COURSE UNIT DESCRIPTION

Course unit title	Code
Traumatology, Plastic and Reconstructive Surgery, Physical and Rehabilitation Medicine	

Annotation
This course covers a wide variety of common topics in the field of Traumatology, Plastic and Reconstructive Surgery, Physical and Rehabilitation Medicine

Lecturer(s)	Department, Faculty
Coordinating: ass. prof. dr. Igoris Šatkauskas (Traumatology) ass. prof. dr. Nerijus Jakutis (Plastic and Reconstructive Surgery) lect. Jūratė Kesienė (Physical and Rehabilitation Medicine) **Other:** Lecturers of the Clinic of Rheumatology, Traumatology–Orthopaedics and Reconstructive Surgery at the Institute of Clinical Medicine, and the Department of Rehabilitation, Physical and Sports Medicine.	Clinic of Rheumatology, Orthopaedic and Traumatology and Reconstructive Surgery, Faculty of Medicine, Vilnius University, Santariškių 2, LT – 08661, Vilnius, Lithuania Centre of Orthopaedic – Traumatology, RVUH, Šiltnamių 29, LT – 04130, Vilnius, Lithuania The Department of Rehabilitation, Physical and Sports Medicine, Faculty of Medicine, Health Science Institute, Medical faculty, Vilnius University, Santariškių 2, LT – 08661, Vilnius, Lithuania

Study cycle	Type of the course unit
Integrated studies	Compulsatory

Mode of delivery	Semester or period when it is delivered	Language of instruction
Lectures, seminars and practices in the operating room, emergency room, departments of Orthopedics, Traumatology, Plastic and reconstructive surgery, Rehabilitation, Physical and Sports Medicine Center	8	English

Requisites	
Prerequisites: Human anatomy, Human physiology, Psychology, Pharmacology, Propaedeutic of internal medicine, General surgery.	**Co-requisites (if relevant):** none

Number of ECTS credits allocated	Student's workload (total)	Contact hours	Individual work
5	135	66	69

Purpose of the course unit: programme competences to be developed		
The goal is to give knowledge for students about mechanism of musculoskeletal system injuries, wounds, dislocations, and fractures, about etiology, pathophysiology, clinical presentation, diagnosis and treatment principles of orthopeadic diseases; principles of Plastic and reconstructive surgery; principles of rehabilitation, impact of disability on persons biopsychosocial functions; structure of rehabilitation, main functions of all rehabilitation team members and their work measures, principles of the assessment in rehabilitation. After the course students will show abilities to provide first aid and professionally perform temporary immobilisation of fractures and dislocations, abilities of wound, dislocation, bone fracture diagnostics, symptoms, physiology of healing, the basic methods of treatment, the priorities of polytrauma patient evaluation and treatment steps. To know the evaluation, diagnostics and treatment methods of most common orthopeadic diseases, their possible complications and to evaluate orthopeadic trauma patient incapacity for work. After the course students will show abilities of problem based thinking, communication and work in group, while solving problems and bringing up decisions for persons with functional limitations of biopsychosocial functions.		
Learning outcomes of the course unit	**Teaching and learning methods**	**Assessment methods**
Generic competences After successful completing the course students will be able to:		
Acting with integrity and ethical obligations to be empathetic, able to think critically and self-critically, be creative, proactive, to be able to communicate with others	Practical classes in departments of orthopaedic, traumatology, rehabilitation, plastic and reconstructive surgery, human mannequins – simulators classes.	Continuous assessment of knowledge and situation analysis in departments of orthopaedic, traumatology, plastic and reconstructive surgery and rehabilitation, human mannequins – simulators classes.
To analyze and synthesize knowledge acquired during studies, self-study, be able to apply knowledge acquired during practice, to know competencies and seek for advice, if necessary, to solve problems and make common decisions.	Practical classes in departments of orthopaedic, traumatology, rehabilitation, plastic and reconstructive surgery, human mannequins – simulators classes.	Continuous assessment of knowledge and situation analysis in departments of orthopaedic, traumatology and rehabilitation, plastic and reconstructive surgery, human mannequins – simulators classes.
Be able to communicate and collaborate in group with other specialists and experts; to organise and plan work activities.	Practical classes in departments of orthopaedic, traumatology, rehabilitation, plastic and reconstructive surgery ,human mannequins – simulators classes.	Continuous assessment of knowledge and situation analysis in departments of orthopaedic, traumatology and rehabilitation, plastic and reconstructive surgery, human mannequins – simulators classes.
Subject-specific competences After successful completing the course students will be able to:		
Be able to evaluate trauma patient status, clinical examination, to recognize life threatening cardiac, breathing and circulation conditions. To perform examination of orthopaedic patient, limb length evaluation and range of joint movement evaluation according to Neutral 0 methodology.	Problem based teaching, lectures. Model situation, case analysis during seminars. Group work, discussions. Demonstration of assessment	Assessment of activities during practise; assessment of assignments. All practise tasks and assignments should be done to be permitted to take a written exam at the end of the course.
To provide emergency aid in case of soft tissue injury, bruising, ligament sprain, rupture, and wound. To perform diagnostical examination and		

