THEMATIC PLAN OF PRACTICAL CLASSES ON NEUROLOGY FOR STUDENTS OF MEDICAL FACULTY IV COURSE FOR 2017-2018 ACADEMIC YEAR ON THE DEPARTMENT OF PSYCHIATRY, NARCOLOGY NEUROLOGY AND MEDICAL PSYCHOLOGY

№	Practice theme	Questions, that should be studied	Hours
1.	The principles of the structure and functioning of the nervous system. Functional unit of the nervous system – a neuron. Motor system. The idea about the reflex and reflex arch.	The main stages of the phylo- and ontogenesis of the nervous system. The structural and functional unit of the nervous system. The main anatomical-topographical parts of the nervous system: brain hemispheres, basal ganglia, the brainstem, spinal cord, roots, spinal ganglia, plexus, peripheral nerves. The functional unit of the nervous system – a neuron. Types of neurons, their functional significance. Neuroglia, its functional significance. The vegetative nervous system, its outsegmental and segmental parts. Limbic-reticular complex. The cerebral cortex. Cytoarchitectonics fields. The localization of functions in the cortex of large hemispheres. The concept about the functional systems. The blood supply of the brain and spinal cord. The membranes of the brain and spinal cord. Cerebrospinal fluid. The idea about the reflex and the reflex arch, conditioned and unconditioned reflexes, the levels of closure of skin, tendon and periostal reflexes. The anatomical features and neurophysiology of the system of arbitrary motions, extrapyramidal system and the cerebellum. The research technique of the locomotor system.	4
2.	Arbitrary movements and their disorders. The pyramidal system. Cortico-nuclear and cortico-spinal ways. The symptoms of central and peripheral paresis. Syndromes of the defect of the motor ways at different levels.	The realization of the arbitrary movements. The pyramidal system. The central and peripheral motor neurons. Cortico-nuclear and cortico-spinal ways. The symptoms of the central (spastic) paralysis. Pathophysiology of the muscle hypertonia, hyperreflexia, pathologic reflexes, decrease of the abdominal reflexes. The symptoms of peripheral (flaccid) paralysis. Pathophysiology of atony, a reflexy, atrophy. Paralysis, paresis, monoplegia, paraplegia, hemiplegia, triplegia, tetraplegia. The syndrome of motor disorders in the defect of the motor ways at different levels: frontal central gyrus (the syndromes of irritation and loss), corona radiation, internal capsule, the brainstem (alternating paralysis), the different levels of the spinal cord (supra – the cervical intumescence, at the level of the cervical intumescence, thoracic, lumbar intumescences, the conus), different levels of the peripheral motor neuron (the anterior horn, anterior root, nervous plexus, certain peripheral nerves).	4
3.	The extrapyramidal system and the syndromes of its defect. The cerebellum, syndromes of defect of the cerebellum.	The anatomical data: the basal ganglia (lentiformis, caudate nucleus, the claustrum of insula, sub-thalamus), the formations in the brainstem (red nucleus, substantia niagra, reticular formation). The communication of sub-cortical ganglia with the various departments of the brain and spinal cord. Physiology of the extra-pyramidal system, its participation in support of unconditioned reflexes, realization of the stereotypical automated movements, the ability of muscles act. The biochemistry of the extra-pyramidal pathway. Modern ideas about the exchange and the concentration of the catecholamines in the nigra-striatum system. Syndromes of defect of the extrapyramidal system. Akinetico-rigid syndrome or the Parkinson syndrome, its biochemical aspects. The key clinical symptoms of the parkinsonism: oligo-bradykinesia, muscle rigidity, parkinsonism tremor and postural instability. Differential diagnosis of the plastic and spastic (elastic) hypertonuses. The hyperkinetic syndrome. Types of hyperkinesis: athetosis, chorea, hemiballism, tics. Muscle dystonia (focal (blepharospasm, facial hemispasm, spastic torticollis, oromandibularis dystonia, hand dystonia, foot dystonia, the torsion dystonia), segmental, generalized). Anatomic and physiological features of the cerebellum. The connection of the cerebellum with the various departments of the brain and spinal cord (homo – and geterolateralis). Afferent and efferent ways. The vermis and cerebellar hemisphere. The functions of the cerebellum: achieving of balance, coordination, synergism of movements, the regulation of muscle tone. Syndromes of defects of the cerebellum. The idea about static and locomotory ataxia, asynergia, atony of muscles, intention tremor, adiadochokinesia, dysmetria, hypermetria, nystagmus, scanning speech. The types of ataxia: cerebellar, cortical, vestibular, sensitive).	4

