



**“CAROL DAVILA” UNIVERSITY  
OF MEDICINE AND PHARMACY BUCHAREST**  
**Faculty of Dentistry**  
**Dental Medicine in English**



**DISCIPLINE GRID**

**1. Program:**

1.1.	<b>CAROL DAVILA UNIVERSITY OF MEDICINE AND PHARMACY BUCHAREST</b>
1.2.	<b>FACULTY OF DENTISTRY / 1<sup>st</sup> DEPARTMENT</b>
1.3.	<b>DIVISION: Dental prosthesis technology</b>
1.4.	<b>STUDY DOMAIN: Health, sectoral regulated within European Union</b>
1.5.	<b>STUDY LEVEL: LICENCE</b>
1.6.	<b>STUDY PROGRAMME: DENTAL MEDICINE IN ENGLISH</b>

**2. Discipline:**

2.1.	<b>DISCIPLINE NAME: Dental prosthesis technology I</b>						
2.2.	<b>LOCATION: Eforie Clinic, 4-6 Eforie St., Sect 5, Bucharest</b>						
2.3.	Lectures tenure: <b>Lucian Toma Ciocan (DDS, DMD, PhD) – Assoc. Prof., Camelia Ionescu (DMD, PhD) - Lecturer , Irina Donciu (DMD, MSc, PhD) – Lecturer, Vlad Vasilescu (DMD, PhD) - Lecturer</b>						
2.4.	Teaching assistants for practical lessons tenure: <b>Lucian Toma Ciocan (DDS, DMD, PhD) – Assoc. Prof., Irina Donciu (DMD, MSc, PhD) – Lecturer, Camelia Ionescu (DMD, PhD) - Lecturer, Vlad Vasilescu (DMD, PhD) – Lecturer, Dana Pîrvu (DMD, PhD) - Assist. Prof., Cătălin Andrei (DDS, DMD, PhD) - Assist. Prof.</b>						
2.5. Study year	<b>II</b>	2.6. Semester	<b>3</b>	2.7. Evaluation	<b>Exam</b>	2.8. Type of discipline	<b>CD/SD</b>

**3. Estimated total time (hours/semester)**

No. hours/week	<b>6</b>	out of which	<b>Lectures: 2</b>	<b>Laboratory session: 4</b>
Total hours out of learning schedule	<b>84</b>	out of which	<b>Lectures: 28</b>	<b>Laboratory sessions: 56</b>

Time distribution	hours
<b>Textbook study, lecture support, bibliography and notes</b>	<b>26</b>
<b>Supplementary documentation activity in the library, on online platforms</b>	<b>22</b>
<b>Practical activity support material, homework, portfolio and essays</b>	<b>22</b>
<b>Tutorial activity</b>	<b>8</b>
<b>Examinations</b>	<b>6</b>
<b>Other activities</b>	<b>7</b>
<b>Total hours of individual study</b>	<b>91</b>
<b>Total hours per semester</b>	<b>175</b>
<b>Credits</b>	<b>7</b>

#### 4. Preconditions

<b>4.1. curriculum</b>	Notions of morphology and function of the masticatory system Notions of dental embryology and anatomy of the head
<b>4.2. proficiencies</b>	Not necessary

#### 5. Conditions

<b>5.1. for lecture activity</b>	<ul style="list-style-type: none"> <li>- Amphitheatre with projection system</li> <li>- Telephone conversations are not tolerated during the course.</li> <li>- Delay of students in progress will not be tolerated, as it proves to be disruptive to the educational process.</li> </ul>
<b>5.2. for laboratory activity</b>	<ul style="list-style-type: none"> <li>- Laboratories with specific endowments for practical activities;</li> <li>- Telephone conversations are not tolerated during laboratories;</li> <li>- Students arriving late will not be allowed to attend the lecture, as it proves to be disruptive to the educational process.</li> <li>- Mandatory participation is required in laboratories, with a maximum of 10% of unrequited absences being accepted;</li> <li>- Recovery of absences is allowed according to the Regulation on the professional activity of students enrolled at the U.M.F. "Carol Davila", Chapter VI, Art. 53.</li> </ul>