know treatment. To know principles of how to stop the bleeding, primary surgical wound closure. Bone dislocation. Diagnostics, first aid and treatment. Reposition techniques. Management after reposition. Regular dislocation.	skills (hands-on). Assessment conclusion and argumentation. Role games. Individual work.	
To evaluate clinical presentation of bone fracture, their diagnostics using clinical and radiological examination, possible complications, to establish preliminary indications for conservative or surgical treatment, to create an examination and observation plan for a patient with a bone fracture, to perform rehabilitation treatment expertise ang healing prognose.		
To create treatment plan for patients after acute severe pulmonary failure, shock, severe impaired consciousness, resuscitation.		
To be able to diagnose and differentiate orthopaedic bone and connective tissue diseases. To understand their treatment. To be able to suspect oncological skeletal disease and to create diagnostic plan.		
To apply principles of evidence-based medicine, justifying tactics of trauma patient diagnostics and treatment, during discussion of clinical cases.		
To understand principles of effective communication in medicine: communicate with patients, patient relatives.		
To properly and fully store and protect medical documentation, know how to use computer and perform search of literature; to protect and update information.		
Be able to evaluate effect of illness or injury on biopsychosocial functions of a person, to explain principles and possibilities of rehabilitation measures application.		
Be able to evaluate psychological, social and environmental factors impact on patients' wellbeing		
To know rehabilitation system, to understand and be able to explain role and functions of each rehabilitation team member		

Course content: breakdown of the topics	Contact hours							Individual work: time and assignments	
	Lectures	Tutorials	Seminars	Workshops	Laboratory work	Internship/work placement	**Contact hours, total**	**Individual work**	**Assignments**
Biology of bone tissue. Bone fractures, their morphology and classification. Treatment of bone fractures. Methods, indications and contraindications, potential complications.			1	1			**2**	**2**	Prepare for the practice and know about biology of bone tissue. Know bone fracture classification and morphology. Work with artificial bone models and discussion of different fracture morphologies in roentgenograms during seminars. Know the methods, indications, and contraindications of bone fracture treatment. Visitation of patients with bone fractures, discussion of clinical cases, roentgenological and treatment plan evaluation during seminars.
Traumatic dislocations of bones and their treatment. Injuries of the shoulder. Bone fractures of the upper extremity and their treatment.			1	2			**3**	**2**	Prepare for the practice and know about conservative and surgical treatment of upper extremity. Simulation of immobilization and conservative treatment methods of arm fracture during seminar. Visitation of patients with upper extremity bone fractures, discussion of clinical cases, roentgenological and treatment plan evaluation.
Bone fractures of the lower extremity and their treatment.	2						**2**	**2**	Prepare for the practice and know about conservative and surgical treatment of lower extremity. Simulation of immobilization and conservative treatment methods of leg fracture during seminar. Visitation of patients with femur and tibia fractures, discussion of clinical cases, roentgenological and treatment plan evaluation.

