**Dental Technician**

**Course syllabi**

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| **Course** | **Appliances and Instruments in Dental Laboratory** |
| Type | Semester | ECTS | Code |
| OBLIGATORY ( O ) | 2 | 3 |  |
| **Course Lecturer**  | Ass. Dr. Adelina Loxha  |
| **Course Assistant** | Ass. Dr. Adelina Loxha |
| **Aims and Objectives** |  This course is important to review basic science concepts and introduce new concepts of chemistry and physics as they relate to dental laboratory techniques, materials, instruments and equipment.Aims of the course are :1. **To Provide a Solid Foundation in Appliances and Instruments in Dental Laboratory :** The course aims to offer comprehensive knowledge of the principles, materials and equipment used during dental laboratory procedures.
2. **To Develop Practical Skills :** To provide students with solid practical experience in the use of equipment and instruments in dental laboratory.
3. **To Encourage Research and Critical Thinking :** To foster an environment where students are encouraged to explore materials and innovative equipment used during dental laboratory procedures by promoting continuous learning.

Upon successful completion of this course, students should be able to :1. **Understand the Fundamentals** : Demonstrate a thorough understanding of the basic concepts, principles and materials science underlying equipment and instruments in dental laboratory.
2. **Apply Theoretical Knowledge Practically** : Show proficiency in applying theoretical knowledge to the practical skills of operating the equipment used in dental laboratory.
3. **Engage in Research** : Encourage current research and innovative equipment by critically evaluating their application during dental laboratory procedures.

By achieving these aims and objectives, the course “ Appliances and Instruments in Dental Laboratory “ will ensure students are well-prepared to enter to the professional world of dental technician with a strong foundation in the use of equipment and instruments in the dental laboratory.  |
| **Learning outcomes** | Learning outcomes for this course are :1. **( 6 ) Comprehensive Understanding of Appliances and Laboratory Instruments** : Students will demonstrate a comprehensive understanding of the principles, materials and equipment used during dental laboratory procedures.
2. **( 7 ) Practical Proficiency in the operation of laboratory equipment :** Students will exhibit proficiency in the use and operation of dental equipment and instruments.
3. **( 8 ) Research and Critical Thinking Skills :** Students will demonstrate the ability to engage with current research and critically evaluate innovative dental laboratory equipment. They will critically evaluate the implications of new discoveries during dental laboratory procedures and contribute to the advancement of the field.

These learning outcomes ensure that students completing the course “Appliances and Instruments in Dental Laboratory“ are well-prepared to meet the demands of the dental technican profession. They will have a strong foundation in both, the theoretical aspect and practical applications ready to contribute effectively to dental health care teams. |
| **Alignment of Course’s Learning Outcomes to Program’s Learning Outcomes** | Aligning the course’s learning outcomes for “ Appliances and Instruments in Dental Laboratory “ with the program’s learning outcomes for the Dental Technician, Bachelor level, ensures that the course contributes effectively to the overarching objectives of the program. The specific learning outcomes of “ Appliances and Instruments in Dental Laboratory “ support the achievement of the program’s broader learning outcomes :1. **Comprehensive Understanding of Appliances and Laboratory Instruments** :
* Aligns with the Program Outcome on Knowledge and Understanding : This outcome supports the program’s aim to equip students with a solid foundation including understanding the principles and techniques of using laboratory equipment and instruments.
1. **Practical Proficieny in Laboratory Techniques :**
* Aligns with the Program Outcome on Practical Skills : Enhances the program’s goal of developing practical skills in the use of dental equipment and instruments.
1. **Research and Critical Thinking Skills :**
* Aligns with the Program Outcome on Research and Innovation :

