar plexus. Sacral-coccygeal plexus.

Topic 2

Methods of examination of patients with pathology of the nervous system.

Neurological symptoms and syndromes. General cerebral, liquor hypertensive syndromes. Vestibular atactic syndrome. Focal symptoms. Meningeal symptom complex.

Lumbar puncture. Indications and contraindications. Liquor dynamic tests.

Radiographic methods of examination of the central nervous system. Indications and contraindications. X-ray computed tomography of the brain and spinal cord. Indications and contraindications. Contrast enhancement during CNS X-ray examination. Myelography. Cerebral selective angiography. Indications and contraindications.

Ultrasonic methods of CNS examination. Echoencephalography. Indications and contraindications. Ultrasound examination of cerebral vessels.

Magnetic resonance imaging of the brain, angio-mode MRI. Indications and contraindications.

Assessment of detected changes in the application of diagnostic methods.

Topic 3

Current approaches in the treatment of traumatic brain and spinal cord injury.

Indications for surgical treatment of brain injury in the acute and delayed periods. Methods of opening the cranial cavity, principles of brain surgeries. Methods of stopping bleeding from soft tissues of the head, dura mater, cerebral vessels. Features of the course of traumatic brain injury depending on age. Features of surgical treatment of brain injury in the elderly.

Open brain injury, classification, clinics and diagnostics. Gunshot wounds of the skull and brain, their classification and clinics. First aid for head injury. Medical sorting and scope of medical care during the evacuation stages.

Etiopathogenesis of traumatic spine and spinal cord lesions. Classification. Clinics of various types of damage to the spinal cord and spine, depending on the level of damage. Clinical and instrumental diagnostics. Assessment of changes revealed by auxiliary methods for the diagnosis of traumatic injuries of the spinal cord and spine. Emergency care of patients with traumatic injuries of the spine and spinal cord, basic methods and principles of transport immobilization of patients, depending on the level of injury. Indications for surgical treatment of spinal cord injury. Modern methods of treatment of damage of the spinal cord and spine. Prevention and treatment of complications in acute and remote periods. Rehabilitation treatment of patients.

Gunshot injuries of the spine and spinal cord. Clinical picture and diagnostics. Periods of clinical course. First aid on the battlefield. The volume of medical assistance during the medical evacuation stages.

Multiple injuries of the head, spine and other areas (torso, limbs). Medical assistance in the field and in extreme situations. Features of preparation for evacuation. Non-Transportability Regulations.

Classification of traumatic injuries of peripheral nerves. Clinics. Diagnosis. Emergency care of patients with traumatic peripheral nerve damage. Compression ischemic (tunneling) neuropathy.

Algorithm for determining the tactics of treatment of open and closed peripheral nerve damage. Basic principles and methods of surgery in the peripheral nerve injury, depending on the type, level and mechanism of injury. Principles of rehabilitation of patients in the postoperative period. Features of the course of peripheral nerve injury and surgical treatment in the elderly.

Topic 4.

Polytrauma: features of diagnosis and treatment

Combined and complex brain injury, features of clinics and diagnostics. Principles of providing emergency care to patients with open, combined and complex brain injury at the accident scene and at different stages of evacuation. Auxiliary examination methods for the diagnosis of brain injury. Primary surgical treatment of open penetrating and non-penetrating injuries of the skull and brain. Early and late complications of open brain injury, principles of surgical treatment. Plastics of defects of skull bones.

Topic 5.

Classification, etiology and factors of development of vascular brain diseases.

Classification. Clinics. Etiopathogenesis. Methods for diagnosis of cerebral vascular pathology. Vascular brain diseases requiring surgical treatment. Clinics, diagnosis and treatment of aneurysms, arteriovenous malformations, carotid-cavernous complications in acute and remote periods. Emergency care of patients with acute disorders of the cerebral circulation of hemorrhagic type. Modern methods of surgical treatment of patients with pathology of cerebral vessels. Recovery treatment in the postoperative period. Prevention of vascular brain diseases. Rehabilitation and re-adaptation of patients with pathology of cerebral vessels. Features of etiopathogenesis and course of pathology of cerebral vessels in the elderly. Features of rehabilitation of elderly people after acute disorders of cerebral circulation.