Orthopaedic diseases of the shoulder joint, diagnostics and treatment.			1	1			**2**	**2**	Prepare for the practice and know about degenerative diseases of shoulder, rotator cuff degenerative tears, frozen shoulder clinical symptoms. Visitation of patients with shoulder pathology, discussion of roentgenological and MRI imaging of affected shoulder, differential diagnosis. Clinical evaluation of shoulder joint range of motion using Neutral 0 methodic.
Orthopaedic diseases of the hip joint, diagnostics and treatment.			1	1			**2**	**2**	Prepare for the practice and know about most common diseases of hip joint. Hip arthrosis epidemiology, etiology and treatment. Perform coxa valga and coxa vara simulation corrections during seminars. Visitation of patients with orthopaedic diseases of hip joint, discussion of radiological imaging of affected hip joint, differential diagnosis. Clinical evaluation of hip joint range of motion using Neutral 0 methodic.
Fractures of the spine and degenerative diseases.			1	2			**3**	**2**	Prepare for the practice and know about the symptoms, possible complications of vertebra fracture. Know most common diseases of the spine. Practical clinical examination, radiological imaging evaluation of the spine during seminar. Visitation and discussion of patients with specific diseases.
Injuries and orthopaedic diseases of the knee joint.	1		1	1			**3**	**2**	Prepare for the practice and know about knee joint injuries, their clinical presentation and possible diagnostics. Discussion about knee joint aspiration. Clinical evaluation of knee joint range of motion using Neutral 0 methodic. Simulation of knee joint injury immobilization. Visitation of patients with knee arthrosis, discussion of clinical cases, radiological imaging of affected knee joint.

Injuries of the pelvic ring.	1		1	1			**3**	**2**	Prepare for the practice and know about fractures of pelvic ring and femur, their clinical presentation and diagnostical examination. Epidemiology of proximal part of femur. Discussion of clinical cases, radiological imaging, treatment priorities, and importance of adequate anesthesia.
Fractures of the proximal part of femur	1		1	1			**3**	**2**	Visitation of geriatric patients with hip fractures. Discussion of clinical cases, treatment priorities, importance of adequate anesthesia. Consideration of nursing and preoperative management of geriatric patients with hip fracture, modeling of various clinical cases according to comorbidities and coagulation abnormalities. Discussion of performed and planned treatment.
Polytrauma			1	1			**2**	**3**	Discussion about strategics and principles of polytrauma patient management. Visitation of emergency room intensive care unit and discussion of polytrauma patient treatment sequence while simulating a case of polytrauma.
Endoprosthetic replacement of the joints. Indications, contraindications, and potential complications.				1			**1**	**2**	Prepare for the practice and know about conservative and surgical treatment of joint degenerative diseases. Clinical evaluation of joint range of motion using Neutral 0 methodic. Discussion of clinical cases, radiological imaging.

Fractures of the foot and ankle joint. Subluxation and dislocation of foot. Orhopeadic diseases of the foot.				2			**2**	**2**	Prepare for the practice and know about clinical presentation, examination, conservative and surgical treatment of foot fractures. Know how to and perform immobilization of injured foot or ankle during seminar. Discussion of specific foot fracture radiological imaging. Discussion of clinical cases of Hallux valgus, pes planum, digitus malleus and pes equino-varus. Discussion of etiopathogenetic factors of these pathologies, prophylactical management. Discussion of clinical cases, radiological images.
Burns and thermal trauma. The features of burns, diagnostics, and treatment. Frostbites, their diagnostics and treatment.			2				**2**	**3**	Methodic of burn area evaluation. Degree of burn. Discussion of clinical cases of patients with burns, attendance of their dressing replacement. Discussion of treatment management after burn. Clinical evaluation of frostbites and demarcation lines. Degrees of frostbites, clinical evaluation during seminar. Attendance of their dressing replacement.
Oncology of bone, cartilage, and connective tissue.			1				**1**	**2**	Discussion of clinical cases with benign and malignant skeletal tumors. Tumor radiological differential diagnostics. Discussion about different radiological signs of different tumors. Discussion about tumor diagnostics and treatment management.
Peripheral nerves: structure, degrees of injury, healing. Tunnel syndromes (carpal tunnel syndrome, cubital tunnel syndrome, pronator syndrome, thoracic outlet syndrome, tarsal tunnel syndrome, peroneal tunnel syndrome), syndrome. Nerve injuries, reconstruction methods. Nerves of the lower limb.				2			**2**	**3**	Prepare for the exercises and know the structure of peripheral nerves, their degrees of injury and healing. Know the groups of nerve pathologies and surgical methods. Know the anatomy of the nerves of the upper limb. Know about tunnel syndromes, nerve injuries and methods of reconstruction. Know the anatomy of the nerves of the lower limb
Hand surgery: trauma and diseases				1			**1**	**2**	Prepare for classes and know the principles of diagnosing hand injuries. Know the principles of hand surgery (atraumaticity, microsurgical method, skin incisions). Know the principles of microsurgical suture of blood vessels, nerves. Know the principles of first aid in case of traumatic

