FACULTY OF STOMATOLOGY

STUDY PROGRAM 0911.1 STOMATOLOGY

DEPARTMENT OF NEUROLOGY NO. 2

APPROVED
at the meeting of the Committee for Quality Assurance and Curriculum Evaluation, Faculty of Stomatology
Report No. 4 from 27.04.2024
Chairman of the Committee, PhD, professor
Burlacu Valeriu _____

APPROVED
at the meeting of the Faculty Council, Faculty of Stomatology
Report No. 7 from 21.05.2024
Dean of the Faculty of Stomatology,
MD, PhD, associate professor
Solomon Oleg _____

FACULTATEA DE STOMATOLOGIE

APPROVED
at the meeting of the Departments of Neurology No. 2
Report No. 10 from 18.04.2024
Head of the Department of Neurology No. 2,
Acad., MD, PhD, Professor
Groppa Stanislav _____

CURRICULUM

DISCIPLINE **NEUROLOGY**

Integrated studies

Course type: **Compulsory**

Curriculum elaborated by the team of authors:

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Chișinău, 2024

I. PRELIMINARIES

- **Overview of the discipline: the role of discipline in formation of specific skills within the vocational / specialty training program**

Neurology holds an important place among other medical disciplines. Neurology has long been considered a specialty with accurate diagnostic results, but with limited therapeutic possibilities. This has changed significantly in recent decades. Many neurological conditions currently have effective treatment. Knowing the basics of clinical neurology is extremely important for the stomatologists. It is extremely important to know the role of the nervous system in norm and in pathology, approaching especially the diseases of medical-social importance, such as stroke, demyelinating disorders, peripheral nervous system disorders (radiculopathies, polyneuropathies) and other diseases that are frequently encountered in medical practice. The neurological training within the faculty offers the necessary knowledge background in order to provide medical assistance in case of neurological emergencies: coma caused by cerebral strokes, neuroinfections, craniocerebral traumas, status epilepticus as well as pain syndromes of various origins (trigeminal neuralgia, discogenic radiculopathy, etc.). Teaching neurology at the Faculty of Stomatology also has some spesific features. Particular attention is paid to the study of cranial nerves and their pathology, such as trigeminal and glossopharyngeal neuralgia, facial paralysis, prosopalgia. A more detailed approach is needed in the study of the afferent and vegetative system of the face and the oral cavity.

The oral health in neurological patients includes aspects of interference between complex neurophysiological and metabolic mechanisms in the process of evolution of the neurological pathology. These pathological mechanisms are of great importance due to increased incidense and prevalence of dental lesions underlying various vicious circles (intra- and extrasystemic), which imply cognitive psicho-emotional systems at functional and metabolic levels. From these considerations emerges the need to study and research the multisystemic and multifunctional interrelation of the dental and neurological system, the action of congenital and acquired risk factors in order to process methods of prophylaxis and treatment of oral diseases. Thus, the problem of dento-maxillary pathology in people with neurological disorders is one of the major concerns of modern neurostomatology.

Nowadays neurostamatology is considered to be one of the clinical disciplines with an outstanding scientific development. The accomplished progress in the field of imagery revolutioned the diagnostic possibilities and, therefore, the appropriate treatment of many diseases. The continues gaining of new data regarding the bioactive substances – neurotransmitters and neuromodulators, as well as elucidating the role of brain chemical imbalances in the genesis of neurological diseases greatly modify the conceptual content of clinical neurology.

At the contemporary stage of the medical techniques development, paraclinical exploration methods have become an integral part of the process of diagnosing neurostomatological diseases. Thus, the doctor must not only know the methods of examining the patient, but also apply the appropriate instrumental and laboratory investigations in order to locate the level of lesion and identify the nature of the pathological process. The treatment of neurological diseases is becoming more and more differentiated, which requires a good orientation of the doctor in choosing the appropriate therapy.

