AL-FARABI KAZAKH NATIONAL UNIVERSITY

Faculty of Medicine and Health Care
Higher School of Medicine
Department of Clinical Disciplines

APPROVED
Dean of the Faculty
_____ (signature)
Kalmatayeva Zh.A.
"_____"_____ 2022г.

EDUCATIONAL-METHODOLOGICAL COMPLEX OF DISCIPLINE

NSiON4223
Nervous system and fundamentals of neurology

DIRECTION OF TRAINING
6B101 HEALTHCARE

EDUCATIONAL PROGRAM
6B10106 GENERAL MEDICINE

Course– 4
Semester – 7
Credits - 6

Almaty 2022 г.

The educational-methodical complex of the discipline was compiled by PhD K.M. Madenbay

Based on the educational program **6B10103 - General medicine**

Considered and recommended at a meeting of the Department of Clinical Disciplines
«___ » _____ 2022, protocol №

Head of Department _____ Prof. Kurmanova G.M.
(signature)

Recommended by Methodical committee of Faculty
«____» _____ 2022, protocol №

Head of Methodical committee of HSM_____Dzhumasheva R.T.
(signature)

Al Farabi Kazakh National University
Faculty of Medicine
Department of Clinical Disciplines

APPROVED
Dean of Faculty

_____
Kalmatayeva Zh.A.
"_____"_____ 2022г.

SYLLABUS
7th semester -2022-2023 academic year

Academic information about course

Discipline code	Discipline name	Type	Hours per week			ECTS
			Practice	SIWT	CPC	
NSiON4223	Nervous system and fundamentals of neurology	BD	60	20	20	4
Course leader e-mail Phone	Kamshat Madenbay kamshat.madenbay@gmail.com +7 747 406 02 57					Class time Mon-Sat 8.00- 14.00
Assistants e-mail Phone	Aida Kondybayeva					Class time Mon-Sat 8.00- 14.00
	K. Kuzhybayeva					
	Dina Sultanova boldi.s.73@mail.ru +7 778 221 51 47					
	Sholpan Tankayeva sholpantank@gmail.com					
	F. Sultamuratova feruza.sultanmuratova@gmail.com +7 705 753 94 63					
	Zarina Nurlanova zarinchik360@mail.ru +					
	Dana Serikbayeva					
	Аяулым					
	Жетписбай А.					

Academic	During the study of course, students should be competent in: -

course presentation	The discipline includes the study of the pathogenesis, pathology, clinical presentation of problems and clinically oriented pharmacology of the nervous system pathology, the principles of diagnosis and treatment of the most frequent diseases of the nervous system. Training involves the development of clinical argumentation, analytical and problem-oriented thinking, a deep understanding of the problem in a clinical context; development and development of clinical diagnostic skills and reasonable formation of a syndromic diagnosis. During the study of the discipline students will learn following aspects: 1. Apply knowledge of pathogenesis the pathology of the nervous system for targeted questioning and physical examination of the patient, taking into account age-related features and determining diagnostic and therapeutic interventions related to common diseases of the nervous system. 3 2. Interpret the basic data a special neurological and laboratory and instrumental examination in the pathology of the nervous system. 3 3. Integrate knowledge to identify the main syndromes of the nervous system: headache, dizziness, tremor, hyperkinesis, back pain, memory impairment, cerebral, meningeal symptoms, pathological reflexes, tension symptoms, epileptic seizures, migraine attack, myasthenic crisis. 3 4. To identify the main focal symptoms and syndromes: impaired sensitivity, level of lesion of the motor sphere, types of hyperkinesis, akinetiko-rigid syndrome, types of ataxia, damage to the spinal cord, brain stem, cranial nerves, disorders of the autonomic nervous system; syndromes of the defeat of the cerebral cortex. 3 5. Interpret the neuro-psychological and emotional development of children and adolescents in the age aspect. 3 6. To diagnose and know the principles of treatment of acute disorders of cerebral circulation, meningeal and cerebral syndrome (meningitis and encephalitis), coma, estrapiramidnye disorders, epilepsy, myasthenia gravis, myelitis, assume multiple sclerosis 3 7. Understand how disorders of the nervous system lead to mental and physical disability, as well as the extent to which the social and economic context affects the ability of patients to function with such a disability. 3 8. Describe the social, economic, ethnic and racial factors that play a role in the development, diagnosis and treatment of neurological diseases. 3 9. Know the classification, mechanism of action, pharmacokinetics, side effects, indications and contraindications to the use of drugs that affect the nervous system and are used in the treatment of diseases of the nervous system. 3 10. Demonstrate effective skills during the interview and examination of the neuropsychological status of patients. 4 11. -Demonstrate a commitment to professional values, such as altruism, compassion, empathy, responsibility, honesty and 4

	respect for the principles of confidentiality.
Prerequisite	Pathology of organ's and system-2
Postrequisite	Profile disciplines
Informational resources	**Educational literature:** 1. Триумфов А.В. «Топическая диагностика заболеваний нервной системы», краткое руководство. Издательство «МЕДпресс-информ» (2015). 2. Топический диагноз в нервологии по Петеру Дуусу: учебник/ П. Дуус; под ред. М. Бера, М. Фротшера. – 3-е изд. 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 7. Philip B Gorelick, Fernando B Testai, Graeme J Hankey, Joanna M Wardlaw (2014). Hankey's clinical neurology. 8. Hal Blumenfeld (2010) Neuroanatomy through clinical cases 9. «Неврологиялық науқастарды клиникалық зерттеу әдістемесі» Методические рекомендации / С.У.Каменова и др. – Алматы, 2018.- 84с. 10. Kamenova S.U., Kuzhubaeva K.K., Ospanbekova D.M. Methods of clinical examination of neurological patients / Methodical recommendations / S.U. Kamenova et al. – Almaty, 2018. – 82 pages. 11. Uddin S., Rashid M. (eds.) Advances in Neuropharmacology-Drugs and Therapeutics. New York: Apple Academic Press, 2019. — 654 p. 12. Hadi Manji, Seán Connolly, Neil Dorward, Neil Kitchen, Amrish Mehta, Adrian Wills (2007). Oxford handbook of neurology. 13. Nicholas J Talley, Brad Frankum, Davis Currow (2015). Essentials of internal medicine. 14. Paul W. Brazis, Joseph C. Masdeu, José Biller (2011). Localization in clinical neurology. 15. Каменова С.У., Кужыбаева К.К., Оспанбекова Д.М. Методика клинического обследования неврологических больных: Учебное пособие / С.У.Каменова и др. – Алматы, 2018.- 84с. **Interner-resources:** 2. Medscape.com - https://www.medscape.com/familymedicine 3. Oxfordmedicine.com - https://oxfordmedicine.com/ 4. Uptodate.com - https://www.wolterskluwer.com/en/solutions/uptodate 5. Osmosis - https://www.youtube.com/c/osmosis 6. Ninja Nerd - https://www.youtube.com/c/NinjaNerdScience/videos 7. Cor Medicale - https://www.youtube.com/c/CorMedicale - медицинские видео анимации на русском языке. 8. Lecturio Medical - https://www.youtube.com/channel/UCbYmF43dpGHz8gi2ugiXr0Q 9. SciDrugs - https://www.youtube.com/c/SciDrugs/videos - видео лекции по фармакологии на русском языке.
Academic	**Rules of academic behavior in hospital:**