4.	The sensitive system and symptoms of its defect. Kinds and types of violations of the sensitivity. Practical skills.	The concept about reception. Types of receptors. Exteroceptive, proprioceptive, interoceptive sensitivity. The clinical classification of sensitivity. The pathways of sensitivity. The methodology of the study. The types of disorders of sensation: anesthesia, hypesthesia, hyperesthesia, hyperpathia, dysesthesia. Synesthesia, dyssociation disorders, polisthesia, paresthesia. Pain and its classification. The concept about the nociceptive and antinociceptive systems of the brain. The topical types of violations of sensitivity: mononeuritic, polineuritic, root, posterior horn, conductor (in the defect of the conductor sensitive ways at the level of the spinal cord, medial loop, thalamus opticus, internal capsule); cortical type (the syndromes of irritation and loss). The syndrome of half-blow of the spinal cord (Brown-Sequard's syndrome). Practical skills.	4
5.	Pathology of olfactory and visual systems. The syndromes of destruction of the oculomotor nerves.	I pair – olfactory nerve (sensitive): basic anatomical and physiological data. The olfactory analyzer: the first neuron (the ganglia cells of the mucous membrane of the nose); the second neuron (the olfactory bulbs and olfactory path); the third neuron (the primary sub-cortical olfactory centers – the olfactory triangle, the pellucid septum, anterior perforating substance); cortical olfactory center (the medial surface of the temporal lobe of the brain). The research of the olfactory analyzer. Syndromes of defect – hypoosmia, anosmia, hyperosmia, olfactory hallucinations. II pair – the optic nerve (sensitive). The anatomic and physiological features: departments – the peripheral (rods and cones, bipolar cells, ganglia cells, the optic nerve, chiasm, the optic tract), the central (lateral geniculate body, the upper colliculus of the quadrigeminal plate, the pulvinar of thalamus (sub-cortical centers), the Graciole's bundle, calcarine sulcus of the occipital lobe (the cortical center of the analyzer). Symptoms of defect: amaurosis, amblyopia, homonymous and heteronymous hemianopsia (binasalis, bitemporalis), visual hallucinations. Changes of the disc of the optic nerve (changes in the fundus). III, IV, VI pairs – oculomotor (mixed), trochlear, abducent (motor) nerves: the localization of the nuclei, the output of roots from the skull, zone of innervation at the periphery. Symptoms of exposure: ptosis, strabismus, diplopia, violations of convergence and accommodation, ophtalmoplegia (partial and full); the pupil reaction, reflex arch of the pupil reflex, violation of the pupil reactions (Argail-Robertson's syndrome), miosis, mydriasis, anisocoria.	4
6.	Trigeminal, facial, vestibulocochlear nerves and symptoms of their defeat.	V pair – trigeminal nerve (mixed): the nucleus of the nerve, the output of roots at the base of the brain, the skull, the branches of the nerve and the zone of their innervation (ophthalmic nerve, maxillary, mandibular nerves). The symptoms of the defeat of the system of the trigeminal nerve: the defeat of the branches of the trigeminal nerve (shooting pain, disorders of all kinds of sensitivity in the area of the branche's innervation, loss of the corneal reflex, paresis of masticatory muscles, loss of the mandibular reflex); the defeat of the node of the trigeminal nerve (herpetic rash, pain, disorders of all kinds of the sensitivity of the half of the face, reducing of the corneal, mandibular reflexes); the defeat of the nucleus of the trigeminal nerve – the nucleus of the spinal tract (segmentally – dissociative type of the violation of pain and temperature sensation at the side of the face); the defeat of thalamus (hemianesthesia of all kinds of sensitivity, thalamic pain on the opposite side of the fire; the defeat of the cortex of the postcentral gyrus. VII pair – facial nerve (mixed). The anatomic and physiological features and components of the branches of the nerve (the greater petrosal nerve, nerve to stapedius muscle, the tympanic nerve, facial nerve). The symptoms of the defeat of the facial nerve: peripheral paresis of the facial muscles (the defeat of the nerve in the channel, the cerebellopontine angle, the brainstem (alternating syndromes of the pons)) and the central paresis of the facial muscles (internal capsule; the lower parts of the anterior central gyrus). VIII pair – vestibule-cochlear nerve (sensitive). Anatomo – physiological data, cochlear and vestibular nerves. Pathology of the cochlea – vestibular apparatus: the defect of the sound – conductional apparatus (the disorder of the hearing in the high tone), the defect of sound – conducting apparatus (the disorder of the hearing in low tones); the defect of the vestibular part (vertigo, nistagmus, the violation of balance, coordination of movements, vegetative disorders, the defect of the cortex of the temporal lobes (in irritation – the auditory hallucinations).	4

