INTERNATIONAL HIGHER SCHOOL OF MEDICINE

Department of Special clinical disciplines

SYLLABUS

Neurology and Fundamentals of Neurosurgery

2026-2027 academic year

For students of medical faculty 4th Course 8th Semester

1 – 9 groups of the Central Campus

3 credits (90 h, including auditorial -54 h, independent work – 36 h)

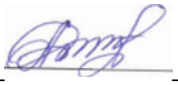
Lecturer: **Venue:**	**Shirin Sadyrbekova** +996550550717 (WhatsApp) Zoom
Practical classes:	
02, 05, 06, 08, 09 groups **Venue:**	**Gulzat Mataeva** +996559031771 (WhatsApp) «Vedanta plus», 1B Manas str., classroom № 303
01, 03, 04, 07 groups **Venue:**	**Shirin Sadyrbekova** +996550550717 (WhatsApp) IHSM Clinical Simulation Center, 17B Shabdan Baatyr str., classroom № 110

Venue:

«Vedanta plus», 1B Manas str., classroom № 303 https://2gis.kg/bishkek/geo/15763234351099267/74.561565,42.877276

IHSM Clinical Simulation Center, 17B Shabdan Baatyr str., classroom № 110 https://2gis.kg/bishkek/geo/70000001059948864/74.571668,42.866149

The Syllabus is considered
at the meeting of the department of
Special Clinical Disciplines
Protocol № 1 dated 28th august 2026

Head of the department________

Course Objective: The main objective of the course of Neurology and Fundamentals of Neurosurgery is to acquire knowledge and skills on the method of examining patients with various neurological pathologies, with the identification of symptoms and the determination of the level of damage. As well as the principles of evidence-based medicine in making a preliminary clinical diagnosis, drawing up an examination plan, comparing data from clinical and diagnostic examinations, skills in the treatment and prevention of common neurological diseases.

After study of the discipline the student must gain:

Knowledge:

Treatment algorithms for the most common neurological diseases based on the principles of evidence-based medicine, and first aid techniques and methods for emergency neurological conditions.

Skill:

Apply standard treatment algorithms for the most common diseases in typical clinical situations. Select first aid techniques and methods for emergency neurological conditions.

Attitude:

Skills in correcting treatment for the most common illnesses within the framework of standard algorithms in accordance with the principles of evidence-based medicine.

Skills in applying basic first aid techniques in emergency neurological conditions.

Pre-requisites. basic pharmacology, clinical pharmacology, internal medicine, Nervous system short-term module.

Post-requisites. Family medicine, medical genetics, polyclinic therapy.

THEMATIC PLAN OF LECTURES

№	Theme of lecture	Hours	Date
1.	Approach to the patient with pain.	2	As per timetable
2.	Primary headache.	2	As per timetable
3.	Movement disorders.	2	As per timetable
4.	Stroke.	2	As per timetable
5.	Traumatic brain injuries.	2	As per timetable
6.	Neurodegenerative disorders.	2	As per timetable
7.	Spinal cord disorders	2	As per timetable
8.	Polyneuropathies.	2	As per timetable
9.	Muscular dystrophies.	2	As per timetable

THEMATIC PLAN OF PRACTICAL CLASSES

№	Theme of practical class	Hours	Date
1.	Approach to the patient with a headache.	2	As per timetable
2.	Neck and back pain.	2	As per timetable
3.	Movement disorders.	2	As per timetable
4.	Epilepsy.	2	As per timetable
5.	Sleep and wakefulness disorders. Coma and impairment of consciousness.	2	As per timetable
6.	Module №1	2	As per timetable
7.	Cerebrovascular diseases.	2	As per timetable
8.	A neurological approach to the patient with dementia.	2	As per timetable
9.	Multiple sclerosis.	2	As per timetable
10.	Meningitis.	2	As per timetable
11.	Neurodegenerative disorders.	2	As per timetable
12.	Module №2	2	As per timetable
13.	Spinal cord disorders.	2	As per timetable
14.	Cranial nerve disorders.	2	As per timetable
15.	Mononeuropathies.	2	As per timetable
16.	Polyneuropathies.	2	As per timetable
17.	Myasthenia gravis	2	As per timetable
18.	Module №3	2	As per timetable

