Attachment No. 3		Course program for the first cycle of studies			
1.	Course title	Clinical endodontics			
2.	Code	DMMCE5			
3.	Study program	Dentistry - integrated first and second cycle of studies			
4.	Organizer of the study program (unit, i.e., institute, department, division)	UKIM - Faculty of Dentistry – Skopje, Department of Endodontics and Restorative dentistry			
5.	Degree (first, second, third cycle)	Integrated First and Second Cycle Studies			
6.	Academic year/semester	Year	5	Semester	9 and 10
7	Course workload expressed in ECTS credits	9			
8.	Teacher (in case of multiple teachers, designated teacher in charge)	Teacher in charge: Prof. Dr. Sonja Apostolska *All professors from the department will be included in the instruction			
9.	Language in which the curriculum is conducted	English			
10.	Necessary prerequisites for taking and passing the course	Completed all mandatory courses from semesters 7 and 8 and passed all mandatory courses from semesters 5 and 6.			
11.	Course objectives (competences) and learning outcomes:	Acquiring skills for self-diagnosis and implementation of endodontic therapy of teeth with diseased pulp and apical periodontitis, knowledge of biological therapeutic options, indications, and use of intersession medications, their effects, and disadvantages. Skills for definitive obturation of root canals, recognition of errors and complications, indications for repeated endodontic treatment, as well as the use of canal retention systems. Knowledge of urgent therapeutic procedures, etiological factors for crown discoloration, and techniques for whitening endodontically treated teeth. The acquired knowledge will enable the correct application of therapy in clinical settings.			
12.	Detailed course content by chapters and units with learning outcomes for each chapter	Theoretical instruction - lectures - Introduction to clinical endodontics, functional characteristics of the pulpo-periodontal complex.....1 Learning outcome: Students will be able to describe the basic goals of endodontics and relate the anatomical and histological aspects of teeth to the endodontic and periapical spaces. - Oral cavity pain.....1 Learning outcome: Students will be able to identify and differentiate different types of oral pain and determine their potential causes, as well as assess the importance of pain in			

		clinical diagnosis and treatment. - Diagnostics in endodontics.....1 Learning outcome: Students will be able to apply diagnostic procedures to detect pathological conditions of the pulp and periapical region, and assess the accuracy of diagnostic tests. - Deep caries.....2 Learning outcome: knowledge of the clinical image, methods of diagnosis, approaches to therapy, and techniques for preserving the vitality of the pulp during artificial opening. -Clinical aspects of endodontic therapy, indications and contraindications, regressive metamorphoses of the pulp, denticles, cementicles.....1 Learning outcome: knowledge of the indications and contraindications for endodontic therapy. Understanding the processes of regressive metamorphoses of the pulp, denticles, and cementicles. - Dental Pulp Diseases.....1 Learning Outcome: Students will be able to describe the causes and mechanisms of dental pulp diseases, including pathogenesis and classification, with a special focus on hyperemia. - Acute pulpitis.....1 Learning outcome: Students will be able to analyze the etiology and clinical picture of acute pulpitis and propose adequate methods for diagnosis and therapy. - Chronic pulpitis.....1 Learning Outcome: Students will be able to explain the etiology and clinical image of chronic pulpitis, as well as develop plans for diagnosis and therapy. - Necrosis, necrobiosis, gangrene of the dental pulp.....1 Learning outcome: Students will be able to describe the etiology, clinical picture, and therapy of necrosis, necrobiosis, and gangrene of the dental pulp. - Parodontium, diseases of periapical tissues, division, Parodontitis apicalis acuta.....2 Learning outcome: students will be able to understand the pathology of periapical tissues and classify the different types of diseases, will be able to analyze the etiology, clinical image, and choose methods of therapy for acute apical periodontitis. -Parodontitis apicalis chronica.....2 Learning outcome: Students will be able to describe the characteristics of chronic apical periodontitis and suggest treatment strategies. - Marginal and lateral periodontitis.....1 Learning outcome: Students will be able to identify marginal and lateral periodontitis, review their etiology, and suggest therapeutic approaches. - Specifics of anesthesia and analgesia in endodontics....1 Learning outcome: students will be able to identify specifics of anesthesia and analgesia in endodontic treatments and make the right choice. - Emergency endodontic treatment.....1 Learning outcome: Students will be able to identify and assess emergency endodontic cases and apply appropriate clinical treatment strategies. - Use of antibiotics in endodontics.....1 Learning outcome: students will be able to describe the proper use, indications, and contraindications of antibiotics in the context of endodontic treatments. -Endodontic treatment of high-risk patients..1 Learning outcomes: which patients are included in the group of high-risk patients, and their preparation for endodontic therapy. Acquiring knowledge about the indications and contraindications for working with such a group of patients. -Biomaterials in endodontics.....1 Learning outcome: Understanding and application of the types and properties of biomaterials in endodontic therapy, the method of work, and their effect on living tissue. - Regenerative endodontics.....1 Learning outcome: getting acquainted with the regenerative potential of the dental pulp and the methods and techniques that stimulate the regeneration of pulp tissue. - Endodontic aspect of tooth crown resorption.....1 Learning outcome: understanding of endodontic aspects and approaches to tooth crown resorption. - Endodontic aspects of tooth fracture treatment.....1 Learning outcome: Students will be able to distinguish between different types of fractures (coronary and root) and choose the most appropriate treatment therapy.