#### 6. Accumulated skills

<b>6.1. Proficiencies</b> <i>(knowledge and abilities)</i>	<p><b>I. Knowledge (cognitive dimension)</b></p> <ul style="list-style-type: none"> <li>- The ability to identify and diagnose dental lesions and types of edentulism</li> <li>- Ability to use specialized terminology appropriately and in context</li> <li>- Knowledge of the structural components of single- and multiple fixed prostheses</li> <li>- Theoretical knowledge of the clinical-technical stages in obtaining single- and multiple fixed prostheses</li> </ul> <p><b>II. Abilities (functional dimension)</b></p> <ul style="list-style-type: none"> <li>- Elaboration of an appropriate design adapted to the clinical case for single- and multiple fixed prostheses</li> <li>- The theoretical and practical acquisition of some general and special techniques for modeling single- and multiple fixed prosthesis</li> <li>- Acquiring the necessary practical experience in order to go through the technical stages in making fixed dental prostheses</li> <li>- Knowledge of the technologies for obtaining fixed dental prostheses by melting-casting, sintering, milling, polymerization and printing</li> </ul>
<b>6.2. Transversal skills</b> <i>(role, professional and personal development)</i>	<p><b>III. Role skills</b></p> <ul style="list-style-type: none"> <li>- The use of assimilated notions in new contexts</li> <li>- Application of theoretical notions in practical activity</li> <li>- Establishing interdisciplinary correlations within the studied fields</li> </ul> <p><b>IV. Professional and personal development skills</b></p> <ul style="list-style-type: none"> <li>- Development of synthesis capacity</li> <li>- Developing the ability to integrate and collaborate</li> <li>- Developing organizational capacity</li> </ul>

#### 7. Objectives (based on the grid of acquired specific skills)

<b>7.1. General Objective</b>	<ul style="list-style-type: none"> <li>- The acquisition by students of the theoretical and practical notions of restoring the morphology and functions of the masticatory system by fixed dental prostheses.</li> <li>- Knowledge by the future dentist of the organization and activity of the dental laboratory.</li> </ul>
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	<ul style="list-style-type: none"> <li>- Knowledge of the laboratory steps taken to obtain a fixed denture.</li> <li>- Development of professional communication skills for achieving an efficient collaboration within the dental technician team.</li> </ul>
<b>7.2. Specific Objectives</b>	<ul style="list-style-type: none"> <li>- Recognition of the types of fixed dentures used in dentistry</li> <li>- Knowledge of the methods of making a fixed dental prosthesis and the necessary clinical and technical steps to obtain</li> <li>- Acquiring the knowledge of casting a working model in fixed prosthesis</li> <li>- Acquiring the wax layout knowledge of the main types of fixed dentures</li> </ul> <p>Acquiring knowledge of the laboratory steps required to make a fixed denture, how to perform it, as well as the errors that may occur in each step and how to intervene to correct them</p>

## 8. Content

<b>8.1. Lectures</b>	<b>No. hrs./topic</b>	<b>Teaching method</b>	<b>Obs.</b>
1. <b>Introduction</b> , classification of dental lesions, presentation of edentulousness, classification of dental prostheses, types of materials for obtaining dental prostheses: metal, ceramic, polymeric, composites. General notions of processing materials for dental prostheses.	2	Lecture, interactive systematic presentation	Oral presentation, Power-Point presentations
2. <b>Single tooth prosthetic restorations</b> : classification, description, characteristics, indications, materials, prosthetic field	2		Oral presentation, Power-Point presentations
3. <b>Multiple teeth prosthetic restorations</b> : description, components, classification, prosthetic field, indications, materials, prosthetic principles	2		Oral presentation, Power-Point presentations
4. <b>Prosthetic field and information transfer in the laboratory</b> (impression/ scan), determination and recording of intermaxillary occlusion relationships, technological possibilities of transmitting the "color" in the laboratory;	2		Oral presentation, Power-Point presentations
5. <b>The cast in dental prosthesis technology</b> : the real model - materials for models, technologies for obtaining real models, virtual models, advantages / disadvantages, mounting the models in the articulator	2		Oral presentation, Power-Point presentations
6. <b>Techniques and technologies in the diagnosis and design of the prosthetic treatment plan</b> : wax-up, model - prosthetic restoration project. Materials, work technique, materials, properties, indications, virtual design.	2		Oral presentation, Power-Point presentations
7. <b>Technology for obtaining metallic / ceramic restorations by melting-casting</b> - materials, indications, advantages / disadvantages, technological stages, errors	2		Oral presentation, Power-Point presentations
8. <b>Technology for obtaining metallic / ceramic restorations</b> by sintering, and metal by galvanizing - materials, indications, advantages / disadvantages, technological stages, errors	2		Oral presentation, Power-Point presentations
9. <b>Technology for obtaining metallic / ceramic restorations by milling</b> - materials, indications, advantages / disadvantages, technological stages, errors	2		Oral presentation, Power-Point presentations