THEMATIC PLAN OF INDEPENDENT WORK OF STUDENTS

№	Theme of independent work	Hours
1.	Reflex sympathetic dystrophy (RSD) - literature review	2
2.	Adjuvant pain medications - literature review	2
3.	Assessment of pain in patients with communication difficulties- literature review	2
4.	Integrative medicine techniques for the treatment of chronic pain. - literature review	2
5.	Indications for the use of surgery and botulinum toxin in the treatment of movement disorders. – task to perform	2
6.	First aid for seizures. – task to perform	2
7.	Practice lumbar puncture on the lumbar puncture simulator – task to perform	2
8.	NIHSS stroke severity determination– task to perform	2
9.	Brain tumors - literature review	2
10.	Assessment of cognitive functions. – task to perform	2
11.	Amyotrophic lateral sclerosis. - literature review	2
12.	Examination of meningeal signs on a mannequin in a simulation center. – task to perform	2
13.	Interpretation of CSF test results – task to perform	2
14.	Indications for electroneuromyography. - literature review	2
15.	Performing an edrophonium test – task to perform	2
16.	Spina bifida (etiology, classification, diagnosis and treatment) - literature review	2
17.	Spinal cord syndromes. – task to perform	2
18.	Brainstem syndromes. – task to perform	2

Recommended reading for the discipline:

Basic:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993

Additional:

1. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
2. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Resources of the information and telecommunication network "Internet"

1. https://www.stroke.org
2. https://www.ilae.org/
3. https://ihs-headache.org/en/
4. https://www.who.int/
5. https://emedicine.medscape.com/

Grading policy and procedures for all types of work

For the period of studying the discipline, the student gains points for the relevant parameters (per unit):
current score - 40 points
independent work - 20 points
control score (final assessment of knowledge per unit) - 40 points
Maximum score - 100 (40+20+40)

Grading system for student's achievements

Grading criteria per discipline				
Maximum score	Intervals			
	«unsatisfactory»	«satisfactory»	«good»	«excellent»
Interval description	Does not know a significant part of the program material, makes significant mistakes, and cannot cope with practical assignments.	Knowledge of only the basic material, significant difficulties in completing practical tasks.	High level of knowledge, skills, abilities, without significant inaccuracies.	High, advanced level of knowledge, skills, abilities, without inaccuracies.
Current control - 40	0-23	24-30	31-35	36-40
Independent work - 20	0-11	12-15	16-17	18-20
Control work (module) - 40	0-23	24-30	31-35	36-40
Total - 100	0-59	60-75	76-89	90-100

Conduct Policy: (lateness, absence, behavior in the auditorium, late submission of work).
- Punctuality and completion of tasks.
- Mandatory attendance of classes.
- Attending class in a clean medical uniform.
- Eliminating conversations on a cell phone in the classroom.
- Active participation in the learning process.
- Doing homework on time.
- Academic detention at the time specified by the teacher.

For violations of the Conduct Policy, the total points for discipline might be reduced to 1-5 points.
For missing classes there are following reducing marks:

1-6 absentees – 2 points from the total score
7-13 absentees – 5 points from the total score
>14 absentees – 10 points from the total score

Academic Ethics Policy.
- Be tolerant, respect the opinions of others.
- Formulate objections in the correct form.
- Constructively support feedback in all classes.
- Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the following: the absence of references when using printed and electronic materials, quotes, thoughts and works of other authors or students.
- Prompting and cheating during tests, exams, classes is unacceptable as well as passing an exam for another student, unauthorized copying of materials.

For violations of the Academic Ethics Policy, the total points for the discipline may be reduced to 1-5 points.

Guidelines for the lessons of the discipline

Key questions covered in lesson 1. Approach to the patient with a headache.

1. Definition and Pathophysiology of pain. Neuropathic pain.
2. Definition and Pathophysiology of Headache
3. Diagnosis and Classification of Headache Disorders According to the International Classification of Headache Disorders, 3rd Edition (ICHD-3).
4. Headache treatment.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005
4. Headache Classification Committee of the International Headache Society (IHS) The International Classification of Headache Disorders, 3rd edition. https://journals.sagepub.com/toc/cepa/38/1

Key questions covered in lesson 2. Neck and back pain.

1. Causes of neck and back pain.
2. Neck and back pain management.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Key questions covered in lesson 3. Movement disorders.

1. Classification of movement disorders. Hypokinesia and hyperkinesia. Ataxia.
2. Hyperkinetic movement disorders: dystonia, myoclonus, athetosis, hemiballismus, Tourette's syndrome, essential tremor. Causes, definition, classification, clinical features, pathophysiology, diagnosis, treatment, rehabilitation.
3. Ataxia: causes, types, pathophysiology, diagnosis, symptoms, differential diagnosis of ataxia, treatment, complications. Hereditary ataxias.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Key questions covered in lesson 4. Epilepsy.

