



# **NEUROLOGY**

**FOURTH YEAR OF STUDIES**

2025/2026. school year

**NEUROLOGY**

Subject:

## **NEUROLOGY**

The course is evaluated with 6 ECTS. There are 6 hours of active teaching per week (3 hours of lectures and 3 hours of work in a small group).

**TEACHERS:**

| ON | Name and surname         | Email address               | title               |
|----|--------------------------|-----------------------------|---------------------|
| 1. | Svetlana MileticDrakulic | mileticdrakulic@gmail.com   | professor           |
| 2. | Tatjana Boskovic Matic   | stmatic769@gmail.com        | assistant professor |
| 3. | Aleksandar Gavrilovic    | a.gavrilovic.kg@hotmail.com | assistant professor |
| 4. | Katarina Vsic            | stojanovick@yahoo.com       | assistant professor |
| 5. | DejanAleksic             | drdeal1987@gmail.com        | assistant professor |
| 6. | Ana AzanjacArsic         | ana.azanjac@yahoo.com       | assistant professor |
| 7. | Snezana Lazarevic        | simovicsnezana2@gmail.com   | assistant professor |

## **COURSE STRUCTURE:**

| <b>Module</b> | <b>Name of the module</b> | <b>Week</b> | <b>Lectures weekly</b> | <b>Work in a small group per week</b> | <b>Head of the module</b>      |
|---------------|---------------------------|-------------|------------------------|---------------------------------------|--------------------------------|
| 1             | General Neurology         | 7           | 3                      | 3                                     | Svetlana Miletic Drakulic, PhD |
| 2             | Special Neurology         | 8           | 3                      | 3                                     | Svetlana Miletic Drakulic, PhD |
|               |                           |             |                        |                                       | $\Sigma 45+45=90$              |

## **EVALUATION:**

The student masters the subject in modules. The grade is equivalent to the number of points won (see tables). Points are earned in three ways:

**ACTIVITY DURING THE LESSON:** In this way, a student can earn up to 15 points by answering 2 exam questions from that week's lessons during the last working hour in a small group, and based on demonstrated knowledge, they can acquire 0-1 points.

**FINAL MODULE EXAMS:** In this manner, a student can earn up to 15 points, as per the attached table.

**FINAL EXAM:** In this way, the student can get 70 points, 20 points on the final skills test and 50 points on the final written exam .

The final skills test requires the student to take an anamnesis, perform a neurological examination of the patient, interpret the findings, diagnose the patient (differential) and propose a therapeutic procedure. If the student does not get more than 50% of the points on the final skills test, he cannot take the part of the final written exam.

In this way, the student can gain up to 50 points (50 questions, each worth 1 point). A student has the right to take the final written exam if he has achieved more than 50% of the points provided for the activity and test in the modules. Postponed passing of the final written exam (in the following exam periods) does not reduce the number of points used to define the final grade.

| MODULE   |                   | MAXIMUM POINTS             |                    |            |            |
|----------|-------------------|----------------------------|--------------------|------------|------------|
|          |                   | activity during the lesson | final module exams | Final exam | Σ          |
| 1        | General neurology | 7                          | 7                  |            | 14         |
| 2        | Special neurology | 8                          | 8                  |            | 16         |
|          |                   |                            |                    | 70         | 30         |
| <b>Σ</b> |                   | 15                         | <b>15</b>          | <b>70</b>  | <b>100</b> |

**CONSULTATIVE TEACHING:** Consultations can be scheduled with the head of the subject, Svetlana MileticDrakulic([mileticdrakulic@gmail.com](mailto:mileticdrakulic@gmail.com)), Tatjana Boskovic Matic ([stmatic769@gmail.com](mailto:stmatic769@gmail.com)), Aleksandar Gavrilovic([a.gavrilovic.kg@hotmail.com](mailto:a.gavrilovic.kg@hotmail.com)), Katarina Vesic ([stojanovick@yahoo.com](mailto:stojanovick@yahoo.com)), DejanAlekcic ([drdeal1987@gmail.com](mailto:drdeal1987@gmail.com)), Ana Azanjac Arsic ([ana.azanjac@yahoo.com](mailto:ana.azanjac@yahoo.com)), Snezana Lazarevic ([simovicsnezana2@gmail.com](mailto:simovicsnezana2@gmail.com))

**The final grade is determined as follows:**

In order for a student to pass the course, they must accumulate a minimum of 51 points, pass all modules, and pass the final oral exam.