- **Curriculum mission (purpose) of the professional training**

The main goal of the course is to gain knowledge regarding the role of the nervous system in norm and in pathology, approaching especially the diseases of medical-social importance, such as stroke, craniocerebral trauma, facial pain, paroxysmal conditions and other diseases that are frequently encountered in medical practice. The neurological training within the faculty offers the necessary knowledge background in order to provide medical assistance in case of neurological emergencies:

coma caused by cerebral strokes, neuroinfections, craniocerebral traumas, status epilepticus as well as **pain syndromes of various origins (trigeminal neuralgia, other types of facial pain, etc.).**

Studying the discipline will ensure:

a) acquiring practical skills of examining a neurological patient in order to recognize pathological signs with their semiotic localization assessment and identifying the nature of the pathological process;
b) adequate evaluation of the information obtained from the additional investigations: electrophysiological, radiological, biochemical, immunological etc.
c) making the clinical diagnosis of neurological diseases frequently encountered in the medical practice, which offers the possibility of introducing appropriate treatment and effective prophylactic measures;
d) knowing various alternations of the nervous system within different somatic diseases, their early diagnosis, treatment, prophylaxis and prognosis.

The didactic process of teaching neurology within the Faculty of Stomatology has the following aims and objectives:

a) learning practical dexterities for the examination of the neurological patient in order to recognize the pathological signs with their semiotic evaluation and to locate and identify the character of the pathological process.
b) adequate evaluation of the information obtained within the additional investigations: neurophysiological, neuroimaging, biochemical, immunological and others.
c) establishing the clinical diagnosis of neurological diseases which are frequently encountered in medical practice, in order to initiate an adequate treatment and effective prophylactic measures.
d) knowing various changes of the nervous system in somatic diseases, their early diagnosis, treatment, prophylaxis and prognosis.

- **Teaching languages:** Romanian, Russian, English, French.
- **Beneficiaries:** students of the fourth year, Faculty Medicine nr.1 and 2, Specialty of Medicine.

II. DISCIPLINE MANAGEMENT

Code of discipline		S.07.O.083	
Name of discipline		**Neurology**	
Responsible for discipline		Acad., MD, PhD, Professor **Stanislav Groppa**	
Year	**IV**	Semestres	**14**
Total hours, including:			**90**
Course	**14**	Practical / laboratory work	**21**
Seminars	**14**	Individual work	**48**
Assessment type	**CD**	Number of credits	**3**

III. TRAINING OBJECTIVES OF THE DISCIPLINE

At the end of the course, the student will be able to:

- ***At the level of knowledge and understanding:***
  - To define the theoretical bases of contemporary neurology;
  - To identify the anatomical and functional features of the nervous system;
  - To highlight topographically the place and the importance of different anatomical structures and areas of the nervous system involved in the performing of specific functions and to define neurological syndromes;
  - To establish the topical diagnosis based on defined clinical syndromes;
  - To report on the etiology, pathogenesis, clinical manifestations, diagnosis, treatment principles and prophylaxis of neurological disorders.

- ***At the level of application:***
  - To collect the anamnesis and evaluate the data about the functions of the nervous system;
  - To perform the special neurological examination according to the systems;
  - To apply various diagnostic methods in neurological disorders;
  - To evaluate the results of the clinical tests and additional diagnostic investigations in order to appreciate the functional state of the nervous system;
  - To apply examination methods in emergency patients.
- ***At the level of integration:***
  - To assess the importance of neurology in the context of Medicine and integration with related medical disciplines;
  - To appreciate the evolution of physiological processes and the etiology of pathological processes of the nervous system;
  - To observe the pathological processes and to apply the right methods of investigation, treatment and prophylaxis of the nervous system disorders;
  - To evaluate the results of diagnostic methods in neurological diseases;
  - To make optimal decisions while providing emergency assistance in critical situations;
  - To develop scientific research projects in the field of neurology.

IV. PRIOR CONDITIONS AND REQUIREMENTS

Neurology is a clinical medical discipline, which study will allow the development of the necessary skills to support a correct diagnosis based on the anamnesis, clinical and paraclinical examination, acquiring the necessary terminology and skills to highlight neurological emergency cases and frequent neurological diseases, as well as choosing the right treatment.

