

	Forms of teaching activities		16.2.	Exercises (<u>laboratory</u> , classroom), seminars, teamwork: classes	60	
			16.3.	Practice: classes		
17.	Other forms of activities		17.1.	Project work: classes		
			17.2.	Individual work: classes		
			17.3.	Homework - tasks	60	
18	Signature requirements		To obtain a signature, attendance to at least 60% of the theoretical classes demonstrated activity classes, attendance to at least 80% of the exercises, and a prepared and presented operation are required.			
19	Method of the evaluation					
	19.1.	Tests: points (2 tests X 25 points)			50	
	19.2.	Seminar work/project, written and oral presentation: points			10	
	19.3.	Final exam: points			40	
20	Evaluation 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 teaching			Self-evaluation by students, control of assistants in carrying out practical teaching and assessment of the achieved success of students, as well as the pass rate of students who have passed the course		
22.	Literature					
	22.1.	Compulsory literature				
		Serial number	Author	Title	Publisher	Year
		1.	Zuzhelova M.	Orthodontics	Faculty of Dentistry	2004
		2.	Teachers from after Department of Orthodontics	Presentation slides	Faculty of Dentistry	
	22.2.	For further reading				
		Serial number	Author	Title	Publisher	Year
		1.	Proffit W, Fields H, Larson B	Contemporary Orthodontics	Elsevier Health Sciences, 6st ed	2018
		2.	Mileusnic B, Jovanovic D.	Orthodontic appliances with foundation of orthodontics	Institute for textbooks and teaching aids Belgrade	2004
		3.	Virtz U.	Atlas of orthodontic and orofacial orthopedic technique	Dentaurum	2018

Serial number: 32

Annex no. 3		First cycle study program
1.	Title of courses	Implantology
2.	Code	PDTMIM3
3.	Study Program	Professional Dental Technicians
4.	Organizer of the study	UKIM - Faculty of Dentistry – Skopje,

	program (unit, i.e. institute, department, division)	Implantology Department, Department of Dental Prosthetics, Department of Oral and Periodontal Diseases			
5.	Degree (first, second, third cycle)	First Cycle			
6.	Academic year/semester	Year	3	semester	5
7.	Course load expressed in ECTS credits	5			
8.	Teacher (in case of multiple teachers, a responsible teacher is appointed)	Prof. Aneta Mijoska, PhD and associates from the Department of Dental Prosthetics, Implantology Department and Department of oral and periodontal diseases			
9.	Course language	English			
10.	Necessary prerequisites for listening to and passing the course	Basic credits in Anatomy and physiology of the masticatory system, attended compulsory courses of second year			
11.	Course objectives (competencies) and learning outcomes:	The student will gain broader knowledge of dental implantology, analysis and planning for determining the location and number of implants, the fabrication of prosthetic superstructures and their maintenance in the oral cavity.			
12.	Detailed content of the course by chapters and units with learning outcomes for each chapter	Theoretical teaching - Lectures Chapter 1 History and development of dental implantology. Microscopic and macroscopic design of implants and surface. Division and types of implants according to shape, form, threads and surface 3 classes Indications and contraindications for implant placement. The concept of osseointegration 3 classes Quantitative and qualitative analysis of residual alveolar ridges. Anatomical-morphological characteristics of the jawbones and adjacent anatomical structures 3 classes <i>Outcomes of the 1st chapter: The student will be introduced to the historical data on the development of implantology, the macroscopic design of the implant. The student will be introduced to the indications for implant placement, as well as contraindications and the concept of osseointegration. The student will be introduced to elementary topographical structures and anatomical features in both jaws where dental implant placement is planned, as well as classifying bone quality and relationship to surrounding vital structures.</i> Chapter 2 Planning of implantology treatment. 3D computer analysis. Determining the dimensions, number and position of dental implants; conventional and computer-guided three-dimensional techniques 3 classes Surgical placement of implants. Intraoperative and postoperative complications 3 classes <i>Outcomes of the 2nd chapter: The student will be introduced to conventional and computer three-dimensional techniques, methods and techniques for planning implantology treatment. The student will be introduced to the surgical procedure of implant placement, site preparation in four stages, as well as complications that may occur during the operation, as well as postoperatively in an early or delayed time frame.</i> Chapter 3			

