1.	Subject	**SPECIALIZED CLINICAL BIOCHEMISTRY AND PROFESSIONAL TRAINING**			
2.	Code				
3.	Study program:	Three-year professional studies of medical laboratory diagnostics			
4.	Conducted by	UKIM – Medical faculty Department of Biochemistry and Clinical Biochemistry			
5.	Degree of education (first or second cycle)	First cycle			
6.	Academic year/semester	III/V	7.	Credits	7
8.	Professor	Head of the Department: Prof. d-r Jasna Bogdanska The lessons are held by all the Department members			
9.	Prerequisite				
10.	Goals	The students master the skills of analyzes from the fields of specialized clinical biochemistry. Mastering specific analytical techniques – immune-chemical methods (EIA, ECLIA, RIA) for determining concentration of specific proteins, tumor markers, hormones, medication, vitamins. The students master the skills of performing analyzes for discovering autoimmune diseases, congenital metabolic conditions, allergies; master the skills of working on a analyzer and controlling the work of the machine and mastering the skills of comparing multiple analyzers. *Knowledge and understanding:* After finishing the subject program the student will know to: • Quantify specific proteins, tumor markers, hormones and vitamins with immune-chemical methods; • Determine the concentration of specific allergens and IgE • Perform cytological and biochemical examination of a cerebrospinal fluid • Take and prepare capillary blood sample for determining acid-base balance, for analysis with POC tests, as well as interpret the result • Perform immunofixation for determining the class and the type of monoclonal proteins • Determine and categorize cryoglobulins quantitatively • Make chromatographic separation of sugars in diagnosing particular metabolic disorders • Prepare cell culture *Skills and knowledge:* With mastering the subject content the student will be able to: • Perform tests from the field of specialized clinical biochemistry. Master specific analytical techniques as ELISA, ECLIA etc., immune-chemical methods for determining the concentration of specific proteins, tumor markers, hormones, medications, vitamins • Master skills for analyses connected to discovering autoimmune diseases, congenital metabolic disorders, allergies • Fulfill the task for working with analyzers and with the help of certain programs to control the work of the analyzers and compare multiple			

		analyzers			
11.	Content summary: **Practical work in a laboratory:** The attendance to the professional training, the interest in the work and the conscious fulfillment of the given tasks under the guidance of a mentor is controlled and graded				
12.	Teaching methods: *Teaching activity:* Laboratory work under surveillance and independent laboratory work, guided individual learning, learning at home, consultations *Student's activity:* Practicing skills through independent laboratory work, homework assignments, mastering techniques for presenting work results, mastering techniques for summarizing and concise expression *Ways of passing the exam* Points are given for attending the professional training, the interest in the work and conscious finishing of the given tasks under the guidance of a mentor. The student must attend a minimum of 50 lessons laboratory training to gain the necessary credits.				
13.	Total classes:		170		
14.	Organization				
15.	Types of teaching activities		15.1	Lessons: theoretical classes	15
			15.2	Practical lessons	30
16.	Other types of activities		16.1	Laboratory training	50
			16.2	Self-supporting practice	15
			16.3	Learning at home	45
17.	Knowledge assessment		Points		
	17.1		Theoretical lessons attendance 1 – 3 min.-max. Practical lessons 9 – 15 min.-max. Seminars 4 – 7 min.-max. Laboratory training 30 – 50 min.-max. Interest in completing the given tasks 15 – 25 min.-max.		
18.	Grading criterion (points/grades)	Up to 59	5 (five) F		
		60-68	6 (six) E		
		69-76	7 (seven) D		
		77-84	8 (eight) C		
		85-92	9 (nine) B		
		93-100	10 (ten) A		
19.	Requirements for obtaining a signature and attending the final examination	To gain a signature for the training, the student must master the planned skills, spend a certain amount of time in the laboratory and do the given tasks.			

20.	Language	Macedonian/English	
21.	Method of evaluating the quality of the lessons	Students' anonymous evaluation of the organization quality, content, work of the professors and mentors. The usefulness of the training, content and the mentors readiness is evaluated.	
22.	Literature:		
	22.1	Mandatory literature	
		1.	Medical Biochemistry, Nada Majkikj Singh, Drushtvo Medicinski Biohemicara Serbia, 2006
		2.	Strauss Medical Biochemistry, Group of authors, Medicinska naklada, Zagreb, 2009
	22.2	Additional literature	
		1.	