To pass a module, a student must:

1. Score more than 50% of the points allocated for that module.
2. Earn more than 50% of the points designated for participation in classes within each module.
3. Pass the test for that module, meaning they have more than 50% correct answers

| <b>number of points won</b> | <b>grade</b> |
|-----------------------------|--------------|
| 0 - 50                      | <b>5</b>     |
| 51 - 60                     | <b>6</b>     |
| 61 - 70                     | <b>7</b>     |
| 71 - 80                     | <b>8</b>     |
| 81 - 90                     | <b>9</b>     |
| 91 - 100                    | <b>10</b>    |

## **FINAL MODULE EXAMS**

## **MODULE 1.**

### **FINAL EXAM**

**0-7 POINTS**

#### **EVALUATION OF FINAL EXAM**

The test has 28 questions

Each question is worth 0,25 point

## **MODULE 2.**

### **FINAL EXAM**

**0-8 POINTS**

#### **EVALUATION OF FINAL EXAM**

The test has 32 questions

Each question is worth 0,25 point

## LITERATURE:

| <b>module</b>            | <b>the name of the textbook</b>                   | <b>authors</b>                     | <b>publisher</b>                      | <b>the library<br/>G</b> |
|--------------------------|---------------------------------------------------|------------------------------------|---------------------------------------|--------------------------|
| <b>General neurology</b> | ADAMS AND VICTOR'S<br>PRINCIPLES OF<br>NEUROLOGY  | Allan H. Ropper, Martin A. Samuels | McGraw Hill; 9 <sup>th</sup> edition. | Yes                      |
| <b>Special neurology</b> | ADAMS AND V ICTOR'S<br>PRINCIPLES OF<br>NEUROLOGY | Allan H. Ropper, Martin A. Samuels | McGraw Hill; 9 <sup>th</sup> edition. | Yes                      |

All the presentations can be found on the website of the Faculty of Medical Sciences: [www.medf.kg.ac.rs](http://www.medf.kg.ac.rs)

# PROGRAM:

## MODULE 1: General neurology

### TEACHING UNIT 1 (FIRST WEEK):

#### COMA AND RELATED DISORDERS OF CONSCIOUSNESS

lectures 3 school classes

- States of Normal and Impaired Consciousness
- Causes of episodic faintness and syncope
- Classification of Coma and Differential Diagnosis
- Clinical approach to the comatose patient
- Neurologic Examination of the Stuporous or Comatose Patient
- Brain Death and diagnosis of brainstem death

practice 3 school classes

- Approach to the patient with neurological disease
- Principles of neurological history taking
- Recognized symptoms and signs are provided by history and physical review
- Acquaintance with the general neurological examination of the patient
- The neurological examination of Cranial Nerves (I,II)

### TEACHING UNIT 2 (SECOND WEEK):

#### DISORDERS OF SLEEP, HEADACHE, VERTIGO

lectures 3 school classes

- Physiology of Sleep and Sleep-Wake Mechanisms
- Disorders of Sleep
- Principal varieties of headache
- Migraine: epidemiology, clinical features, differential diagnosis, investigations, HIS criteria
- Management of acute migraine and prophylaxis
- Trigeminal Neuralgia and Postherpetic Neuralgia
- Vertigo: Etiology, Clinical features, Management

practice 3 school classes

- Observation of the neurological patient
- The neurological examination head and neck by inspection and palpation
- The neurological examination of Cranial Nerves (III, IV, VI)

### TEACHING UNIT 3 (THIRD WEEK):

#### EPILEPSY

lectures 3 school classes

- Epilepsy: definition, etiology classification, clinical features
- Women and epilepsy
- Management of epilepsy
- The electroencephalogram in Epilepsy
- Management of Status Epilepticus

practice 3 school classes

- The neurological examination of Cranial Nerves (V, VII, VIII)
- The neurological examination cranial nerves, neck, and trunk to the testing of motor, of the upper and lower limbs
- Observations of the speed and strength of movements and of muscle bulk, tone, and coordination

### TEACHING UNIT 4 (FOURTH WEEK):

## CRANIOCEREBRAL TRAUMA

### lectures 3 school classes

- Craniocerebral trauma: definitions and mechanisms
- Cerebral Concussion
- Cerebral Contusion
- Acute Epidural Hemorrhage
- Acute and Chronic Subdural Hematomas
- Traumatic Intracerebral Hemorrhage
- Cerebral edema
- Brain Herniations