A forth-year student needs the following:

- to know the teaching language;
- preclinical skills;
- clinical skills;
- digital skills (being able to use the internet, to process the documents, electronic tables and presentation, using graphics software);
- communication and teamwork skills;
- the ability to communicate with patients;
- qualities – intelligence, wisdom, tolerance, compassion, autonomy.

V. THEMES AND ORIENTATIVE DISTRIBUTION OF HOURS

Courses (lectures), practical / laboratory work/ seminars and individual work

No.	Theme	Number of hours			
		Lectures	Practical lessons		Individual work
1.	Neurostomatology: generalities. Neurological examination of the patient. Main neurological syndromes. Methods of examination.	2	2	2	6
2.	Cranial nerves semiology. Clinical aspects of pain in dentistry.	2	2	2	7
3.	Cerebrovascular disease. Stroke.	2	2	2	7
4.	Paroxysmal states in neurology. Seizures and epilepsy. Syncope. Disturbances of consciousness.	2	2	2	7
5.	Neuroinfections.	2	2	2	7
6.	Traumatic brain injury.	2	2	2	7
7.	Brain tumors. Intracranial hypertension syndrome.	2	2	2	7
Total		**14**	**14**	**14**	**48**

VI. PRACTICAL SKILLS ACQUIRED AT THE END OF THE COURSE

A. Mental state
1. Level of alertness
2. Language function (fluency, comprehension, repetition and naming)
3. Memory (short-term and long-term)
4. Numeracy
5. Assessment of cognitive status using the MMSE (Mini Mental State Examination) scale

B. Cranial nerves
1. Examination of olfactory function
2. Examination of visual function (visual acuity, visual field)
3. Examination of oculomotor function (position of the eyeballs, presence of convergent/divergent strabismus, uni-, bilateral ptosis, anisocoria, motility of the eyeballs, photopupillary reaction)
4. Examination of tactile sensitivity and pain of the face
5. Examination of facial muscle strength (facial expression muscles)
6. Examination of vestibulo-cochlear function (vertigo, hypoacusis, nystagmus, Romberg position)
7. Examination of swallowing, speech articulation, phonation, palatal and tongue movement, pharyngeal reflex, velopalatine
8. Examination of neck movements (head rotation, shoulder raise)

C. Motor function
1. Examination of stance and gait (normal gait, on toes and heels, tandem gait)
2. Examination of coordination function (fine finger movements, diadochokinesis, index finger-nose and heel-knee test, nystagmus)
3. Evidence of involuntary movements

4. Examination of muscle strength (upper and lower barbell test, shoulder abduction, elbow flexion/extension, hand flexion/extension, finger flexion/extension/abduction, thigh flexion/extension, knee flexion/extension, plantar flexion/extension)
5. Examination of muscle tone

D. Reflexes
1. Osteotendinous reflexes (biceps, triceps, carporadial, patellar, achilles)
2. Pathological reflexes (Hoffman, Babinski sign)
3. Oral automatism reflexes: Marinescu-Radovici, trunk reflexes

E. Sensitivity
1. Examination of tactile and pain sensitivity
2. Examination of proprioception and vibration sense

F. Meningeal signs
1. Occipital muscle damping
2. Kernig sign
3. Brudzinskii sign: upper, middle, lower

G. Elongation signs
1. Neri
2. Lasegue

H. Examination of the coma patient
1. pupils
2. position of eyeballs
3. corneal reflex
4. facial symmetry
5. reaction to painful stimuli
6. osteotendinous reflexes
7. pathological signs
8. muscle tone
9. meningeal signs
10. Glasgow scale