Topic 6.

Physiology and pathophysiology of cerebral and spinal circulation

Types of pathology of the main vessels, manifested by acute and chronic cerebral ischemia. Classification. Etiopathogenesis. The importance of hypertension and other diseases at vascular atherosclerosis as a major factor in the development of cerebral circulation disorders by ischemic type. Clinics, diagnosis and treatment of stenosis, thrombosis and thromboembolism of cerebral vessels. Modern methods of surgical treatment of ischemic brain lesions. Recovery treatment in the postoperative period. Prevention of vascular brain diseases. Rehabilitation and re-adaptation of patients with pathology of cerebral vessels. The main clinical manifestations of vascular pathology of the spinal cord. Diagnosis. Methods of surgical treatment.

Topic 7.

Modern methods of diagnosis of vascular diseases of the brain and spinal cord.

Ultrasound Doppler Imaging of the main vessels of the head and neck.

Spiral computed tomography (SCT) of the brain in angio-mode and with contrast enhancement. Indications and contraindications.

Magnetic resonance imaging of the brain in angio-mode and contrast enhancement. Indications and contraindications.

Selective cerebral angiography. Indications and contraindications.

Topic 8.

Modern methods of neuroradiology.

Interventional neuroradiology. Endovascular methods of research in neurosurgery. Subtraction selective angiography for arterial aneurysms, arterio-venous malformations, carotid-cavernous fistulas. Endovascular embolization with AA microspiral, AVM embolization. Endovascular treatment of carotid-cavernous

fistulas, endovascular embolization of the vascular network of brain tumors using embolizing materials.

Topic 9.
Treatment of CNS vascular disease.

Basic principles of treatment of vascular diseases of the central nervous system. Indications and contraindications to the surgical treatment of hemorrhagic Acute Cerebrovascular Event. Types of surgery - removal of stroke-hematoma, drainage of the cerebral ventricular system. Indications and contraindications to surgery for ischemic Acute Cerebrovascular Event. Angioplasty surgery by stenting of the main vessels of the head and neck.

Transcranial and endovascular surgery for AA, AVM and carotid-cavernous fistulas. Endovascular embolization with AA microspirals. Endovascular embolization with the use of embolizing AVM materials, detachable cylinders, carotid-cavernous fistulas.

Topic 10.
Minimally invasive treatment methods - endoscopic, endovascular techniques.

Endoscopic methods of treatment in neurosurgery. Indications and contraindications. Endoscopic cryoneurodestruction. Endovascular methods of examination in neurosurgery. Subtraction selective angiography for arterial aneurysms, arterio-venous malformations, carotid-cavernous fistulas. Endovascular embolization with AA microspiral, AVM embolization. Endovascular treatment of carotid-cavernous fistulas. Endovascular embolization of the vasculature of brain tumors using embolizing materials.

Topic 11.
Classification, etiology and modern methods of diagnostics of neuro-oncological diseases.

Classification. Clinics. Diagnosis. Pathophysiological mechanisms of hypertension formation. Brain and focal symptoms. Pathogenesis of primary and secondary symptoms of brain tumors. Significance of auxiliary examinations (ophthalmologic examination, craniography, ultrasound, EchoEG, EEG, pneumoencephalography, angiography, computed tomography, MRI, SPECT) in the diagnosis of brain tumors. Principles of surgical treatment of brain tumors depending on histostructure and localization. Radical and palliative surgeries, their principles.

Classification. Features of the clinics depending on the location of the tumor and the nature of its growth. Modern methods of diagnosis of tumors of the spinal cord. Significance of additional methods in the examination of patients with spinal cord tumors and differential diagnosis of this pathology. Methods of surgical treatment of spinal cord tumors. Laminectomy technique. Prevention of complications of

tumors of the spinal cord (urosepsis, sepsis, bedsores). Recovery treatment in the postoperative period. Rehabilitation of patients after removal of spinal cord tumors.