1. Classification of seizures and epilepsy. Status epilepticus.
2. Other epilepsy syndromes: Lennox-Gastaut syndrome, West's syndrome.
3. Diagnosis, EEG interpretation.
4. Drug treatment of epilepsy. Classifications of antiseizure drugs.
5. Principles of ASD selection for specific seizure type.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005
4. https://www.ilae.org/updated-classification-epileptic-seizures-2025

Key questions covered in lesson 5. Sleep and wakefulness disorders. Coma and impairment of consciousness.

1. Sleep phases, sleep and wakefulness regulation centers. The chronobiological model of sleep.
2. International Classification of Sleep Disorders.
3. Insomnia. Sleep-related breathing disorders. Central disorders of hyper somnolence- Narcolepsy. Parasomnias. Circadian rhythm sleep-wake disorders. Sleep-related movement disorders.
4. Coma and impaired consciousness- etiology, pathophysiology, symptoms and signs. Diagnosis. The Glasgow Coma Scale. Prognosis. Treatment.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Lesson 6. Module №1.

Submit first unit independent works as per instructions given below (page 10).
Repeat all topics of the first unit, including lectures.
Module includes MCQ and clinical cases.
Module is taken only once, missing module reduces your total unit mark for 40 points (your control score)

Key questions covered in lesson 7. Cerebrovascular disease.

1. Blood supply of brain. Stroke risk factors. Epidemiology. Stroke prevention.
2. Stroke classification. Initial stroke management. Ischemic stroke management. Hemorrhagic stroke management.
3. Stroke treatment. Stroke rehabilitation.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005
4. https://eso-stroke.org/guidelines/eso-guideline-directory/#acute-stroke

Key questions covered in lesson 8. A neurological approach to a patient with dementia.

1. Clinical criteria of dementia. Classification of dementias.
2. Diagnostic testing, management of dementia.
3. Cortical dementias: Alzheimer’s disease.
4. Subcortical dementias: vascular dementia, Binswanger's disease.
5. Cortico-subcortical dementias: dementia with Lewy bodies.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Key questions covered in lesson 9. Multiple sclerosis.

1. Multiple sclerosis. Classification and clinical forms.
2. Diagnostic criteria of multiple sclerosis.
3. Treatment of exacerbations and relapses. Disease-modifying therapies.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Key questions covered in lesson 10. Meningitis.

1. Primary meningitis (bacterial, viral), clinical manifestation, diagnostics, treatment.
2. Secondary meningitis (purulent, serous), clinical manifestation, diagnostics, treatment.
3. Meningeal signs

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Key questions covered in lesson 11. Neurodegenerative diseases.

1. Alzheimer's disease, etiology, pathogenesis, clinical presentations, treatment.
2. Parkinson's disease, etiology, pathogenesis, clinical presentations, treatment.
3. Wilson’s disease (hepatolenticular degeneration), etiology, pathogenesis, clinical presentations, treatment.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Lesson 12. Module №2

Submit second unit independent works as per instructions given below (pages 10-11).
Repeat all topics of the second unit, including lectures.
Module includes MCQ and clinical cases. Module is taken only once, missing module reduces your total unit mark for 40 points (your control score)

Key questions covered in lesson 13. Spinal cord disorders

1. Blood supply of spinal cord. Pathomorphology of spinal stroke. Clinical manifestation and diagnostics of spinal stroke. Principles of treatment of spinal stroke.
2. Myelopathy (vascular, inflammatory, traumatic), etiology, pathogenesis, clinical presentation, forms, diagnostics, treatment.
3. Spinal cord syndromes

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Key questions covered in lesson 14. Cranial nerve disorders.

1. Cranial nerves, anatomy and functions.
2. Facial palsy, etiology, pathogenesis, clinical presentations, treatment.
3. Trigeminal neuralgia, etiology, pathogenesis, clinical presentations, treatment.
4. Glossopharyngeal neuralgia, etiology, pathogenesis, clinical presentations, treatment.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Key questions covered in lesson 15. Mononeuropathies.

1. Radial nerve palsy. Carpal tunnel syndrome**.** Causes, pathophysiology, diagnosis, symptoms and treatment.
2. Ulnar nerve palsy. Cubital tunnel syndrome. Causes, pathophysiology, diagnosis, symptoms and treatment.
3. Median nerve neuropathy. Anterior interosseous nerve syndrome. Causes, pathophysiology, diagnosis, symptoms and treatment.
4. Peroneal nerve palsy. Etiology, differential diagnosis between peroneal and tibial nerve palsy, clinical features, diagnosis, treatment and rehabilitation. Tarsal tunnel syndrome.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Key questions covered in lesson 16. Polyneuropathies.

