**Dental Technician Program**

**Course Syllabi**

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| **Course** | **GNATHOLOGY-DENTAL OCCLUSION** |
| Type  | Semester | ECTS | Code |
| OBLIGATORY (O) | 3 | 4 |  |
| **Course Lecturer** | Ass.Dr,Krenare Mehemti |
| **Course Assistant** | Ass.Dr.Krenare Mehmeti |
| **Aims and Objectives****Learning Outcomes** | This course is important for preparing students to meet the demands of the profession, focusing on the theoretical understanding and practical application of dental occlusion concepts.**Aims of the course** **are**:**1**. **To provide a solid foundation of dental occlusion - gnathology**: The course aims to provide knowledge about the complex relationships of the components of the stomatognathic system at rest and in function which are applicable to all dental procedures.**2. To develop practical skills**: Equip students with practical experience in modern gnathological techniques, select and use articulators.**3. To encourage research and critical thinking**: Foster an environment where students are encouraged to explore current research, innovative materials, and innovative apparatus in achieving and maintaining occlusal balance, promoting continuous learning and adaptation to advances in the field.After completing this course, students will be able to:**1**. **Understand the Basics**: Demonstrate a thorough understanding of the basic concepts to master the fundamental concepts of occlusion that underlie gnathology.**2**. **Practically apply theoretical knowledge**: Demonstrate skills in applying theoretical knowledge to practical tasks of using medium-value and semi-adjustable articulators.**3.** **Engage in Research**: Identify and engage with current research and innovative equipment in gnathology, critically evaluating their application during dental laboratory procedures.By achieving these aims and objectives, the Gnathology course will ensure that students are well prepared to enter the professional world with a solid foundation of dental occlusion concepts. These learning outcomes summarize the integration of theoretical knowledge with practical skills, and research commitment, during the stages of dental laboratory work.**1.(6) Comprehensive understanding of gnathology**: Students will demonstrate a comprehensive understanding of the principles, equipment, materials, and techniques in dental occlusion.**2. (7) Practical skills in gnathological techniques**: Students will demonstrate skills in the technique of recording the reference positions of the mandible and the technique of carrying the models in the articulators.**3. (8)Research and critical thinking skills**: Students will demonstrate the ability to engage with current research, to evaluate innovative equipment in gnathology. 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 who complete the Gnathology-Dental Occlusion course are well prepared to meet the demands of the profession. They will have a strong foundation in both the theoretical and practical applications of gnathology, ready to contribute effectively to dental health care teams and pursue further specialization in the field. |
| **Alignment of Course’s Learning Outcomes to Programs’ Learning Outcomes.** | Aligning the learning outcomes of the Gnathology-Dental Occlusion course with the learning outcomes of the Bachelor's Degree Dental Technician program ensures that the course contributes effectively to the program's overarching educational objectives. Here is how the specific learning outcomes of Gnathology-Dental Occlusion are designed and support the achievement of the broader program learning outcomes:**1. Comprehensive understanding of Gnathology**:o Conforms to the program outcome on knowledge and understanding: This outcome supports the program's aim to equip students with a solid foundation, including understanding of the principles and techniques during dental laboratory gnathological procedures.**2. Practical skills in gnathological techniques:**o Aligns with the program outcome for practical skills: Contributes directly to the program's objective of developing practical skills in dental laboratory procedures, ensuring that students are prepared for real-world dental laboratory procedure tasks.**3. Research and critical thinking skills:**o Aligns with the program's research and innovation outcome: Enhances the program's goal of fostering an environment that encourages engagement with research, critical analysis, and innovation within dental laboratory procedures. By achieving the learning outcomes in the Dental Gnathology-Occlusion course, students make significant progress toward meeting the broader learning outcomes of the Dental Technician program. . Aligning course learning outcomes with program learning outcomes ensures a cohesive and comprehensive educational experience that supports students' academic and professional development. |