VII. REFERENCE OBJECTIVES AND CONTENT UNITS

Objectives	Content units
Theme 1. Neurostomatology: generalities. Neurological examination of the patient. Major neurological syndromes. Examination methods.	
• to define neurostomatology and the importance of study • to know the anatomy of CNS, • to know the notion of major neurological syndromes and their classification, • to know the anatomical and physiological features of sensitivity, • to know the clinical manifestations of impaired superficial and deep	The importance of neurostomatology. Anatomy of the CNS. Major neurological syndromes. Definition of sensitivity. The pathways of superficial sensitivity and deep sensitivity. Semiology of sensitivity disorders,

Objectives	Content units
sensitivity, • to assess the results of objective methods for examining superficial, deep and complex sensitivities, • to know the anatomical and physiological features of the central and peripheral motor neuron, • to apply practically the theoretical knowledge about the anatomy and physiology of the pyramidal system, • to define the clinical syndromes affecting central and peripheral motor neuron, • to differentiate the lesion of the central motor neuron (central paralysis) and the peripheral motor neuron (peripheral paralysis), • to know the technique of the voluntary motility exam, • to define the anatomical and physiological features of the extrapyramidal system, • to know the semiology of cerebellar damage: ataxia, dysmetry, asynergy, adiadohokinesia, intentional tremor, speech and writing disorders, • to know the methodology of the clinical examination of the cerebellum.	sensory syndromes. Sensitivity examination method. The notion of the motor unit and the pathay of voluntary motility. The notion of paresis and paralysis. Clinical symptoms of central motor neuron syndrome. Nosological entities manifested by central motor neuron and peripheral motor neuron syndromes. Anatomophysiological features of the extrapyramidal system. The cerebellum: anatomical and physiological principles of constitution, clinical examination, clinical manifestations of damage. Examination methods: CT, MRI, EEG, PE (method, utility).
Theme 2. Semiology of cranial nerves. Clinical aspects of pain in dental medicine..	
• to know the algorithm for diagnosing the symptoms and signs of the cranial nerves lesions, • to apply in clinical practice the knowledge gained during preclinical objects about the anatomy and physiology of cranial nerves, • to know the techniques of clinical examination of cranial nerves function, • to know the definition of pain and the afferent pathways of pain, the clinical aspects of pain, • to know the antinociceptive pathways and the pain control gate theory, • to define the general principles of pain treatment, • to define facial pain of odontogenic origin, • to know the classification of facial pain of odontogenic origin, • to apply in clinical practice the knowledge gained during preclinical objects about the anatomy and physiology system of the maxillofacial nerves, • to define facial pain of non-odontogenic origin, • to know the classification of facial pain of non-odontogenic origin, • to possess skills for the differentiated diagnosis of odontogenic and non-odontogenic facial pain, • to know the clinical manifestations of primary and secondary trigeminal and glossopharyngeal neuralgia, • to know the treatment of facial pain of non-odontogenic origin. • gaining personal clinical experience regarding cranial nerves pathology.	Anatomical and physiological features of the brainstem. Classification criteria of the cranial nerves. Generalities of constitution and functioning of the sensory cranial nerves. Generalities of constitution and functioning of the motor cranial nerves. Semiology of cranial nerve injury. Definition of pain and related pathways of pain, clinical aspects of pain. Antinociceptive pathways. Pain control gate theory. General principles of pain treatment. Notions about facial pain of odontogenic and non-odontogenic origin. Classification of facial pain of odontogenic origin. Classification of facial pain of non-odontogenic origin. Differentiated diagnosis be of odontogenic and non-odontogenic facial pain. General characteristic of non-odontogenic facial pain syndromes. Clinical manifestations of primary and