Topic 12.

Clinics, diagnosis, treatment of hydrocephalus.

Hydrocephaly. Pathogenesis. Clinics. Diagnosis. Classification. Modern methods and principles of surgical treatment of hydrocephalus. Basic types of liquid shunt operations, demonstrations for their execution and method of performance. First aid for shunt dysfunction. Rehabilitation and social re-adaptation of patients.

Topic 13.

Modern methods of combined treatment of neuro-oncological diseases.

Combined and radiosurgical treatment of brain tumors. Emergency care of acute intracranial hypertension syndrome and dislocation syndromes. Rehabilitation and re-adaptation of patients after surgery for brain tumors.

Topic 14.

Curation of patients. Analysis of medical histories.

Topic 15.

General principles of treatment and examination of disability of patients with pathology of the nervous system.

The use of quality of life scales (Karnovsky, Rankin) to evaluate the results of surgical treatment of patients with pathology of the central nervous system. Objective and subjective evaluation of the results of treatment of patients with CNS pathology using the SF-36 questionnaire. Rehabilitation and social re-adaptation of patients with pathology of the central nervous system.

DESCRIPTION OF ACADEMIC COURSE

Name of indicators	Subject area, training direction, education level	Characteristics of academic discipline	
		full-time education	partial-time education
Credits 4	Direction of preparation field of study 22 «Healthcare» (code and name)	Full-time	
Total hours - 120	Specialty: 222 «Medicine» (code and name)	year of training:	
		6th	th
		Semester	
		11 th,	12 th
		Lectures	
		Practical, seminar	
		20 hours	
Weekly hours for full-time education, classroom - 20 student individual work - 100	the second (master's) level specialist	Laboratory	
		hours	hours
		Independent work	
		100 hours	hours
		Individual tasks: hours	
		Type of control: credit	

Discipline Structure "Current Issues of neurosurgery"

Topic	Number of hours			Individual. CPC
	Lectures	Practical classes	bid	
Topic 1. Anatomical and physiological features of the central and peripheral nervous system	-	2	10	<i>During the cycle – review of scientific literature on the topic. Preparation of abstracts, reports.</i>
Topic 2. Methods of examination of patients with pathology of the nervous system	-	2	10	
Topic 3. Current approaches in the treatment of traumatic brain and spinal cord injury	-	2	6	
Topic 4 Polytrauma: features of diagnosis and treatment	-	-	6	
Topic 5. Classification, etiology and factors of development of vascular brain diseases	-	2	6	
Topic 6. Physiology and pathophysiology of cerebral and spinal circulation	-	-	6	
Topic 7. Modern methods of diagnosis of vascular diseases of the brain and spinal cord	-	2	6	
Topic 8. Modern methods of neuroradiology	-	-	6	
Topic 9. Treatment of CNS vascular disease	-	2	6	
Topic 10. Minimally invasive treatment methods - endoscopic, endovascular techniques	-	-	6	
Topic 11. Classification, etiology and modern methods of diagnostics of neuro-oncological diseases	-	2	6	
Topic 12. Clinics, diagnosis, treatment of hydrocephalus	-	-	6	
Topic 13. Modern methods of combined treatment of neuro-oncological diseases.	-	2	10	
Topic 14. Curation of patients. Analysis of medical histories	-	2	10	
Topic 15. General principles of treatment and examination of disability of patients with pathology of the nervous system	-	1		

