

**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 Rheumatology, Orthopaedics Traumatology and Reconstructive Surgery			
<b>Course unit title</b> (ECTS credits, hours)	<b>Vertebrology</b> 6 credits (160 hours)			
<b>Study method</b>	<b>Lectures</b>	<b>Seminars</b>	<b>Consultations</b>	<b>Individual work</b>
Number of ECTS credits	-	2	1	3
<b>Method of the assessment</b> (in 10 point system)	The exam is considered oral. 3 questions provided. The clinic has a block of questions that is updated every year. Exam evaluation criteria (minimum readable score - 5): (b) general structure and scope of the answer, clear presentation of the knowledge, reasoning, brevity and specificity (3 points); c) ability to participate in discussion, issues management, oratory skills (5 points); d) raising problematic issues (2 points).			
<b>PURPOSE OF THE COURSE UNIT</b>				
<ol style="list-style-type: none"> <li>1. To examine the cervical, thoracic and lumbar spine anatomy, pathophysiology, biomechanics of degenerative diseases.</li> <li>2. To learn to diagnose and differentiate spinal degenerative age and pathological changes.</li> <li>3. To learn to evaluate peripheral neurological symptoms, reflexes; interpret symptoms.</li> <li>5. To deepen knowledge in the interpretation of instrumental research.</li> <li>6. To examine the types of conservative and surgical treatment of spinal degenerative diseases, their indications.</li> </ol>				
<b>THE MAIN TOPICS OF COURSE UNIT</b>				
<p><u>General part.</u> Vertebrology subject - pathogenesis, diagnosis and treatment of spinal diseases. Relevance of spinal diseases in modern society. Epidemiology of spinal diseases in children and adults. Economic expression of treatment of spinal diseases in terms of duration of incapacity for work, treatment costs. Historical aspects of diagnostics and treatment of spinal diseases.</p> <p><u>Anatomy of spine.</u> Bones, muscles of the cervical, thoracic, lumbar and sacral spine. Neuroanatomy of the spine - spinal cord, sheaths, spinal nerves. Spinal blood flow (arterial, venous). Biomechanics of individual parts of the spine.</p> <p><u>Congenital anomalies of the spinal cord, anomalies of neuroanatomy.</u></p> <p><u>Neurology and neurophysiology:</u> Peculiarities of neurophysiology depending on the loads of different parts of the spine. Classification of back pain. Spondylogenic pain: etiology, differential diagnosis. Diagnosis of back pain: history, examination, objective examination. Assessment of neurological symptoms : irritation symptoms, reflexes, sensory disturbances.</p> <p><u>Objective instrumental examinations:</u> 1. X-ray: standard, functional and diagonal evaluation of radiographs. 2. X-ray myelography. Research technique, interpretation of results.</p>				

3. Computed tomography.
4. Nuclear magnetic resonance imaging. Indications, evaluation of its results.
5. Discography. Indications, research technique, interpretation of results.

Spinal fractures: classification, diagnosis, treatment. Application of the algorithm for the treatment of vertebral fractures in practice. Anatomy of the intervertebral disc, diseases, diagnostic development and features.

Diseases of the different parts of spine (cervical, thoracic, lumbar): etiology, diagnosis, conservative treatment.

Physical medicine methods: manual therapy, dynamic stretching, postisometric muscle relaxation, kinesotherapy.

Spine injectable blockades: indications, technique, results.

Lumbar spine part disco diseases: surgical treatment classic methods and treatment results. Unsatisfactory disco surgery results probability, causes, treatment.

Degenerative spine diseases: etiology, pathogenesis, diagnosis and treatment.

Methods of minimally invasive surgery: 1. Percutaneous nucleotomy. 2. Microdiscectomy. 3. Laser nucleotomy. 4. Cementoplasty (kyphoplasty, vertebroplasty ). 5. Anterior retroperitoneal laparoscopic bone plastic surgery. 6. Thoracoscopic bone plastic and spinal fixation.

Transpedicular vertebral fixation with metal implants: indications, technique, results.

Achieving spondylodesis: after transpedicular vertebral fixation, bone plastics or other methods. The importance of achieving spondylodesis in remote areas results of operations.

Intervertebral disc prosthesis: an alternative to transpedicular vertebral fixation, indications, results.

Spondylolisthesis: etiology, classification, diagnosis and treatment.

Spinal tumors: diagnosis and treatment.

Idiopathic spinal deformities: etiology, treatment.

Evaluation of conservative and surgical treatment of spinal diseases: evaluation using the Rolland and NASS scales.

### **RECOMMENDED LITERATURE SOURCES**

1. Eli M. Baron and Alexander R. Vaccaro. Operative Techniques : Spine Surgery, Elsevier, 3rd Edition, 2018:  
<https://www.sciencedirect.com/book/9780323400664/operative-techniques-spine-surgery>
2. Jeffrey S. Ross and Kevin R. Moore. Diagnostic Imaging : Spine. Elsevier, 3rd Edition, 2016:  
<https://www.sciencedirect.com/book/9780323377058/diagnostic-imaging-spine#book-description>
3. Robert F. Heary. Revision Lumbar Spine Surgery. Elsevier, 2021:  
<https://www.sciencedirect.com/book/9780323712019/revision-lumbar-spine-surgery#book-description>
4. Zoran Rumboldt, Alessandro Cianfoni, Abhay Varma. Clinical Imaging of Spinal Trauma. Cambridge University Press, 2018:  
<https://www.cambridge.org/en/academic/subjects/medicine/medical-imaging/clinical-imaging-spinal-trauma-case-based-approach?format=PB>
5. Christine Sang, Claire Hulsebosch. Spinal Cord Injury Pain. Elsevier, 1st edition, 2021:  
<https://www.elsevier.com/books/spinal-cord-injury-pain/sang/978-0-12-818662-6>
6. Luigi Manfrè, Johan Van Goethem. The Disc and Degenerative Disc Disease Remove or Regenerate ? Springer, Cham, 2020:  
<https://link.springer.com/book/10.1007/978-3-030-03715-4#about>
7. Bernhard Meyer, Michael Rauschmann. Spine Surgery. Springer, Cham, 2019:  
<https://link.springer.com/book/10.1007/978-3-319-98875-7#about>

8. Luiz Roberto Vialle, Jeffrey C. Wang, Claudio Lamartina. AOSpine Masters Series, Volume 8: Back Pain. Thieme, 2016:  
<https://www.thieme.com/books-main/orthopaedic-surgery/product/3895-aospine-masters-series-volume-8-back-pain>
9. Luiz Roberto Vialle, Carlo Bellabarba, Frank Kandziora. AOSpine Masters Series, Volume 6: Thoracolumbar Spine Trauma. Thieme, 2015:  
<https://www.thieme.com/books-main/orthopaedic-surgery/product/3532-aospine-masters-series-volume-6-thoracolumbar-spine-trauma>
10. Luiz Roberto Vialle, F. Cumhur Oner, Alexander R. Vaccaro. AOSpine Masters Series, Volume 5: Cervical Spine Trauma. Thieme, 2015  
<https://www.thieme.com/books-main/orthopaedic-surgery/product/2418-aospine-masters-series-volume-5-cervical-spine-trauma>

### **CONSULTING LECTURERS**

1. Coordinating lecturer: Valentinas Uvarovas (Prof. Dr.).

2. Igoris Šatkauskas (Assoc. 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