Objectives	Content units
	secondary trigeminal neuralgia. Clinical manifestations of primary and secondary glossopharyngeal neuralgia.
Theme 3. Cerebrovascular disease. Stroke.	
• to define stroke and to know the classification of stroke, • to define non-modifiable and modifiable risk factors and their significance for the onset of stroke, • to know the clinical manifestations of stroke, • to interpret imaging changes of stroke on computer tomography and nuclear magnetic resonance images, • to define the notion of "therapeutic window" and its significance in the management of the patient with acute stroke, • to report on the principles of drug and mechanical thrombolysis, its indications and contraindications, • to know the management at the pre- and intra-hospital stage, • to present knowledge of primary and secondary prevention of cerebrovascular diseases, • to know the clinical manifestations, complementary investigations and treatment of intracranial venous thrombosis.	Classification of stroke. Pathogenesis of ischemic stroke. Pathogenesis of hemorrhagic stroke. The clinical picture. The notion of "therapeutic window". Paraclinical investigations. Specific treatment in the acute period: drug and endovascular treatment. Treatment during the acute period in the patient outside the therapeutic window or in case of contraindications for specific treatment. Neurorehabilitation treatment. Secondary prophylaxis of stroke. Intracranial venous thrombosis: clinical manifestations, complementary investigations and treatment.
Theme 4. Paroxysmal conditions in neurology. Epileptic seizures and epilepsy. Syncopal states. Disorders of consciousness.	
• to define the normal and altered state of consciousness, • to know the anatomical substrate of consciousness, • to know the etiopathogenetic mechanisms of coma, • to demonstrate the skills of examination of the unconscious patient, • to apply the obtained information to differentiate different states of consciousness disorder, • to interpret the results of imaging and laboratory investigations in the diagnosis of comatose conditions, • to understand the usefulness of the Glasgow scale in assessing the state of consciousness, • to know the definition and classification of syncopes, • to define seizures, • to define epilepsy, • to know the classification of seizures, • to understand the mechanisms of epileptogenesis, • to know the clinical manifestations of epilepsy, • to demonstrate the ability to make a differential diagnosis of the loss of consciousness states, • to explain the electrophysiological changes of generalized and focal seizures, • to define status epilepticus, • to know the treatment algorithm for status epilepticus, • to know the principles and algorithm of epilepsy treatment.	Definition of coma. Etiopathogenesis of comas. Classification of comas. Differential diagnosis of neurogenic and metabolic coma. Clinical examination of the unconscious patient. Glasgow scale. Paraclinical diagnosis. Principles of treatment in comatose states. Classification and treatment of syncopes. Classification of epilepsy and epileptic seizures. Clinical manifestations of generalized and focal epileptic seizures. Electrophysiological manifestations of generalized and focal epileptic seizures. Principles and algorithm of epilepsy treatment. Status epilepticus. Intensive treatment.
Theme 5.	

Objectives	Content units
Neuroinfections.	
• to define meningitis and encephalitis, • to know the principles of classification of meningitis and encephalitis • to know the causative agents of bacterial and aseptic meningitis, • to know the etiology of encephalitis, • to understand the pathogenesis of meningitis and encephalitis, • to know the meningitis triad, • to know the clinical manifestations of meningitis and encephalitis, • to demonstrate skills in the correct appreciation and interpretation of meningeal signs, • to know the treatment methods of neuroinfections.	Definition of meningitis. Classification. Etiology. Pathogenesis. Clinical manifestations. Acute bacterial meningitis. Aseptic meningitis. Definition of encephalitis. Classification. Etiology. Pathogenesis. Neurological manifestations in neuroinfections, meningitis triad. Paraclinical diagnosis of neuroinfections. Treatment of neuroinfections.
Theme 6. Craniocerebral trauma	
• to define the notion of craniocerebral trauma, • to know the theories of pathogenesis and the biomechanisms of craniocerebral traumas, • to know the classification of craniocerebral traumas (types, severity, character), • to know the classification of cranial bone fractures (skull cap, base - closed, open, penetrating), • to know the clinical forms and the manifestations of the craniocerebral traumas, • classification of consciousness disorders in craniocerebral trauma, Glasgow scale, • to apply the classification and methods of paraclinical investigations in establishing the diagnosis of craniocerebral trauma, • to know the methods of treatment in craniocerebral traumas depending on the clinical form.	Generalities. Classification and pathogenesis of craniocerebral traumas. Open craniocerebral trauma. Craniocerebral injuries by firearm. Classification of cranial bone fractures. Cranial wounds. Principles of primary processing of cranial wounds. Cerebral contusion. Localized traumatic brain delaceration. Traumatic coma. Intracranial posttraumatic compressive processes. Extradural hematoma. Subdural hematoma. Intracerebral hematoma. Dislocation syndrome and brainstem involvement. Surgical treatment.
Theme 7. Brain tumors. Intracranial hypertension syndrome.	
• to define the notion of expansive process, • to know the etiopathogenesis of nervous system tumors, • to know the classification of the nervous system tumors, • to know the clinical manifestations of tumors depending on their location, • to know the intracranial hypertension syndrome, • to know the methods of treatment of the nervous system tumors,	Classification of brain tumors. Intracranial hypertension syndrome. Engagements and cerebral hernias. Metastatic tumors. Tumor treatment.