Enhances the programs’s goal of fostering an environment that encourages research, critical thinking,and innovation within dental laboratory procedures. By achieving the learning outcomes in the course “ Appliances and Instruments in Dental Laboratory “ students make significant progress toward meeting the broader learning outcomes of the Dental Technician program. The alignment of course learning outcomes with program learning outcomes ensures a cohesive and comprehensive educational experience that supports students academic and professional deveploment. |
| **Course Content** | This course is structured to progressively build students knowledge and skills. |  |
| **Weekly schedule - Lectures** |  **Week** |
| **Introduction to dental laboratory appliances and instruments** **-** Historical development of instruments in dental technique | **1** |
| **Standards for technical equipment of dental laboratory and their space** | **2** |
| **Instruments and equipment for working with plaster**  | **3** |
| **Instruments for working with wax and Instruments for investing and casting** | **4** |
| **Instruments for welding and puncture**  | **5** |
|  **Parallelometer**- How to use it in partial dentures- Application of the parallelometer in fixed prosthtetics | **6**  |
| **Seminars Presentations** | **7** |
| **Instruments for polishing and veneering** | **8** |
| **Cutting and abrasive instruments** - Rotary instruments with geometrically defined blades  - Rotary instruments with geometrically undefined blades | **9** |
| **Scientific properties of dental materials*** Materials, science and dentistry
 | **10** |
| **Realization of the individual measuring spoon** * Instruments used during this phase
* Laboratory implementation procedures
 | **11** |
| **Articulators and their types*** Placing models on the articulator
 | **12** |
| **Instruments used for molding and polymerization** | **13** |
| **Standards for dental work place** | **14** |
| **Final test** This course content is designed to provide a comprehensive foundation in dental laboratory equipment and instruments, ensuring students are well-prepared for further advancement in dental technician field and able to contribute effectively to dental health care teams. | **15** |
| **Weekly Schedule – Laboratory exercises** | **Week** |
| **General laboratory procedures and techniques**  | **1** |
| **Health and safety in the dental laboratory, potential dangers in laboratory related to the use of laboratory equipment**  | **2** |
| **Hand dental laboratory tools** | **3** |
| **Models for prosthodontics** | **4** |
| **Orthodontic study models**  | **5** |
| **Articulating models on a simple hinge**  | **6** |
| **Seminars presentations** -Collection of seminars-Analysis of seminars-Assessment of seminar presentations | **7** |
| **Equipments / Instruments for Denture Section** | **8** |
| **Equipments / Instruments for Metal Section**  | **9** |
| **Equipments / Instruments for Wax Section** | **10** |
| **Equipments / Instruments for Ceramic Section** | **11** |
| **Equipments / Instruments for Casting Section** | **12** |
| **Equipments / Instruments for Model Section** | **13** |
| **Digital workflow presentations**-Projects-Hands-on work | **14** |
| **Assessments and Discussions** | **15** |
| **Teaching/Learning Methods** |  |  |
| These methods are designed to foster a deep understanding of the principles of equipment and instruments in dental laboratory, develop practical skills and encourage critical thinking.1. **Lectures 35 %**
* Purpose : To deliver foundational knowledge and theoretical concepts.
* Implemention : Regular weekly lectures covering the comprehensivecourse content.
1. **Hands-on Laboratory Sessions : 25 %**
* Purpose : To develop practical skills in the use of equipment and instruments in dental laboratory .
* Implementation : Laboratory work following lectures to apply theoretical knowledge practically.
1. **Seminars and Group Discussions : 20 %**
* Purpose : To enhance understanding through discussion and collaborative learning.
* Implementation : Scheduled sessions for discussing case studies, research findings and current trends.
1. **Individual lesson 20 %**

 - Purpose : To supplement and reinforce learning outside the classroom. - Implementation : Access to online materials and forums for further study and discussion.   These percentages are indicative and can be adjusted based on specific course requirements, institutional guidelines or the needs of students group. The allocation ensures a special emphasis on the theoretical part through lectures ( 35 % ) while maintaining a solid foundation in practical and laboratory work ( 25 % ). Interactive and student-centered learning methods such as seminars are integrated to enhance critical thinking and collaboration. |  |
| **Assessment Methods** | The following assessment methods correspond to the learning methods outlined previously, ensuring a comprehensive evaluation of student performance throughout the course.**Assessment Methods Aligned with Learning Methods :**1. **Lectures ( 35 % )**

Assessment method – Written ExaminationsStudents will be assessed thorugh written exams covering theoretical knowledge presented during lectures. These exmas may include multiple-choice questions, short answer questions and essay questions to evaluate comprehension of foundational concepts in appliances and instruments in dental laboratory.  |  |
|  | **.** |
| 1. **Hands-on Laboratory Sessions ( 25 % )**

Assessment method – Practical Skills AssessmentsPractical examinations and continuous assessment of laboratory work will be used to evaluate students proficiency to utilize appliances and instruments in dental laboratory. 1. **Seminars and Group Discussions ( 20 % )**

Assessment method – Participation and Presentation Students will be assessed based on their active participation in discussions and their ability to present case studies, research findings or topics of current interest in appliances and instruments in dental laboratory. 1. **Individual lesson ( 20 % )**