policy of the course in the context of university values	1) Appearance: ➢ office clothing style ((shorts, short skirts, open t-shirts are not allowed to visit the university, jeans are not allowed in the hospital)) ➢ clean ironed medical robe ➢ surgical suit (for surgery and obstetrics) ➢ medical mask ➢ medical cap (or neat hijab without hanging thoughts) ➢ medical gloves ➢ interchangeable shoes - closed (ballet flats for girls, you can crocs) ➢ neat hairstyle, neat short-cut nails ➢ badge with full name (full name) 2) Mandatory presence of a phonendoscope, tonometer, centimeter tape (you can also have a pulse oximeter) 3) * Properly executed sanitary (medical) book (before the start of classes and must be updated on time) 4) * The presence of a vaccination passport or other document confirming a fully completed course of vaccination against COVID-19 and influenza 5) Mandatory observance of the rules of personal hygiene and safety 6) Systematic preparation for the educational process. 7) Accurate and timely maintenance of reporting documentation. 8) Active participation in medical-diagnostic and public events of the departments. **A student without a medical book and vaccination will not be allowed to see patients.** **Also, a student who emits a strong / pungent odor is not allowed to see patients, since such a smell can provoke an undesirable reaction in the patient (obstruction, etc.)** **Discipline**: ➢ It is not allowed to be late for classes or the morning conference. In case of being late, the decision on admission to the lesson is made by the teacher leading the lesson. If there is a good reason, inform the teacher about the delay and the reason by message or by phone. After the third delay, the student writes an explanatory note addressed to the head of the department indicating the reasons for being late and is sent to the dean's office to obtain admission to the lesson. If you are late without a valid reason, the teacher has the right to deduct points from the current grade (1 point for each minute of delay) ➢ Religious events, holidays, etc. are not a valid reason for skipping, being late and distracting the teacher and the group from work during classes. ➢ If you are late for a good reason - do not distract the group and the teacher from the lesson and quietly go to your place. ➢ Leaving the class ahead of time, being outside the workplace during school hours is regarded as absenteeism. ➢ Additional work of students during study hours (during practical classes and shifts) is not allowed. ➢ For students who have more than 3 passes without notifying the curator and a good reason, a report is issued with a recommendation for expulsion. ➢ Missed classes will not be made up. ➢ The internal regulations of the clinical bases of the department are fully applicable to students ➢ Greet the teacher and any senior by standing up (in class)

	➢ Smoking (including the use of vapes, electronic cigarettes) is strictly prohibited on the territory of medical facilities (out-doors) and the university. Punishment - up to the annulment of boundary control, in case of repeated violation - the decision on admission to classes is made by the head of the department ➢ Respectful attitude towards colleagues regardless of gender, age, nationality, religion, sexual orientation. **Academic values**: Academic honesty and integrity: independence in completing all assignments; the inadmissibility of plagiarism, forgery, the use of cheat sheets, cheating at all stages of knowledge control, deception of the teacher, attempts to manipulate and disrespectful attitude towards him.
Assessment and attestation policy	**Criteria assessment:** evaluation of work by type of activity according to the checklists of the department **Summative assessment:** final control in the discipline from 2 stages: 1. MSQ Testing 2. OSCE

Course content realization calendar:

№	Topic Title	Number of hours	Max score
1.	Anatomical physiological introduction. Elements of the nervous system. Neurons and synapses. Neurotransmitters and receptors.	6	
2.	Sensitivity and its disorders	6	
3.	Movement. Central components of the motor system and lesions of central motor pathways	6	
4.	Movement. Peripheral components of the motor system and clinical syndromes of lesions affecting them	6	
5.	Cerebellum and extrapyramidal system.	6	
6.	***Border control 1***		**100**
7.	Brain stem and cranial nerves. I, II, III, IV, V, VI cranial nerves. Trigeminal neuralgia	6	
8.	VII and VIII cranial nerves. Facial neuropathy	6	
9.	IX, X, XI, XII cranial nerves. Bulbar and pseudobulbar syndromes	6	
10.	Autonomic nervous system. Autonomic innervation and functional disturbances of individual organs. ANS assessment methods	6	
11.	Higher cortical functions and their impairment by cortical lesions. Assessment methods. Coverings of the brain and spinal cord; cerebrospinal fluid and ventricular system	6	
12.	***Mid-term***		
13.	Cerebrovascular disease.	6	
14.	Paroxysmal conditions in neurology.	6	
15.	Injuries to the brain, spinal cord and peripheral nervous system.	6	
16.	Infectious and inflammatory diseases of the nervous system	6	
17.	Hereditary degenerative diseases of NS. Demelienizing diseases of NS	6	
18.	Hereditary neuromuscular diseases.	6	
19.	***Border control 2***		**100**

	Final control		
	Stage 1 – test		
	Stage 2 – OSCE		

For the course as a whole – overall admission rating (OAR)

Patient history defence	30%
Border control	70%
Finals for Border control 1	100%
Patient history defence	30%
Border control	70%
Finals for Midterm	100%
360 score - behavior and professionalism	20%
Scientific project SSRW (student's scientific research work)	20%
Border control	60%
Finals for Border control 2	100%

Final grades for discipline: OAR 60% + Exam 40%

Exam (2 steps) – testing (40%) + miniclinical exam MiniCex (60%)

THEMATIC PLAN AND CONTENT OF PRACTICAL CLASSES

№	Topic name	Content	What to read
	2	3	4
	BLOCK 1		
1	Anatomical physiological introduction. Elements of the nervous system. Neurons and synapses. Neurotransmitters and receptors.	Fundamentals of the neural theory of S. Ramon-y-Cajal. A neuron as a structural and functional element of the central nervous system. Neuron, neuroglia, synapse: structure, functional significance, role in norm and pathology. The mechanism of excitation along the axon, axoplasmic current.	1. Триумфов А.В. «Топическая диагностика заболеваний нервной системы», краткое руководство. Издательство «МЕДпресс-информ» (2015). 4-21 стр. 2. Топический диагноз в нервологии по Петеру Дуусу: учебник/ П. Дуус; под ред. М. Бера, М. Фротшера. – 3-е изд. Стр. 15-30. 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. Pages 2-8. 4. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Pages 18-23. 5. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. Pages 139-141.

			Philip B Gorelick, Fernando B Testai, Graeme J Hankey, Joanna M Wardlaw (2014). Hankey's clinical neurology. Pages 38-39. 6. «Неврологиялық науқастарды клиникалық зерттеу әдістемесі» Методические рекомендации / С.У.Каменова и др. – Алматы, 2018.- 84с. 41-48 беттер. **7.** Kamenova S.U., Kuzhubaeva K.K., Ospanbekova D.M. Methods of clinical examination of neurological patients / Methodical recommendations / S.U. Kamenova et al. – Almaty, 2018. Pages. 41-48. **Internet sources:** Tendon reflexes: https://www.youtube.com/watch?v=BLzfLt_CSMk Babinski Reflex in Infants https://www.youtube.com/watch?v=b2QKXOzD8sA&t=4s
2	Sensitivity and its disorders	Sensitivity: exteroceptive, proprioceptive, interoceptive, complex species. Afferent systems of somatic sensitivity and their structure: receptors, pathways. Anatomy and physiology of superficial and deep sensation conductors. Epicritic and protopathic sensitivity. Types of sensitivity disorders. hypo- and hyperesthesia, paresthesia and pain, dysesthesia, hyperpathy, allodynia, causalgia. Types of sensitivity disorders: peripheral, segmental, conductive, cortical. Dissociated sensitivity disorder. Neuropathophysiological, neurochemical and psychological aspects of pain. Antinociceptive system. Acute and	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни :

		chronic pain. Central pain. Reflected pain. Paraclinical research methods: electroneuromyography (study of conduction velocity along sensory fibers of peripheral nerves, study of the H-reflex), somatosensory evoked potentials. Understand the basics and features of the sensory system structure; Determine the mechanisms of development of superficial and deep sensation pathways damages; Apply the skills of physical examination in case of damage to the nervous system; Allocates syndromes - - types of sensory impairment (peripheral, segmental, conductive, cortical) formulates a topical diagnosis; Enhance interpersonal communication and patient counseling skills; Temperature perception test: https://www.youtube.com/watch?v=7it5E9OBl2k Neurological sensory examination: https://www.youtube.com/watch?v=XVOVpq-41BY Neurological peripheral vibration test: https://www.youtube.com/watch?v=iEfyHSm2fCA Coordination and joint position sense: https://www.youtube.com/watch?v=Z9yRlJelcTg	учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172.