		Principles of implant biomechanics, early and delayed loading of the implant-prosthetic system, balanced occlusion and articulation, biological effect of occlusal forces, stress distribution, stress resistance, stresses, elastic deformation 3 classes Implant-supported suprastructures; Definition of suprastructures, types (surgical and prosthetic guide, abutments, crown, bridge, prosthesis), classification according to the method of transmitting chewing pressure (implant, gingival and mixed support), according to the method of connection (fixed, mobile, conditionally mobile), classification according to Misch (FK-1,2,3 and MK-4,5) 3 classes Impression procedures over implants (open and closed method) and over abutments (direct and indirect method). Concept of transfer and analog, types and selection of trays (factory and individual). Intraoral and laboratory scanner, photogrammetry, analog and digital procedure 3 classes <i>Outcomes of the 3rd chapter: The student will be introduced to the basic principles of biomechanics of implant-supported prosthetic suprastructures. The student will become familiar with suprastructures, surgical and prosthetic guides, types of abutments (factory and individually made), selection and fabrication of a suprastructure. The student will learn how to fabricate surgical and prosthetic guides, will learn the procedures of analog and digital impression over implants. He will learn how to fabricate individual trays and abutments, and will gain knowledge about the most modern materials and impression procedures in implant prosthetics.</i> Chapter 4 Classification of metal-ceramic superstructures (crown, bridge, hybrid bridge and hybrid prosthesis), analog and digital work protocol, fixation of the structure in the mouth (cementation and screwing) 3 classes CAD/CAM fabrication of prosthetic structures over implants, stages of work in the digital protocol, cutting and milling techniques; abutments and implants in computer programs 3 classes <i>Outcomes of the 4th chapter: The student will learn how to fabricate a metal-ceramic crown and bridge over implants, what are the stages and procedures in analog and digital work, and will gain knowledge about the method of fixing the structure over implants. The student will learn how to fabricate digital implant-prosthetic structures.</i> Chapter 5 Concept of mini implants, classification, use, advantages and disadvantages. Mini-implants-screws and suprastructures in mobile, maxillofacial prosthetics and orthodontics 3 classes Temporary prosthetic suprastructures. Immediate crowns, bridges and dentures 3 classes <i>Outcomes of the 5th chapter: The student will learn about mini implants in dentistry; will gain knowledge about the use of mini implants in orthodontics and maxillofacial prosthetics, the method of achieving the connection with the superstructure. The student will learn how to produce prosthetic constructions for immediate loading over implants.</i> Chapter 6 Anatomical-histological aspects of periodontal and peri-implant tissues 1 class Etiology and risk factors for peri-implant diseases (biofilm and poor hygienic accessibility, design of suprastructures that make cleaning difficult, surface roughness and biofilm retention, influence of materials
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		(titanium vs zirconium), cement residues in cemented constructions) 1 class Classification of peri-implant diseases and conditions (according to EFP and AAP 2018). Peri-implant mucositis: clinical image, diagnosis and therapy 1 class Preimplantitis: clinical image, diagnosis and therapy 2 classes <i>Outcomes of the 6th chapter: The student will gain knowledge about the differences and specifics of the anato-histological structure of preimplant tissues and the microbiological composition of the preimplant biofilm. The identification of risk factors with special emphasis on the design of superstructures and the specifics arising from the work of the professional dental technician as well as the biological principles in the relationship between the implant and the superstructure are the focus of this chapter. Finally, knowledge of the differences in preimplant diseases will enable the student to distinguish the clinical image, diagnosis and therapeutic approaches in preimplant mucositis and preimplantitis.</i> Chapter 7 Biological complications and the technician's role in prevention (concave/convex abutment shapes, techniques for minimizing submucosal cement, surface and transition zone processing, application of CAD/CAM for precision and hygienic design, etc.)..... 2 classes Maintenance of implant and superstructure areas (professionally and at home) and long-term biological stability and success of implants 2 classes <i>Outcomes of the 7th chapter: The student will obtain knowledge of the biological space and the relationship to the mucosal tissue when planning suprastructures to create constructions that will enable excellent hygiene. Knowledge of the indicators of inflammatory reaction, as well as indicators of success and monitoring are factors for healthy preimplant tissues. A plan for professional and home care of the implants, based on individual risk profiles, as well as appropriate education and motivation for proper oral hygiene and prevention of preimplant complications, rounds off the competence that the student will obtain as a key factor for the long-term success of complex restorative therapy with implants.</i> Total 45 classes <i>Exercises:</i> Of the 1st chapter 6 classes Of the 2nd chapter 4 classes Of the 3rd to 6th Chapter 14 classes Of the 7th chapter 6 classes Total 30 classes		
13	Interrelationship of courses	Dental prosthetics, Periodontics and oral medicine		
14.	Detailed description of the teaching and working methods for the subject	Theoretical teaching, interactive teaching, practical teaching (exercises), seminar work and other forms foreseen by the common ECTS criteria		
15.	Total available classes fund	150 classes		
16.	Forms of teaching	16.1.	Lectures - theoretical teaching, classes	45
		16.2.	Exercises (laboratory, classroom),	30

	activities			seminars, teamwork: classes			
			16.3.	Practice: classes			
17.	Other forms of activities		17.1.	Project work: classes			
			17.2.	Individual work: classes		15	
			17.3.	Homework - tasks		60	
18	Signature requirements		Regular attendance to at least 60% of the lectures, completed exercise activities foreseen with the study program.				
19	Method of the evaluation						
	19.1.	Tests: points			50		
	19.2.	Seminar work/project, written and oral presentation: points			10		
	19.3.	Final exam: points			40		
20	Evaluation criteria (points/grade)		up to 59 points		5 (five) (F)		
			from 60 to 68 points		6 (six) (E)		
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21.	Method of monitoring the quality of teaching		Self-evaluation by students, control of assistants in carrying out practical teaching and assessment of the achieved success of students, as well as the pass rate of students who have passed the course				
22.	Literature						
	22.1.	Compulsory literature					
		Serial number	Author	Title	Publisher	Year	
		1.	A. Mijoska E. Janev	Slides of theoretical teaching		2022, 2023.2025	
		2.	Newman, M. G., Takei, H., Klokkevold, P. R., & Carranza, F. A.	Carranza's Clinical Periodontology (13th ed.)	St. Louis, MO: Elsevier.	2019	
		3.	Lang, N.P., Lindhe, J.	Clinical Periodontology and Implant Dentistry, 7th Edition.	Wiley-Blackwell.	2022	
		22.2.	For further reading				
	Serial number		Author	Title	Publisher	Year	
	1.		Carl E. Misch	Dental Implants Prosthodontics	Mosby	2014	
	2.		International Team for Implantology (ITI)	ITI Treatment Guide, Volume 11: Peri-Implantitis	Quintessence Publishing	2022	
	3.		Carl E. Misch	Contemporary implant dentistry	Mosby	2008	

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Annex no. 3	First cycle study program
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