

			program from the first cycle			
			exam.			
20	Evaluation criteria (points/grade)		up to 59 points	5 (five) (F)		
			from 60 to 68 points	6 (six) (E)		
			from 69 to 76 points	7 (seven) (D)		
			from 77 to 84 points	8 (eight) (C)		
			from 85 to 92 points	9 (nine) (B)		
			from 93 to 100 points	10 (ten) (A)		
21.	Method of monitoring the quality of teaching		Self-evaluation by students, assistant control during the practical teaching and assessment of the achieved student success, as well as the pass rate of students who have passed the subject			
22.	Literature					
	22.1.	Required literature				
		Ord. number	Author	Title	Publisher	Year
		1.	Kumar, Abbas, Fausto, Aster (editors)	Robbins and Cotran: Pathologic Basis of Disease	Ars Lamina, Skopje	2015
		2.	Kumar V, Abbas AK, Fausto N, Aster JC.	Pathologic Basis of Disease, 8th Edition	Saunders	2010
		3.	Group of authors	Histopathological Exercise Practices for Medical and Dental Students	Department of Pathology, Faculty of Medicine, Skopje	2008
	22.2.	Additional literature				
		Ord. number	Author	Title	Publisher	Year
		1.	Robbins and Cotran	Pathology Atlas	Saunders	2006/2010

Attachment No. 3		Course program for the first cycle of studies			
1.	Course title	Pharmacology			
2.	Code	DMMPC2			
3.	Study program	Dentistry - integrated first and second cycle of studies			
4.	Organizer of the study program (unit, i.e., institute, department, division)	University "Ss. Cyril and Methodius" - Skopje. Faculty of Medicine - Skopje, Institute of Preclinical and Clinical Pharmacology			
5.	Degree (first, second, third cycle)	Integrated first and second cycle studies			
6.	Academic year/semester	Year	2	Semester	4
7.	Course workload expressed in ECTS credits	5			
8.	Teacher (in case of multiple teachers, designated teacher in charge)	Head of the Department of Pharmacology Prof. Dr. Trajan Balkanov *teaching is performed by all members of the department			
9.	Language in which the curriculum is conducted	English			
10.	Necessary prerequisites for listening and taking the class	Listened to all compulsory subjects from the first year			
11.	Course objectives (competences) and learning outcomes:	The primary objectives of the subject program are: Getting familiar with the subject and tasks of pharmacology; Learning about the pharmacodynamic effects of medication and their mechanisms of action through which they achieve their effects; Learning about pharmacokinetics of medication, absorption, bioavailability, distribution, metabolism, and elimination of medication;			