<i>Credit lesson</i>		1		
<i>Total hours - 120 (4 credits)</i>	-	20	100	

Topics of practical classes

No.	Topic	Hours
1	Anatomical and physiological features of the central and peripheral nervous system.	2
2	Methods of examination of patients with pathology of the nervous system.	2
3	Current approaches in the treatment of brain and spinal cord injury.	2
4	Classification, etiology and factors of development of vascular brain diseases.	2
5	Modern methods of diagnostics of vascular diseases of the brain and spinal cord.	2
6	Treatment of CNS vascular disease.	2
7	Classification, etiology and modern methods of diagnostics of neuro-oncological diseases.	2
8	Modern methods of combined treatment of neuro-oncological diseases.	2
9	Curation of patients. Analysis of medical histories.	2
10	General principles of treatment and examination of temporal disability	1
	Credit lesson	1
Total		20

Individual work

No.	Topic	Hours
1	Preparation for practical classes	70
2	Poliytrauma, features of diagnostics and treatment	6
3	Physiology and pathophysiology of cerebral and spinal circulation	6
4	Modern methods of neuroradiology	6
5	Minimal invasive methods of treatment - endoscopic, endovascular techniques.	6
6	Clinic, diagnosis, treatment of hydrocephalus	6

Total		100
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Individual tasks

RECOMMENDED TOPICS OF ESSAYS ON NEUROSURGERY

1. Diffuse axonal brain damage.
2. Brain injury in alcoholic intoxication.
3. Brain injury of newborns.
4. Modern methods of treatment of brain tumors.
5. Hydrocephaly (diagnosis, treatment).
6. Craniopharyngiomas (diagnosis, treatment).
7. Significance of MRI in neuro-oncology.
8. The role of the stereotactic method in neurosurgery.
9. Neurotransplantation.
10. Pain surgery.
11. Current approach to surgical treatment of spinal cord and spine injury.
12. Neurosurgery.
13. Minimally invasive methods in neurosurgery.
14. Labor injury of the shoulder plexus.
15. Ophthalmic manifestations of neurosurgical pathology.
16. Features of clinics, diagnostics and treatment of cervical osteochondrosis.
17. Urological complications of spinal injury. Their prevention and treatment.
18. Nonspecific inflammatory processes of the brain and spinal cord. Clinic, diagnosis, treatment.
19. Pathology of the cerebral vessels accompanied by acute disorders of the cerebral circulation.
20. Combined brain injury. Features of sorting patients and assisting them at different stages.
21. Congenital malformations of the CNS and their surgical treatment
22. Cerebral palsy. Clinics, diagnosis, and surgical treatment.

The final semester control is carried out after completing the study of the discipline in the form of current control and credit; it includes assessment the student's mastering of the course material of optional course "Current issues of neurosurgery" based on the results of the implementation of all types of educational work provided by the discipline program.

During the assessment of mastering each academic topic, the student is given a grade by national 4-point scale. The mastering of the topic (current educational activity) is controlled in practical classes according to specific objectives and during the individual work of the teacher with the students.

The following methods are used to determine the level of student preparation:

1. Answers to control questions;
2. Computer tests;
3. Solving situational tasks and tasks from the licensing exam "Step-2";

4. Evaluation and interpretation of clinical and laboratory and instrumental examinations (directly in diagnostic and treatment units, in training classrooms, at patient's beds);
5. Control of mastery of practical skills and elements of medical technique during curation of the patient.

The total score for the current semester is defined as the arithmetic mean of the national grades for each class and is listed in a multicolor scale according to the table:

The minimum number of points that student must earn for the current academic activity in order to be admitted to the credit is 120 by ECTS scale.