VIII. PROFESSIONAL COMPETENCES (SPECIFIC (SC) AND TRANSVERSAL (TC)) AND LEARNING OUTCOMES

✓ **Professional competences (specific) (SC)**

- **CP1**. Thorough knowledge of the particularities of structure, development and functioning of the nervous system in various physiological and pathological states.

- **CP2**. Carrying out various practical maneuvers and procedures in order to manage professional activities specific to Neurology based on knowledge in fundamental sciences.
- **CP3.** Elaboration of the diagnostic, treatment and rehabilitation plan in various pathologies of the nervous system and selection of the appropriate therapeutic procedures, including the provision of emergency care.
- **CP4.** The use of medical techniques, instrumental and laboratory investigations and digital technologies to solve specific tasks of the therapeutic conduct in the neurological patient.
- **CP5.** Planning, coordinating and carrying out health promotion activities and prophylactic measures to improve health at individual and community level.
- **CP6.** Assessing and ensuring the quality of medical services in relation to associated maneuvers, procedures and treatment.

✓ **Transversal competences (TC)*:***

- **CT1.** Responsible execution of professional tasks with the application of the values and norms of professional ethics, as well as the provisions of the legislation in force. Promoting logical reasoning, practical applicability, evaluation and self-evaluation in decision making.
- **CT2.** Carrying out activities and performing specific teamwork roles in various medical institutions. Promoting the spirit of initiative, dialogue, cooperation, positive attitude and respect for others, empathy, altruism and continuous improvement of one's activity.
- **CT3.** Objective self-assessment of the need for continues vocational training in order to provide quality services and to adapt to the dynamics of health policy requirements and for personal and professional development. Effective use of language skills, knowledge of information technologies, research and communication skills.

✓ **Learning outcomes**

- To know the definitions and classifications of the pathologies of central nervous system.
- To understand etiopathogenesis of central nervous system diseases.
- To possess the ability of neurological examination of the patient with the disease of central nervous system based on mastered clinical procedures (disease history, physical examination, establishment of topographical diagnosis).
- To define indications and contraindications of different methods of diagnosis in neurolgy.
- To manifest the ability to elaborate an additional diagnostic plan (laboratory, electrophysiological and imaging) of the patient with a neurological disease and the capacity to argue the diagnosis based on perfomed investigation.
- To know the treatment principles of different neurological diseases in accordance with modern-day exigencies.
- To know the principles of prophylaxis of nervous system diseases and to perform health promotion activities and preventive measures for health improvement on individual and community level.
- To know the basic principles of rehabilitation of patients with nervous system diseases.
- To realize the importance of studying neurology in the processe of traning the future doctors that should be capable to define primary disorders of the nervous system, as well as the neurological disorders in other somatic diseases.
- To possess the ability of analysis and synthesis of the clinical activity results in the scientific research projects.
- To possess the ability to work in a team, based on initiative spirit, dialogue, cooperation, positive attitude and respect towards others.

