

GENERAL TRAINING AND OCCUPATIONAL STANDARDS FOR DENTAL TECHNOLOGY

UNIT

DOSAM_F Fundamentals

Summary of the unit

This unit focuses on the competences that are a pre-requisite to performing any of the tasks associated with dental technology. This general and basic knowledge shall cover all theoretical, anatomical, physiological, acrylic resins-related, chemical, physical, technical, technological and legal aspects that are essential to the understanding of the complexity of the health care profession of a dental technician. Quality assurance measures that are self-evidence in the case of a device about to be inserted into a living organism shall also serve as a basis for all subsequent tasks.

This unit applies to any of the tasks associated with the **profession** of a dental technician. The theoretical knowledge mentioned in the present document serves as a basis for all subsequent units, where each item of knowledge is described more thoroughly and combined with the relevant practical skills.

There are seven sections in this unit:

DOSAM_F.1 Anatomy and physiology

- Anatomy
- Tooth morphology, masticatory system (masticatory muscles, tongue, salivary glands, temporomandibular joint)
- Histology
- Pathology
 - o Pathological changes
 - o Parafunctions of the masticatory system
 - o Dysfunction
- The natural dentition and related pathologies
- Mandibular movements and their replication on the articulator
- Reference points and surfaces on the articulator
- Classification of the articulators on the basis of the degree of freedom and the simulated joint movement
- Principles of occlusion : spatial guidance and related **concepts**

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- Principles of dynamic occlusion

DOSAM_F.2 Work materials and ancillary materials

- Work materials : metals, metal alloys, acrylic resins/composite, ceramics
- Ancillary materials : **wax**, gypsum products, embedding compounds, impression materials, etc.
- Bonding systems
- Biocompatibility of work materials
 - o Galvanic elements
 - o Oral galvanism
 - o Effects of corrosive products on the oral mucosa
 - o Local and systemic toxicity

*When using work and ancillary materials, whatever their type, **the trainee shall** :*

- Read and put into practice the processing and **any safety** instructions
- Select and use the work and ancillary materials according to their operational applicability, their degree of physiological safety, their compatibility with the production processes and the equipments in use
- **Trimming** the work components and materials with hand tools and fixed equipment, taking into account their durability and their surface texture
- Process the surfaces electrochemically if **required**
- Preferably use a silanization technique to produce surface bonding systems
- Modify the structural properties of work materials through recrystallization, homogenization, hardening and tempering

DOSAM_F.3 Chemistry and physics

- Principles of organic / inorganic chemistry
- Principles of physics

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DOSAM_F.4 Work equipment

When using tools, appliances, machines, etc., the technician shall always :

- Read and put into practice the operating instructions and directions for use, the technical documentation as well as the charts and diagrams
- Organize the work station on the basis of the technical, organisational and ergonomical needs
- Select and use tools according to the work material, the processing requirements and the expected surface texture of the machined component
- Switch on, programme and **use the appropriate machinery, equipment and appliances.**

- Make sure the **all machinery, equipment and appliances are cleaned**, serviced and maintained and that in the event of a failure, relevant measures are taken

DOSAM_F.5 Dental technologies

- Principles of enamelling and casting techniques
 - o Setting and enamelling
 - Structural building
 - Structure morphology
 - Properties of cast parts according to process parameters
- Casting processes in dental technology
 - o Centrifugal casting
 - o Vacuum die casting
 - o Vacuum casting
- Principles of shaping and contouring
 - o shaping and contouring by **trimming**
 - o machine geometrics
 - o operating speed, contact pressure, feed rate
 - o Classification of abrasive agents
- Joining techniques : brazing, welding, bonding

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DOSAM_F.6 Quality assurance

- Fundamentals of quality assurance : quality standards, fault analysis and remedy, documentation

Before starting any new tasks as well as between individual job steps, the trainee shall prepare a planning and :

- Implement patient-oriented data protection provisions
- Use a trade-specific terminology
- Collect the prescriptions and check their completeness
- Check the technical feasibility of prescriptions
- Assess feasible production alternatives and discuss them with the person in charge. Determine which solutions are likely to offer the best-possible balance of aesthetics, function and cost-effectiveness and to best meet the patients needs
- Plan, coordinate and implement the sequence of operations and the use of materials while taking into account considerations such as production, organisation, workload distribution, cost-effectiveness
- Prepare sketches and models
- Inform person in charge about the biocompatibility of work materials and suggest a solution
- Provide advice to the client about the technical solutions for the production of a working component

During the process and especially before each new job step or after the completion of a task, the trainee shall :

- Continuously assess and keep a record of the production processes and steps
- Assess and keep a record of the quality of the product
- Check the device for fit accuracy
- Verify the occlusion and the information transferred on the articulator
- Check whether the required functionality is achieved
- Spot quality discrepancies, identify and correct the causes of defect
- If need be, take corrective measures in view of preparing the work components for the next step or their delivery
- Check whether the previous steps still match the prescription
- Immediately report all arising problems to the person in charge

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- Make sure hygiene and cleanliness rules are respected

DOSAM_F.7 Legislation and recordkeeping

- Health protection, especially hygiene at the workplace and hygiene plan
- Occupational health and safety, especially regulations on accident prevention, first-aid
- Environmental protection, especially the separate storage of work materials and waste disposal

*Whatever the task or the job, the technician shall make sure that **in accordance to national regulations** the following principles of occupational health and safety are abided by :*

- Identification of health and safety related hazards at the workplace and implementation of preventive measures
- Implementation of trade-specific regulations on accident prevention and occupational safety
- **In the event of any accident, appropriate rescue measures should be taken**
- **Disinfection of all work components or products that have been in the mouth or are intended to be placed in the mouth, before further processing or delivery.**
- ~~Implementation of fire prevention regulations and adoption of fire fighting measures~~

*Whatever the task or the job, the technician shall make sure that the following principles of environmental protection **in accordance to national regulations** are abided by :*

- Implementation of those environmental regulations that apply to this line of business
- Exploration of all possibilities of an economical and environmentally-friendly use of energy and materials
- Waste reduction, environmentally-minded disposal of materials and equipment

Before starting any kind of work as well as between individual job steps, the technician shall check the information provided by the client for completeness, intelligibility and applicability and make a record of the following information :

- **Name of the client**
- **Appropriate personal data of the patient**
- **Necessary instructions**
- Requested type of dental prosthesis

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- Components needed
- Timeline for the execution and completion of work
- Request for specific materials
- Supplementary specific requirements from the client, especially if these generate additional costs
- X-rays and photographs, if necessary

During the process and especially before each new job step or after the completion of a task, the technician shall :

Recordkeeping and storage

- Keep a record of all tests carried out on incoming work
- Keep a record of the working processes and steps as performed by the operating technician
- Draw comprehensible plans and drawings
- Compile a file on the materials and components that were used
- Store the records in accordance with the legal provisions
- Identify every piece of work, even unfinished, with the client's and the patient's reference and date of production
- Store the medical device, finished or unfinished, in a safe location and environment.

Certification/ certificate ¹

- Draft an allocation of tasks
 - o Project work
 - o Presentation of the results
- Develop and adopt assessment criteria

European logbook to record the training.

¹ To be defined