**COURSE UNIT DESCRIPTION**

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

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| **Lecturer(s)** | **Department(s)** |
| Coordinating: Dr. Dovilė Karčiauskaitė Others: Lect, Rita Dzetaveckienė | Dept. of Pathology, Forensic Medicine and Pharmacology |

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

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

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

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| **Number of ECTS credits allocated to the course unit** | **Total student’s workload** | **Contact hours** | **Self-study hours** |
| 5 | 80 | 40 | 40 |

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| **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.
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| **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.  | Lectures, seminars, exercises on clinical cases, practical exercises in laboratories. | Continuous assessment of the practice in laboratory medicine department. |
| Ability to properly organize pre-analytical pre-laboratory testing phase (patient preparation, sample collection, proper concomitant documentation, the correct sample transportation to the laboratory).  | Lectures, seminars, exercises on clinical cases, practical exercises in laboratories. | Continuous assessment of the practice in laboratory medicine department. |
| The proper interpretation of laboratory test results and, after correlating with other investigations, to use obtained information for establishing diagnosis, prognosis and treatment method.  | Lectures, seminars, exercises on clinical cases, practical exercises in laboratories. | Performance of Clinical Tasks |

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| **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. |
| 1. Medicines acting on autonomic nervous system.
 |  |  | 2 |  |  |  | **2** | **2** | To prepare for the seminar on autonomic nervous system and drugs acting this system. |
| 1. Local anaesthetics. Premedication Agents. Opioid analgetics. Antidepressants. Tranquillizers, sedative drugs.
 | 2 |  | 2 |  |  |  | **4** | **4** | To prepare for the lecture and seminar on local anaesthetics, opioid analgetics, antidepressants, tranquillizers, sedative drugs  |
| 1. 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. |
| 1. Nonsteroidal antiiflammatory drugs. Antirheumatic agents. Gout medications.
 | 2 |  | 2 |  |  |  | **4** | **4** | To prepare for the lecture and seminar on NSAIDs. |
| 1. Cardiovascular drugs.
 |  |  | 2 |  |  |  | **2** | **2** | To prepare for the seminar on cardiovascular drugs |
| 1. 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  |
| 1. Drugs used in the treatment of gastrointestinal diseases.
 |  |  | 2 |  |  |  | **2** | **2** | To prepare for the seminar on the medicament treatment of gastrointestinal diseases  |
| 1. Antibiotics, their rational use.
 | 2 |  | 2 |  |  |  | **4** | **4** | To prepare for the lecture and seminar on antibiotics  |
| 1. Antimycobacterial agents.
 |  |  | 2 |  |  |  | **2** | **2** | To prepare for the seminar on antimycobacterial drugs  |
| 1. Treatment of pain.
 | 2 |  |  |  |  |  | **2** | **2** | To prepare for the lecture on drugs used to treat the pain  |
| 1. Drug interactions.
 | 2 |  |  |  |  |  | **2** | **2** | To prepare for the lecture on drug interactions |
| Adverse drug reactions. Pharmacovigilance. |  |  | 2 |  |  |  | **2** | **2** | To prepare for the seminar on pharmacovigilance |
| 1. Drug information. Risk minimization measures.
 |  |  | 2 |  |  |  | **2** | **2** | To prepare for the seminar on drug information and risk minimisation measures |
| 15. Clinical trials. |  | **2** | **2** |  |  |  | **4** | **4** | To prepare for the seminar on clinical trials |
| **Total** | **14** | **2** | **26** |  |  |  | **42** | **42** |  |
| 1. Coagulation tests and their interpretation.  | 2 |  |  | 2 |  |  | **4** | **4** | Prepare for the lecture on coagulation system, inflammation and acute phase proteins. |
| 2. Inflammation and acute phase proteins. | 2 |  |  |  |  |  | **2** | **2** | Prepare for lecture on Inflammation and acute phase proteins. |
| 3. Automated and cytomorphological hematology tests and interpretation.  | 2 |  |  | 2 |  |  | **4** | **4** | Prepare for lecture and seminar on automated and cytomorphological hematology tests and interpretation.  |
| 4. Laboratory tests reflecting markers of bone turnover. | 2 |  |  |  |  |  | **2** | **2** | Prepare for the lecture on bone turnover markers.  |
| 5. Liver functions and the importance of laboratory diagnosis.  | 2 |  |  | 2 |  |  | **4** | **4** | Prepare for lectures and exercises on the laboratory diagnosis of liver function.  |
| 6. The most important electrolytes and relevance of laboratory testing.  | 2 |  |  |  |  |  | **2** | **2** | Prepare for the lecture on electrolyte testing and interpretation.  |
| 7. Principles of infection laboratory diagnosis and antimicrobial therapy.  | 2 |  |  | 2 |  |  | **4** | **4** | Prepare for lecture and 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 lecture on Investigations of patient's immune status of and its interpretation. |
| Consultation. |  |  |  |  |  |  |  |  | Prepare for the exam. |
| **Total** | **16** |  | **1** | **8** |  |  | **25** | **25** |  |
| **Grand total** | **30** | **2** | **27** | **8** |  |  | **67** | **67** |  |

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| **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%. |

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| **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](http://www.vvkt.lt) [www.emea.eu](http://www.emea.eu) |
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