COURSE UNIT DESCRIPTION

Course unit title	Code
Pharmacology. Clinical Pharmacology. Laboratory medicine.	

Lecturer(s)	Department(s)
Coordinating: Dr. Dovilė Karčiauskaitė Others: Lect, Marius Žiemininkas	Dept. of Pathology, Forensic Medicine and Pharmacology

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

Mode of delivery	Period of delivery	Language of instruction
Lectures, seminars	2 Year, 4th semester;	English

Prerequisites and corequisites	
Prerequisites: A student must have completed the following courses: biochemistry, anatomy, physiology and pathological physiology, microbiology	**Corequisites (if any): any**

Number of ECTS credits allocated to the course unit	Total student's workload	Contact hours	Self-study hours
5	134	67	67

Purpose of the course unit Programme competences to be developed
Objectives: • to help for students to gain basic pharmacology knowledge, understanding classification of medicines, to acquaint with main groups of medicines, mechanisms of their action, desirable and undesirable effects, influence of medicines for pathologic process, interaction of drugs and the requirements for clinical trials. After completing the course students should to know in which cases to prescribe particular medicinal product in odontology practise. • To develop the student's understanding of the importance of basic laboratory tests for the diagnosis of various diseases, the influence of various environmental factors on test results. Teaching to assess and interpret basic laboratory tests.

Learning outcomes of the course unit	Teaching and learning methods	Assessment methods
Understanding and assimilation of basic principles of pharmacodynamics and pharmacokinetics; Understanding and assimilation of classification of medicines (according body organ systems), ability to characterize main groups of medicines and mechanisms of their action; Understanding and assimilation of the desirable and undesirable effects, interaction of medicines; Understanding and assimilation of the pharmacovigilance activities and requirements for clinical trials; Understanding of the main principles of treatment of pain.	Lectures, seminars. During the seminars students make the decisions on clinical situations, answer to the tests questions, search for information.	During the semester knowledges of students are controlled in 2 written colloquia, assessment on a 10 point scale according to an official scheme of Vilnius University. Only if all seminars are attended student is eligible to take the colloquium. At the end of semester – written exam (specially prepared test), assessment on a 10 point scale according to an official scheme of Vilnius University. Student is eligible to take the final exam, if all lectures and seminars are attended, colloquia are passed.
To create adequate preliminary laboratory testing plan according to the preliminary clinical diagnosis, status of the patient and laboratory testing purpose.	Seminars, exercises on clinical cases, practical exercises in laboratories.	At the end of semester – written exam (specially prepared test), assessment on a 10 point scale according to an official scheme of Vilnius University.
Ability to properly organize pre-analytical pre-laboratory testing phase (patient preparation, sample collection, proper concomitant documentation, the correct sample transportation to the laboratory).	Seminars, exercises on clinical cases, practical exercises in laboratories.	At the end of semester – written exam (specially prepared test), assessment on a 10 point scale according to an official scheme of Vilnius University.
The proper interpretation of laboratory test results and, after correlating with other investigations, to use obtained information for establishing diagnosis, prognosis and treatment method.	Seminars, exercises on clinical cases, practical exercises in laboratories.	At the end of semester – written exam (specially prepared test), assessment on a 10 point scale according to an official scheme of Vilnius University.

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. Object and history of pharmacology. Basic principles of pharmacology: pharmacodynamics, pharmacokinetics.	2		2				**4**	**4**	To prepare for the lecture and seminar on pharmacodynamics and pharmacokinetics.
2. Medicines acting on autonomic nervous system.			2				**2**	**2**	To prepare for the seminar on autonomic nervous system and drugs acting this system.
3. Local anaesthetics. Premedication Agents. Opioid analgetics. Antidepressants. Tranquillizers, sedative drugs.	2		3				**5**	**5**	To prepare for the lecture and seminar on local anaesthetics, opioid analgetics, antidepressants, tranquillizers, sedative drugs
4. Medicines for treatment of epilepsy, Parkinson disease. General anaesthetics, Neuroleptics.			2				**2**	**2**	To prepare for the seminar on antiepileptics, medicines for treatment of Parkinson disease, general anaesthetics, neuroleptics.
5. Nonsteroidal antiiflammatory drugs. Antirheumatic agents. Gout medications.	2		2				**4**	**4**	To prepare for the lecture and seminar on NSAIDs.
6. Cardiovascular drugs.			2				**2**	**2**	To prepare for the seminar on cardiovascular drugs
7. Drugs used in disorders of coagulation. Drugs affecting haematopoiesis.	2		2				**4**	**4**	To prepare for the lecture and seminar on drugs used in disorders of coagulation and drugs affecting haematopoiesis
8. Drugs used in the treatment of gastrointestinal diseases.			2				**2**	**2**	To prepare for the seminar on the medicament treatment of gastrointestinal diseases
9. Antibiotics, their rational use.	2		3				**5**	**5**	To prepare for the lecture and seminar on antibiotics
10. Antimycobacterial agents.			2				**2**	**2**	To prepare for the seminar on antimycobacterial drugs
11. Treatment of pain.	2						**2**	**2**	To prepare for the lecture on drugs used to treat the pain
12. Drug interactions.	2						**2**	**2**	To prepare for the lecture on drug interactions
13. Adverse drug reactions. Pharmacovigilance.			2				**2**	**2**	To prepare for the seminar on pharmacovigilance
14. Drug information. Risk minimization measures.			2				**2**	**2**	To prepare for the seminar on drug information and risk minimisation measures
15. Clinical trials.			**2**				**4**	**4**	To prepare for the seminar on clinical trials
Total	**14**		**28**				**42**	**42**	
1. Coagulation tests and their interpretation.			4				**4**	**4**	Prepare for the seminar on coagulation system, inflammation and acute phase proteins.