10. <b>Technology for obtaining polymetric restorations by self curing, light curing, milling and printing</b> - materials, indications, advantages / disadvantages, technological stages, errors	2		Oral presentation, Power-Point presentations
11. <b>Technology for obtaining mixed metal-ceramic restorations</b> , zirconia-ceramics - materials, indications, advantages / disadvantages, technological stages, errors	2		Oral presentation, Power-Point presentations
12. <b>Technology for obtaining mixed metal-polymeric restorations</b> - indications, advantages / disadvantages, technological stages, errors	2		Oral presentation, Power-Point presentations
13. <b>Technological peculiarities for obtaining prosthetic restorations on implants</b> - dental abutments, connections, transfer, model, technological possibilities for execution and fixing of prosthetic restorations on implants, errors	2		Oral presentation, Power-Point presentations
14. <b>Digital technological work-flow for obtaining fixed prosthetic restorations, robotics in dentistry</b>	2		Oral presentation, Power-Point presentations

<b>8.2 Laboratory Sessions</b>	<b>No. hrs./topic</b>	<b>Teaching method</b>	<b>Obs.</b>
1. Presentation of the way of carrying out the practical activities, necessary instruments, introduction, definitions, presentation of fixed and mobile prosthetic restorations	4	Presentation, practical demonstrations, interactive exercises	Handicraft exercises
2. Classification of single-tooth prosthetic restorations, clinical-technical stages of obtaining cast metal restorations - presentation, imprint, modelling of inlay pattern	4		Handicraft exercises
3. Patterning the full-thickness metallic coating crown-layout techniques (drip, graduated cooling, Adapta foil) - modelling of the full coverage crown	4		Handicraft exercises
4. Preparation of the investment for casting the all-metal coating crown	4		Handicraft exercises
5. Investing, melting, casting, modelling the pattern of the crown of all-metal coating with total thickness	4		Handicraft exercises
6. Polymeric crown obtained by self and light curing, modelling of the polymeric crown pattern	4		Handicraft exercises
7. Ceramic crown - obtaining technologies: sintering, melting-casting, CAD-CAM milling, modelling ceramic crown model	4		Handicraft exercises
8. Mixed metal-polymeric crown, plating of the mixed metal-polymeric crown (simple / composite polymer), modelling of the metal component pattern of the mixed metal-polymeric crown	4		Handicraft exercises
9. Mixed metal-ceramic crown, ceramic plating of the metal component, pattern modelling of the metal component of the mixed metal-ceramic crown	4		Handicraft exercises
10. Intraradicular retained crown and dowel core restoration, direct and indirect pattern, DCR pattern modelling	4		Handicraft exercises
11. Dental bridges, presentation of different dental bridges, modelling of the metal component pattern of the mandibular metal-ceramic bridge	4		Handicraft exercises

12. Mixed metal-polymer bridge, bridges on implants - presentation, modelling of the metallic component pattern of the mandibular metal-ceramic bridge	4		Handicraft exercises
13. Review, exercises for recognition different types of restorations, questions, discussions, patterns modeling and finishing	4		Handicraft exercises
14. Practical exam	4	Practical test	Craft test