			7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
3	Movement. Central components of the motor system and lesions of central motor pathways	Modern ideas about the organization of voluntary movement. The cortical-muscular pathway: structure, functional significance. Central (upper) and peripheral (lower) motor neurons. The corticospinal tract: its functional significance for the organization of voluntary movements. The concept of reflex. Types of reflexes. Reflex arc: structure and functioning. Levels of reflex closure in the spinal cord and brain stem, importance in topical diagnostics. Surface and deep reflexes, basic pathological reflexes, protective spinal reflexes. Regulation of muscle tone: spinal reflex arc, gamma system. Suprasegmental levels of regulation of muscle tone. Muscle tone assessment. The technique of studying deep reflexes on the hands (biceps,triceps, carporadial), on the legs (knee, Achilles) and surface reflexes (abdominal, plantar). Neuropathophysiological bases of changes in physiological reflexes, pathological pyramidal reflexes, spasticity. Central and peripheral paresis: changes in muscle tone and reflexes, trophic muscles. Clinical features of cortical-muscular pathway lesions at different levels: brain (precentral gyrus, radiant crown, inner capsule, brain stem), spinal cord (lateral cord, anterior horn),	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. :

		anterior root, plexus, peripheral nerve, neuromuscular synapse, muscle. The structure of the spinal cord: shape and position, furrows and ropes of the spinal cord, gray and white matter, the structure of the ropes of the spinal cord, posterior and anterior roots, the concept of a segment of the spinal cord, the ratio of segments of the spinal cord and vertebrae, spinal nodes, plexuses. The general principle of the formation of nerves of the limbs and trunk. Defeat of the gray matter. The threshold of the white matter. Symptom complexes of the lesion at different levels: upper neck, cervical thickening, thoracic, lumbar thickening, conus medullaris, ponytail. Descending tracts of central nervous system (Pyramidal): https://geekymedics.com/the-descending-tracts-of-the-central-nervous-system/ Upper Motor Neuron vs Lower Motor Neuron Lesion: https://www.youtube.com/watch?v=lwTeoVZPuJM Motor Neuron Disease: https://www.youtube.com/watch?v=rxYSw6Xxgfs&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=43 Muscle power assessment (MRC Scale): https://geekymedics.com/muscle-power-assessment-mrc-scale/ Muscle power test of the upper limbs: https://www.youtube.com/watch?v=KZoQ2UkMFTA Muscle power test of the lower limbs: https://www.youtube.com/watch?v=Cjt0iFt2hL8 Active movements upper and lower limbs: https://www.youtube.com/watch?v=JNN1736I5a0 Plantar reflex or Babinski sign: https://www.youtube.com/watch?v=DkMN6u6Hcts Gait abnormalities: https://geekymedics.com/gait-abnormalities/ Upper Motor Neuron vs Lower Motor Neuron Lesion: https://www.youtube.com/watch?v=lwTeoVZPuJM Cremasteric reflex: https://www.youtube.com/watch?v=eVvInQNyXIU Abdominal reflex: https://www.youtube.com/watch?v=v4FyZydgHs0 Clonus: https://www.youtube.com/watch?v=A67Od2Z_TpQ Dermatomes and myotomes: https://geekymedics.com/dermatomes-and-myotomes/	МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M.

			(2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
4	Movement. Peripheral components of the motor system and clinical syndromes of lesions affecting them	The cervical plexus. The brachial plexus. Lesions of the roots and primary trunks. Damage to the nerves of the brachial plexus (axillary nerve, musculoskeletal nerve. radial nerve, ulnar nerve, median nerve, cutaneous internal nerve of the shoulder, conch internal nerve of the forearm). Lesions of the thoracic nerves. Lumbar plexus. Lesions of the nerves of the lumbar plexus (femoral nerve, obturator nerve, external cutaneous nerve of the thigh, femoral genital nerve). Sacral plexus. Lesions of the nerves of the sacral plexus (sciatic nerves, peroneal nerve, tibial nerve, superior gluteal nerve, inferior gluteal nerve, posterior cutaneous nerve of the thigh). Anatomy of brachial plexus: https://geekymedics.com/brachial-plexus/ Straight leg raise test - Lasègue's sign: https://www.youtube.com/watch?v=ZSHDCyIvr7o	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology:

			Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К.

			Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
5	The cerebellum and the extrapyramidal system	The structure and main connections of the extrapyramidal system, the role in the organization of movements; participation in the organization of movements by providing posture, muscle tone and stereotyped automated movements. Neurophysiological and neurochemical mechanisms of regulation of the extrapyramidal system activity. The main neurotransmitters are dopamine, acetylcholine, gamma-aminobutyric acid. Hypokinesia (oligo-and bradykinesia), rigidity and muscle hypotension. Hyperkinesis: tremor, muscular dystopia, chorea, tics, hemiballism, athetosis, myoclonia. Hypotonic-hyperkinetic and hypertonic-hypokinetic syndromes. Neuropathophysiology of extrapyramidal motor disorders, methods of pharmacological correction. Anatomical and physiological data: cerebellum and vestibular system: anatomy and physiology, afferent and efferent connections, the role in the organization of movements. Clinical methods of studying the coordination of movements. Symptoms and syndromes of cerebellar damage: ataxia, dissinergia, nystagmus, dysarthria, muscle hypotension. Ataxia: cerebellar, vestibular, frontal, sensitive. Pathophysiology and pharmacological methods of correction. The descending tracts of the CNS (extrapiramidal): https://geekymedics.com/the-descending-tracts-of-the-central-nervous-system/ Anatomy of cerebellum: https://geekymedics.com/cerebellum/ Parkinsons disease examination OSCE guide: https://geekymedics.com/parkinsons-disease-examination-osce-guide/ Cerebellar examination OSCE guide: https://geekymedics.com/cerebellar-examination-osce-guide/	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In

		Rombergs test/sign: https://www.youtube.com/watch?v=H8VbKdRS-hg	Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com

			3. Uptodate.com
6	**BLOCK 2**		
7	Brain stem and cranial nerves. I, II, III, IV, V, VI cranial nerves. Brain stem damage. Trigeminal neuralgia	Gray matter of the brain stem. Brain stem conductors (descending and ascending pathways). Cross-sections of the brain stem. The boundaries of the medulla oblongata and spinal cord (section I). The lower part of the medulla oblongata (section II). The upper part of the medulla oblongata (section III). The border of the medulla oblongata and the bridge (section IV). The middle third of the bridge (section V). The front third of the bridge (section VI). The legs of the brain and the anterior tubercles of the quadrilateral (sections VII) Brain stem damage syndromes at various levels, alternating syndromes. Cranial nerves: anatomical and physiological data, clinical research methods and symptoms of the lesion. I pair-olfactory nerve and olfactory system; symptoms and syndromes of the lesion. II pair — the optic nerve and the visual system, signs of damage to the visual system at different levels (retina, optic nerve, intersection, visual tract, visual tubercle, visual radiance, cortex). Neuro-ophthalmological and paraclinical methods of studying the visual system (fundus examination, visual evoked potentials). III, IV, VI pairs — oculomotor, block, diverting nerves and oculomotor system; symptoms of the lesion; medial longitudinal bundle and internuclear ophthalmoplegia; gaze regulation, cortical and stem paresis of the gaze; oculocephalic reflex; pupillary reflex and signs of its lesion; types and causes of anisocoria; Argyle Robertson syndrome, Eidy syndrome. V pair-trigeminal nerve, syndromes of sensitivity disorders (peripheral, nuclear, stem and hemispheric); chewing disorders. Brain stem anatomy: https://www.youtube.com/watch?v=HYDfhoMun0I Midbrain Lesions: Benedikt, Weber, Claude, Parinaud Syndrome: https://www.youtube.com/watch?v=t47ZbHh3Ytg Olfactory System: Anatomy and Physiology, Pathways: https://www.youtube.com/watch?v=wQJbsOWc344&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=53 The Optic Nerve (CN II): https://geekymedics.com/the-optic-nerve-cn-2/ Extraocular muscles: https://geekymedics.com/extraocular-muscles/ Eye examination OSCE guide: https://geekymedics.com/eye-examination-osce-guide/ Colour vision assessment OSCE guide/: https://geekymedics.com/colour-vision-assessment-osce-guide/ Fundoscopy ophthalmoscopy OSCE guide: https://geekymedics.com/fundoscopy-	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S.,

