<table>
<tr><td>1.</td><td>Subject</td><td colspan="4">CLINICAL MICROBIOLOGY</td></tr>
<tr><td>2.</td><td>Code</td><td colspan="4">MLD – 321</td></tr>
<tr><td>3.</td><td>Study program:</td><td colspan="4">Three-year professional studies of medical laboratory diagnostics</td></tr>
<tr><td>4.</td><td>Conducted by</td><td colspan="4">UKIM – Medical faculty
Department of Microbiology and Parasitology</td></tr>
<tr><td>5.</td><td>Degree of education (first or second cycle)</td><td colspan="4">First cycle</td></tr>
<tr><td>6.</td><td>Academic year/semester</td><td>III/VI</td><td>7.</td><td>Credits</td><td>8</td></tr>
<tr><td>8.</td><td>Professor</td><td colspan="4">Head of the Department of Microbiology with Parasitology – prof. d-r Elena Trajkovska Dokikj
The lessons are held by all the Department members</td></tr>
<tr><td>9.</td><td>Prerequisite</td><td colspan="4">Enrolled in third year</td></tr>
<tr><td>10.</td><td>Goals</td><td colspan="4">The main aim of the subject program is for the students to understand the role and the importance of quick, exact and proper microbiological diagnostic in clinical practice.
After finishing the subject program, the students will gain knowledge about:
Recognizing an infectious condition and the need for microbiological processing of a biological sample
The importance of choosing a viable and representative sample which is necessary for a proper diagnosis of different infectious processes in separate organs or systems
Making the students able to take proper patient sample: taking a sample in the right time, proper amount, conditions and proper containers
Proper packaging and transporting the samples to the microbiological laboratory, including proper storage of the samples until processing
Incubation of samples
Biochemical identification of microorganisms which cause the human infections
Serological identification of microorganisms which cause the human infections
Molecular identification of microorganisms which cause the human infections
Working with automatic machines
Proper analysis of the results
Proper interpretation of the results and choosing the right therapy according to the antimicrobial sensitivity</td></tr>
<tr><td>11.</td><td colspan="5">Content summary:
Theoretical lessons:
Microbiological diagnosis of respiratory infections
Microbiological diagnosis of digestive tract infections
Microbiological diagnosis of genitourinary tract infections
Etiological agents of meningitis – microbiological diagnosis
Sepsis and endocarditis – etiological agents and microbiological diagnosis
Types of wounds, wound infections, their microbiological diagnosis
Anaerobic infections – importance of proper microbiological diagnosis
Viral infections diagnosis
Parasitic diseases diagnosis</td></tr>
</table>

	• Proper diagnosis of mycotic infections: local and systemic • Control of intrahospital infections **Practical lessons and practice:** • Taking representative biological sample • Criteria for rejecting nonvalid sample • Proper labeling of the taken sample • Determining surfaces for cultivation • Cultivation of proper surfaces • Determining the conditions and time of incubation • Analysis and identification of the grown colonies • Analysis of work of the automatic machines • Analysis of the antimicrobial sensitivity • Analysis and interpretation of the results of the analyzed antimicrobial sensitivity • Noting the importance of the collaboration between the doctor microbiologist and the clinical doctor				
12.	Teaching methods: Interactive theoretical lessons Self-assisted learning Practical lessons/clinical presentations Problem-based learning and their solutions Independent analysis of particular clinical cases and their complete microbiological processing Independent interpretation of the microbiological results with a special attention to the choice of a proper antimicrobial medium				
13.	Total classes:		125		
14	Organization				
15.	Types of teaching activities		15.1	Lessons: theoretical classes	15
			15.2	Practical lessons, seminars	30
16.	Other types of activities		16.1	Practice	80
			16.2		
			16.3	Learning at home	50
17.	Knowledge assessment		Points		
	17.1	Tests 2	Written test theoretical lessons points 9 – 15 min-max Written test practical lessons points 15 – 25 min-max		
	17.2	Paper/project	Presentation of a clinical case points 12 – 20 min-max		
	17.3	Active participation	Theoretical lessons points 2 – 5 min-max Practical lessons points 10 – 15 min-max Practice points 12 – 20 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 obtain a signature, the student must gain minimum 60% of the points of the theoretical lessons, practical lessons and practice. The final grade is formed according to the grading criterion, and is based on the sum of the points of all the activities.	
20.	Language	Macedonian	
21.	Method of evaluating the quality of the lessons	Students' anonymous evaluation of the professors and lessons	
22.	Literature:		
	22.1	Mandatory literature	
		1.	Grinvud D. et al., Translation: prof. d-r Nikola Panovski, prof. d-r Milena Patrovska, prof. d-r Elena Trajkovska Dokikj, prof. d-r Kakja Popovska, Medical Microbiology, 17th edition 2006, translation 2011 as part of the Government Project of the Republic of North Macedonia for Translation of Professional and Scientific Books, 2010
		2.	Prof. d-r K. Popovska, prof. d-r N.Panovski, Prof. d-r M.Petrovska, Prof. d-r E. Trajkovska Dokikj, Microbiology with Parasitology, Textbook and Practicum for the students of professional studies, Department of Microbiology and Parasitology, 2008
		3.	Prof. d-r Panovski N. and collaborators, Medical Microbiology – general part, Department of Microbiology and Parasitology, 2011
		4.	Prof. d-r Panovski N. and collaborators, Medical Microbiology – specialized part, Department of Microbiology and Parasitology, 2011
		5.	Prof. d-r Milena Petrovska and collaborators, Practicum of Medical Microbiology and Parasitology, Department of Microbiology and Parasitology, 5th ed. 2010
	22.2	Additional literature	
		1.	Jawetz E, Melnik II, Adelberg EA., Medical Microbiology, Savremena Administracija, Belgrade, 21st ed., 2004