FUNDAMENTALS OF PHARMACOLOGY	
GENERAL INFORMATION	
Course teacher	Assoc. Prof. Ines Bilić Ćurčić, MD, PhD
Associates	Asst. Prof. Željko Debeljak, MMedBiochem, PhD Tea Omanović Kolarić, MD, PhD Nikola Raguž-Lučić, MD, PhD Hrvoje Roguljić, MD, PhD Aurora Antolović Amidžić, MPharm
Study programme	Graduate University Study of Medical Laboratory Diagnostics
Course status	Compulsory
Year of study, semester	1st year, 2nd semester
ECTS credits	**5**
Form of teaching (number of classes)	Lectures: 30; Seminars: 30
Expected number of students attending the course	20
COURSE DESCRIPTION	
Course objectives	
Through a series of lectures and seminars, students will master basic terms related to pharmacology, mechanisms of effects of medications, factors of pharmacological response and they will understand pharmacokinetics and pharmacodynamics of medications. Furthermore, students will be able to implement methods of determining medication concentration in blood and to monitor medication therapy, to implement basic principles of storing, monitoring, procuring and selling medications, as well as managing waste medications.	
Course entry requirements and competencies needed for the course	
Completed courses at the Undergraduate Study Programme of Medical Laboratory Diagnostics or equivalent bachelor's degree (baccalaureate)	
Learning outcomes at study programme level	
1.1, 2.1, 2.2, 2.6, 2.7, 3.2	
Expected learning outcomes at course level	
After attending lectures, seminars, independent study and passing the exam, students will be able to: 1. explain pharmacokinetics and pharmacodynamics of medications. 2. explain manners and processes of absorption, distribution, metabolism, and excretion of medications. 3. integrate knowledge of basic principles and molecular mechanism of effects of medications and factors of pharmacological response. 4. implement methods of determining medication concentration in blood and monitor medication therapy. 5. explain the most important interactions and side effects of medications 6. implement the principles of storing, monitoring, procuring and selling medications. 7. describe the pharmacology of different organ systems and pathophysiological conditions. 8. define over-the-counter medications, homeopathic, and herbal medications. 9. analyse the fundamentals of legislation related to medications and toxins. 10. implement the procedures for managing waste medications.	

Course content

Lectures: General principles of clinical pharmacology. Side effects and interactions of medications. Pharmacoepidemiology. Procurement, storage, monitoring and selling of medications. General principles of toxicology. Pharmacology of the central nervous system. Antipsychotics. Antidepressants. Anxiolytics. Psychostimulants. Addictive substances. Medication misuse. Pharmacology of neurodegenerative diseases. Anticonvulsants. Pharmacology of the autonomic nervous system. Pharmacology of the cardiovascular system. Treatment of ischemic heart disease and arrhythmia. Anti-inflammatory medications. Analgesics (opioid and non-opioid). Pharmacology of hypertension. Diuretics. Vasoactive medications. Antimicrobial chemotherapeutic agents. Pharmacology of viral, fungal, and parasitic diseases. Pharmacology of the respiratory system. Pharmacology of the digestive system. Treatment of endocrine diseases. Diabetes. Obesity. Thyroid gland. Pharmacology of dyslipidaemia. Pharmacology of anaemia and coagulation disorder. Cytostatic medications, general principles. Hormones and vitamins. Application of medications in emergencies. Most common causes of intoxication in households and industry. Medications affecting the reproductive system. Antiseptics and disinfectants. Over-the-counter medications. Homeopathic medications. Herbal medications. Legislation related to medications/toxins. Managing waste medications (pharmaceutical waste).

Seminars: Determination of drug concentration in blood. Anti-inflammatory drugs. Pharmacology of the respiratory system. Psychostimulants, addictive substances, drug abuse. Pharmacology of anemias and coagulation disorders. Clinical pharmacology and general principles. Side effects and drug interactions. Antiseptics and disinfectants. Treatment of diseases of endocrine organs. Medicines with an effect on the reproductive system. Chemotherapy of malignant disease. Pharmacology of viral, fungal and parasitic diseases. Immunosuppressive drugs and determination in transplant patients. Medicines in manual sale. Procurement and distribution of medicines, storage and supervision. Pharmacology and analysis of specific drugs and toxic agents.

Forms of teaching

Lectures; seminars; independent assignments

Students' responsibilities

Attendance is obligatory throughout all course forms, and the student has to attend all the exams. Student absence of up to 30% is considered acceptable in each teaching form. Seminars that were not completed have to be taken in the form of colloquiums.

Monitoring students' work *(Connecting learning outcomes, teaching methods and evaluation)*

Written part and oral part of the exam.

Teaching activity	ECTS	Learning outcome	Student activity	Evaluation methods	Grade points	
					Min.	Max.
Attending classes (lectures, seminars, practicums)	1.5	1-10	Attendance, Seminar paper	Attendance records	16	30
Final exam	3.5	1-10	Preparation for the final exam	Written exam	24	40
				Oral exam	10	30
Total	**5**				**50**	**100**

Evaluation of written part of final exam

Percentage of correct answers (%)	Grade points

Evaluation part of exam:	60.00-64.99	20	*of oral final*
	65.00-69.99	24	
	70.00-74.99	28	
	75.00-79.99	32	
	80.00-84.99	34	
	85.00-89.99	36	
	90.00-94.99	38	
	95.00-100	40	

Answear	**Grade points**
average answer with clearly identifiable errors	10-19
very good answer with minor errors	20-25
excellent answer	26-30

Formulating the final grade:
Grade points achieved in classes are combined with points achieved in the final exam. Grading system involves absolute grading and represents one's final achievement. Grades are numerically expressed as follows: A – excellent (5): 80-100 grade points; B – very good (4): 70-79.99 grade points; C – good (3): 60-69.99 grade points; D – sufficient (2): 50-59.99 grade points

Assigned reading (available in the library and in other media)

Title	Number of copies in the library	Availability in other media
Various texts for use in pharmacology classes, Department of Pharmacology		Yes
Katzung et al.: Temeljna i klinička farmakologija, 11th ed., Medicinska naklada, Zagreb, 2011.	26	

Further reading

Farmakologija, Rang HP, Dale MM, Ritter JM, Moore PK (editors), Golden marketing, Zagreb, 2006.

Quality assurance methods that ensure the acquisition of exit competencies

Anonymous, quantitative, standardised students' opinion survey on the course and teacher's work, carried out by the Quality Assurance Office of the Faculty of Medicine in Osijek.

Note

E-learning does not enter the course of the subject but it is used in teaching and contains links to different pages, videos and audio materials available on the web pages.