

	Educational institution Roel Metropolitan University
	Abstract of the course Department of Dental Disciplines

### Abstract of the course «Impression and prosthetic materials in dentistry»

<b>Name of the discipline</b>	impression and prosthetic materials in dentistry
<b>The complexity of the discipline</b>	2 credits (60 hours)
<b>Course, semester</b>	4th year, 7th semester
<b>The place of the discipline in the curriculum (prerequisites, postrequisites)</b>	<p>The course is an elective course that deepens students' knowledge in the field of dental materials science and orthopedics.</p> <p>Prerequisites: materials science (basic), propaedeutics of dental diseases, physics and chemistry, human anatomy.</p> <p><b>Postrequisites:</b> Orthopedic dentistry (clinical course), implantology, maxillofacial prosthetics.</p>
<b>Goals and objectives of the discipline</b>	<p><b>The goal</b> The aim of this discipline is to study in depth the physical and chemical properties and clinical characteristics of innovative materials to improve the quality of prosthetics and the durability of dental structures.</p> <p><b>Objectives of the course:</b></p> <ol style="list-style-type: none"> <li>1. Study of comparative characteristics of modern elastomers (A-silicones, polyesters) and digital prints.</li> <li>2. Introduction to CAD/CAM technologies and milling materials (zirconium dioxide, PEEK, hybrid ceramics).</li> <li>3. Study of adhesive protocols for fixation of metal-free structures.</li> <li>4. Mastering the skills of choosing impression materials depending on the type of prosthetics (crowns, bridges, implants).</li> <li>5. Study of biocompatibility and allergological status of modern polymers and alloys.</li> <li>6. Analysis of clinical errors in manipulation of modern materials and methods for their elimination.</li> </ol>
<b>Competencies:</b>	<p>The discipline contributes to the development of the following competencies:</p> <p><b>OK-1:</b>ability to abstract thinking, analysis, synthesis;</p>

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	<p><b>IK-1:</b>ability and readiness to communicate orally and in writing in Kyrgyz, Russian and foreign languages to solve problems of professional and interpersonal interaction;</p> <p><b>SLK-1:</b>ability and willingness to comply with ethical and deontological standards in professional activities;</p> <p><b>SLK-2:</b>ability and willingness to work in a team, tolerantly perceive social, ethnic, religious and cultural differences;</p> <p><b>PC-2:</b>ability and readiness to carry out preventive measures;</p> <p>PC-4: ability and readiness to diagnose dental diseases;</p> <p><b>PC-6:</b>ability and readiness to treat dental diseases;</p> <p><b>PC-16:</b>ability and willingness to maintain medical records;</p> <p><b>PC-19:</b>ability and readiness to organize the work of medical personnel;</p> <p><b>PC-20:</b>ability and readiness to analyze and assess the state of health of the population;</p> <p><b>PC-22:</b>ability and willingness to participate in the organization and provision of medical and preventive care to the population;</p> <p><b>DPK-1:</b>ability and readiness to manage patients with various dental diseases using modern technologies;</p> <p><b>DPK-2:</b>ability and readiness to use modern materials and technologies in dentistry.</p>
<p><b>Results of mastering the discipline</b></p>	<p>The results of mastering the discipline are formed using the active verbs of Bloom's Taxonomy: After mastering this discipline, the student:</p> <p><b>Will know:</b></p> <ul style="list-style-type: none"> <li>• chemical structure and mechanisms of polymerization of modern A-silicones and polyesters;</li> <li>• classification and properties of blocks for CAD/CAM systems (glass ceramics, zirconium dioxide, composites);</li> <li>• Requirements for preparation (gingival retraction) before taking high-precision impressions.</li> </ul>

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	<p><b>Will understand:</b></p> <ul style="list-style-type: none"> <li>• physical principles of intraoral scanning and its differences from traditional methods;</li> <li>• the importance of the coefficient of thermal expansion when cladding frames with ceramics;</li> <li>• the role of adhesive preparation of the material surface before permanent fixation.</li> </ul> <p><b>Will be able to use:</b></p> <ul style="list-style-type: none"> <li>• criteria for selecting an impression tray and material for obtaining functional and anatomical impressions;</li> <li>• digital libraries of materials for planning orthopedic structures;</li> <li>• devices for assessing the color and transparency of modern metal-free materials.</li> </ul> <p><b>Will be able to:</b></p> <ul style="list-style-type: none"> <li>• perform the technique of two-layer one-stage and two-stage impression using A-silicones;</li> <li>• select fixing cements (composite, glass ionomer) for a specific type of prosthesis material;</li> <li>• evaluate the accuracy of fit of zirconium dioxide and metal-ceramic frameworks;</li> <li>• to carry out correction and polishing of modern composite and ceramic structures in the oral cavity.</li> </ul>
<b>Basic literature</b>	<ol style="list-style-type: none"> <li>1. <b>John M. Powers.</b> Craig's Restorative Dental Materials. Elsevier. (The most comprehensive guide to properties).</li> <li>2. <b>Stephen Rosenstiel.</b> Contemporary Fixed Prosthodontics. Elsevier. (Sections on Materials).</li> <li>3. <b>Richard van Noort.</b> Introduction to Dental Materials. (A user-friendly guide for students).</li> <li>4. <b>Abolmasov N. G.</b> Orthopedic dentistry. (Sections on new materials).</li> <li>5. <b>Zhulev E. N.</b> Materials science in dentistry. Textbook.</li> </ol>



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