

|  |  |    |                                |                                                   |                                       |          |
|--|--|----|--------------------------------|---------------------------------------------------|---------------------------------------|----------|
|  |  | 1. | B. Dimitrievikj                | Clinical Periodontology                           | Zavod za uzhbenike                    | 2010     |
|  |  | 2. | Edwina M. Kidd et al.          | Pickard's manual of operative dentistry.          | TF,Oxford University Press, UK, 2011. | 2011.    |
|  |  | 3. | Leif Tronstad                  | Clinical Endodontics                              | Thieme 2003                           | 2003     |
|  |  | 4. | James R. Hupp                  | Contemporary oral and maxillofacial surgery       | Mosby, Elsevier                       | 2014     |
|  |  | 5. | Peterson Larry J.              | Contemporary oral and maxillofacial surgery       | Mosby Year Book, Inc                  | 1993     |
|  |  | 6. | Babic B.                       | Skeletirana proteza                               | Medicinska knjiga, Beograd-Zagreb     | 1977     |
|  |  | 7. | Mc Cracken                     | Removable Partial Prosthodontics 11th edition     | Mosby, Inc                            | Inc 2005 |
|  |  | 8. | Shillingburg H.T. et al.       | Fundamentals of Fixed Prosthodontics Quintessence | Publishing Co. Chicago                | 1997     |
|  |  | 9. | Rangarajan V, Padmanaban T.V . | Textbook of prosthodontics                        | Ars Lamina                            | 2017     |

|                  |                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |          |    |
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| Attachment No. 3 |                                                                                        | Course program for the first cycle of studies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |          |    |
| 1.               | Course title                                                                           | Computerized dentistry                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |          |    |
| 2.               | Code                                                                                   | DMECD6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |          |    |
| 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, Department of Implantology and Department of Oral Surgery                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |          |    |
| 5.               | Degree (first, second, third cycle)                                                    | Integrated First and Second Cycle Studies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |          |    |
| 6.               | Academic year/semester                                                                 | Year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6 | semester | 11 |
| 7.               | Course workload expressed in ECTS credits                                              | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |          |    |
| 8.               | Teacher (in case of multiple teachers, designated teacher in charge)                   | Prof. Dr. Janev Edvard (Teacher in charge), Prof. Dr. Oliver Dimitrovski                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |   |          |    |
| 9.               | Language in which the curriculum is conducted                                          | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |          |    |
| 10.              | Necessary prerequisites for taking and passing the course                              | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |          |    |
| 11.              | Course objectives (competences) and learning outcomes:                                 | Digital dentistry allows students to learn about establishing a diagnosis, planning therapy, and how to move through the phases of treatment faster, more efficiently, more easily, and more accurately. The development of computer-based technologies, including virtual simulation, computer-aided design, and fabrication, creates a need for continuous education and practice. The aim of this course is to introduce you to the most modern diagnostic methods, such as computed tomography, magnetic resonance imaging, three-dimensional visualization, and digital scanning (CT, CBCT, MRI, 3D, DigitalScan). |   |          |    |
| 12.              | Detailed course content by chapters and units, with learning outcomes for each chapter | Theoretical teaching - lectures<br>Modern dentistry, development and application of Computerized dentistry in clinical practice...1 class<br>Types of CT scanners: CT and CBCT. Advantages and disadvantages of CBCT, advantages and disadvantages of CT..... 1 class<br>Precision, variations and deviations of CT and CBCT measurements in clinical dental practice.....1 class                                                                                                                                                                                                                                       |   |          |    |