									amputation of limb, amputee transportation protocol. Know the indications and contraindications for upper limb replantation, the course of replantation surgery, principles, complications, ways to avoid or resolve them. Know the functional anatomy of hand tendons (extensor and flexor), damage diagnostics, types of operations, types of tendon sutures, principles. Know the most common hand diseases (Dupuytren's, etc.), diagnostics, treatment methods. Visiting patients who have experienced complex (several structures are damaged: bones, tendons, nerves, blood vessels, there is a tissue defect) hand injuries, traumatic amputations, discussion of specific clinical cases.

Reconstructive surgery.				10			**10**	**10**	Know the object and principles of reconstructive surgery. Know the necessary conditions for achieving an aesthetic postoperative scar. Know the etiopathogenesis, clinical features, and treatment principles of a pathological scar. Know the types of autografts according to their blood circulation: vascularized and non-vascularized, and their examples. Know the indications and contraindications for the use of vascularized and non-vascularized grafts. Know the types of skin grafts, their differences, advantages, disadvantages, donor sites, graft harvesting methods, postoperative care of the donor and recipient areas. Know the classifications of vascularized grafts: by anatomical structure, by type of blood circulation (free/microsurgical/ and on a pedicle). Know their most characteristic examples and the most common areas of application. Know the main methods of reconstructive breast surgery, the principle of reconstruction stages, the choice of reconstruction time (immediate, delayed), the factors determining this, the choice of reconstruction method and the factors determining this. Know the principles of soft tissue reconstruction of the abdominal wall, chest,

									perineum, lower limb.
Tendencies of rehabilitation development. Philosophy and principles of the rehabilitation, structure of rehabilitation. Biopsychosocial functions of a person. International Classification of Functioning, Disability and Health. Disability and working ability/ capacity assessment. Social rehabilitation and integration of disabled.	2		2	2			**6**	**4**	Read literature on PRM field and specialty development, WHO documents about disability, rehabilitation, social integration. Prepare presentation of medical and social rehabilitation in different countries. To prepare case for topic "ICF".
Assessment in rehabilitation process, the principles of rehabilitation plan and goal setting.			1	2			**3**	**6**	To prepare for practice about assessment measures in rehabilitation (goniometry, MMT, MMSE, muscle tone, pain). Read scientific article and prepare presentation about assessment tool in rehabilitation (adult or children).
Teamwork in rehabilitation. Rehabilitation measures: physical modalities, physiotherapy, occupational therapy, speech therapy, role of social worker and psychologist in rehabilitation.	3		2	2			**7**	**7**	To prepare for role game about interaction in rehabilitation team.
Physical agents for treatment and rehabilitation. Assistive devices and orthotics. Adaptation of the environment for different needs. Physical activity for health.	2		3	1			**6**	**7**	Search information about adaptation of environment and assistive devices. To prepare short introduction. Analysis of the article about different physical agents, with emphasis on action, indications and contraindications for their use. Prepare for discusion and reasoning on WHO Physical activity recomendations for children and adults.
Total	14		22	30			**66**	**69**	