2. Inflammation and acute phase proteins.			2				**2**	**2**	Prepare for the seminar on Inflammation and acute phase proteins.
3. Automated and cytomorphological hematology tests and interpretation.			4				**4**	**4**	Prepare for the seminar on automated and cytomorphological hematology tests and interpretation.
4. Laboratory tests reflecting markers of bone turnover.			2				**2**	**2**	Prepare for the seminar on bone turnover markers.
5. Liver functions and the importance of laboratory diagnosis.			4				**4**	**4**	Prepare for the seminar on the laboratory diagnosis of liver function.
6. The most important electrolytes and relevance of laboratory testing.			2				**2**	**2**	Prepare for the seminar on electrolyte testing and interpretation.
7. Principles of infection laboratory diagnosis and antimicrobial therapy.			4				**4**	**4**	Prepare for the seminar on laboratory diagnosis of infection and antimicrobial therapy.
8. Investigations of patient's immune status of and its interpretation.			2				**2**	**2**	Prepare for the seminar on Investigations of patient's immune status of and its interpretation.
Laboratory Medicine Test			1						Prepare for the exam.
Total			**25**				**25**	**25**	
Grand total	**14**		**53**				**67**	**67**	

Assessment strategy	**Weight (%)**	**Assessment period**	**Assessment criteria**
Pharmacology. Clinical Pharmacology. Colloquia (two in total)	20	Semester	Assessment of specially prepared test on a 10 point scale according to an official scheme of Vilnius University.
Pharmacology. Clinical Pharmacology. Exam	80	June	Assessment of specially prepared test (100 questions). Total assessment on a 10 point according to an official scheme of Vilnius University. The final grade of pharmacology and clinical pharmacology course is a cumulative score, which consists of colloquia score (20%) and exam score (80%).
Laboratory medicine. Activity in practice		Semester	The student is able to perform the following tasks: To set up laboratory testing plan, fill-in test order forms, prepare patient for laboratory testing, interpret the results of laboratory test parameters, and correlate them with clinical, functional and imaging studies to formulate a diagnosis. Student achievements are estimated by various methods: a training observation, case discussion, direct skill observation, participation in seminars.

Laboratory medicine. Exam	100	During exam session	Student is allowed to enter Laboratory medicine exam if attendance requirements are met. Laboratory medicine Exam is assessed in 10 point scale according to the system approved by VU regulations. Answers to each of open exam questions is scored individually, and then average total score is calculated.
Final mark of Pharmacology, Clinical Pharmacology and Laboratory Medicine			Final score is calculated based on Cumulative final grade formula of 2 exams score: pharmacology and clinical pharmacology course 60% + Laboratory medicine course 40% = Final grade 100%.

Author	**Year of publication**	**Title**	**No of periodical or vol. of publication**	**Publication place and publisher or Internet link**
Required reading				
Richard A. Harvey Karen Whalen PharmD	2015	Pharmacology	6 ed	Lippincott Illustrated Reviews
B.G. Katzung, S.B. Masters, A.J. Trevor.	2012	Basic and clinical pharmacology. 11th ed.	12 ed.	McGraw Hill Medical
Rang H.P. et al.	2015	Pharmacology	8 ed.	Churchill Livingstone
James M. Ritter, Lionel D. Lewis, Timothy GK Mant, Albert Ferro	2008	A textbook of Clinical Pharmacology and Therapeutics		London, **www.hoddereducation.com**
Richard A. McPherson, MD, MSc and Matthew R. Pincus, MD, PhD	2017	Henry's Clinical Diagnosis and Management by Laboratory Methods, 23rd Edition	23rd	Elsevier
Recommended reading				
Laurence L. Brunton, Bruce A. Chabner, Björn C. Knollmann	2011	Goodman & Gilman's The Pharmacological basis of therapeutics.	12 ed.	McGraw Hill Medical
Michael Laposata	2014	Laboratory Medicine: The Diagnosis of Disease in the Clinical Laboratory,	Second Edition	McGraw-Hill Education
Carl A. Burtis, PhD, Edward R. Ashwood, MD and David E. Bruns, MD	2013	Tietz Textbook of Clinical Chemistry and Molecular Diagnostics,	5th Edition	Saunders
Kučinskienė Z.	2001	Laboratorinių tyrimų žinynas		Vilnius, Vaistų žinios
Internet resources: www.vvkt.lt www.emea.eu				