**Integrated studies in Dentistry**

**Department of Dental Technician**

**Subject: Dental Materials**

Curriculum of the subject

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| **Subject** | **DENTAL MATERIALS** |
| TYPE | Semester | ECTS | Code |
| OBLIGATIVE | 3 | 4 |  |
| **Lecturer** | Spec Dr. Donika Arifi  |
| **Teaching Assistent** | Spec.Dr.Donika Arifi |
| Goals and Objectives | The subject of dental materials includes the analysis of the structure and characteristics of restorative and auxiliary dental materials. Since restorative materials are included in the group of drugs, they are also included in the law on the use of drugs, and every future dentist or dental technician must record the type of material used on the patient, that is, the structure and composition of the material used must be known. , in terms of profitability and processing.The objective of this course is to familiarize with the composition, as well as the biological, chemical, physical, mechanical and technological characteristics of dental materials, which will enable students to learn about their use in certain clinical situations. The focus will be that, based on this knowledge, students can distinguish between how to manage (do) and how to understand (study) the processing of a certain material, as well as evaluate the reason for eventual failure (breakage, distortion , loss. ) ,allergy) of the applied material or how to contribute to the therapeutic effect of a properly chosen material, for a particular clinical case in almost all branches of dental medicine. |
| Expected results | After successful completion of this course, students will have knowledge of:• Classification of dental materials• Basic principles of dental materials• Evaluate dental materials• Field of use of specific dental materials |
| Alignment of the learning outcomes of the subject with the learning outcomes of the program | 1. Application of theoretical knowledgeIt focuses on the application of methods and theoretical knowledge in practical tasks. (Outcome 2Communication courses ans oral presentations improve verbal and written proficiency.(Outcome5).2. Development of practical skillsTo work independently and in collaboration within an interdisciplinary health team choosing the right and appropriate materials based on their physical, chemical properties, biocompatibility and specific needs of the patient. (Outcome 3).To choose the right materials for the removable work of dental prostheses, fixed works. (Result 6). |
| **Content** | **Weekly Plan - Lectures** | **Java** |
| Introduction to Dental Materials• History of the development of dental materials | 1 |
| Scientific characteristics of Dental Materials• Structure, classification and properties of materials• Basic scientific principles• Biocompatibility of dental materials | 2 |
| Laboratory auxiliary materials• Plaster• Resins• ZOE pastes• Thermoplastic materials | 3 |
|  WAX • Wax as mass material • Classification and composition of waxes • Dental waxes | 4 |
|  Elastic Materials• General characteristics• Reversible elastic materials• Non-reversible elastic materials• Synthetic elastomers• Silicones• Alginates | 5 |
| Artificial Dental Arcades• Artificial resin teeth• Porcelain artificial teeth | 6 |
| Half-semester assessment | **7** |
|  Construction materials - Rubber• Chemical composition• Physical features• Beneficiation, fabrication and vulcanization• Types | 8 |
|  Building materials - Acrylates• History• Benefit of Acrylates• Polarization• Acrylates for crowns and veneers• Causes of failure with artificial resins• Properties of acrylates• Rules for working with acrylates | 9 |
| Dental Ceramics• Historical overview of the development and application of ceramics• Classification of ceramic materials• Requirements for the application of ceramic materials in dentistry• Composition of ceramics• Structure of ceramic materials• Characteristics of ceramic materials• Production processes• Silicate ceramics• Aluminum ceramics• Glass ceramics• Oxide ceramics• Aluminum oxide ceramics | 10 |
| Metals and alloys• The history of the development of metal materials in dentistry• Metals• AlloysDental alloys• Mechanical and chemical properties of dental alloys• Noble and non-finite dental alloys• Nickel – chrome alloys• Cobalt-chromium alloys• Titanium and titanium alloys | 11 |
| Materials for CAD CAM – Computer processing system in prosthetics• Types• Usage | 12 |
