COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
Clinical pharmacology; emergency medicine	**VRVS3115**

Lecturer(s)	Department(s) where the course unit (module) is delivered
Coordinator: Prof. dr. Jolanta Gulbinovič **Others:** and other lecturers of the Pharmacy and Pharmacology Centre and the Clinic of Emergency Medicine	Vilnius University, Pharmacy and Pharmacology Centre. Čiurlionio 21, Vilnius Vilnius University, Faculty of Medicine, Clinic of Emergency Medicine, Santariškių 2, Vilnius

Study cycle	Type of the course unit (module)
Cycle (integrated studies)	Compulsory

Mode of delivery	Period when the course unit (module) is delivered	Language(s) of instruction
Lectures, seminars, practical work Lectures and seminars in simulator class	10th semester	English

Requirements for students	
Prerequisites: A student must have completed the following courses: anatomy, biochemistry, physiology. Microbiology, pathology and internal medicine. **Prerequisites:** A student must have completed the following courses: human anatomy, human physiology, biochemistry, pathopysiology, internal medicine.	**Additional requirements (if any):** None

Course (module) volume in credits	Total student's workload	Contact hours	Self-study hours
5	81+54	40+26	41+28

Purpose of the course unit (module): programme competences to be developed		
To give the understanding about development and life cycle of medicines, benefit risk balance and measures to optimise it. To familiarise with the principles of clinical pharmacology and application of them in practice; to understand the reason for variation of drug effects in different patients or patient groups, e.g., in paediatric patients, elderly, pregnancy and lactation, in patients with renal or hepatic impairment; to teach how to choose the best treatment for a particular patient, how to assess efficacy and safety of drug treatment; to introduce principles of drug interactions; to teach to recognise adverse drug reaction and to report to competent authority; to teach how critically appraise the results of clinical trials, how to interpret information about the medicines and where to search for independent information on medicines. To give the general understanding about the etiology, diagnostics and management of critical conditions; to develop ability to provide medical care in acute clinical situations; to familiarise with causes and results of contemporary global threats (terorism, war, ethnic conflicts); to introduce principles of first aid in situations of armed conflict.		
Learning outcomes of the course unit (module)	**Teaching and learning methods**	**Assessment methods**
After the course the student will be able	During practical work, the students work in small groups, solve the problems	The tests and clinical situations are used for self-control during the classes. During the cycle, each group has

- To understand and describe drug development and life cycle, benefit risk balance of medicines, aim for risk management, risk minimisation measures and effectiveness of risk minimisation. - Will be able to use in practice the principles of rational prescribing and use of medicines, to assess effectiveness and safety of drug treatment, to predict possible drug-drug interaction; to recognise and differentiate adverse drug reactions, to establish causal relationship and to report to the competent authority (State medicines Control Agency). - Will be able to evaluate patient and drug interaction specificity, and make a dose or treatment adjustment for patients with renal or hepatic impairment and for elderly. Will understand therapeutic drug monitoring. - Will be able to assess benefit and risk of drug treatment in pregnancy and lactation. - Will be able to interpret critically the results of clinical trials, and drug information.	and discuss clinical situations, learn how to find necessary information and how to interpret information critically. During the course, the students have to fulfil specific task for self-study: describe adverse drug reaction and prepare the report to competent authority; to prescribe treatment for specific patients; to evaluate rationality of drug prescribing in specific given situation During practical work, the students will read given publications of clinical trials and will apprise the quality of these trials and reliability of the results; will discuss the quality indicators of clinical trials and interpretation of results.	to solve a clinical situation and present it on the exam day.
Will be able to act *conscientiously and comply with ethical standards, act empathetic, demonstrate ability of critical,creative thinking,* show initiative and ability of goal oriented behavior, demonstrate effective teamwork skills. Will be able to understand the basics of diagnostics and primary management of main life threatening conditions. Will be able to recognize urgent medical conditions; will have principal knowledge of management of acute medical conditions. Will be able to understand principles of medical care in cases of mass casualty incidents.	Lectures and seminars in simulator class Lectures and seminars in simulator class, self-study work	Short written or oral test after seminars in simulator class Evaluation of participation in discussion, oral test, clinical case analysis