1. Guillain-Barre's syndrome, etiology, pathogenesis, clinical presentations, treatment.
2. Diabetic polyneuropathy, etiology, pathogenesis, clinical presentations, treatment.
3. Alcoholic polyneuropathy, etiology, pathogenesis, clinical presentations, treatment

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Key questions covered in lesson 17. Myasthenia gravis.

1. Neuromuscular junction physiology in myasthenia gravis.
2. Causes, classification, diagnosis, symptoms, treatment. Differential Diagnosis. Lambert-Eaton syndrome.

Recommended reading for the class:

1. Principles of Neurology 5th edition, Adams R.D., Victor M., 1993
2. Differential diagnosis in neurology and neurosurgery, Sotirios A. Tsemetzis, 2000
3. Essential neurology 4th edition, Iain Wilkinson, Graham Lennox, 2005

Lesson 18. Module №3.

Submit third unit independent works as per instructions given below (page11).
Repeat all topics of the third unit, including lectures
Module includes MCQ and clinical cases. Module is taken only once, missing module reduces your total unit mark for 40 points (your control score)

Methodological instructions for the implementation of independent work on the discipline

№	Theme of independent work	**Instructions**
1.	Reflex sympathetic dystrophy (RSD) - literature review	1. Search on the internet latest articles on Reflex sympathetic dystrophy 2. Take short notes on key points 3. Answer 1 question to submit
2.	Adjuvant pain medications - literature review	1. Search on the internet latest articles on Adjuvant pain medications 2. Make a table with name, initial doses and important side effects of Adjuvant pain medications 3. Answer 1 question to submit
3.	Assessment of pain in patients with communication difficulties- literature review	1. Search on the internet latest articles on Assessment of pain in patients with communication difficulties 2. Take short notes on key points 3. Answer 1 question to submit
4.	Integrative medicine techniques for the treatment of chronic pain. - literature review	1. Search for the most recent Integrative medicine techniques for the treatment of chronic pain 2. Report your findings Answer 1 question to submit
5.	Indications for the use of surgery and botulinum toxin in the treatment of movement disorders. – task to perform	1. Search what are Indications for the use of surgery and botulinum toxin in the treatment of movement disorders. 2. Take notes 3. Answer 1 question to submit
6.	First aid for seizures. – task to perform	Make up a chart with Seizure first aid instructions on www.canva.com
7.	Practice lumbar puncture on the lumbar puncture simulator – task to perform	1.Visit the center of simulation medicine 2.Ask instructor of the center permission to work on Lumbar Puncture Simulator 3. Practice LP on Lumbar Puncture Simulator 4. Note that visited the center on attendance register 5. Record 5-minute video while you are practicing 6. Show the video to submit
8.	NIHSS stroke severity determination– task to perform	1. Find on the internet and print out NIHSS 2. Use the list of main symptoms you have found on stroke patient 3. Score them on NIHHS 4. Perform results with short explanation
9.	Brain tumors - literature review	1. Find WHO brain tumor grades 2. Copy it down 3. Answer 1 question to submit
10.	Assessment of cognitive functions. – task to perform	1. Perform an assessment of cognitive functions using MMSE or MOCA, record 5-10-minute video. (patient age should be above 65, video can be presented during practice classes)

11.	Amyotrophic lateral sclerosis. - literature review	1. Read about Amyotrophic lateral sclerosis. Take notes on key points. Answer 1 question to submit
12.	Examination of meningeal signs on a mannequin in a simulation center. – task to perform	1.Visit the center of simulation medicine 2.Ask instructor of the center permission to work on mannequin 3. Assess meningeal signs on mannequin while recording 5-minute video 4. Note that visited the center on attendance register 5. Show the video to submit This assessment also can be done on your group mate. In this case you do not have to visit simulation center
13.	Interpretation of CSF test results – task to perform	1. Interpret suggested CSF test results.
14.	Indications for electroneuromyography. - literature review	Read about Indications for electroneuromyography. Take notes. Answer 1 question to submit
15.	Performing an edrophonium test – task to perform	Explain what edrophonium test used for and how to perform it.
16.	Spina bifida (etiology, classification, diagnosis and treatment) - literature review	Read about causes and forms of Spina Bifida. Take notes. Answer 1 question to submit
17.	Spinal cord syndromes. – task to perform	Draw up a table of spinal cord syndromes with common causes and main features. Present it.
18.	Brainstem syndromes. – task to perform	1. Draw up a table of brainstem syndromes with common causes and main features. Present it.