### practice 3 school classes

- The neurological examination of Cranial Nerves (IX, X, XI, XII)
- Examination of the upper and lower limbs (muscle trophism, fasciculations, tone, muscle strength, pronation test)
- Tests of deep and main superficial reflexes

## TEACHING UNIT 5 ( FIFTH WEEK):

### DEVELOPMENTAL DISEASES OF THE NERVOUS SYSTEM AND CONSIDERATIONS OF CORTICAL FUNCTION

#### lectures 3 school classes

- Classification of congenital neurologic disorders
- Enlarged head and Microcephaly
- Cranial Malformations at Birth and in Early Infancy
- Disturbances of Neuronal Migration
- Dysraphism, or Rachischisis
- Chromosomal abnormalities
- The Phakomatoses
- Aphasia, apraxia, agnosia
- General Anatomic and Physiologic Considerations of Cortical Function

#### practice 3 school classes

- The neurological examination of infants and small children.
- Testing of Sensory Function: for pain, light touch, vibration, joint position
- Shows the dermatomes of the upper and lower limbs
- Cortical Sensory Syndromes
- Testing of Higher Cortical Functions

## TEACHING UNIT 6 (SIXTH WEEK):

### DISORDERS OF CEREBELLAR

#### lectures 3 school classes

- Clinical features of cerebellar disease
- Differential Diagnosis of acquired cerebellar ataxias
- Differential Diagnosis of hereditary cerebellar ataxias
- Friedreich ataxia and other spinocerebellar degenerations
- Paraneoplastic cerebellar degeneration
- Inherited Mitochondrial disorders

#### practice 3 school classes

- Testing cerebellar function
- Testing cerebellar coordination (Finger-nose and heel-shin testing intention tremor; dysdiadokinesia; tapping to elicit rhythm)
- Phenomenological classification of tremor
- Gait examination, Romberg's sign

TEACHING UNIT 7 (SEVENTH WEEK):

**INFECTIONS OF THE NERVOUS SYSTEM**

lectures 3 school classes

- Viral infections of the nervous system
- Bacterial infections of nervous system
- Toxoplasmosis, parasitic and fungal Infections
- The connective tissue diseases associated with diseases of the nervous system
- Subacute Spongiform Encephalopathy (Creutzfeldt-Jakob Disease)
- Spinal Fluid Examination

practice 3 school classes

- the examination of patients with the symptoms and signs of meningitis
- The examination of the Kernig and Brudzinski signs
- Introducing students to the implementation of diagnostic procedure, lumbar puncture in neurology

**MODULE 2: Special neurology**

TEACHING UNIT 8 (EIGHTH WEEK):

**MULTIPLE SCLEROSIS AND ALLIED DEMYELINATIVE DISEASES**

lectures 3 school classes

- Multiple sclerosis: etiology and epidemiology, pathogenesis
- Clinical Manifestations of multiple sclerosis
- Clinical Course and Prognosis
- Treatment of multiple sclerosis
- Acute disseminated encephalomyelitis ADEM
- Neuromyelitis optica (NMOSD)

practice 3 school classes

- The examination of patients with the symptoms and signs of multiple sclerosis
- Testing cerebellar function patient of multiple sclerosis
- Learn the clinical interpretation of pathological Magnetic Resonance Imaging (MRI)

TEACHING UNIT 9 (NINTH WEEK):

**INTRACRANIAL TUMORS**

lectures 3 school classes

- Classification and Grading of Nervous System Tumors
- Clinical and pathologic characteristics of brain tumors
- Management of brain tumors
- Signs of Increased Intracranial Pressure
- Paraneoplastic syndromes

practice 3 school classes

- The examination patients with symptoms of increased intracranial pressure with or without focal signs
- Diagnostic procedures for patients with tumors
- Learn to interpretation Imaging intracranial tumors (Computed Tomography CT)

- Disturbance of cerebrospinal fluid including Hydrocephalus and Idiopathic intracranial hypertension.
- The neurologic examination of the comatose patient
- Glasgow Coma Scale

TEACHING UNIT 10 (TENTH WEEK):

**EXTRAPYRAMIDAL MOVEMENT DISORDERS**

lectures 3 school classes

- Parkinson disease etiology, epidemiology, classification.
- Clinical presentation of Parkinson disease
- Differential diagnosis of PD and investigation
- Treatment of Parkinson disease
- Wilson disease
- Involuntary Movements (Chorea, Athetosis, Ballismus, Dystonia)
- Myoclonus

practice 3 school classes

- Managing patients with Parkinson disease
- Assessment of Extraparaxidal tone, rigidity
- Familiarization with the physical findings in patients with Parkinson disease