IX. STUDENT'S INDIVIDUAL WORK

Nr.	The expected product	Achievement strategies	Evaluation criteria	Deadline
1.	Work with information sources	Careful reading of the lecture or material from the handbook on the current topic. Reading the questions on the topic, which require reflection on the specific subject. Familiarization with the list of additional informational sources on the specific subject. Choosing the information source on the specific topic. Careful reading of the entire text and writing down the main points. Formulation of generalizations and conclusions regarding the importance of the theme / subject.	The ability to extract the essential points; interpretative skills; workload.	During the module
2.	Work with the patient	Communication and examination of the patient with neurological pathology according to the thematic plan: interrogation, objective neurological examination, systematization of the gained information in clinical syndromes, establishment of topographic diagnosis. Establishing an investigation plan. Analysis of the obtained results. Argumentation of diagnosis. The choice of non-pharmaceutical and pharmaceutical treatment. Making conclusions at the end of each lesson. Evaluation of the learning outcomes and appreciation of their achievements. Selection of additional information, using electronic addresses and additional bibliography.	Workload, solving clinical cases, tests the ability to make conclusions.	During the module
3.	Appliement of different learning thechniques	Situational problems Projects	Level of scientific argumentation, quality of conclusions, elements of creativity, demonstration of understanding the problem, forming personal attitude.	During the module
4.	Work with on-line	Online self-assessment, study of online materials, expressing own	Number and duration of forum and chat entries, self-assessment results.	During the module

	materials	opinions through forums and chat		
5.	Elaboration and presentation of clinical cases and medical records	Selection of the patient with neurological pathology for the clinical observation record, establishment of the research plan, setting the terms of realization. Establishing the patient for case presentation. PowerPoint - topic, purpose, results, conclusions, practical applications, bibliography.	Workload, level of scientific argumentation, creativity elements, forming personal attitude, consistency of exposure and scientific correctness, graphic presentation, method of presentation.	During the module
6.	Develop and present a research project	Selecting the research project from the list of proposed projects, establishing the research plan, establishing the deadlines. Presentation of the results of the research project. PowerPoint - topic, purpose, results, conclusions, practical applications, bibliography.	Workload, level of scientific argumentation, creativity elements, forming personal attitude, consistency of exposure and scientific correctness, graphic presentation, method of presentation.	During the module

X. METHODOLOGICAL SUGGESTIONS OF TEACHING-LEARNING-EVALUATION

- ***Used teaching and learning methods***

There are various methods and procedures used in teaching Neurology, which are oriented towards efficient learning and reaching the goals of curriculum process. Within the theoretical lessons, along with traditional methods (exposure, conversation, synthesis), modern methods (debate, conference, problem-solving) are also used. Within the practical lessons there are used various forms of individual, formative and group activity, virtual clinical cases, projects. For better learning of the information, different semiotics systems (scientific language, graphic and computer language) and didactic materials (tables, schemes, radiographic, tomographic, MRI, electroencephalographic, electromyography images) are used. Information communication technologies are used during the lessons and extracurricular activities – Power Point presentations.

- ***Recommended learning methods:***
  - **Observation** – Identification of symptoms and physical signs typical for neurological diseases, description of those manifestations.
  - **Analysis** - Imaginary disintegration of an upstanding phenomenon in component parts. Highlighting of the essential elements. Studying each element as part of the whole.
  - **Analysis schemei / figurii** – Selection of required information regarding the studied topic. Recognition of structures and pathological changes, showed in the scheme/diagram, based on acquired knowledge and selected information. Analysis of functions/role of recognized structures.
  - **Comparison** - Analysis of obtained results from a patient with a neurological disease and determination of essential features of the given disease. Analysis of a second patient with the same disease, but with different particularities of evolution. Comparison on these two

patients and highlighting the common features and the differences. Establishing the criteria of distinction. Drawing conclusions

- **Classification** – Identification of structures / processes that need to be classified. Establishing the criteria based on which the classification needs to be done. Distributing the structures / processes in groups depending on the established criteria.
- **Schematic drawing** – Selecion of elements that need to be included in the scheme. Representation of the elements through different symbols/colors and indicating the relation between them. Formulation of a proper title and the legend of used symbols.
- **Shaping –** Identification and selection of necessary elements for shaping the phenomenon. Imagining (graphic, schematic) of the studied phenomenon. Execution of the phenomenon using the developed model. Drawing conclusions, deducted from arguments or statements.