		- Errors and complications during endodontic therapy.....1 Learning outcome: Students will be able to identify and propose strategies for the prevention of the most common errors and complications in endodontic treatments. -Retreatment and endodontic surgery.....1 Learning outcome: Students will be able to explain the indications for retreatment in unsuccessful endodontic treatments and apply endodontic surgery techniques. - Apical periodontium repair.....1 Learning outcome: Students will be able to understand the methods for apical periodontium repair and apply them in clinical practice. - New technologies and technical advances in endodontics.....1 Learning outcome: Getting acquainted with new technologies (operating microscope, devices, instruments, machine techniques) and their application in endodontic treatment. - Whitening of discolored teeth.....1 Learning outcome: Understanding the techniques and indications for whitening discolored teeth, including their application after endodontic treatments. - Postendodontic restoration of teeth.....2 Learning outcome: understanding of postendodontic restoration techniques and their importance for successful completion of endodontic treatment. Total: .....30 classes Practical teaching - exercises - Introduction to clinical procedure - preparation of the workplace for endodontic treatment, anamnesis, method of diagnosis, indications for work and outcome of therapy, dry working field (demonstration of rubber dam application).....5 - Medical documentation in endodontics.....4 - Diagnostic procedures in acute pulp diseases (diagnosis and differential diagnosis - clinical image, anamnesis, clinical examination, indications and type of therapy) .....5 - Diagnostic procedures in chronic pulp diseases (diagnosis and differential diagnosis - clinical image, anamnesis, clinical examination, indications and type of therapy) .....5 -Odontometric methods.....4 -X-ray diagnostics in endodontic therapy.....4 -Therapeutic procedures in necrosis and necrobiosis.....4 -Therapeutic procedures in gangrenous decayed pulp.....5 -Diagnostic procedures in acute periodontitis (diagnosis and differential diagnosis - clinical image, anamnesis, clinical examination, indications and type of therapy) .....5 - Diagnostic procedures in chronic periodontitis (diagnosis and differential diagnosis - clinical image, anamnesis, clinical examination, indications and type of therapy) .....5 - Endodontic intervention - principles and procedures with irrigant and medications…….....5 - Obturation of the root canal system, conditions, purpose of obturation....4 -Obturation of the root canal system - materials and techniques.....5 - Radiographic control of completed endodontic therapy in pulpitis and periodontitis.....4 - Urgent endodontic therapeutic procedures.....5 - Types of anesthesia in endodontic therapy, alternatives.....4 - Errors and complications during endodontic therapy.....4 - Alternative methods after unsuccessful endodontic therapy (retreatment, endodontic surgery).....4 - Therapeutic modalities in chronic periodontitis, endodontic surgery - indications, methods.....3 - Procedures for whitening non-vital and endodontically treated teeth.....4 -Restoration of endodontically treated teeth - indications and application of composite and fiberglass reinforced root canal posts.....4 - Endodontic therapy for dental injuries and traumas.....4 - Team preparation and rehabilitation of the patient for prosthodontic replacements.....4 - Endodontic therapy in certain general diseases.....4

		Total .....105 classes			
13	Interrelation of subjects	Preclinical endodontics, Dental materials			
14.	Detailed description of the teaching and working methods for the subject	Interactive instruction, teamwork, clinical exercises that include working in small groups with demonstrations of instruments and methods used in endodontic therapy, and presentation and performance of endodontic procedures on patients by students			
15.	Total available time	270 classes			
16.	Forms of teaching activities	16.1.	Lectures - theoretical teaching classes	30 classes	
		16.2.	Exercises (laboratory, auditorium), seminars, teamwork: classes	105 classes	
		16.3.	Practice: classes		
17.	Other forms of activities	17.1.	Project assignments: classes		
		17.2.	Independent assignments: classes		
		17.3.	Home study - assignments	135	
18	Signature requirements	80% of practical instruction and 60% of theoretical instruction			
19	Grading method				
	19.1.	Tests: points		15+15	
	19.2.	Seminar paper/project, written and oral presentation: points		6 – 10	
	19.3.	Final exam: points		36 - 60 points (oral and practical)	
20	Grading 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 instruction		Self-evaluation by students, control by assistants in carrying out practical instruction and assessment of the students' success, as well as the pass rate of students who have passed the course		

22.	Literature					
	22.1.	Required literature				
		Ord. No.	Author	Title	Publisher	Year
		1.	Apostolska Sonja, Rendjova Vasilka	Endodontics	Maring, Skopje	2014
	22.2.	Additional literature				
		Ord. No.	Author	Title	Publisher	Year
		1.	Arnaldo Casteluci	Endodontics	Edra	2022