		ophthalmoscopy-osce-guide/ Visual pathway and visual field defects: https://geekymedics.com/visual-pathway-and-visual-field-defects/ Olfactory nerve examination: https://www.youtube.com/watch?v=uF5KXrlSrjs Optic nerve examination: https://www.youtube.com/watch?v=VB94tYqsIJI Occulomotor, Troclear and Abduscent examination: https://www.youtube.com/watch?v=Drpn_E1wmLI Trigeminal nerve examination: https://www.youtube.com/watch?v=7_REH6ZycUk	Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
8	VII and VIII cranial nerves. Facial neuropathy	Cranial nerves: anatomical and physiological data, clinical research methods and symptoms of the lesion. VII pair-facial nerve, central and peripheral paresis of facial muscles, clinic of facial nerve damage at different levels. Taste and its disorders. VIII pair — vestibular-cochlear nerve, auditory and vestibular systems; the role of the	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник.

		vestibular apparatus in the regulation of coordination of movements, balance and posture; signs of damage at different levels; nystagmus, vestibular vertigo, vestibular ataxia, Meniere's syndrome. Otoneurological methods of studying vestibular function. Facial nerve examination: https://www.youtube.com/watch?v=M4kAQ6V6axs Bell's Palsy: https://www.youtube.com/watch?v=5KUbnVeMYEo&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=37 The Vestibulocochlear Nerve (CN VIII): https://geekymedics.com/the-vestibulocochlear-nerve-cn-viii/ The Head Impulse, Nystagmus, Test of Skew (HINTS) Examination: https://geekymedics.com/the-head-impulse-nystagmus-test-of-skew-hints-examination/ Vestibulocochlear nerve examination: https://www.youtube.com/watch?v=AU_mZAPNFjQ	Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/v

			iew/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
9	IX, X, XI, XII cranial nerves. Bulbar and pseudobulbar syndromes	Cranial nerves: anatomical and physiological data, clinical research methods and symptoms of the lesion. IX and X pairs — lingual and vagus nerves, autonomic functions of the vagus nerve; signs of damage at different levels, bulbar and pseudobulbar syndromes. XI pair-accessory nerve, signs of damage. XII pair- hypoglossal nerve, signs of damage; central and peripheral paresis of the tongue. Anatomy of the glossopharyngeal nerve: https://geekymedics.com/the-glossopharyngeal-nerve-cn-ix/	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец,

		Swallowing Reflex: https://www.youtube.com/watch?v=YQm5RCz9Pxc&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=34 Dysphagia: https://www.youtube.com/watch?v=VoSMA2Anq3U Glossopharyngeal, Vagus, Hypoglossal nerves examination: https://www.youtube.com/watch?v=sMZbsci3BM4 Accessory nerve examination: https://www.youtube.com/watch?v=K_QqV9HZJnQ	Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E.

			(2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
10	Autonomic nervous system. Autonomic innervation and functional disturbances of individual organs. ANS assessment methods	The structure and functions of the autonomic nervous system: sympathetic and parasympathetic systems; peripheral (segmental) and central parts of the autonomic nervous system. Limbic-hypothalamic-reticular complex. Symptoms and syndromes of damage to the peripheral part of the autonomic nervous system: peripheral autonomic insufficiency, Raynaud's syndrome. The physiology of arbitrary control of the functions of the bladder. Neurogenic bladder, urinary retention and incontinence, imperative urge to urinate. Signs of central and peripheral disorders of the bladder functions. Instrumental and drug correction of peripheral autonomic disorders and neurogenic bladder. Examination of a patient with syndromes of disorders of the autonomic nervous system Be able to measure vital signs with tests to identify the functionality of autonomic innervation (assessment of blood pressure, heart rate, pulse, respiratory rate). Be able to isolate dysregulation of the autonomic nervous system when interviewing a patient Be able to conduct a general physical and neurological examination with an emphasis on the functions of the autonomic nervous system. To be able to conduct a survey of a patient with urinary disorders (adult and child) in an	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-

		ethical manner. Be able to prescribe the necessary examination for a patient with urination disorders To know the main drugs and methods of treatment for various types of urination disorders. Autonomic Nervous System: https://www.youtube.com/watch?v=D96mSg2_h0c&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=6 Neural Control of Urination: https://www.youtube.com/watch?v=US0vNoxsW-k&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=35	00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and

			history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
11	Higher cortical functions and their impairment by cortical lesions. Assessment methods. Coverings of the brain and spinal cord; cerebrospinal fluid and ventricular system	The cerebral cortex: basic principles of structure and function, the problem of localization of functions in the brain. Functional asymmetry of the cerebral hemispheres. The concept of the systemic organization of mental functions. Higher cerebral (mental) functions: gnosis, praxis, speech, reading, writing, counting, memory, attention, intelligence and their disorders; aphasia (motor, sensory, amnestic, semantic); apraxia (constructive, spatial, ideomotor); agnosia (visual, auditory, olfactory); astereotnosis, anosognosia, autotopagnosia; dysmnestic syndrome, Korsakov's syndrome; dementia, mental retardation. The importance of neuropsychological research in the neurological clinic. Syndromes of damage to the frontal, temporal, temporal and occipital lobes of the brain, Psychomotor and speech development of the child, the rate of speech development, delayed speech functions (alalia, dyslalia, dysgraphia, dyslexia). To be able to examine a patient with syndromes of impaired higher nervous function; Be able to assess and interpret the patient's level of consciousness on the Glasgow Coma Scale; be able to assess the patient's speech when collecting an anamnesis: Purposeful physical and general neurological examination to exclude other (except for neurological and mental disorders) causes of speech impairment. be able to conduct targeted questioning of the patient in identifying speech disorders, to differentiate between different types of aphasia, dysarthria, dysphonia. conducting a purposeful physical and general neurological examination in order to exclude other (except for neurological and mental disorders) if the patient is mistaken or does not recognize - he cannot correctly name objects, people / parts of his body.	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. Пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. Проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms.