4- point scale	200- point scale	4- point scale	200- point scale	4- point scale	200- point scale
5	200	4.22-4,23	169	3.45-3,46	138
4.97-4,99	199	4.19-4,21	168	3.42-3,44	137
4.95-4,96	198	4.17-4,18	167	3.4-3,41	136
4.92-4,94	197	4.14-4,16	166	3.37-3,39	135
4.9-4,91	196	4.12-4,13	165	3.35-3,36	134
4.87-4,89	195	4.09-4,11	164	3.32-3,34	133
4.85-4,86	194	4.07-4,08	163	3.3-3,31	132
4.82-4,84	193	4.04-4,06	162	3.27-3,29	131
4.8-4,81	192	4.02-4,03	161	3.25-3,26	130
4.77-4,79	191	3.99-4,01	160	3.22-3,24	129
4.75-4,76	190	3.97-3,98	159	3.2-3,21	128
4.72-4,74	189	3.94-3,96	158	3.17-3,19	127
4.7-4,71	188	3.92-3,93	157	3.15-3,16	126
4.67-4,69	187	3.89-3,91	156	3.12-3,14	125
4.65-4,66	186	3.87-3,88	155	3.1-3,11	124
4.62-4,64	185	3.84-3,86	154	3.07-3,09	123
4.6-4,61	184	3.82-3,83	153	3.05-3,06	122
4.57-4,59	183	3.79-3,81	152	3.02-3,04	121
4.54-4,56	182	3.77-3,78	151	3-3,01	120

4.52- 4,53	181	3.74- 3,76	150	Менше 3	Недостатньо
4.5- 4,51	180	3.72- 3,73	149		
4.47- 4,49	179	3.7-3,71	148		
4.45- 4,46	178	3.67- 3,69	147		
4.42- 4,44	177	3.65- 3,66	146		
4.4- 4,41	176	3.62- 3,64	145		
4.37- 4,39	175	3.6-3,61	144		
4.35- 4,36	174	3.57- 3,59	143		
4.32- 4,34	173	3.55- 3,56	142		
4.3- 4,31	172	3.52- 3,54	141		
4.27- 4,29	171	3.5-3,51	140		
4.24- 4,26	170	3.47- 3,49	139		

The credit is conducted by a lecturer of the academic group at the last lesson of the discipline and involves taking into account the current educational activity and checking the mastering of all topics of the discipline. The score is determined in points from 120 to 200 and with the mark - "credited", "not credited".

After completing the discipline study, the person responsible for the organization of teaching and methodical work at the department or the teacher would put the score in the student's record book and fill in the data of students' success in the discipline in the form U-5.03A - credit.

METHODICAL PROVISION OF THE DISCIPLINE

14. Methodical support

1. Work curriculum of the discipline;
2. Plans for practical classes and independent work of students;
3. Methodical development of practical classes for teachers;
4. Methodical instructions for practical classes for students;
5. Methodical materials for student independent work;
6. Test and control tasks for practical classes;
7. Questions and tasks to control the assimilation of the section;

8. Tasks to test practical skills during the test.

The list of technical training tools, visual aids and methodological materials for control of students' knowledge used by the department during the educational process.

No.	Equipment and technical means	Application area	Number
1	Multimedia projector	Practical exercises	1
1	Slide-projector "3M"	Practical exercises	1
1	Slide-projector "Sketch"	Practical exercises	
4	Slides	Practical exercises	250
5	Training Tables	Practical classes	95
6	X-ray images of patients, images of CT, MRI, angiograms	Practical classes	more than 1000
7	Modern equipment for diagnostics of neurosurgical pathology belonging to the clinical base	Practical classes	

7.5. Set of situational tasks for each thematic session.

7.6. Computer Neurosurgery Test Program.

11. Recommended literature list

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Brain tumor. Hydrocephalus

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Pathology of vessels of the brain and spinal cord

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http://www.knmu.kharkov.ua/index.php?option=com_content&view=article&id=218%3A2011-05-18-13-03-01&catid=7%3A2011-05-05-09-09-08&Itemid=27&lang=uk
2. Сторінка кафедри у соціальній мережі: <https://www.facebook.com/neurokhnmu>
3. Сайт кафедри: http://neurohirurg.umi.ru/kollektiv/kollektiv_kafedry_nejrohirurgii/
4. Сторінка кафедри з курсом в Moodle
<http://31.128.79.157:8083/course/view.php?id=395>

5. Сторінка кафедри з курсом в Moodle
<http://31.128.79.157:8083/enrol/index.php?id=2324>
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