Attachment No.3		Course program for the first cycle of studies			
1.	Course title	Medical chemistry			
2.	Code	DMMMC1			
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 Medicine - Skopje Department of Medical Chemistry			
5.	Degree (first, second, third cycle)	Integrated first and second cycle studies			
6.	Academic year/semester	Year	1	Semester	1
7	Course workload expressed in ECTS credits	3			
8.	Teacher (in case of multiple teachers, designated teacher in charge)	Prof. Dr. Svetlana Cekovska			
9.	Language in which the curriculum is conducted	English			
10.	Necessary prerequisites for taking and passing the course	None			
11.	Course objectives (competences) and learning outcomes:	The student acquires knowledge about the chemical structure of biomolecules, chemical and energetic changes during their transformations, basic concepts of general chemistry, and knowledge about the classification of organic compounds according to the functional groups they possess.			
12.	Detailed course content by chapter and units, with the learning outcomes for each chapter	Theoretical teaching - lectures Chapter: General Chemistry Bioelements…….... 1 Class Ionic, covalent, coordinate relationship, intermolecular forces (hydrogen, Van der Waals, induced dipole-dipole) ….1 class Solutions, quantitative composition, colligative properties of solutions, strong and weak electrolytes (dissociation), acid theories, Hydrogen index, pH scale ..... 2 classes Buffers. Biologically important buffers.....1 class Basic laws of thermodynamics.....1 class Chemical kinetics…….1 class Oxidation and Reduction……1 class Chapter: Organic Chemistry Chemistry of carbon atom, alkanes, alkenes, alkynes, cycloalkanes…2 classes Aromatic hydrocarbons, alcohols, phenols, polyphenols…1 class Carbonyl compounds (ketones, aldehydes, and carboxylic acids) .....2 classes Heterocyclic organic compounds.....2 classes Total: .....15 classes Learning outcomes of the first chapter - General Chemistry: Students will be introduced to the biologically important elements and their medical significance, the basic types of intramolecular and intermolecular chemical bonds, the way of expressing the concentration of solutions, the basic theories of acid bases, the notion of pH (hydrogen index) and pH scale, the mechanism of functioning of biologically important buffers, the basic laws of thermodynamics and the factors that affect the speed of reactions and the significance of redox reactions for living organisms. Learning outcomes of the second chapter - Organic Chemistry: Students will be introduced to the method of classification of organic compounds based on functional groups, the basic types of reactions in organic chemistry, and the biological significance and interrelationship of the basic classes of organic compounds.			

		Practical teaching: Basic physicochemical procedures in chemical-biochemical laboratories.....3 classes Solutions and colligative properties of solutions.....3 classes pH of solutions.....3 classes Buffers.....3 classes Properties and nomenclature of organic compounds.....3 classes Total .....15 classes Learning outcomes gained from the exercises: Students will learn how to use basic physicochemical procedures, how to prepare a solution of a certain concentration, how to dilute solutions, calculate the pH of a solution, explain the term buffer and explain the mechanism of effect of buffers, gain knowledge on how to name organic compounds and how to classify them based on functional groups, with particular emphasis on biologically important organic compounds.		
13	Interrelation of subjects	Passing an exam in medical chemistry is a condition for the student to take the final exam in the subject of Biochemistry		
14.	Detailed description of the teaching and working methods for the subject	Interactive teaching, laboratory exercises by groups, presentation and performance of laboratory procedures, demonstration of used instruments and methods, holding theoretical teaching with physical presence in an amphitheater, according to the subject program.		
15.	Total Available Time	90 classes		
16.	Forms of teaching activities	16.1.	Lectures - theoretical teaching. classes	15
		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	15
		17.3.	Home study - assignments	45
18	Signature requirements	Attendance at exercises (minimum 20 points) and attendance at 50-60% of lectures (minimum 1 point)		
19	Method of assessment:	Attendance at lectures: 51%-60% 1 point 61%-85% 2 points 86%-100% 3 points Exercices : 20-25 points* *attendance + demonstrated knowledge (5 exercises: 2 points attendance + 3 points knowledge of exercises)		
	19.1.	Tests: points		/
	19.2.	Seminar work/project, written and oral presentation: points		/
	19.3.	Final exam: points		43 - 72 points
20	Evaluation criteria (points/grade)	up to 59 points		5 (five) (F)
		60 to 68 points		6 (six) (E)
		69 to 76 points		7 (seven) (D)
		77 to 84 points		8 (eight) (C)
		85 to 92 points		9 (nine) (B)
		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.	Krstevska Marija, Alabakovska Sonja, Efremova Aaron Snezhana, Labudovikj Danica, Cekovska Svetlana	General and organic chemistry for medical students	Faculty of Medicine, UKIM Skopje	Skopje, 2014
		2.	Bogdanska Jasna, Bosilkova Gordana, Juliana Brezovska-Kavrakova, Krstevska Marija, Labudovikj Danica, Topuzovska Sonja, Tosheska Trajkovska Katerina, Cekovska Svetlana	"Exercise Practicum in Medical Chemistry for Dental Students"	Faculty of Medicine, UKIM Skopje	Skopje, 2020
	22.2.	Additional literature				
		Ord. number	Author	Title	Publisher	Year
		1.				