		Conduct a targeted questioning of the patient when identifying signs of agnosia, to differentiate between different types of agnosia: Conducting a purposeful physical and general neurological examination to exclude other (except for neurological and mental disorders) reasons if the patient cannot perform some action; conduct targeted questioning of the patient in identifying signs of apraxia, to differentiate between different types of apraxia. Perform simple tests to detect impaired cognitive function - MiniMental Status Test Localize the affected area (frontal, parietal, temporal or occipital lobe), is able to make a syndromic diagnosis. Assess normal speech development in a healthy child from birth. Cerebral Cortex Anatomy & Function: https://www.youtube.com/watch?v=2LzZMWGQe1k Neurological examination; higher brain functions**:** **https://www.youtube.com/watch?v=k0cph9PAFGQ**	4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева,

			Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
12	**BLOCK 3**		
13	Cerebrovascular diseases.	Classification of vascular diseases of the brain. Etiology of vascular diseases of the brain. Pathophysiology of cerebral circulation in case of blockage of cerebral arteries and arterial hypertension. The primary symptoms of FAST, BEFAST. Transient cerebrovascular accident (transient ischemic attack) and ischemic stroke: ethnology, pathogenesis, clinic, diagnosis. Thrombolytic therapy, mechanism of action, pharmacokinetics, side effects, indications and contraindications. Brain hemorrhage: etiology, pathogenesis, clinic, diagnosis, therapy and indications for surgical treatment. Subarachnoid non-traumatic hemorrhage: etiology, pathogenesis, clinic. diagnostics. therapy and indications for surgical treatment. Paraclinical methods for the diagnosis of acute disorders of cerebral circulation — CT and MRI, ultrasound Dopplerography, ultrasound duplex and triplex scanning, transcranial Dopplerography, angiography. Rehabilitation of patients who have suffered a stroke. Surgical treatment of vascular lesions of the brain, indications and principles of surgical interventions for cerebral hemorrhage, brain aneurysm, stenoses and occlusions of the main arteries of the head. Primary and secondary prevention of stroke. Arterial supply of the brain: 1. https://geekymedics.com/arterial-supply-of-the-brain/ 2. https://www.youtube.com/watch?v=CaOPBuP3VkA&list=WL&index=1&t=40s Ischemic Stroke - causes, symptoms, diagnosis, treatment, pathology: https://www.youtube.com/watch?v=2IgFri0B85Q&list=WL&index=2 Arteriovenous malformation (AVM) and Embolization Treatment: https://www.youtube.com/watch?v=gYTVA3PoeY8&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=51 Stroke and TIA history taking: https://geekymedics.com/stroke-and-tia-history-taking/	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In

		CT head interpretation: https://geekymedics.com/ct-head-interpretation/ The basics of MRI interpretation: https://geekymedics.com/the-basics-of-mri-interpretation/ Language Pathways and Aphasia: https://www.youtube.com/watch?v=DwVfCjbIJQI&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=20	Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет 10. In Clark, M. A., In Finkel, R., In Rey, J. A., & In Whalen, K.

			(2012). *Pharmacology*. **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
14	Paroxysmal states in neurology.	Classification of epilepsy and epileptic seizures. Etiology and pathogenesis of epilepsy and epileptic syndrome. Treatment of epilepsy. Epileptic status: clinic, pathogenesis, treatment. Features of the course of epilepsy in children, neonatal seizures, infantile spasms (West's syndrome), Lennox-Gastaut syndrome, febrile seizures, benign rolandic epilepsy; non-epileptic paroxysmal disorders in childhood (affective-respiratory attacks). Paraclinical methods in the diagnosis of paroxysmal disorders of consciousness — electroencephalography, CT and MRI of the head. Principles of prescribing antiepileptic drugs classification, mechanism of action, pharmacokinetics, side effects, indications and contraindications. Antidepressants classification, mechanism of action, pharmacokinetics, side effects, indications and contraindications. Epilepsy: Types of seizures, Symptoms, Pathophysiology, Causes and Treatments: https://www.youtube.com/watch?v=RxgZJA625QQ Transient loss consciousness history taking: https://geekymedics.com/transient-loss-consciousness-history-taking/ Explaining a diagnosis of epilepsy: https://geekymedics.com/explaining-a-diagnosis-of-epilepsy/ GABA and Glutamate: https://www.youtube.com/watch?v=wP9QD-5FL5U&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=22 GABA Receptors and GABA Drugs: https://www.youtube.com/watch?v=MRr6Ov2Uyc4&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=23	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016).

			Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет 10. In Clark, M. A., In Finkel, R., In Rey, J. A., & In Whalen, K. (2012). *Pharmacology*. **Internet resources:**

			1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
15	Injuries to the brain, spinal cord and peripheral nervous system.	Traumatic brain injury. Classification, clinic, diagnosis, treatment. Concussion of the brain. Brain injury. Intracranial traumatic hematomas. Medical tactics. The consequences of traumatic brain injury, syndromic manifestations and their treatment. Post-commotion syndrome. Spinal cord injury: pathogenesis, clinic, diagnosis, medical tactics. Neurosurgical treatment of traumatic lesions of the central nervous system. Rehabilitation of patients with spinal injury. Anesthetics classification, mechanism of action, pharmacokinetics, side effects, indications and contraindications. Concussion: Pathophysiology, Causes, Symptoms and Treatment: https://www.youtube.com/watch?v=sxh3z12kXjQ&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=43 Glasgow coma scale: https://geekymedics.com/glasgow-coma-scale-gcs/ Traumatic brain injury: https://www.youtube.com/watch?v=hssdJu-81g4	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice.

			6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет 10. In Clark, M. A., In Finkel, R., In Rey, J. A., & In Whalen, K. (2012). *Pharmacology*. **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com

			3. Uptodate.com
16	Infectious and inflammatory diseases of the nervous system	Meningitis: classification, ethnology, clinic, diagnosis, treatment. Primary and secondary purulent meningitis: menigococcal, pneumococcal, caused by hemophilic bacillus. Serous meningitis: tuberculosis and viral meningitis. Meningeal syndrome: manifestations, diagnosis. Features of the course of purulent meningitis in newborns and young children. Encephalitis: classification, etiology, clinic, diagnosis, treatment. Herpetic encephalitis. Tick-borne encephalitis. Parainfective encephalitis in measles, chickenpox, rubella. Rheumatic lesions of the nervous system, minor chorea. Polio, features of the modern course of polio. Brain abscess, spinal epidural abscess. Shingles (herpes). Diphtheria polyneuropathy. Botulism. Neurosyphilis. Damage to the nervous system in AIDS. Parainfective and postvaccial lesions of the nervous system. Lesions of the nervous system in intrauterine infections. post-vaccination encephalomyelitis. Congenital neurosyphilis. Paraclinical methods in the diagnosis of infectious diseases of the nervous system: liquorological and serological studies, CT and MRI of the head. Features of pathogenetic treatment for meningitis, encephalitis, polio. Cerebrospinal fluid CSF interpretation: https://geekymedics.com/cerebrospinal-fluid-csf-interpretation/ Meningitis: https://geekymedics.com/meningitis/ Meningitis: https://www.youtube.com/watch?v=gIHUJs2eTHA Brudzinski's sign, Meningeal stretch test: https://www.youtube.com/watch?v=ke5EsXMXPHo Kernig's sign, Meningeal stretch test: https://www.youtube.com/watch?v=euNPB3OjrdM	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., &

			Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет 10. In Clark, M. A., In Finkel, R., In Rey, J. A., & In Whalen, K. (2012). *Pharmacology*. **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
17	Hereditary	Degenerative diseases of the nervous system: Alzheimer's, Huntington's chorea, Parkinson's	1. Гусев Е.И., Коновалов

	degenerative diseases. Demyelinating diseases of nervous system	disease, amyotrophic lateral sclerosis. Etiology, pathogenesis, clinic, diagnosis. Antiparkinsonian drugs, classification, mechanism of action, pharmacokinetics, side effects, indications and contraindications. Drugs for the treatment of Alzheimer's, classification, mechanism of action, pharmacokinetics, side effects, indications and contraindications. Multiple sclerosis: pathogenesis, clinic, diagnosis, types of course. Paraclinical research methods in the diagnosis of multiple sclerosis: MRI of the brain and spinal cord, the study of evoked potentials of the brain. Drugs that change the course of multiple sclerosis (first- and second-third-line PITRS) classification, mechanism of action, pharmacokinetics, side effects, indications and contraindications. To determine the mechanisms of development of brain damage in degenerative, demyelinating diseases (Parkinson's disease, Alzheimer's disease, Huntington's disease, multiple sclerosis); To apply the skills of physical examination in case of damage to the nervous system; To interpret, summarize the data of physical and laboratory-instrumental examination obtained during the examination of the patient - general blood analysis, blood chemistry, coagulogram, CT, MRI, duplex scanning of brachiocephalic arteries To allocate syndromes - cerebral, bulbar, extrapyramidal, pyramidal, cognitive-mnestic; formulates a topical, clinical diagnosis; To build a treatment strategy for degenerative and demyelinating diseases of the central nervous system - PMTRS, glucocorticosteroids, supportive, symptomatic therapy; To demonstrate interpersonal communication and patient counseling skills; Alzheimer's disease: https://www.youtube.com/watch?v=v5gdH_Hydes Alzheimer's disease: https://www.youtube.com/watch?v=ot90GJ1usrk&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=39 Huntington's Disease: https://www.youtube.com/watch?v=M6Z9bkd7zF8&list=PLJIs8ZcKXHUx4C9zjinQ8NY0JetieXFl0&index=41 Multiple sclerosis: https://geekymedics.com/multiple-sclerosis/ Multiple sclerosis: https://www.youtube.com/watch?v=yzH8ul5PSZ8 Parkinson's Disease | Clinical Presentation | Part 1 https://www.youtube.com/watch?v=KWVJBg6SCoY Parkinson's Disease | Causes & Pathophysiology | Part 2. https://www.youtube.com/watch?v=rFoc4ACFehQ	А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник. Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford

			University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет 10. In Clark, M. A., In Finkel, R., In Rey, J. A., & In Whalen, K. (2012). *Pharmacology*. **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
18	Hereditary neuromuscular diseases.	Hereditary neuromuscular diseases. Classification of neuromuscular diseases. Progressive muscular dystrophy. Duchenne, Becker, Landuzi-Dejerin myopathy. Clinic, diagnostics, differential diagnostics. Modern medical and genetic possibilities of treatment, mechanism of action, pharmacokinetics, side effects, indications and contraindications.	1. Гусев Е.И., Коновалов А.Н., Бурд Г.С. «Неврология и нейрохирургия», учебник.

		Myasthenia gravis: pathogenesis, clinic, diagnosis, treatment. Myasthenic crisis: causes, clinic, diagnosis, treatment. Cholinergic crisis: causes, clinic, diagnosis, treatment. Thomsen's myotonia and dystrophic myotonia: clinic, diagnostics, prognosis. Paraclinical methods in the diagnosis of neuromuscular diseases: electromyography, electroneuromyography, muscle biopsy, study of creatine phosphokinase in blood serum, DNA studies. Children's spinal amyotrophy, congenital myopathies; "sluggish child" syndrome. Principles of pathogenetic treatment, classification, mechanism of action, pharmacokinetics, side effects, indications and contraindications. Know about hereditary neuromuscular diseases, Classify diseases about HNMD, Be able to identify family history; Interpret clinical and laboratory-instrumental data for the diagnosis and treatment of the identified pathology in accordance with the principles of evidence-based medicine. Diagnose by clinical manifestations of hereditary neuromuscular diseases; Conduct a differentiated diagnosis of HNMD with other clinically similar manifestations; To identify the cause of their development to provide adequate medical care. Improve interpersonal communication and patient counseling skills; Lhermittes test, Cervical myelopathy test: https://www.youtube.com/watch?v=4rPMC-l4KME Duchenne Becker muscular dystrophy: https://www.youtube.com/watch?v=DGOmN6rnsNk Myasthenia gravis: https://www.youtube.com/watch?v=bYGxGdu9MsQ	Издательство «Медицина» ISBN 5-225-00969-7 2. Нервные болезни : учебн. пособие / А.А.Скоромец, А.П.Скоромец, Т.А.Скоромец; под ред. проф. А.В.Амелина, проф. Е.Р.Баранцевича. – 10-е изд., доп. – М. : МЕДпресс-информ, 2017. – 568 с. : ил. ISBN 978-5-00030-441-9 3. Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms. 4. Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology. 5. In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice. 6. Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/v

			iew/10.1093/med/9780199601172.001.0001/med-9780199601172. 7. In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination. 8. Bickley, L. S., Szilagyi, P. G., & In Hoffman, R. M. (2017). Bates' guide to physical examination and history taking. 9. Практикалық неврология: оқулық/ С.У.Каменова, К.К. Кужыбаева, А.М. Кондыбаева, Б.Е.Кенжеахметова – Алматы, 2021.- 100 бет 10. In Clark, M. A., In Finkel, R., In Rey, J. A., & In Whalen, K. (2012). *Pharmacology*. **Internet resources:** 1. Medscape.com 2. Oxfordmedicine.com 3. Uptodate.com
	The final lesson		

360° assessment checklist for student
CURATOR and Lecturer

FULL NAME of Curator _____ Signature _____

	Very well	Criteria and points	Unsatisfactory
1	**Constantly preparing for classes:** For example, backs up statements with relevant references, makes short summaries Demonstrates effective teaching skills, assists in teaching others	**Preparing for classes** **10 8 6 4 2 0**	**Constantly not preparing for class** For example, insufficient reading and study of problematic issues, makes little contribution to the knowledge of the group, does not analyze, does not summarize the material.
2	**Takes responsibility for their own learning:** For example, manages their learning plan, actively tries to improve, critically evaluates information resources	**A responsibility** **10 8 6 4 2 0**	**Takes no responsibility for their own learning:** For example, depends on others to complete the learning plan, hides mistakes, rarely critically analyzes resources.
3	**Actively participates in the training of the group:** For example, actively participates in discussions, willingly takes tasks	**Participation** **10 8 6 4 2 0**	**Not active in the group training process:** For example, does not participate in the discussion process, is reluctant to accept assignments
4	**Demonstrates effective group skills** For example, takes the initiative, shows respect and correctness towards others, helps to resolve misunderstandings and conflicts.	**Group skills** **10 8 6 4 2 0**	**Demonstrates ineffective group skills** For example, inappropriately intervening, showing poor discussion skills by interrupting, avoiding or ignoring others, dominating or impatient
5	**Skilled in communicating with peers:** For example, actively listening, receptive to non-verbal and emotional cues Respectful attitude	**Communications** **10 8 6 4 2 0**	**Difficulty communicating with peers** For example, poor listening skills, unable or disinclined to listen to non-verbal or emotional cues Use of obscene language
6	**Highly developed professional skills:** Eager to complete tasks, seek opportunities for more learning, confident and skilled Compliance with ethics and deontology in relation to patients and medical staff Observance of subordination.	**Professionalism** **10 8 6 4 2 0**	**Clumsy, fearful, refusing to try even basic procedures** Inferiority in professional behavior - causing harm to the patient, rude disrespectful attitude towards medical staff, colleagues
7	**High introspection:** For example, recognizes the limitations of their knowledge or abilities without becoming defensive or rebuking others.	**Reflection** **10 8 6 4 2 0**	**Low introspection:** For example, needs more awareness of the limits of understanding or ability and does not take positive steps to correct
8	**Highly developed critical thinking:** For example, appropriately demonstrates skill in performing key tasks such as generating hypotheses, applying knowledge to case studies, critically evaluating information, drawing conclusions aloud, explaining the process of thinking	**Critical thinking** **10 8 6 4 2 0**	**Critical Thinking Deficiency:** For example, has difficulty completing key tasks. As a rule, does not generate hypotheses, does not apply knowledge in practice either because of their lack or because of inability (lack of induction), does not know how to critically evaluate information
9	Fully adheres to the rules of academic conduct with understanding, suggests improvements in order to increase efficiency. Complies with the ethics of communication - both oral and written (in chats and appeals)	**Compliance with the rules of academic conduct** **10 8 6 4 2 0**	Пренебрегает правилами, мешает другим членам коллектива Neglects the rules, interferes with other members of the team