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| **Course Content** | **Course Plan** | **Week** |
| Introduction to Gnathology; definition, field of study, goals, historyFunctional anatomy and biomechanics of the chewing apparatus (masticator)- Hard tissues of the masticatory apparatus- Soft tissues of the masticatory apparatus- Nervation of the temporo-mandibular jointAnatomy of the muscles of the masticatory apparatus- Masticatory muscles- Muscles of mimicry- Tongue muscles | 1 |
| ATM function and biomechanical analysis - Mechanics of mandibular movement - Types of ATM movements - Limit movements in a single plane - Boundary movements in the sagittal plane and functional movements - Opening and closing the mouth - Limit movements in superior contactsBiomechanics of anterior sliding of the condyle-disc complex across the temporal fossa - Closing the jaw - Occlusal contacts during mandibular movement - Movement of the lower jaw back and forth, in the frontal plane - Retrusive mandibular movement - Incision - Retrusion - Lateral movements of the lower jaw - Biomechanics of lateral movementsMasticatory movements of the mandible - Chewing - Swallowing - Muscle action during masticatory movements - Biomechanics of mastication - Data on the functional movement of the condyle - Mandibular biomechanics | 2 |
| Determinants of mandibular movements - Functional movements of the lower jaw - Consequences of tooth loss in chewing - Swallowing and occlusion - Muscle activity during swallowing - Occlusal stability - Alignment and occlusion of teeth - Factors and forces that determine the position of the teeth - Intraarch alignment of the teeth - Interarch alignment of the teeth - Buco-lingual contact report - Mesio-distal occlusal contact ratio - Report of normal occlusion of dental arches - Common occlusal relationships of the posterior teeth - Occlusal ratios of anterior teeth - Touch sensitivity and occlusal forces - Detection of occlusion modifications - The forces exerted during mastication | 3 |
| Etiology and pathogenesis of intra-articular TMJ disorders - The main factors in the etiology scheme of the dysfunctional syndrome - Disc interference disorders - ManagementBruxism and other oral dysfunctions - Prevalence of bruxism - Etiology of bruxism - Consequences of bruxism - Occlusal analysis - Bio-feedback - Different methods to change oral prefunctions - General relaxationabrasion - Etiology - Physiological abrasion - Pathological abrasion - Horizontal abrasion - Vertical abrasion - Abrasion of frontal teeth - Abrasion of molars - Consequences of abrasion - Prosthetic treatment of abraded teeth | 4 |
|  Symptoms of ATM dysfunction - Dysfunctional syndrome of ATM and masticatory muscles - Chewing muscle disorders - Local myalgia (non-specific and unclassified) - Myofibrotic contracture - Neoplasia - The mechanism of oro-facial pain - Modulation of pain - Pain modulation mechanisms - Types of pain - Central excitatory effect - Clinical manifestations of the external stimulus effect - Pain - The squeak - Etiology of cracking | 5 |
|  - Classification - Clinical diagnosis - Imaging diagnosis - Terminology and definitions - Mechanism of disc disorders - Clinical course of disc disorders - Possible etiological factor - Mechanical considerations - Crackling as the first clinical sign of disc herniation - Symptom of restriction of mouth opening - Causes of restriction of mouth opening - Deviation of the movement of the lower jaw | 6 |
| **Presentation of seminars** | **7** |
| Diagnosis of intra-articular TMJ disorders - Anamnesis and main complaints related to the disease - Clinical examination - Examination of functional limitation - Palpation - Radiographic method of ATM examination - Panoramic radiography - Conventional radiographs - Tomographic method of ATM examination - Computed tomography - Arthrography - The scintigraphic method of ATM examination - Magnetic resonance - Radiographic interpretation | 8 |
| Classification of diseases of the temporo-mandibular jointMasticatory muscle disordersATM irregularities | 9 |
| Dysfunctional syndrome diagnosis criteria and differential diagnosis - Pathologies affecting the joint itself - Factors that predispose to internal disc damage - Development scheme of ATM pathologies - Differential diagnosis of intra-articular TMJ disorders with oro-maxillo-facial pathologies - Differential diagnosis Otorhinolaryngological diseases Salivary gland diseases Neuralgias Headache Dental diseases | 10 |
| Training program for patients with reduced disc displacement - Training program for patients with hypomobility after surgical intervention in ATM - Treatment program for patients with mandibular hypermobility - Control or reduction of the contribution of predisposing factors - Psychological management - Final treatment - The initial stages of treatment of functional ATM syndrome - Interocclusal registration - Mounting on the articulator - Selective decoction - The main requirements that should be considered during preparation - Results of selective decortication | 11 |
| Articulators and their types - Classification of articulators - The connection between the teeth and the horizontal transverse axis - Facial arches - Registration of movements and adjustment of the articulator - Main movement records - Articulator adjustments - Adjustment of posterior determinants - Complex registrations - Pantography - Axiography | 12 |
| Prosthetic treatment of ATM dysfunction - Stabilizing rails - Rail with partial coverage - Shore flat rail - Mandibular repositioning splints - Treatment of patients with interocclusal splints - The efficiency of occlusal rails - Efficiency of stabilizer rails - Limitations and complications of oral splints - Patient guidance regarding the use of interocclusal splints - The purpose of the treatment - Instructions for the gradual removal of the rail | 13 |
| Final exam | 14 |
| Final exam-consultations | 15 |
| **Weekly Plan – Laboratory exercises** | **WEEK** |
| Anatomical measurement of the lower jaw with full dental arch on mannequin casting model | 1 |
| Anatomical measurement of maxilla with full arch of teeth on mannequin casting model | 2 |
| Assembling models on articulators | 3 |
| Reference points, lines and planes (Frankfurt plane, Spee's curve, Monson's curve, Camper's line, occlusal plane, prosthetic plane). Analysis of models, analysis of dental arch morphology, horizontal and vertical coverage. | 4 |
| The central relationship and the position of the maximum intercuspation, analysis of the maxillary mandibular relationship | 5 |
| Articulator types, articulator parts, working with an average value articulator (carrying the model to the articulator) | 6 |
| Occlusal surface analysisRegistration I: - Cusp tip - The base of the cusp - Central fissure - Mesial and distal marginal border - Triangular surfaces of the cusp | 7 |
| Analysis of occlusion in articulator-mounted models in intercuspationThe ratio of anterior and posterior teeth in intercuspation, central occlusal contacts.The recommendation for this exercise, the analysis is done on the gnathological model | 8 |
| Analysis of occlusion in articulator-mounted modelsThe ratio of anterior and posterior teeth during eccentric movements of the mandible, mandibular guidance paths, protrusion, latero and mediotrusion | 9 |
| Semi-adjustable articulatorsAdjusting the incisal path in semi-adjustable articulators with the help of protrusion registration tools | 10 |
| Face arch, transferring the upper jaw model to the articulators by means of the face bow and then transferring the lower jaw model to the articulators | 11 |
| Two-dimensional analysis of mandibular functionThree-dimensional analysis of mandibular function | 12 |
| Treatment of ATM diseases - Management strategy - Stages of treatment of dysfunctional pathologies - The standard of the exercise program | 13 |
| Final exam | 14 |
| Final exam-consultations | 15 |