|  Principles of Disinfection in the Dental Laboratory • Disinfection of dental impressions• Types of disinfectants• Methods | 13 |
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|  Final exam | 14 |
| Final exam - consultations | 15 |
| Weekly Plan – Laboratory exercises | Week |
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| Introduction to Dental Materials | 1 |
| Scientific characteristics of Dental Materials• Structure, classification and properties of materials• Basic scientific principles• Biocompatibility of dental materials | 2 |
| Laboratory auxiliary materialsDemonstration • Plaster • Resins • ZOE pastes • Thermoplastic materials | 3 |
| WAX • Wax as mass material • Classification and composition of waxes • Dental waxes - Demonstration | 4 |
| Elastic Materials• Reversible elastic materials• Non-reversible elastic materials• Synthetic elastomers• Silicones• Alginates• Demonstration | 5 |
| Artificial Dental Arcades• Demonstration of examples of artificial resin teeth•Demonstration of porcelain artificial teeth | 6 |
| Half-semester assessment/quiz | 7 |
| Construction materials - Rubber• Types-Demoatration  | 8 |
| Building materials - Acrylates• Benefit of Acrylates• Polarization• Acrylates for crowns and veneers• Work with acrylates, successes and failures with artificial resins• Demonstration | 9 |
| Dental CeramicsPresentation of cases with dental ceramics | 10 |
| Metals and alloys• Dental Metals and Alloys• Familiarity with prosthodontics material | 11 |
| Materials for CAD CAM – Computer processing system in prosthetics• Types• UsageDemonstration | 12 |
| Principles of Disinfection in the Dental Laboratory• Disinfection of masses• Types of disinfectants• Methods | 13 |
| Auxiliary laboratory materials• Plaster• Casting materials• Thermoplastic materials• Wax• Their definitive processing• Computer processing system in prosthetics• Video presentation | 14 |
| **Final Exam** | 15 |
| **Teaching methods** | Learning Activity-Teching and learning activityThese methods are crafted to ensure that students develop understanding for different dental materials while using them in practice. | **Wheigt (%)** |
| LecturesPurpose:A theoretical framework is crucial for understanding course matherials.Relevant for:Weekly lectures cover extensive course content.The lectures are delivered with clarity and precission,making it easier to grasp the complex concepts of the course. | 45% |
| Laborathory skillsPurpose:To apply theoretical knowledge in practice while using different matherials.Relevant for:It lets students to apply theory in practice, to develop new skills. | 45% |
| Seminars-PresentationsPurpose: to apply theoretical knowledge in using propery different dental matherials.Relevant for:It lets students to develop new skills,to learn from one another and gain a deeper understanding for a specific material. | 10% |
| **Total** | **100.0 %** |
| **Evaluation methods** | **Evaluation methods** | **Pesha (%)** |
| 1. **Laborathory assesment**
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| Assesment of weekly sessions | 20% |
| Assesment of laboratory sessions | 80% |
| General laborathory Assesment | **100%** |
| **Theoritical assesment** |  |
| Participation and acticity in lectures | 10% |
| Semi semester assesment | 10% |
| Seminar Presentation | 10% |
| Final test | 70% |
| **General theoretical assesment** |  |
|  **Final assessmentfor the subject**  | **100%** |
| **Sourses and means of concretization** | **Means** |  |
| 1. Classroom
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| 1. Data basis on internet
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| 1. Projector
 |  |
| 1. Phantoms
 |  |
| 1. Textbooks and other supporting materials
 |  |
| 6.Different dental materials |  |
| 7.Dental instruments |  |
| **ECTS**  | **Type of activity** |  |  |
| 1. Lectures
 | 30h | 25.0 % |
| 1. Clinical exercises
 | 50 h  | 40.0 % |
| 1. Seminars
 | 5 h  | 10.0 % |
| 1. Tests
 | 10 h  | 5.0 % |
| 1. Individual learning
 | 25h  | 20.0 % |
|  | **Total** | **90 h** | **100.0 %** |
|  | * Jerolimov V. et all. Fundamentals od Dental materials. 2005.
* Ketij Mehulić i suradnici ‘’Dentalni Materijali‘’ Medicinska naklada Zagreb, 2017.
* Prof.Dr. Petar V.- Uuniversity of Dentistry Beograd
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Educational Regulations