### 8.3. Bibliography for lectures and laboratory/practical sessions

1. Dental Prosthesis Technology I - Course Handouts, PPT format, current year of study
2. Dental Prosthesis Technology I - Course and Practical Works Notes, PDF format, current year of study
3. Att W - Digital Workflow in Reconstructive Dentistry, Quintessence 2019
4. Carr AB, Brown DT - McCracken's Removable Partial Prosthodontics, 13th Edition, Elsevier, 2016
5. Johnson T, Patrick DG, Stokes CW, Wildgoose DG, Wood DJ - Basics of Dental Technology: A Step by Step Approach, 2nd Edition, Wiley-Blackwell, 2015
6. Nelson SJ - Wheeler's Dental Anatomy, Physiology and Occlusion, 11th edition, Elsevier, 2020
7. Randall MG - Sintering: From Empirical Observations to Scientific Principles, Elsevier, 2014
8. Rosenstiel SF, Land MF - Contemporary Fixed Prosthodontics, 5th Edition, Elsevier, 2015
9. Sailer I, Fehmer V, Pjetursson BE - Fixed restorations, A clinical guide to the selection of materials and fabrication technology, Quintessence 2021
10. Sakaguchi RL, Ferracane J, Powers J, Powers J. - Craig's restorative dental materials, 14th ed., 2019
11. Shen C, Rawls HR, Esquivel-Upshaw JF - Phillips' Science of Dental Materials, 13th Edition, Elsevier, 2021
12. Shen JZ, Kosmac T - Advanced Ceramics for Dentistry, Butterworth Heinemen, 1st edition, Elsevier, 2013
13. Shillingburg HT et al - Fundamentals of fixed prosthodontics, 4<sup>th</sup> Edition, Chicago, Quintessence Publishing, 2012
14. Wismeijer D, Barter S, Donos N - ITI Treatment Guide, Vol 11: Digital Workflows in Implant Dentistry, Quintessence 2019

## 9. Corroborating the contents of the discipline with the expectations of epistemic community representatives, professional associations and employers in the fields representative for the program

- The discipline of Dental Prosthesis Technology is a fundamental discipline, mandatory for a student to become a dentist.
- Permanent and constructive dialogue with representatives of the dental community - in order to identify the needs and expectations of employers in the field and to adapt the analytical program to the needs of the current practical activity
- Permanent participation of department members in scientific events, in various forms of continuing medical education and in exhibitions of equipment and materials dedicated to the practical activity in dentistry - in order to maintain the theoretical and practical information introduced in the structure of the discipline at a high level of relevance.
- Maintaining contacts with other teachers in the field, with tenured professors in other higher education institutions, to coordinate the content taught with other similar programs within other higher education institutions.
- The studied notions are in accordance with the regulations in force and are compatible with the activities carried out at national and international level in the pre-clinical dentistry segment.

## 10. Evaluation

<b>10.1 Evaluation</b>			
<b>Activity type</b>	<b>Evaluation Criteria</b>	<b>Methods of evaluation</b>	<b>% out of final grade</b>
<b>Lecture</b>	Theoretical exam - written grid - simple and multiple complement questions both from the chapters of the analytical program - <b>knowledge for grade 5</b> – elementary knowledge of the technological stages of making fixed prostheses.	Final exam	55%
	- <b>knowledge for grade 10</b> - in-depth knowledge of the technological stages of making fixed prostheses - going through the entire recommended bibliography. Answer all questions correctly.	Control papers - grid tests and/or essay questions with subjects from the subject covered.	15%
<b>Laboratory Sessions</b>	In each training session - discussions in correlation with the treatment stage of the patients The group assistant will appreciate the student's attitude during the internship (attendance, punctuality, behavior, theoretical training in accordance with the work phase, attitude towards patients and auxiliary staff)	Periodic check Seminar Attitude in internship - internship grade	15%
	Evaluation of the acquisition of practical notions regarding the technology of obtaining fixed dental prostheses.	Verification at the end of the internship - Practical exam/note	15%
<b>Minimum performance standards</b>			
<p>Learning the main notions related to the technology of fixed dentures:</p> <ul style="list-style-type: none"> <li>● Technical stages for the realization of the main current variants of fixed single- and multi-tooth metal prostheses: model, assembly in articulator, model, packaging, casting of metal alloys, sintering, milling.</li> <li>● Technical stages of laboratory processing of fixed ceramic prostheses (sintering, melting-pressing and milling of ceramics) and polymeric (self-curing, light curing, milling, printing)</li> <li>● Technique for processing materials for fixed dental prostheses in the laboratory.</li> <li>● Technical stages for laboratory realization of mixed single- and multi-denture fixed dentures: metal-composite and metal-ceramic.</li> <li>● Treatment of partial edentulousness with fixed partial dentures - realization principles, components, materials used. The ratio of the deck body to the edentulous ridge.</li> <li>● Technology for making mixed metal-polymer, metal-ceramic and all-ceramic bridges.</li> </ul> <p>Minimum grade 5 in the practical exam Minimum grade 5 in the theoretical exam Minimum grade 5 to the final grade point average</p>			

**Date:**  
**04.09.2023**

**Chair of Division,**  
**Assoc. Prof. Dr. Lucian Toma Ciocan**

**Date of the approval in**  
**Department Board:**

**Department director**  
**University Professor Doctor Marina Imre**