Topics	**Contact work hours**							**Time and tasks of self-study**	
	Lectures	Consultations	Seminars	Practice	Laboratory work	Practical training	**Total contact hours**	**Self-study**	**Tasks**
1. Development and life cycle of medicines, benefit risk balance and measures to optimise it	1			2			**3**	**2**	To prepare for practical work
2. Clinical pharmacokinetics, therapeutic drug monitoring, drug interaction	1		2	2			**5**	**4**	To prepare for seminar
3. Adverse drug reactions, seriousness, severity and causality	1		2	2			**5**	**5**	To prepare for practical work, self-study tasks
4. Rational use of medicines. Principles of rational use of antibiotics	1		2	2			**5**	**6**	To prepare for practical work, self-study tasks

5. Clinical pharmacology of drug use in patients with renal or hepatic impairment	1		2	2			**5**	**4**	To prepare for practical work
6. Clinical pharmacology of drug use in critically ill patients			2	2			**4**	**6**	To prepare for practical work
7. Paediatric and geriatric clinical pharmacology	1		2	2			**5**	**6**	To prepare for practical work
8. Drug use in pregnancy and lactation	2			2			**4**	**2**	To prepare for practical work
9. Evaluation of clinical trials			2	2			**4**	**6**	To prepare for seminar, self-study tasks
Total	**8**		**16**	**16**			**40**	**41**	

Topics	**Contact work hours**							**Time and tasks of self-study**	
	Lectures	Consultations	Seminars	Practice	Laboratory work	Practical training	**Total contact hours**	**Self-study**	**Tasks**
Diagnostics of sudden death and principles of basic life support. European Resucitation Council Guidelines. Electric cardiac defibrilation. Resucitation algorithms in cases of ventricular fibrilation, ventricular tachycardia, asystole, electromechanical disociation. Airway management and devices in basic life support.	2		2	4			**8**	**5**	To prepare for practical work.
Foreign body airway obstruction, hanging, drowning. First aid in case of foreign body airway obstruction.	1			1			**2**	**3**	To prepare for practical work.
Electrical and lightning injuries. Basic principles of safety in providing emergency care.	1		1				**2**	**1**	To prepare for seminar.
Anaphylaxis. Acute alergic reactions. Stings and bites. Poisinous animals in Lithuania. Diagnosis and treatment of bee stings and snake bites.	1		1				**2**	**3**	To prepare for seminar.
Emergency management of bleeding and bone fractures. Motor vehicle accident. Head trauma. Spinal injury. Principles of bleeding management, limb immobilization, desmurgy. Etiology, clinical features, diagnosis and first aid in cases of head trauma and spinal injury. Principles of immobilization and transportation to health care facility.	1			1			**2**	**4**	To prepare for practical work.
Principles of military medicine. Military medicine and contemporary challenges. Possible military threats, definition of terrorism. Target of terrorism - civilian citizens. Methods of terrorism – kidnapping, use of explosive devices, individual and group murders, infrastructure damage, hacking computer networks etc. Hybrid	1		2	1			**4**	**4**	To prepare for practical work.