Assessment strategy	Weight %	Deadline	Assessment criteria
Written exam:	100 %	session	Student is allowed to have an exam if he/she did all practice tasks and assignments. Evaluation of the knowledge of subject matter through test. The test consists of 100 single select multiple choice questions. Traumatology – 45, Plastic and reconstructive surgery – 15, Rehabilitation and Physical Medicine – 40 questions. The 10 point scale is used for evaluation: 10 points – excellent knowledge and abilities (95-100 percent of questions are answered correctly); 9 points – very good knowledge and abilities (85-94 percent of questions are answered correctly); 8 points – good knowledge and abilities (75-84 percent of questions are answered correctly); 7 points – average knowledge and abilities (65-74 percent of questions are answered correctly); 6 points – satisfactory knowledge and abilities (55-64 percent of questions are answered correctly); 5 points – poor knowledge and abilities (45-54 percent of questions are answered correctly); 4 points – very poor (unsatisfactory) knowledge and abilities (35-44 percent of questions are answered correctly); 3 points – unsatisfactory knowledge and abilities (25-34 percent of questions are answered correctly); 2 points – unsatisfactory knowledge and abilities (15-24 percent of questions are answered correctly); 1 point – unsatisfactory knowledge and abilities (5-14 percent of questions are answered correctly). 0 points – less than 5 or no correct answers or the testing was discontinued due to unacademic behaviour during assessment.

Author	Publishing year	Title	Issue of a periodical or volume of a publication; pages	Publishing house or internet site
Required reading				
Solomon L, Warwick DJ, Nayagam S.	2014	Apley and solomon's concise system of orthopaedics and trauma.		https://www.taylorfrancis.com
Thomas P. Rüedi, Richard E. Buckley, Christopher G. Moran	2017	AO principles of fracture management. Third edition		https://www.thieme.com/
White Book on Physical and Rehabilitation Medicine in Europe	2018	White Book on Physical and Rehabilitation Medicine in Europe		www.whitebookprm.eu
United Nations	2006	Convention on the Rights of		https://www.un.org/disabilitie

		Persons with Disabilities		s/documents/convention/convoptprot-e.pdf
Gerold Stucki, Mauro Zampolini, Alvydas Juocevicius, Stefano Negrini, Nicolas Christodoulou	2017	Practice, science and governance in interaction: European effort for the system-wide implementation of the International Classification of Functioning, Disability and Health (ICF) in Physical and Rehabilitation Medicine	Vol. 53 - No. 2© 2017 Edizioni Minerva Medica	https://www.minervamedica.it/en/getfreepdf/nImNEcx4cIIWks%252FHTp5YF2D9qRtA%252BXDI5san6u87roE4Zlksn4fMLMb%252BqA7do0sdzktp3WOz%252BfvoErobcc%252Bwkg%253D%253D/R33Y2017N02A0299.pdf
Lietuvos respublikos sveikatos apsaugos ministro įsakymas	2008-01-17	„Dėl medicininės reabilitacijos ir sanatorinio (antirecidyvinio) gydymo organizavimo“	Nr. V-50	https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.313664/asr
WHO	2020	WHO Guidelines on physical activity and sedentary behaviour		https://www.who.int/publications/i/item/9789240015128
Recommended reading				
AO		Adult trauma		https://surgeryreference.aofoundation.org/orthopedic-trauma/adult-trauma
American College of Surgeons. Committee on Trauma	2018	Advanced Trauma Life Support. Student Course Manual. Tenth edition		https://web4.facs.org/ebusiness/ProductCatalog/product.aspx?ID=863
Kuokkanen H, Holstrom H, Abyholm FE, Drzewiecki KT	2014	Scandinavian Plastic Surgery.		Narayana Press
Aston SJ, Beasley RW, Thorne ChHM. Grabs and Smith.	2014	Plastic surgery	7 th ed.	Philadelphia; New York: Lippincott-Ra-ven
Scott W. W., William C. P., Scott H. K., Mark S C. Green’s Operative Hand Surgery.	2016	Green’s Operative Hand Surgery.	7 th ed.	Philadelphia: Elsevier
WHO		Rehabilitation in heatlh systems	2019	https://www.who.int/publications/i/item/9789241515986
WHO		International Classification of Functioning, Disability and Health		https://www.who.int/standards/classifications/international-classification-of-functioning-disability-and-health
Professional associations for physical activity, Sweden	2010	"Physical Activity in the Prevention and Treatment of Disease"		http://www.fyss.se/wp-content/uploads/2011/02/fyss_2010_english.pdf
B. Young, M. A. Young, S. A. Spiens	1997	PM and R secrets		Philadelphia
A. Kriščiūnas	2008/ 2014	Reabilitacijos pagrindai		Kaunas, Vitae Litera
Wei FC, Mardini S.	2009	Flaps and Reconstructive Surgery.		Saunders