- ***Aplied teaching strategies/technologies***
  ”Brainstorming”, ”Think-pair-show”, ”Multi-voting”, ”Round table”, ”Group interview”, ”Case study”, ”Creative controversy”, ”Focus group technique”.
- ***Assessment methods*** *(including the indication of final mark calculation method)*

✓ **Current**: formative or/and individual control through:

- (a) testing,
- (b) solving situational problems,
- (c) clinical case analysis,
- (d) exam papers,
- (e) reports.

✓ **Final**: oral examl, final test and practical skills.

The final mark will consist of ***annual average*** (average of two test papers (summative assessment: Semiology of the nervous system and Diseases of the nervous system) (quota 0,5), ***practical skills mark*** at patient’s bed (quota 0,3), ***final test mark*** (quota 0,2).

Ways to round up marks at assessement stages

Intermediate marks grid (annual	National gradyng	ECTS
1,00-3,00	**2**	**F**
3,01-4,99	**4**	**FX**
5,00	**5**	**E**
5,01-5,50	**5,5**	
5,51-6,0	**6**	
6,01-6,50	**6,5**	**D**
6,51-7,00	**7**	
7,01-7,50	**7,5**	**C**
7,51-8,00	**8**	
8,01-8,50	**8,5**	**B**
8,51-9,00	**9**	
9,01-9,50	**9,5**	**A**
9,51-10,0	**10**	

The annual average mark and final examination marks (computer test, testing, oral test) will be expressed in numbers according to the grid of marks (see table above), while the final mark will be

expressed in a number with two decimal digits, which will be recorded in the student's report card (gradebook).

Student's unexcused absence at the final examinaton is qualified with "absent" and is equivalent to "0" (zero). The students have the right to retake the failed examination twice.

XI. RECOMMENDED BIBLIOGRAPHY:

A. Compulsory:

1. Harrison`s Neurology in Clinical Medicine. Editor: Stephen L. Hauser; Associate Editor: Scott Andrew Josephson. 2010, 765 p. Varianta electronică a ediției.
2. Gavriliuc M. Examen neurologic. -Ch. : S. N., 2012 ("Tipografia-Sirius"). -140 p.
3. Gavriliuc M. Teste de autoevaluare și autocontrol la neurologie și neurochirurgie, Chișinău: Medicina, 2008. - 432 p.
4. Gherman D. Neurologie și neurochirurgie: manual / D. Gherman, I. Moldovanu, G. Zapuhlâh; Universitatea de Stat de Medicina și Farmacie "Nicolae Testemițanu". – Chișinău: Medicină, 2003. - 528 p.

B. Supplimentary:

1. Groppa, St. *Accidentul Vascular Cerebral: epidemiologie, factori de risc, prevenție. Monografie.*Chişinău: F.E.-P. „TipografiaCentrală", 2020, 212 p.
2. Авакян Г., Гроппа Ст.Нейрофизиологические методы исследования в неврологии. Ch.: Î.S.F.E.-P. „TipografiaCentrală". 2012, 280p.
3. Ianachevici, B. Diagnosticul topografic si etiologic în patologia sistemului nervos: (compendium)/ B. Ianachevici; Ministerul Sanatatii al Republicii Moldova; Universitatea de Stat de Medicina si Farmacie "N. Testemitanu". - Chișinău, 2011. - 544 p.
4. Groppa, St. Antiepilepticele şi tratamentul epilepsiilor. Chişinău, RM, FE-P. „Tipografia centrală", 2006, 176 p. ISBN 978-9975-923-62-0.
5. Groppa, St. Heredodegenerescenţe progresive cerebrale. Chişinău, RM, FE-P. „Tipografia centrală", 2007, 296 p. ISBN 978-9975-9508-6-2.
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Note: The listed books can be accessed within the Medical Scientific Library of USMF *"Nicolae Testemitanu"*, the electronic version of the editions is also available.