Assessment method – Quizzes and Online Assignments Quizzes and online assignments related to e-learning resources will be used to reinforce learning and assess understanding of course materials.These assessment methods are designed to comprehensively evaluate students theoretical knowledge, practical skills and critical thinking in the context of appliances and instruments in dental laboratory. By aligning assessment methods with learning methods, the course ensures that students are evaluated in a manner that reflects their learning experience and prepares them for professional practice. |  |
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| **Course Resources** | These resources are chosen to provide comprehensive coverage of the theoretical knowledge, practical skills and current trends in appliances and instruments in dental laboratory. Here is a list of course resources :**Textbooks and Reference Books** “ Basics of Dental Technology “ by Johnson, Patrick, Stokes, Wildgoose, Wood“ Dental Prosthetics – Preclinic “ by Agim Islami, Dugagjin Sokoli A foundational text that offers proper content of using appliances and laboratory instruments.**Journals and Online Databases** Journal of Appliances and Instruments in Dental LaboratoryProvides access to the latest research findings and review articles in laboratory equipments. **Laboratory Equipment and Materials** Dental LaboratoryEquipped with all necessary tools and materials for hands-on practice.**Webinars and Online Workshops**Access to recorded or live webinars hosted by experts in the field of use of laboratory equipments.These resources are selected to ensure that students have access to a broad range of materials that support both the theoretical and practical aspects of appliances and instruments in dental laboratory.  |  |
| materials for hands-on practice.**Webinars and Online Workshops**Access to recorded or live webinars hosted by experts in the field of use of laboratory equipments.These resources are selected to ensure that students have access to a broad range of materials that support both the theoretical and practical aspects of appliances and instruments in dental laboratory. Incorporating a variety of learning aids, such as textbooks and hands-on experiences enriches the learning environment and prepares students for professional practice in dental technology. |  |
| **ECTS Workload** | **Type of activity**  |  |  |
| 1. Lectures
 | 30 h | 35 % |
| 1. Hands-on Laboratory sessions
 | 24 h | 25 % |
| 1. Seminars and Group Discussions
 | 18 h | 20 % |
| 1. Individual Lessons
 | 18 h | 20 % |
| **Total** | **90 h** | **100.0 %** |
| **Literature** | 1. Authors ; Johnson, Patrick, Stokes, Wildgoose, Wood :

 “ Basics of Dental Technology “ a Step by Step Approach 2nd Edition, 20151. Authors ; Agim Islami, Dugagjin Sokoli : “ Dental Prosthetics – Preclinic “ University of Pristina 1999
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| **Contact** | **Dr. Adelina Loxha adelina.loxha@ubt-uni.net** |

**Prerequisites for the course**

This course has no prerequisites

**Assessment of Competence**

For the class to reach a Bachelor’s level of learning, students must prepare by reading the given material, complete all assignments assigned for each class. Students will be evaluated for participation as :

* Full participation in class activities and group work
* Participation in class discussions
* Demonstrating understanding of the content of the material.
* Adding ideas to class discussion
* Helping others clarify an idea
* Raising new ideas and questions
* Arriving on time and staying throughout the lesson.

**Students must be present in at least 80 % of the exercises.**

**Educational Regulations**

**Participation in the lesson**

UBT College undertakes the responsability of training future professionals to the highest standards. One of these standards is taking responsability for personal actions. If a student misses a particular session, the student has lost that instruction forever. 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 disiplinary problems that will not be tolerated.

You made a contract with 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 for listening and/or viewing electronic devices such as smartphones, personal laptops and/or other electronic devices will not be allowed.

The classroom 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 callas 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 begging of the lesson. Tests and quizzes are one way teachers measure a student’s knowledge. Failure to participate in tests or quizzes interfers with theis process. UBT College does not reward students who do not take their tests or quizzes on time: 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 fot thaqt test or quiz. 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 ans projects.

Never copy another student’s seminars and projects.

**Dates of submission of works**

One thing all professionals must learn is to be on time. Excuses do not make the student and teacher feel better about their wasted time. For all asigned tasks, sufficient time is given to complete, and all work must be completed in the time set by the teacher. No delay in the completion of the works will be accepted.

**Dress code**

Professionals must dress appropriately. Any student who does not dress appropriately during class time will not be allowed to participate in class activities.

**The behavior**

Students at UBT College must learn to work in groups, regardless of group composition. Tolerance, courtesy, respect and a peaceful environment are required in the classroom.

All students are expected to be respectful to other students and to the teacher during class and in dealing with class matters. Disrespectful behavior will affect your participation grade. Examples of respectful behavior in classroom include, but are not limited to :

* Listening to each other and exchanging ideas
* Arrival and departure according to the class schedule, except in cases of emergency
* Turn off the cell phone ringer and do not receive calls in class
* Speak so that others can hear and understand what you are saying
* Engaging in class discussion ( avoiding side conversations during class and dominating class discussion )
* Listening ( not speaking ) when the teacher or other students are addressing the class
* Working collaboratively with a specific or selected group
* Completion of class work on time
* Focusing on class topics and not on personal matters or work unrelated to the class
* Viewing your computer and / or cell phone only when related to class work
* Raising questions when the explanation for the work is missing.

**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.