TEACHING UNIT 11 (ELEVENTH WEEK):

**DISEASES OF THE SPINALCORD AND MOTOR NEURON DISEASE**

lectures 3 school classes

- The syndrome of acute paraplegia or quadriplegia due to complete transverse lesions of the spinal cord
- Transverse myelopathy
- Myelitis-Classification of Inflammatory Diseases of the Spinal Cord
- Syringomyelia
- Radiculopathy and Plexopathy
- Motor neuron disease: Amyotrophic lateral sclerosis

practice 3 school classes

- Examination and management of the Spine-Injured patient
- Syringomyelic syndrome-recognized characteristic segmental sensory dissociation
- Management patient with muscular weakness, atrophy, fasciculations

TEACHING UNIT 12 (TWELFTH WEEKS)

**CEREBROVASCULAR DISEASES**

lectures 3 school classes

- CerebrovascularDiseases:incidence, clasification
- The Ischemic Stroke: etiology, risk factors, clinical features, management
- Transient Ischemic Attacks
- Spontaneous Intracranial hemorrhage: causes, clinical presentation, diagnosis, management, outcome

practice 3 school classes

- Management of patients with stroke
- Interpretation of CT brain and other non-invasive methods for diagnosing stroke

- Subarachnoid Hemorrhage: causes, clinical presentation, diagnosis, management
- Cerebral venous thrombosis
- Infarction of the Spinal Cord

- Therapeutic options in treating patient with stroke
- Familiarization with indications thrombolytic therapy

## TEACHING UNIT 13(THIRTEENTH WEEK)

### DISEASES OF THE PERIPHERAL NERVES

lectures 3 school classes

- Pathogenic Mechanisms in Peripheral Nerve Disease
- Symptomatology of peripheral nerve disease
- Topographic and Clinical Patterns of Neuropathy
- Guillain-Barre' Syndrome (Acute Inflammatory Polyneuropathy, AIDP)
- Chronic inflammatory demyelinating polyneuropathy
- Diabetic Polyneuropathies
- Vasculitis Neuropathies
- Genetic Neuropathies

practice 3 school classes

- establishing the existence of disease of the peripheral nervous system;
- distinguishing by clinical tests which of the main topographic syndromes it represents;
- investigations in peripheral nerve disorders
- establishing the temporal course of disease.

## TEACHING UNIT 14 (FOURTEENTH WEEK):

### MUSCLE DISORDERS AND DISEASES OF NEUROMUSCULAR JUNCTION

lectures 3 school classes

- Topography and diagnosis of Myopathic Weakness
- Inherited myopathies: The muscular dystrophies and Myotonic dystrophy
- The inflammatory myopathies (polymyositis and dermatomyositis)
- Myasthenia gravis: pathophysiology, Clinical Manifestations, investigations, differential diagnosis, treatment
- Electromyography (EMG) and muscle biopsy

practice 3 school classes

- Approach to the patient with muscle disease
- Evaluation of Muscle Weakness and Paralysis changes in muscle volume, muscle tone, palpable abnormalities of muscle, muscle pain
- Introduction to students with anamnestic data and clinical findings in disease of neuromuscular junction
- Review of patients with Myasthenia gravis

## TEACHING UNIT 15 (FIFTEENTH WEEK):

### DEMENTIA

lectures 3 school classes

- Dementia: definitions, epidemiology, causes, investigations
- The most common types of dementia
- Alzheimer s disease,
- Cortical Lewy body disease and Frontotemporal dementia
- Vascular dementia

practice 3 school classes

- Approach to the patient with dementia and the amnesic state
- Recognition and differential diagnosis of dementing brain disease:
- Cognitive testing , uncluding lanuage
- The Mini-Mental state examination (Alertness, Orientation, Attention and Concentration, Memory, Frontal executive function)

## WEEKLY COURSE SCHEDULE

### LECTURES

|                             |
|-----------------------------|
| <b>TUESDAY</b>              |
| <b>ANATOMICAL HALL (H2)</b> |
| <b>13:45 - 16:00</b>        |

### PRACTICE

| <b>NEUROLOGY CLINIC</b> |                      |                      |
|-------------------------|----------------------|----------------------|
| <b>WEDNESDAY</b>        | <b>THURSDAY</b>      | <b>FRIDAY</b>        |
| <b>13:00 - 15:15</b>    | <b>16:45 - 19:00</b> | <b>13:00 - 15:15</b> |