		Gaining basic knowledge of toxicology and toxicological research, as well as their importance in drug development Studying possible interactions between medication and other forms of interactions; Learning about dosages of medication and types of doses; Optimization and specific individual approach in adjusting the therapy and dosage regimen of medication; Gaining basic knowledge about the safe use of medication, possible side effects, and pharmacovigilance as a key component of the safe use of medication; Gaining basic knowledge of selected groups of medication, with special reference to the importance of medication for the treatment of pain, nausea, vomiting, and treatment of allergic reactions; Introduction to medication intended for the treatment of respiratory, cardiovascular, and neurological diseases. Gaining basic knowledge about medication used for the treatment of diseases of the digestive system, endocrine organs, and musculoskeletal system. Understanding the basic principles of pharmacogenetics Learning about the safety of medication, possible side effects of medication - local and systemic, as well as minimizing the risk from the same. Training students in prescribing medication and the study of pharmaceutical dosage forms																																																												
12.	Detailed course content by chapter and units, with the learning outcomes for each chapter	<table><tr><td colspan="2">Theoretical teaching - lectures</td></tr><tr><td colspan="2">1. Chapter - General Pharmacology</td></tr><tr><td>Introduction to Pharmacology</td><td>1 class</td></tr><tr><td colspan="2">Pharmacodynamics</td></tr><tr><td>Mechanism of the effect of medication: general principles.....</td><td>2 classes</td></tr><tr><td>Cellular mechanisms of the effect of medication</td><td>2 classes</td></tr><tr><td>Measurements and methods in pharmacology - bioessays</td><td>2 classes</td></tr><tr><td colspan="2">Pharmacokinetics</td></tr><tr><td>Absorption and bioavailability of medication.....</td><td>2 classes</td></tr><tr><td>Distribution of medication.....</td><td>1 class</td></tr><tr><td>Metabolism of medication.....</td><td>1 class</td></tr><tr><td>Elimination of medication.....</td><td>1 class</td></tr><tr><td>Adverse effects of medication and pharmacovigilance.....</td><td>2 classes</td></tr><tr><td>Addiction to medication and other substances, and their abuse.....</td><td>1 class</td></tr><tr><td colspan="2">Result of chapter 1: The student learns about the mechanisms of the effects of medication through which they achieve their effects, about their pharmacodynamic effect, possible interactions, their pharmacokinetic characteristics, as well as their potential harmful and toxic effects, and a way to minimize them.</td></tr><tr><td colspan="2">2. Chapter – Special pharmacology</td></tr><tr><td>Chemical mediators and autonomic nervous system.....</td><td>1 class</td></tr><tr><td>Cholinergic and noradrenergic transmission.....</td><td>2 classes</td></tr><tr><td>Medication that affect cardiac function.....</td><td>2 classes</td></tr><tr><td>Vascular system (vasoconstrictors and vasodilators).....</td><td>2 classes</td></tr><tr><td>Atherosclerosis and Lipoprotein Metabolism.....</td><td>1 class</td></tr><tr><td>Medication used in vascular diseases - hemostasis and thrombosis.....</td><td>2 classes</td></tr><tr><td>Medication for the treatment of respiratory diseases</td><td>2 classes</td></tr><tr><td>Treatment of kidney and urinary tract diseases.....</td><td>1 class</td></tr><tr><td>Medication for the treatment of diseases of the gastrointestinal tract.....</td><td>1 class</td></tr><tr><td>Medication used for the treatment of diseases of the endocrine system.....</td><td>2 classes</td></tr><tr><td>Anti-allergy and anti-inflammatory medication</td><td>2 classes</td></tr><tr><td>Pain management</td><td>2 classes</td></tr><tr><td>Anxiolytic and hypnotic medication.....</td><td>2 classes</td></tr><tr><td>Medication for the treatment of diseases of the central nervous system: antidepressants, antipsychotics,</td><td>3 classes</td></tr></table>	Theoretical teaching - lectures		1. Chapter - General Pharmacology		Introduction to Pharmacology	1 class	Pharmacodynamics		Mechanism of the effect of medication: general principles.....	2 classes	Cellular mechanisms of the effect of medication	2 classes	Measurements and methods in pharmacology - bioessays	2 classes	Pharmacokinetics		Absorption and bioavailability of medication.....	2 classes	Distribution of medication.....	1 class	Metabolism of medication.....	1 class	Elimination of medication.....	1 class	Adverse effects of medication and pharmacovigilance.....	2 classes	Addiction to medication and other substances, and their abuse.....	1 class	Result of chapter 1: The student learns about the mechanisms of the effects of medication through which they achieve their effects, about their pharmacodynamic effect, possible interactions, their pharmacokinetic characteristics, as well as their potential harmful and toxic effects, and a way to minimize them.		2. Chapter – Special pharmacology		Chemical mediators and autonomic nervous system.....	1 class	Cholinergic and noradrenergic transmission.....	2 classes	Medication that affect cardiac function.....	2 classes	Vascular system (vasoconstrictors and vasodilators).....	2 classes	Atherosclerosis and Lipoprotein Metabolism.....	1 class	Medication used in vascular diseases - hemostasis and thrombosis.....	2 classes	Medication for the treatment of respiratory diseases	2 classes	Treatment of kidney and urinary tract diseases.....	1 class	Medication for the treatment of diseases of the gastrointestinal tract.....	1 class	Medication used for the treatment of diseases of the endocrine system.....	2 classes	Anti-allergy and anti-inflammatory medication	2 classes	Pain management	2 classes	Anxiolytic and hypnotic medication.....	2 classes	Medication for the treatment of diseases of the central nervous system: antidepressants, antipsychotics,	3 classes
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		antiepileptics.....		
		Antimicrobial medication		4 classes
		Result of chapter 2: The student acquires basic knowledge about the medication used for the treatment of the most significant and common diseases in order to independently prescribe appropriate treatment and dosage regimen.		
		Total		45 classes
		Practical teaching - exercises		
		From the first chapter (study of pharmaceutical dosage forms, method of medicine prescription, method of medicine administration, calculation of doses and dosage of medicine, determination of medicine potency, medicine effectiveness, interactive pharmacology, side effects and pharmacovigilance)		8 classes
		From the second chapter (pharmacography: specific prescriptions of medicine for diseases according to organic systems)		7 classes
		Total:		15 classes
13.	Interrelation of subjects	Biochemistry, physiology, pathophysiology, internal medicine, pediatrics, infectiology, anesthesia, and sedation		
14.	Detailed description of the teaching and working methods for the subject	Interactive classes (theoretical), work in small groups (exercises), interactive exercises using the Interactiv Clinical Pharmacology software and other forms provided by the ECTS common criteria		
15.	Total Available Time	150 classes		
16.	Forms of teaching activities	16.1.	Lectures - theoretical teaching. Classes	45
		16.2.	Exercises (laboratory, auditorium), seminars, teamwork	15
		16.3.	Practice: classes	
17.	Other forms of activities	17.1.	Project assignments: classes	
		17.2.	Independent assignments: classes	
		17.3.	Home study - assignments	90
18.	Signature requirements	Allowed Absence from up to two exercises and presence at 60% of lectures. Active participation (points) Min-Max Theoretical teaching 1.8 – 3.0 Practical teaching 4.2 – 7.0		
19.	Method of grading			
	19.1.	Tests: points	General Pharmacology Test Min-Max 12.0 – 20.0 Special pharmacology test Min-Max 12.0 – 20.0 Practical exam of the exercise material) Min-Max 6.0 – 10.0	
	19.2.	Seminar work/project, written and oral presentation: points		
	19.3.	Final exam: points *Oral exam (integrative) – questions on the basis of which integrative knowledge in the field of pharmacology is assessed, which is important for understanding the entirety of the subject.	Min-Max 24.0 – 40.0	
20.	Evaluation criteria (points/grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B
			from 93 to 100 points	10 (ten) A
21.	Method of monitoring the quality of teaching		Self-evaluation by students, assistant control during the practical teaching and assessment of the achieved student success, as well as the pass rate of students who have passed the subject	