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| **Teaching methods** | **Learning activity** These methods are designed to foster a deep understanding of the principles of gnathology-dental occlusion, to develop practical skills, and to uphold professional and ethical standards.**• Lectures:25%**• Purpose: To provide basic knowledge and theoretical concepts.• Implementation: Regular weekly lectures covering comprehensive course  content.**• Practical laboratory sessions: 25%**• Purpose: To develop practical skills in occlusal diagnosis and treatment of ꞔcorrection of occlusion.• Application: Laboratory work after lectures to put theoretical knowledge into practice.**• Seminars and group discussions: 17%**• Purpose: To increase understanding through discussion and collaborative learning.• Implementation: Scheduled sessions to discuss case studies, research findings and current trends.**• E-learning resources: 34%**• Purpose: To supplement and reinforce learning outside the classroom.• Implementation: Access to online materials and forums for further study and discussion. |
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| **Assessment Methods** | The following assessment methods correspond to the learning methods described previously, providing a comprehensive assessment of student performance throughout the course. **• Assessment methods in accordance with learning methods** **1. Lecture (25%)**Evaluation method: Written exams**2**. Students will be evaluated through written semi-semester and final exams that cover the theoretical knowledge presented during the lectures. These exams may include multiple-choice questions, short-answer questions, and questions or to assess understanding of basic concepts in gnathology.**3. Practical laboratory sessions (25%)** Assessment method: Assessments of practical skills Practical examinations and continuous assessment of laboratory work will be used to assess students' skills in gnathological techniques.**4. Seminars and group discussions (17%)** Evaluation Method: Participation and Presentation Students will be evaluated on their active participation in discussions and their ability to present case studies, research findings, or topics of current interest in gnathology. Group presentations will also be assessed for teamwork and cooperative learning outcomes.**5. E-learning resources (34%)** Assessment Method: Quizzes and online assignments Online quizzes and assignments related to e-learning resources will be used to reinforce learning and assess understanding of course materials. These may include quizzes on reading assignments or short essays on video lecture topics.These assessment methods are designed to comprehensively assess students' theoretical knowledge, practical skills, professional behavior and ethical understanding in the context of gnathology. By aligning assessment with learning methods, the course ensures that students are assessed in a way that reflects their learning experiences and prepares them for professional practice. |