Participation in the lesson

The Dental Materials Department takes responsibility for training future dental technicians to the highest standards. One of these standards is taking responsibility for one's actions. If a student is absent from class especially in a laboratory and/or clinical session, the student has lost those laboratory and clinical instructions permanently. They can never be repeated. When a student is late to class, the entire class is interrupted. Such interruptions will not be tolerated. Students have a responsibility and a contract to stay in class for the duration of the sessions, for each day. Students who leave sessions early, even if they leave with permission, cause disciplinary problems for the department that will not be tolerated.

You made a contract with the UBTs to be in class and attentive throughout the learning process. Every student must be in every session, every day that is scheduled, throughout the semester. All teaching sessions begin at their designated times in the lesson timetable.

All sessions start and end at their designated times in the class schedule. Any student who leaves the class session early will be considered absent.

Electronic devices

It is distracting to everyone in the classroom when cell phones ring during class. This is even worse if it happens during a test or quiz. Since this is

a classroom and not a room to listen and/or view electronic devices such as smart phones, personal laptops and/or other electronic devices, they will not be allowed.

The classroom, laboratory and dental clinic will be a cell phone free zone. If you must bring a cell phone to class, it must be turned off or set to vibrate. It is distracting for a classroom to have students constantly answering cell phones during class. If you absolutely must answer the call, leave the classroom. A student who accepts calls during class will be asked to leave class. Hearing devices will not be allowed in the classroom for any reason.

Tests and quizzes

Tests and quizzes are usually scheduled at the beginning of the lesson. Tests and quizzes are one way teachers measure a student's knowledge. Failure to participate in tests or quizzes interferes with this process. This department does not reward students who do not participate in their timed tests or quizzes; therefore, the teacher cannot allow students to take tests or quizzes after the deadline.

Tests and quizzes must be taken by each student, any student who asks for help or helps other students during a test or quiz will be removed from the test and will be graded zero for that test or quiz. It is the student's responsibility to prepare for tests and quizzes at all times. It is the student's responsibility to know when there are tests or quizzes to take.

Seminars and projects

Seminars and projects must be done on the student's own time, not during class.

Never allow another student to copy your seminars and projects.

Never copy another student's seminars and projects.

Dress code

Dentists are professionals and should dress appropriately. Any student who does not dress appropriately during class time will not be allowed to participate in clinical and laboratory activities. Long hair should be tied back and away from the face for safety reasons. Long-sleeved shirts and blouses should be rolled up for safety.

Ties (collars) or handkerchiefs should be tucked inside the lab coat (coat) for safety reasons. A long-sleeved white lab coat is appropriate for a student.

Pointed toe shoes or sandals are not appropriate footwear for dental laboratories and clinics. For the safety of UBT staff, patients, students, family members and the community, we ask that all staff in clinical and laboratory sessions wear long pants.

The behavior

Students in the prosthetics department must learn to work in groups, regardless of group composition.

Tolerance, courtesy, respect and a peaceful environment are required in the classroom, dental laboratory and dental clinic.

Academic Dishonesty

Violations of Academic Integrity include, but are not limited to, the following actions:

• Cheating in the exam.

• Plagiarism.

• Work together on an individual assignment, seminar or project when the teacher has specifically forbidden this.

• Submitting the same paper to more than one teacher or allowing another individual to impersonate them for the purpose of improving the grade.

Assessment of weekly laboratory sessions

At the end of each laboratory session, academic staff will evaluate the student using the weekly laboratory session evaluation. This assessment allows the academic staff to evaluate the student in the areas of professionalism and performance at the expected level towards the attainment of competence.

Each laboratory session is rated as "satisfactory" or "needs improvement". Any satisfactory rating means acceptable performance in all three categories. Any rating as needs improvement means an unacceptable performance for that session in any of the areas rated.

To successfully complete the preclinical assessment of the Dental Materials course a student must have an overall average of 80% satisfactory session evaluations. For example, if a course has 15 assessment sessions in a semester, at least 12 must be satisfactory. If a student is graded below the 80% level, then the student is advised of the necessary steps to improve their deficiencies. If the overall assessment of the student falls below 60%, then the student is considered to have failed and must repeat the course.

The evaluation system measures the student's level of achievement for each laboratory session. All lab sessions are graded, and all lab sessions have equal weight in the overall grade. In order for the session to be marked as "satisfactory", the student must perform satisfactorily in each category. In order to have a satisfactory grade, a student cannot have more than one area marked as "needs improvement".

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|  Assessment of Weekly Laboratory Sessions |
| **Professionalism** | Satisfactory | Needs improvement |
| Professional clothing |  |  |
| Accepts and acts constructively on advice |  |  |
| Treats others with courtesy |  |  |
| Ethical behavior |  |  |
| Evaluation of Professionalism |  |  |
| **Performance** | Satisfactory | Needs improvement |
| Time menagment |  |  |
| Documentation of laboratory work |  |  |
| Self evaluation |  |  |
| Critical thinking |  |  |
| Demonstrates indipendence |  |  |
| Skills at the level of the stage of development |  |  |
| Performance Assesment |  |  |
| Assesment of weekly laboratory sessions |  |  |