22.	Literature				
	22.1.	Required literature			
		Ord. number	Author	Title	Publisher
		1.	Department of Pharmacology with Toxicology	Authorized Lectures	
		2.	Rang and Dale: H.P. Rang, M.M. Dale, J.M. Ritter, R.J. Flower	Pharmacology	Akademički pečat 2013
	22.2.	Additional literature			
		Ord. number	Author	Title	Publisher
		1.	Goodman & Gilman: Lawrence Brunton, John Lasso, Kate Parker	The Pharmacological Basis of Therapeutics	Tabernakul 2011
		2.	Varagic V, Milosevic P:	Farmakologija	Elit Medika 23 Izdanje 2012
		3.	Bertram G. Katzung, Marieke Kruidering-Hall and Anthony J. Trevor	Pharmacology, Examination & Board Review, 12th Edition	Mc Graw-Hill Education, LANGE 2019

Attachment No. 3		Course program for the first cycle of studies			
1.	Course title	Oral hygiene			
2.	Code	DMMOH2			
3.	Study program	Dentistry - integrated first and second cycle of studies			
4.	Organizer of the study program (unit, i.e., institute, department, division)	University "Ss. Cyril and Methodius" in Skopje, Faculty of Dentistry - Skopje, Department of Oral and Periodontal Diseases			
5.	Degree (first, second, third cycle)	Integrated first and second cycle studies			
6.	Academic year/semester	Year	2	Semester	4
7.	Course workload expressed in ECTS credits	3			
8.	Teacher	Responsible teacher: Prof. Dr. Kristina Mitikj Prof. Dr. Maja Pandilova			
9.	Language in which the curriculum is conducted	English			
10.	Necessary prerequisites for listening and taking the class	All compulsory subjects from the first year have been listened to			
11.	Course objectives (competences) and learning outcomes:	The purpose of the course is to acquire a broader knowledge of oral hygiene and its importance for general and oral health. Students are trained to identify dental plaque, remove soft and hard deposits, and educate the patient on techniques and means of maintaining oral hygiene. Students acquire skills to achieve optimal oral hygiene in patients with prosthodontic, orthodontic aids, and implants, as well as in patients with special needs.			
12.	Detailed course content by chapter and units, with the learning outcomes for each chapter	Theoretical Teaching - Lectures 1. Chapter - Introduction to the subject and patient care - 1 class - Anamnestic data related to oral hygiene and detection of dental plaque - 1 class			