[Schedule of lectures, practical classes and tests – academic calendar](#)

| <b>module</b> | <b>week</b> | <b>type</b> | <b>method unit name</b>                                                                     | <b>teacher</b>           |
|---------------|-------------|-------------|---------------------------------------------------------------------------------------------|--------------------------|
| 1             | 1           | <b>L</b>    | <b>COMA AND RELATED DISORDERS OF CONSCIOUSNESS</b>                                          | Aleksandar Gavrilovic    |
| 1             | 1           | <b>P</b>    |                                                                                             | all members              |
| 1             | 2           | <b>L</b>    | <b>DISORDERS OF SLEEP, HEADACHE, VERTIGO</b>                                                | Katarina Vesic           |
| 1             | 2           | <b>P</b>    |                                                                                             | all members              |
| 1             | 3           | <b>L</b>    | <b>EPILEPSY</b>                                                                             | Aleksandar Gavrilovic    |
| 1             | 3           | <b>P</b>    |                                                                                             | all members              |
| 1             | 4           | <b>L</b>    | <b>CRANIOCEREBRAL TRAUMA</b>                                                                | Svetlana MileticDrakulic |
| 1             | 4           | <b>P</b>    |                                                                                             | all members              |
| 1             | 5           | <b>L</b>    | <b>DEVELOPMENTAL DISEASES OF THE NERVOUS SYSTEM AND CONSIDERATIONS OF CORTICAL FUNCTION</b> | DejanAleksic             |
| 1             | 5           | <b>P</b>    |                                                                                             | all members              |
| 1             | 6           | <b>L</b>    | <b>DISORDERS OF CEREBELLAR</b>                                                              | Snezana Lazarevic        |
| 1             | 6           | <b>P</b>    |                                                                                             | all members              |
| 1             | 7           | <b>L</b>    | <b>INFECTIONS OF THE NERVOUS SYSTEM</b>                                                     | Katarina Vesic           |
| 1             | 7           | <b>P</b>    |                                                                                             | all members              |
|               |             |             | <b>FINAL MODULE EXAMS MODULE 1.</b>                                                         |                          |
| 2             | 8           | <b>L</b>    | <b>MULTIPLE SCLEROSIS AND ALLIED DEMYELINATIVE DISEASES</b>                                 | Svetlana MileticDrakulic |
|               | 8           | <b>P</b>    |                                                                                             | all members              |
|               | 9           | <b>L</b>    | <b>INTRACRANIAL TUMORS</b>                                                                  | Ana AzanjacArsic         |
|               | 9           | <b>P</b>    |                                                                                             | all members              |
|               | 10          | <b>L</b>    | <b>EXTRAPYRAMIDAL MOVEMENT DISORDERS</b>                                                    | DejanAleksic             |
|               | 10          | <b>P</b>    |                                                                                             | all members              |
|               | 11          | <b>L</b>    | <b>DISEASES OF THE SPINAL CORD AND MOTOR NEURON DISEASE</b>                                 | Snezana Lazarevic        |
|               | 11          | <b>P</b>    |                                                                                             | all members              |
|               | 12          | <b>L</b>    | <b>CEREBROVASCULAR DISEASES</b>                                                             | Tatjana Boskovic Matic   |
|               | 12          | <b>P</b>    |                                                                                             | all members              |
|               | 13          | <b>L</b>    | <b>DISEASES OF THE PERIPHERAL NERVES</b>                                                    | Ana AzanjacArsic         |

| <b>module</b> | <b>week</b> | <b>type</b> | <b>method unit name</b>                                        | <b>teacher</b>  |
|---------------|-------------|-------------|----------------------------------------------------------------|-----------------|
|               | 13          | <b>P</b>    |                                                                | all members     |
|               | 14          | <b>L</b>    | <b>MUSCLE DISORDERS AND DISEASES OF NEUROMUSCULAR JUNCTION</b> | Katarina Vesic, |
|               | 14          | <b>P</b>    |                                                                | all members     |
|               | 15          | <b>L</b>    | <b>DEMENTIA</b>                                                | Dejan Aleksic   |
|               | 15          | <b>P</b>    |                                                                | all members     |
|               |             | <b>E</b>    | <b>FINAL MODULE EXAMS MODULE 2.</b>                            |                 |
|               |             | <b>E</b>    | <b>FINAL SKILLS ASSESSMENT</b>                                 |                 |
|               |             | <b>E</b>    | <b>THE FINAL EXAM</b>                                          |                 |