Attachment No. 3		Course program of the first cycle of studies			
1.	Course title	Dental radiology			
2.	Code	DMMDR4			
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 Pediatric and Preventive Dentistry			
5.	Degree (first, second, third cycle)	Integrated First and Second Cycle Studies			
6.	Academic year/semester	Year	4	Semester	7
7	Course workload expressed in ECTS credits	4			
8.	Teacher	Prof. Dr. Marija Stevanovikj Prof. Dr. Aleksandar Dimkov			
9.	Language in which the curriculum is conducted	English			
10.	Necessary prerequisites for taking and passing the course	Completed all mandatory third year courses and passed all mandatory second year courses			
11.	Course objectives (competences) and learning outcomes:	Objectives of the course program (competences): after attending theoretical and practical classes and passing the exam, the student acquires knowledge and skills about the methods of creating X-rays, the methods of performing and processing X-rays, the harmful effects and protection from X-ray radiation, interpretation of X-rays, competent reading and interpretation of normal radiography of the dental and jaw structures and knowledge about the correct diagnosis of pathological conditions in the orofacial region.			
12.	Detailed course content by chapters and units, with learning outcomes for each chapter	Course content: Chapter 1. Fundamentals of dental radiography and radiology Basic physical principles of ionizing radiation; X-ray tube; generation of X-rays.....2 classes Biological effects of X-ray radiation and protection from X-ray radiation…….....2 classes Types of X-ray imaging in the orofacial region; Performing intraoral, extraoral,			

		and special imaging; Processing X-ray images.....2 classes Normal X-ray anatomy of teeth and supporting tissues, Normal X-ray anatomy of the upper and lower jaws, and Interpretation of X-rays.....2 classes Results from chapter 1: Students will learn of the physical principles of X-rays, biological effects associated with X-rays, X-ray equipment construction, infection control measures, types of radiology equipment and images, image storage and processing methods, image development procedures, and types of X-rays of the orofacial region. Students will also learn about the normal X-ray structure of the teeth, the supporting apparatus, the alveolar ridge, the upper and lower jaws, and all anatomical structures of interest to the dentist. Chapter 2. X-ray diagnostics of carious lesions, tooth irregularities, irregularities in the development of the maxillofacial bones, osteoresorptive and osteosclerotic processes of the bones, regressive and resorptive processes, as well as impacted teeth. X-ray diagnostics of carious lesions.....2 classes Irregularities of the teeth by number, size, shape, and structure.2classes Irregularities in the development of the maxillofacial bones and osteoresorptive and osteosclerotic processes of the bones.....2 classes Regressive, resorptive processes and impacted teeth…….2 classes Results from chapter 2: Students acquire basic knowledge about X-ray diagnostics of dental caries, about tooth irregularities, about irregularities of the face and jaws with reference to cleft lip and palate, about regressive processes, and about all types of resorptive processes. Students also gain knowledge about the methods of proper placement, angulation, exposure, and development of X-ray images in the diagnosis of the aforementioned pathological processes, including computed tomography imaging CON-bim. Chapter 3. Radiology of endodontium, traumas of teeth and jaws, tumors, cysts, TMJ, and salivary glands Radiology of endodontium and foreign bodies in jaws and teeth……4 classes X-ray diagnostics of dental traumas .....2 classes X-ray diagnostics of traumas of the upper and lower jaw .....2 classes X-ray diagnostics of tumors in the jaws.....2 classes X-ray diagnostics of cysts.....2 classes X-ray diagnostics of pathological changes of the salivary glands and X-ray diagnostics of pathological changes of the TMJ .....2 classes Results from chapter 3: Students will learn about X-ray diagnostics of all physiological and pathological changes of the endodontium, will learn about the etiology of traumas of the dento-maxillary apparatus and their X-ray diagnostics, about the types of tumors - benign and malignant, about the role of X-ray diagnostics of cysts, including computed tomography CON-bim. They will be introduced to the pathological changes of the salivary glands and sialography, as well as the types of projections that are important in the interpretation of pathological changes in the TMJ. Total .....30 classes Practical teaching-exercises Introduction to ionizing radiation; X-ray; creation of X-rays....2 classes Methods of protection from X-ray radiation.....2 classes Types of X-rays in the orofacial region; performing intraoral, extraoral, and special images; Processing of X-ray images .....2 classes Display of X-ray images with normal X-ray anatomy of teeth and supporting tissues, normal X-ray anatomy of the upper and lower jaw, and interpretation of X-ray images .....2 classes Diagnosis of carious lesions.....2 classes Analysis of images with irregularities of teeth by number, size, shape, and structure…….2 classes Display and analysis of images with irregularities in the development of the maxillofacial bones.....2 classes Display and analysis of X-ray images with regressive, resorptive processes and

		impacted teeth.....2 classes Radiology of endodontium and foreign bodies in jaws and teeth.....4 classes X-ray diagnostics of dental traumas.....2 classes X-ray diagnostics of traumas of the upper and lower jaw.....2 classes X-ray diagnostics of tumors in the jaws.....2 classes X-ray diagnostics of cysts.....2 classes X-ray diagnostics of pathological changes in the salivary glands and X-ray diagnostics of pathological changes in the TMJ.....2 classes Results of performing the exercises: the student acquires knowledge and skills about the methods of performing and processing X-rays, about harmful effects and protection from X-ray radiation, interpretation of X-rays, competent reading and interpretation of normal X-rays of the dental-jaw structures, and knowledge about the correct diagnosis of pathological conditions in the orofacial region. Total .....30 classes			
13	Interrelation of subjects	Connection with Basics of Clinical Radiology			
14.	Detailed description of the teaching and working methods for the subject	Interactive teaching, clinical exercises, demonstration and performance of digital imaging, presentation of the X-ray laboratory, methods of intraoral and extraoral imaging, analysis of intraoral and extraoral imaging with diagnosis, differential diagnosis and therapy plan, as well as X-ray monitoring of the treatment processes in some patients.			
15.	Total available time	120 classes			
16.	Forms of teaching activities	16.1.	Lectures - theoretical teaching. Classes	30 classes	
		16.2.	Exercises (laboratory, lecture), seminars, teamwork: classes	30 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	60 classes	
18	Signature requirements				
19	Method of assessment				
	19.1.	Tests: points		40 points	
	19.2.	Seminar paper/project, written and oral presentation: points		10 points	
	19.3.	Final exam: points		50 points	
20	Grading criteria (points/grade)	from 59 points	5 (five) (F)		
		60 to 68 points	6 (six) (E)		
		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, control of assistants in carrying out practical teaching 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.	Stevanovikj M.	Dental radiology	Faculty of Dentistry – Skopje	2015
		2.	E Whites	Essentials of Dental Radiography and Radiology	Churchill Livingstone	2013
	22.2.	Additional literature				
		Ord. No.	Author	Title	Publisher	Year

		1.	Joen Iannucci, Laura Jansen Howerton	Dental Radiography: Principles and Techniques 6th Edition	Elsevier	2021
		2.	Zadravec Krolo	Dental Radiology	Medicinska naklada d.o.o. Zagreb	2016