7.	Pathology of IX-XII pairs of the cranial nerves. Bulbar and pseudobulbar syndromes.	IX pair – glossopharyngeal nerve (mixed); X pair – vagus nerve (mixed); XI pair – accessory nerve (motor); XII pair – hypoglossal nerve (motor). The anatomic and physiological features. The localization of nuclei in the medulla oblongata. Bulbar and pseudobulbar syndromes: general characteristics (dysphagia, dysphonia, dysarthria) and differences (fibrillations and atrophy of tongue muscles, reflexes of the oral automatism, forced laugh, cry). The violation of innervation of the tongue muscles – peripheral and central paresis.	4
8.	Pathology of vegetative nervous system.	The anatomic and physiological features and functions of the vegetative nervous system. The segmental section of the vegetative nervous system. The sympathetic nervous system: the lateral horns of the spinal cord, sympathetic trunk, ganglia. Parasympathetic nervous system: cranial-bulbar, sacral parts. Suprasegmental part of vegetative functions: the hypothalamus and the limbic system, the reticular formation of the brainstem. Ergotropic and trophotropic activities. Methods of study of the vegetative functions. Syndromes of defect of the suprasegmental part of the vegetative nervous system. The syndrome of the vegetative dystonia. The permanent and paroxysmal course. Hypothalamic syndrome. Vegetative-vascular paroxysms: sympatho-adrenal, vago-insular, mixed. Syndrome of defect of the segmental vegetative nervous system. The defect of the brainstem, lateral horns of the spinal cord, ganglia of the brainstem, plexuses, nerves. Clod-Bernard-Horner's syndrome. Visceral symptoms. Regulation levels of pelvic functions and their disorders.	4
9.	Localization of function in the brain cortex. Syndromes of defeat. Cerebrospinal fluid, its changing. The meningeal syndrome.	The structure of the cerebral hemispheres of the brain. Cyto – and myeloarchitectonics of the cortex. Localization of functions in the brain cortex. Dynamic localization of functions. Motor and sensory representations in the cortex. The concept about the functional asymmetry of the hemispheres. The gnostic functions. Types of violations of the gnostic functions: visual, olfactory, gustatory, auditory agnosia, astereognosia, autotopagnosia, anozognosia. Praxis. Types of apraxia: constructive, ideatory, motor. The speech. Disorders of speech: motor, sensory, amnestic aphasia. Syndromes of defect of some parts of hemispheres: the frontal, temporal, parietal, occipital lobes, the limbic cortex. Syndromes of irritation of the cortex of the large hemispheres. Syndromes of the defeat of the left and right hemispheres. The concept about the between-hemispheres asymmetry. The syndrome of chronic vegetative state. The syndrome of the «locked in» patient. Syndromes of brain death. Lumbar puncture. The membranes of the brain and spinal cord. Physiology of the liquor formation. The components of the liquor in normal, its modifications in meningitis, tumors, hemorrhagic stroke, tuberculosis. Cell-protein, protein-cell dissociation. Pleocytosis. Meningeal symptoms: headache, vomiting, general hyperaesthesia, photophobia, neck stiffness, the Kernig's symptom, Brudzinsky's symptoms (the upper, middle, the lower), trism, local jet painful phenomena, the Mendel's syndrom, Bekhterev's symptom, pain when you press exit points of the lesser and greater occipital nerves. Meningeal posture of the patient. Lessage's symptom.	4
10.	Functional diagnostics of diseases of the nervous system. Practical skills. Final module control.	X-ray (cranio-, spondilography); Contrast X-ray examinations (myelography, angiography, ventriculography); Ultrasonic (echoencephalograhy, dopplerography); Electrophysiological (electroencephalography, rheoencephalography, echo-encephalography, electromyography, etc.); Methods of the neurovisualisation (computer tomography, magnetic resonance imaging, including in vessel mode). Practical skills. Final module control: including theoretical and practical knowledge.	4
	Altogether:		**40 hours**