

**DESCRIPTION OF COURSE UNIT FOR DOCTORAL STUDIES  
AT VILNIUS UNIVERSITY**

<b>Scientific Area/eas, Field/ds of Science</b>	Medical and Health Sciences (M 000): Medicine (M 001)			
<b>Faculty, Institute, Department/Clinic</b>	Faculty of Medicine Institute of Clinical Medicine Clinic of Neurology and Neurosurgery			
<b>Course unit title</b> (ECTS credits, hours)	<b>Demyelinating Diseases of the Central Nervous System</b> 7 credits (189 hours)			
<b>Study method</b>	<b>Lectures</b>	<b>Seminars</b>	<b>Consultations</b>	<b>Self-study</b>
Number of ECTS credits	-	-	1	6
<b>Method of the assessment</b> (in 10 point system)	Examination. Assessed orally, five questions are asked.			
<b>PURPOSE OF THE COURSE UNIT</b>				
<p>To provide the theoretical knowledge about the modern concept, prevalence, etiology, pathogenesis, examination of a patient with multiple sclerosis (MS) and demyelinating diseases, diagnostic and treatment methods, treatment of demyelinating diseases and pregnancy, the latest clinical trials and treatment prospects. To develop skills for evaluation and interpretation the results of electrophysiological, neurovisual, radiological, laboratory and neuropsychological examinations of a patient with demyelinating diseases; for selection of treatment and evaluation the effectiveness and safety; for development an optimal treatment and counseling plan for a pregnant woman with MS and demyelinating disease.</p>				
<b>THE MAIN TOPICS OF COURSE UNIT</b>				
<p><i>Introduction to Demyelinating diseases of the nervous system.</i> Classification. Demyelinating diseases of the central and peripheral nervous system, diagnostic syndromes, differential diagnosis. <i>Radiological and neurophysiological examination of patients with suspected demyelinating disease of the CNS.</i> Instrumental methods (magnetic resonance imaging, neurophysiological studies of induced potentials) and immunological studies. <i>Multiple sclerosis. Clinically isolated syndrome. Rare demyelinating diseases.</i> Etiology, pathophysiology, pathology, clinic, clinical course of MS. Rare demyelinating diseases: Balo concentric sclerosis, Schilder's disease (diffuse sclerosis), Marchiafava-Bignami disease (corpus callosum demyelination). <i>Criteria for the diagnosis of MS. Radiological criteria for the diagnosis of MS.</i> Updated McDonald's diagnostic criteria and their practical application in the diagnosis of MS. Radiological criteria of Barkhof diagnostics, acquisition of practical skills in radiological image differentiation. <i>Diagnosis of cognitive impairment in MS.</i> Cognitive test kits, clinical value and practical application of the brief cognitive function test (BICAMS) and the computerized cognitive function test (CANTAB). <i>Relapses of MS.</i> Diagnosis and differential diagnosis of relapses of MS. Principles of pulsed corticosteroid therapy and plasma exchange. <i>Sexual dysfunction in MS.</i> Types, nature, dependence on the expression of neurological symptoms, the influence of the burden of the disease.</p>				

*Immunomodulatory (DMT) and symptomatic treatment of MS, follow-up of treated patients, new treatments and therapies, treatment perspectives.*

Indications for the administration of immunomodulatory therapy (DMT), selection of first-, second- and third-line DMTs, algorithms for the treatment of MS. Mechanisms of action of DMTs (interferons beta-1a and 1b, glatiramer acetate, teriflunomide, dimethylfumarate, fingolimod, natalizumab, alemtuzumab, cladribin, etc.). Principles of treatment of highly active MS, autologous stem cell transplantation. Long-term patient monitoring, evaluation of treatment efficacy, criteria for continuation, change and discontinuation of the treatment. Application and efficacy of immunosuppressants. MS registries, principles and value of a long-term patient monitoring system. Multifocal progressive leukoencephalopathy: clinic, diagnosis, developmental prevention.

*MS and pregnancy.*

Choice of childbirth tactics and recommendations for analgesia in a woman with multiple sclerosis. Peculiarities in counselling of pregnant women with MS. Choice of contraception for a woman with MS.

*MS in children and adolescents.*

Peculiarities of pediatric diagnosis, differential diagnosis, choice of treatment tactics, safety of applied therapies in children population, indications for changing treatment in children, long-term follow-up tactics and prognosis.

*Neuromyelitis optica (NMO, Devic's disease), NMO spectrum diseases.*

Epidemiology, prevalence, etiopathogenesis, pathology, clinic, diagnostic criteria, differential diagnosis, treatment, symptomatic treatment and rehabilitation.

*Myelitis (acute idiopathic demyelinating inflammatory myelitis).*

Epidemiology, etiology, pathogenesis, pathology, clinic, diagnostic criteria, differential diagnosis, treatment.

*Optical neuritis (ON). Ophthalmological examination of the patient.*

Epidemiology, etiology, pathogenesis, pathology, clinic, diagnosis, differential diagnosis and principles of treatment of ON. Indications and value of the application of optical coherence tomography in the diagnosis of ON, MS and differential diagnosis, the value of long-term monitoring of retinal nerve fiber layer thickness.

*Acute disseminated encephalomyelitis (ADEM).*

Epidemiology, etiology, pathogenesis, clinic, diagnosis (clinical, radiological, immunological), differential diagnosis, treatment, prognosis and prevention.

*Central pontine myelinolysis and extrapontine myelinolysis.*

Historical aspects, epidemiology, etiology and pathogenesis, pathology, clinic, diagnostics and differential diagnostics (interpretation of radiological images), principles of treatment, recommendations for the correction of electrolyte imbalance, disease prevention and prognosis.

## **RECOMMENDED LITERATURE SOURCES**

1. McAlpine's. Multiple sclerosis. Churchill Livingstone; 4<sup>th</sup> edition. 2005.
2. A.Ropper, M.Samuels, J.Klein, S.Prasad. Adams and Victor's Principles of Neurology. McGraw-Hill. 11th ed., 2019.
3. Wilkins A. Progressive Multiple Sclerosis. Springer, 2018.
4. Lucchinetti CF, Hohlfeld R. Multiple sclerosis 3. Saunders, 2010.
5. Fox RJ. et al. Multiple sclerosis. Continuum. Vol.19 N4. 2013.
6. Krieger SC et al. Multiple sclerosis and other demyelinating diseases. Continuum. Vol.22N3.2016
7. Goodin DS. Handbook of clinical neurology. Multiple sclerosis and related disorders. Elsevier, 2014.

8. Minagar A. Multiple sclerosis. An overview of clinical features, pathophysiology, neuroimaging, and treatment options. Morgan and Claypool. 2014.
9. Scolding N, Wilkins A. Multiple sclerosis. Oxford University Press, 2012.
10. Hodges JR. Cognitive assessment for clinicians. 3rd Ed. Oxford University Press, 2017

#### **CONSULTING LECTURERS**

1. Coordinating lecturer: Rasa Kizlaitienė (Assoc. Prof. Dr.).

2. Gintaras Ferdinandas Kaubrys (Prof. Dr.).

#### **APPROVED:**

By Council of Doctoral School of Medicine and Health Sciences at Vilnius University:  
29<sup>th</sup> of September 2022

Chairperson of the Board: Prof. Janina Tutkuvienė