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| **Course Resources** | **Textbooks and reference books****1.** Ruzhdije Qafmolla,Gnathology **2.** Agim Islami, Dugagjin Sokoli. Preclinical Dental Prosthetics, University of Pristina, Pristina.• A basic text covering the principles of occlusion, understanding the physiology and determinants of mandibular movement. **Online journals and databases****•** Journal of Gnatology.• Provides access to the latest research findings, case studies and review articles in gnathology. **Digital learning platforms and software****•** Access to online lessons. **Laboratory Equipment and Materials**• Dental Laboratory• Equipped with all tools and materials needed for practical sessions, including dental lathe, trimmer and other instruments.  **Webinars and online seminars**• Access to recorded or live webinars hosted by experts.• Guest lectures and Industrial Partnerships• Visit of experts• Sessions with experienced dental technicians, prosthodontists and material scientists to share knowledge and real-world experiences.These resources have been selected to ensure that students have access to a wide range of materials supporting both the theoretical and practical aspects of gnathology. Incorporating a variety of learning tools, such as textbooks, digital tools, and hands-on experiences, enriches the learning environment and prepares students for professional practice in dental technology. |

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| **ECTS Workload** | **Activity Type** |  |  |
| 1. Lecture
 | 30 h | 25%%7% |
| 1. Dental Laboratory Exercises
 | 30 h | 25% |
| 1. Seminars and Group Discussions
 | 20 h | 17% |
|  4. Digital Workflows Training | 40 h | 34% |
|  | **Total** | **120 h** | **100.0%** |
| **Literature** | 1. 1. Ruzhdije Qafmolla, Gnathology
2. 2. Agim Islami, Dugagjin Sokoli. Preclinical Dental Prosthetics, University of Pristina, Pristina.
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| **Contact** | Dr.Krenare Mehmeti krenare.mehmeti@ubt-uni.net |

**Pre -requirements for the course**

**This course does not have any pre-requirements**

 **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 (without dominating the conversation).

 • Demonstrating understanding of the content of the material read.

 • Providing critical thinking about the subject matter.

 • Adding ideas to class discussion.

 • Helping others clarify an idea.

 • Supporting others as they share their ideas and speak in class.

 • Raising new ideas and questions.

 • Arriving on time and staying throughout the lesson.

 **Participation policy**

Students are expected to attend all lectures and exercises. The importance of class attendance is reflected in the percentage of the grade associated with attendance. You cannot receive attendance grades if you are not in class. If you have an emergency and cannot attend class, please email me in advance to let me know. Class will start on time to honor everyone's commitment. If you are late, please enter the classroom quietly. Participation marks will be deducted for lateness.

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

 **Educational Regulations**

 **Participation in the lesson**

UBT College undertakes the responsibility of training future professionals to the highest standards. One of these standards is taking responsibility 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 disciplinary problems 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 for listening and/or viewing electronic devices such as smart phones, 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 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. 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 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.

 **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 assigned 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 the 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 th

 **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.