10	Fully follows the rules with full understanding of them, encourages other members of the group to adhere to the rules Strictly adheres to the principles of medical ethics and PRIMUM NON NOCERE	**Compliance with the rules of conduct in the hospital 10 8 6 4 2 0**	Breaks the rules. Encourages and provokes other members of the group to break the rules Creates a threat to the patient
	Maximum	**100 points**	

* gross violation of professional behavior, rules of conduct in the hospital - or a decrease in the grade for boundary control or cancellation; ethical committee
Such violations are a threat to the health of patients due to action (for example, smoking on the territory of the hospital) or inaction; rudeness and rudeness towards any person (patient, classmate, colleague, teacher, doctor, medical staff)

POINT-RATING ASSESSMENT (CHECK-LIST) OF PROFESSIONAL SKILLS OF STUDENTS

Examination of motor function and superficial reflexes

№	**Evaluation criteria**	**Evaluation criteria**				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1.	volume of active movement					
2.	muscle tone of the upper and lower limbs					
3.	muscle strength of the upper and lower limbs					
4.	muscle trophism					
5.	conjunctival reflex					
6.	pharyngeal reflex					
7.	soft palate reflex					
8.	upper abdominal reflex					
9	middle and lower abdominal reflex					
10	plantar reflex					

Examination of deep reflexes

№	Evaluation criteria	Evaluation criteria				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1	superciliary reflex					
2	nasopalpebral reflex					
3	mandibular reflex					
4	biceps reflex					
5	triceps reflex					
6	carpo-radial reflex					
7	scapular-humeral reflex					
8	deep abdominal reflex					
9	knee jerk reflex					
10	achilles reflex					

Examination of pathological reflexes and clonuses

№	Evaluation criteria	Evaluation criteria				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1	*Study of reflexes of oral automatism:* proboscis					
2	exploratory and sucking					
3	reflex Marinescu-Radovici					
4	Reflexes of spinal automatism of the upper limbs: Rassolimo					
5	Bechterew's reflex					

6	Zhukovsky Reflex					
7	Jacobson-Laska					
8	Hand clonus					
9	patella clonus					
10	Foot clonus					

Examination of pathological reflexes from the lower extremities

№	Evaluation criteria	Evaluation criteria				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1	*Examined pathological extensor reflexes from the lower extremities:* Babinsky					
2	Oppenheim					
3	Gordon					
4	Schaeffer					
5	Chaddock					
6	*Examined flexor pathological reflexes from the lower extremities:*Rassolimo					
7	Bekhterev I					
8	Bekhterev II					
9	Zhukovsky					
10	Flexor tangential reflex					

Examination of superficial sensitivity and symptoms of tension of the nerve trunks

№	Evaluation criteria	Evaluation criteria				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**

1	pain sensitivity					
2	temperature sensitivity					
3	tactile sensitivity					
4	Examined the symptoms of tension of the nerve trunks: Neri					
5	Dejerine					
6	Lasegue I					
7	Lasegue II					
8	Wasserman					
9	Matskevich					
10	Sikar					

Examination of deep and complex types of sensitivity

№	**Evaluation criteria**	**Evaluation criteria**				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1-2	joint-muscular sense(position sense)					
3	sense of weight					
4	Sense of pressure					
5	vibration sensitivity					
6	kinesthetic sensitivity					
7-8	two-dimensional sense					
9	sense of discrimination					
10	stereognosis					

Examination of the function of the cranial nerves (I, II, III, IV, VI)

№	**Evaluation criteria**	**Evaluation criteria**				
		does not have manual skills	conducted chaotically, with omissions, without	not carried out fully enough with technical errors	carried out systematically, but with minor technical	carried out systematically, technically correct and efficiently

			effect		inaccuracies	
		2	**4**	**6**	**8**	**10**
1	Examination of the olfactory nerve					
2	Examination of visual acuity					
3	Examination of visual fields					
4	Examination of Color Sensing					
5	Estimate the size of the eye slits and pupils					
6	Examination of the direct reaction of the pupils to light					
7	Examination of the friendly response of the pupils to light					
8	Examination of the movement of the eyeballs					
9	Examination of Convergence					
10	Examination of accommodation					

Examination of the function of the trigeminal nerve

№	**Evaluation criteria**	**Evaluation criteria**				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1	Determination of soreness at the exit sites of the branches of the trigeminal nerve					
2	Examination of the movement of the lower jaw					
3	Determine the tone and trophism of the chewing muscles					
4	Examination of the mandibular reflex					

5	Examination of the surface sensitivity of the face along the branches of the trigeminal nerve					
6-7	Examination of the surface sensitivity of the face by Zelder zones					
8	Examination of deep facial sensitivity					
9	Interviewed subjective data for trigeminal neuralgia: - are there unilateral, paroxysmal, short-term pains on the face?					
10	- Is the pain relieved by chewing, talking or washing?					

Examination of the function of the cranial nerves (VII, VIII)

№	**Evaluation criteria**	**Evaluation criteria**				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1	Ask to raise eyebrows					
2	Ask to frown					
3	Ask to close eyes tightly					
4	Examination of the symmetry of the nasolabial folds					
5	Ask to puff out cheeks (sail symptom)					
6	Ask to whistle with lips					
7	Taste detection on the front 2/3 of the tongue					
8	Whispering Research					
9-	Investigation of the					

10	presence of nystagmus					

Examination of the function of the cranial nerves (IX, X, XI, XII)

№	Evaluation criteria	Evaluation criteria				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1	Swallowing function examination (choking, dysphagia,)					
2	examination of Phonation					
3	examination of the pharyngeal reflex					
4	examination of the movement of the soft palate					
5-6	examination on the taste of the root of the tongue					
7	examination of head turns to the sides					
8	Shoulder Shrug and Shoulder Adduction Study					
9-10	Ask to stick out tongue and explore the symmetry, movement and trophism of the tongue					

Examination of the function of cerebellum

№	Evaluation criteria	Evaluation criteria				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1	Ask the patient to walk in one line, Romberg test evaluation					
2	Diadochokinesis					

3	Finger test, Finger-finger test					
4	Dysmetria test					
5	Knee-heel test					
6	Examined Babinsky's asynergy					
7	Examined muscle tone					
8	Examined handwriting					
9	Examined Speech					
10	Examination of nystagmus					

Examination of the function of the extrapyramidal system

№	**Evaluation criteria**	**Evaluation criteria**				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1	Ask the patient to stand up and walk around the room					
2	Examination of handwriting (ask to write)					
3-4	Examined the Westphal Phenomenon (from foot)					
5-6	Examined the Foix Thévenard phenomenon (from his knees)					
7-8	Stuart-Holmes test					
9	Examined the symptom of the eye, face, tongue					
10	Examined the muscle tone of the upper and lower limbs					

Examination of meningeal symptoms

№	**Evaluation criteria**	**Evaluation criteria**

		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1	Survey of subjective data					
2	assessment of the patient's condition					
3	Examined the stiffness of the muscles of the back of the head					
4	Examined Kernig's symptom					
5	Investigated the upper symptom of Brudzinsky					
6	Investigated the middle symptom of Brudzinski					
7	Investigated the lower symptom of Brudzinsky					
8	Mendel’s symptom.					
9-10	Bekhterev's facial reflex.					