warfare aimed at vulnerable domains of states. Noticeable elements of hybrid warfare. Experience from conflict in Ukraine. War for hearts and minds. Hostile informational operations in Lithuania. War challenges of new generation. Aims of hostile informational operations in Lithuania. Propaganda in Lithuania: channels, measures, types, aims and examples. Threats of disinformation and informational operations to the security of state. Ability of western states to resist adverse informational operations and disinformation campaign from the east. History as a weapon in information warfare. Why and how history is used in information warfare? Which stages of Lithuanian history are most vulnerable? Security of decision making process. Warfare tomorrow, thoughts and insights. Role of citizens in case of armed conflict: behavior and attitude to a changing situation. Information warfare. Ability of state of Russia to use military and non-military measures (hybrid warfare), masked military operations is changing the understanding of defense and planning. Currently main factor undermining security of Lithuania – actions of Russia, which are destroying the rule- based architecture of security in Europe. Modern military munitions of Russian state at the borders of Lithuania and other states, regularly carried out inspections of combat readiness, military drills are raising tension. Soft power.									
Disaster medicine and terrorism. Mass-casualty incidents. Use of personal protective equipment. Evaluation of reports form Emergency services and Emergency response centers. Means of communication used by prehospital emergency providers and hospitals.	1		2	1			**4**	**4**	
Psychological and social relief in extreme situations. Principles of organizing psychological and social relief in extreme situations. Analysis of traumatic factors affecting people involved in accidents and disasters, groups affected by accidents and disasters.			2				**2**	**4**	
Total	**8**		**10**	**8**			**26**	**28**	
TOTAL	**16**		**26**	**24**			**66**	**69**	

Assessment strategy	**Weigh t (%)**	**Assessment period**	**Assessment criteria**
Self-study and preparations for classes	-	During the course	Preparing for the class students have to solve self-assessment test. Solution of tests is obligatory; however, they are not graded. The objective of tests is self-assessment.
Presentation of the project at the end of course	100	After the course	Every group receives a problem/situation at the beginning of the course. The problem should be solved and presented as a group

			work. Duration of the presentation 20 min. Evaluation criteria: a) Defining the problem, solution plan (2 points) b) Search and choice of literature or other material (2 points) c) Structure of presentation, presentation of information/knowledge, argumentation, discussion (2 points) d) Summary, conclusions/solutions (2 points) e) Ability to discuss, respond to questions (2 points) Maximal grade – 10 points, minimal acceptable grade – 5 points. Impact of every student is defined by the group. Example: the project gets 8 points. The student with the impact of 100% gets 8 points, the student with the impact 0f 60% gets 5 points.

Assessment strategy	**Weight (%)**	**Assessment period**	**Assessment criteria**
Work in simulator class	50	10th semester	Assessment of ability to organize emergency care, identify sudden death, understand principles of basic life support and first aid in special cases and apply those principles in practical cases.
Written evaluation (rated by mark)	50	10th semester	Student is presented with 10 open-ended questions and clinical cases. Accuracy, comprehensiveness, consistency of the answers is evaluated. Student has to answer 5 or more questions correctly to pass the evaluation.
Overall Rating: Clinical Pharmacology: Urgent medicine	 60% 40%	At the end of semester	The total final score is calculated after passing a clinical pharmacology exam and an emergency medical examination

Author	**Year of publication**	**Title**	**No of periodical or vol. of publication**	**Publication place and publisher or Internet link**
Reading list				
McKay GA, Walters MR, Ritchie ND	2021	Clinical pharmacology & therapeutics. Lecture notes	10 ed.	Wiley Blackwell
Reid JL, Rubin PC, Walters MR	2013	Lecture notes: Clinical pharmacology & therapeutics	9 ed.	Blacwell publishing
Additional literature				
Websites: www.vvkt.lt; www.emea.eu				
Greenhalgh T.	2019	How to read a paper: the basics of evidence-based medicine and healthcare	6 ed.	Wiley Blackwell

Author	**Year**	**Title**	**No of periodical or vol. of publication**	**Publication place and publisher or Internet link**
Reading list				
	2017	ACCA Clinical Decision-Making Toolkit		ESC, Second Edition, 2017
M.Tubaro et al.	2015	The ESC Textbook of Intensive and Acute Cardiovascular Care		Oxford
Rita K. Cydulka et al.	2017	*Tintinalli's Emergency Medicine, Eighth Edition.*		*American College of Emergency Physicians 2017*

	2015	European Resuscitation Guidelines		
Additional literature				