

**Federal State Budgetary Educational Institution  
higher education  
"NORTH OSSETIAN STATE MEDICAL ACADEMY"  
Ministry of Health of the Russian Federation**

**ANNOTATION  
WORK PROGRAM DISCIPLINE**

**"DIGITAL TECHNOLOGIES IN DENTISTRY»**

the main professional educational program of higher education - specialist's programs in the  
specialty 31.05.03 Dentistry,  
approved on May 24, 2023

- 1. The purpose of studying the discipline:** training of a dentist who owns computer technology and is able to apply modern technologies at all stages of dental care.
- 2. The place of the academic discipline in the structure of the main educational program:** discipline is obligatory and belongs to the basic part of Block 1 of the Federal State Educational Standard of Higher Education in the specialty 31.05.03 Dentistry.
- 3. Requirements for the results of mastering the discipline:** the process of studying the discipline is aimed at the formation and development of competencies: YK-1, YK-6, OPIK-1, OPIK-5, PIK-1, PIK-3.

As a result of studying the discipline, the student must

**Know:**

- The content of the basic concepts of working with computer information systems.
- Basic approaches to the formalization and structuring of various types of medical data used to form decisions in the course of the treatment and diagnostic process.
- Types, structure, characteristics of medical information systems.
- Principles of automating the management of healthcare institutions using modern computer technology.
- Computer technologies and their clinical use in dentistry (CAD / CAM technologies, computer axiography, tooth color determination system, T-scan technology).
- Methods of radiation diagnostics (computed tomography) in the planning of dental treatment.
- The principle of operation of the software system CAD /CAM.
- Getting three-dimensional optical impression, building a virtual model of the future prosthesis design, manufacturing an orthopedic design.
- Features of using the 3D modeling method for planning the treatment of a dental patient.
- Possibilities of using a dental microscope, device and design features of microscopes, characteristics of the main types of optical systems and lighting.

**Be able to:**

- Carry out textual and graphical processing of medical data using standard software tools.
- Use statistical and heuristic algorithms for diagnosing and managing the treatment of diseases.
- Use modern Internet tools to search for professional information in self-study and advanced training in certain sections of medical knowledge.
- Interpret the data of additional examinations of patients (including radiographs, teleroentgenograms, radiovisiograms, orthopantomograms, tomograms (on film and digital media), establish the possibilities and limitations of using dental material for a specific purpose based on knowledge of the chemical nature and the main components of its composition.
- Carry out textual and graphical processing of medical data using standard software tools.
- Draw up a treatment plan for a dental patient using digital technologies and justify the choice of prosthesis design.
- Analyze the results of basic and additional digital methods for examining patients.
- Individually adjust the microscope for endodontic treatment of different groups of teeth on phantoms.

#### **Own:**

- skills in interpreting the results of collecting information from patients, data from the initial examination of patients, data from additional examinations of patients (including radiographs, teleroentgenograms, radiovisiograms, orthopantomograms, tomograms (on film and digital media);
- skills of working with an intraoral camera;
- skills to work with high-speed scanner Medit i 500;
- skills in determining the color of teeth using Vita Easysshade V;
- 3D computer modeling skills.

**4. General laboriousness of the discipline** is 2 credits (72 hours).

**5. Semester:** 5 semester

#### **6. Main sections:**

Application of methods of radiation diagnostics (computed tomography, visiography) in the planning of complex rehabilitation of a dental patient. Analysis of the TMJ and TRH, analysis of the parameters of the movement of the lower jaw, analysis of the dentition. 3D articulator programming.

The use of computer-thomographic examination for the diagnosis of pathological changes in the periapical tissues and root canals of teeth

Computer technologies and their clinical use in dentistry (T-scan technology, digital axiography, computer 3D modeling).Construction of 3D scenes and combination of CT data, scans of dentition, photographs in a single scene.

Visual diagnostics of the oral cavity. Filling out a medical card in electronic form.

Tooth shade determination with Vita Easysshade V.

Smile visualization and design with Digital Smile Design combined with the Dental Face Lifting principle.

Dental laboratory represented by the Medit i 500 high-speed scanner and software that allows you to export STL files from Medit Link and transfer them to the laboratory. Dental laboratory using an open area CAD/CAM system and 3D printing.

The use of an electron microscope in the practice of a dentist. Work with a microscope for orthopedics, endodontics, surgery with the Zeiss Opmi Pico imaging platform, with the possibility of portable visualization with a Sony camera.

Head Department of Dentistry No. 3  
Doctor of Medical Sciences,

Associate Professor



A.A. Remizova