Examination of the autonomic nervous system

№	**Evaluation criteria**	**Evaluation criteria**				
		does not have manual skills	conducted chaotically, with omissions, without effect	not carried out fully enough with technical errors	carried out systematically, but with minor technical inaccuracies	carried out systematically, technically correct and efficiently
		2	**4**	**6**	**8**	**10**
1	Local dermographism					
2	Painful dermographism (reflex)					
3	Stange test					
4	Orthostatic test (Prevel)					
5	Clinostatic test (Danielopol)					
6	Cold test					
7-8	Solar reflex					

9-10	Pilomotor reflex					

Point-rating assessment (check-list) of medical history management (maximum 100 points)

№	Criteria	10	8	6	4	2
		Excellent	***Good***	***Satisfactory***	***Need correction***	***Bad***
1	Patient complaints: major and minor	Completely and systematically, with an understanding of important details	Accurate and complete	basic information	Incomplete or inaccurate, some details are missing	Misses important
2	Collecting an anamnesis of the disease					
3	Anamnesis of life					
4	Objective status - general examination	Completely and systematically, with an understanding of important details	Consistently and correctly	Identification of main data	Incomplete or not quite correct, not attentive to patient comfort	Inappropriate data
5	**Nervous system**		Complete, effective, technically correct application of all examination skills, physical examination with minor errors, or corrected during execution	Revealed basic data Physical examination skills learned	Incomplete or Inaccurate Physical examination skills need to be improved	Important data are missing. Inappropriate physical examination skills
6	Medical history presentation	Maximum full description and presentation Understands the problem in a complex, connects with the patient’s features	precise, focused; choice of facts shows understanding	Record is by form, includes all basic information;	Many important omissions, inaccurate or unimportant facts are often included	Lack of control of the situation, many important omissions, many clarifying questions

Point-rating assessment (check-list) of the ISW (independent student's work) - creative task (maximum 90 points) + bonuses for English and time management

		10	8	4	2
1	**Problem solving**	The organized concentrated, allocates all questions which are falling into to the main revealed problem with a comprehension of a concrete clinical situation	Organized, the concentrated, allocates all questions which are falling into to the main revealed problem, but there is no comprehension of a concrete clinical situation	Not the concentrated, Derivation on the questions which are not falling into to the main revealed problem	Inaccurate, misses the main thing, disharmonious data.
2	**Information**	All necessary information on a subject in the free, serial, logical manner is completely conveyed The product form is adequately chosen	All necessary information in a logical manner, but with shallow inaccuracies is conveyed	All necessary information on a subject is explained chaotically, with not gross errors	Important information on a subject, gross errors is not reflected
3	**Significance**	Material is chosen on the basis of authentically established facts. Manifestation of a comprehension on the level or quality of proofs	Some conclusions and the conclusions are formulated on the basis of assumptions or the incorrect facts. There is no complete comprehension of level or quality of proofs	Not the sufficient comprehension of a problem, some conclusions and the conclusions are based on the inexact and not proved data – doubtful resources are used	Conclusions and the conclusions are not proved or irregular
4	**Logic**	logical and well reasoning, has internal unity, provisions in a product follow one of another and are logically interdependent between themselves	Has internal unity, provisions of a product one of another follows, but there are inaccuracies	There is no sequence and logicality in statement, but it is possible to keep track of the main idea	Jumps from one on another, it is difficult to catch the main idea
5	**Recourses**	Literary data are submitted in logical interrelation, show deep study of the main and padding informational resources	Literary data show study of the main literature	Only ordinary recourses	Inconsistency and randomness in statement of data, an inconsistency There is no knowledge of the main textbook Using of Google
6	**Practical application**	High	Good	moderate	no
7	**Patient**	High	Good	moderate	no

	focusing				
8	**Applicability in future practice**	High	Good	moderate	no
9	**Presenation**	Correctly, to the place all opportunities of Power Point or other e-softs, the free possession of material, a sure manner of statement are used	It is overloaded or are insufficiently used visual materials, inexact possession of material	Visual materials are not informative	Does not own material, is not able to explain it
bonus	**Time management***	10 For before deadline	In time	Good quality but a little late Minus 2-4	After deadline more than 24 hours Minus 10
bonus	**Rating****	10 points additional	Outstanding work, for example: The best work in group Creative approach Innovative approach to realization of a task According to the proposal of group		
	* The deadline is determined by the teacher, as a rule - the day of the boundary control ** thus, you can get 90 points as much as possible, to get above 90-you need to show a result higher than expected				

Independent work of students

20 hours

1. Writing an educational medical history – 1 history
2. Training of practical skills independently (on volunteers)
3. Performing a creative task – 3 tasks of the IWS
- Drugs affecting the central nervous system, classification, mechanism of action, pharmacokinetics, side effects, indications and contraindications.
- Antipsychotic drugs classification, mechanism of action, pharmacokinetics, side effects, indications and contraindications.
- Narcotic drugs classification, mechanism of action, pharmacokinetics, side effects, indications and contraindications.

Map of the educational and methodological security of the discipline

№	Informational resources	Number of students studying the discipline (estimated enrollment)	Number in the library KazNU		
			kaz	rus	Eng
	Textbooks (title, year of publication, authors) in electronic version	15			
1	Триумфов А.В. «Топическая диагностика заболеваний нервной системы», краткое руководство. Издательство «МЕДпресс-информ» (2015).				
2	Топический диагноз в нервологии по Петеру Дуусу: учебник/ П. Дуус; под ред. М. Бера, М. Фротшера. – 3-е изд.	-			
3	Bähr, M., & Frotscher, M. (2019). Duus' topical diagnosis in neurology: Anatomy, physiology, signs, symptoms.				
4	Ropper, A. H., Samuels, M. A., & Klein, J. (2014). Adams and Victor's principles of neurology.				
5	In Daroff, R. B., In Jankovic, J., In Mazziotta, J. C., In Pomeroy, S. L., & Bradley, W. G. (2016). Bradley's neurology in clinical practice.				
6	In Innes, J. A., In Dover, A. R., In Fairhurst, K., Britton, R., & Danielson, E. (2018). Macleod's clinical examination.				
7	Philip B Gorelick, Fernando B Testai, Graeme J Hankey, Joanna M Wardlaw (2014). Hankey's clinical neurology.				
8	Hal Blumenfeld (2010) Neuroanatomy through				

	clinical cases				
9	«Неврологиялық науқастарды клиникалық зерттеу әдістемесі» Методические рекомендации / С.У.Каменова и др. – Алматы, 2018.- 84с.				
10	Kamenova S.U., Kuzhubaeva K.K., Ospanbekova D.M. Methods of clinical examination of neurological patients / Methodical recommendations / S.U. Kamenova et al. – Almaty, 2018. – 82 pages.				
11	Uddin S., Rashid M. (eds.) Advances in Neuropharmacology-Drugs and Therapeutics. New York: Apple Academic Press, 2019. — 654 p.				
12	Manji, H., Connolly, S., Kitchen, N., Lambert, C., & Mehta, A. (2014-10). Oxford Handbook of Neurology. Oxford, UK: Oxford University Press. Retrieved 17 Aug. 2021, from https://oxfordmedicine.com/view/10.1093/med/9780199601172.001.0001/med-9780199601172.				
13	Nicholas J Talley, Brad Frankum, Davis Currow (2015). Essentials of internal medicine.				
14	Paul W. Brazis, Joseph C. Masdeu, José Biller (2011). Localization in clinical neurology.				
15	Каменова С.У., Кужыбаева К.К., Оспанбекова Д.М. Методика клинического обследования неврологических больных: Учебное пособие / С.У.Каменова и др. – Алматы, 2018.- 84с.				
	Internet sources:				
	Medscape.com Oxfordmedicine.com Uptodate.com Clinical Learning by ELSEVIER				