|     |                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                 |               |
|-----|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|---------------|
|     |                                                                          | Effective dose and radiation when using CT and CBCT for different types of diagnostic measurements and needs..... 1 class<br>Indications for specific application of CT and CBCT in clinical dental practice.....1 class<br>Computer-based technologies in dentistry (MRI, VR, AR, CAD-CAM, 3D, Digital scanning..... 1 class<br>Application and advantages in the application of computer technologies by specialties in all branches of dentistry (Prosthodontics, Maxillofacial surgery, Orthodontics, Periodontology, Restorative dentistry).....1 class<br>Implantology - 3D planning, 3D navigation, virtual placement of dental implants.....1 class<br>Computer-guided implantology, advantages and disadvantages...1 class<br>Digital scanning, preparation of surgical templates, CAD-CAM prosthodontic fabrications .....1 class<br>Fabrication of definitive and temporary prosthodontic restorations in just one visit, a reality in modern dentistry..... 1 class<br>Fabrication of a complete prosthodontic restoration using CAD-CAM technology..... 1 class<br>Implementation of Digital dentistry as a clearly defined standard in everyday clinical practice.....1 class<br>Identification of the benefits for clinicians and patients from the application of modern techniques in Digital dentistry.....1 class<br>Outcomes: Students will acquire elementary knowledge of the software system of 3D radiological examinations (made using CT and CBCT), in terms of diagnostics and planning of therapeutic directions in the domain of oral surgery and implantology. Visualization and review of panoramic, sagittal, axial, and transversal sections of three-dimensional images. Precise determination of the dimensions of the residual alveolar ridge intended for implantation, mapping of vital anatomical-morphological structures in both jaws, along with virtual placement of dental implants.<br>Total: .....15 classes<br><br>Practical teaching - exercises<br>- From the first chapter ..... 9..... classes<br>- From the second chapter .....6..... classes<br>Total .....15 classes |                                                                 |               |
| 13  | Interrelation of subjects                                                | Interrelation with implantology, oral surgery, periodontology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                 |               |
| 14. | Detailed description of the teaching and working methods for the subject | Interactive instruction, laboratory or clinical exercises, working in small groups, presentation and performance of laboratory procedures, demonstration of instruments and methods used, teamwork                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                 |               |
| 15. | Total available time                                                     | 60 classes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                 |               |
| 16. | Forms of teaching activities                                             | 16.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lectures - theoretical teaching classes                         | 15 classes    |
|     |                                                                          | 16.2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Exercises (laboratory, auditorium), seminars, teamwork: classes | 15 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                                        | 30 classes    |
| 18  | Signature requirements                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                 |               |
| 19  | Grading method                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                 |               |
|     | 19.1.                                                                    | Tests: points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 30 points                                                       |               |
|     | 19.2.                                                                    | Seminar paper/project, written and oral presentation: points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10 points                                                       |               |
|     | 19.3.                                                                    | Final exam: points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 60 points                                                       |               |
| 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.                                                                                                                                                                                                | R.Masri, C. Driscoll | Clinical Applications of Digital Dental Technology | Wiley Blackwell                | 2015 |
|     |                                                 | 2.                                                                                                                                                                                                | Dianne Rekow         | Digital dentistry                                  | Quintessence Pub Co; 1 edition | 2018 |
|     |                                                 | 3.                                                                                                                                                                                                | Mirela Feraru        | Dental Visualisation                               | Quintessence Pub Co; 1 dition  | 2018 |
|     | 22.2.                                           | Additional literature                                                                                                                                                                             |                      |                                                    |                                |      |
|     |                                                 | Ord. No.                                                                                                                                                                                          | Author               | Title                                              | Publisher                      | Year |
|     |                                                 | 1.                                                                                                                                                                                                | Osama Sardar         | Digital dentistry                                  | Antigoni Delantoni             | 2025 |

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| Attachment No. 3 |                                                                                        | Course program for the first cycle of studies                                                                                                                                                                                                                                                                                                                                     |   |          |    |
| 1.               | Course title                                                                           | Orthodontic - surgical treatment of craniofacial deformities                                                                                                                                                                                                                                                                                                                      |   |          |    |
| 2.               | Code                                                                                   | DMEOS6                                                                                                                                                                                                                                                                                                                                                                            |   |          |    |
| 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, Department of Orthodontics                                                                                                                                                                                                                                                                                                                           |   |          |    |
| 5.               | Degree (first, second, third cycle)                                                    | Integrated First and Second Cycle Studies                                                                                                                                                                                                                                                                                                                                         |   |          |    |
| 6.               | Academic year/semester                                                                 | Year                                                                                                                                                                                                                                                                                                                                                                              | 6 | semester | 11 |
| 7.               | Course workload expressed in ECTS credits                                              | 2                                                                                                                                                                                                                                                                                                                                                                                 |   |          |    |
| 8.               | Teacher (in case of multiple teachers, designated teacher in charge)                   | Prof. Dr. Cvetanka Bajraktarova Mishevaska<br>Teachers from the Department of Orthodontics                                                                                                                                                                                                                                                                                        |   |          |    |
| 9.               | Language in which the curriculum is conducted                                          | English                                                                                                                                                                                                                                                                                                                                                                           |   |          |    |
| 10.              | Necessary prerequisites for taking and passing the course                              | Completed course in Orthodontics                                                                                                                                                                                                                                                                                                                                                  |   |          |    |
| 11.              | Course objectives (competences) and learning outcomes:                                 | The objective of the course is to introduce students to the skeletal orthodontic malocclusions and their treatment. From the initial planning, through the orthodontic and surgical phases, to the postoperative phase in treating these irregularities, with special emphasis on surgical methods.                                                                               |   |          |    |
| 12.              | Detailed course content by chapters and units, with learning outcomes for each chapter | Theoretical instruction - lectures<br>Chapter 1 - Orthodontic surgical treatment of skeletal orthodontic malocclusions in sagittal, transverse, and vertical planes<br>- Orthodontic methods and techniques for making a plan and treatment of skeletal orthodontic malocclusions 1 class<br>- Planning and orthodontic-surgical treatment of patients with skeletal malocclusion |   |          |    |