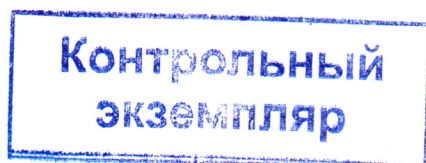


**MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS**  
Educational Institution  
«BELARUSIAN STATE MEDICAL UNIVERSITY»



**APPROVED**



by Rector of the Educational  
Institution «Belarusian State  
Medical University»

S.P.Rubnikovich

Reg. # UD-0911-03-36/2521/edu.

01.12.2025

**ENDODONTICS**

**Curriculum of the educational institution  
in the academic discipline for the specialty**

**7-07-0911-03 «Dentistry»**

Curriculum is based on the educational program «Endodontics», approved 01.12.2025, registration # УД-0911-03-36/2526/уч.; on the educational plan in the specialty 7-07-0911-03 «Dentistry», approved 16.04.2024, registration # 7-07-0911-03/2526/mf.

### **COMPILERS:**

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### **RECOMMENDED FOR APPROVAL:**

by the Department of Endodontics of the Educational Institution «Belarusian State Medical University»  
(protocol # 2 of 15.09.2025);

by the Scientific and Methodological Council of the Educational Institution «Belarusian State Medical University»  
(protocol # 3 of 19.11.2025)

## EXPLANATORY NOTE

«Endodontics» – the academic discipline of the module «Therapeutic Dentistry», which contains systematized scientific knowledge about the structure of pulp and periapical tissues of tooth, mechanisms of development, clinical manifestations of the diseases of pulp and periapical tissues, methods of their diagnosis, treatment and prevention.

**The aim** of the academic discipline «Endodontics» is the formation of specialized competences for solving the issues of professional activity in the field of diagnosis, treatment and comprehensive dental care of patients with the diseases of dental pulp and periapical tissues.

**The objectives** of the academic discipline «Endodontics» are to form students' scientific knowledge about the structure of dental pulp and periapical tissues, mechanisms of development and clinical manifestations, classification, methods of diagnosis, treatment and medical prevention of the diseases of pulp and periapical tissues of tooth, skills and abilities necessary for:

- examination of patients with dental pulp and periapical tissues' diseases;
- diagnosis of the diseases of dental pulp and periapical tissues;
- interpretation of the results of clinical, physical, instrumental diagnostic (radiological) and other additional methods of examination;
- planning and implementation of treatment for patients with the diseases of dental pulp and periapical tissues;
- evaluation of treatment results in patients with the diseases of dental pulp and periapical tissues during medical observation;
- medical prevention and elimination of predisposing risk factors for the development of the diseases of pulp and periapical tissues of tooth, leading to impairment of health, function, aesthetics of teeth and surrounding tissues.

### **Relations to other educational disciplines**

The knowledge, skills and abilities acquired during the study of the academic discipline «Endodontics» are necessary for successful mastering of the academic discipline «Conservative Dentistry», «Pediatric Therapeutic Dentistry», «Clinical Periodontology», «Diseases of the oral mucosa».

A student who has mastered the content of the educational material of the academic discipline «Endodontics» should have the following specialized competence: conduct examination, apply methods of diagnostics and differential diagnostics, formulate a clinical diagnosis, apply modern technologies for the treatment and medical prevention of caries and its complications (pulpitis, periodontitis), other diseases of the hard tissues of the teeth, the oral mucosa in adults; define a comprehensive plan of dental treatment.

As a result of studying the discipline «Endodontics» the student should

### **know:**

- the basic concepts in endodontics;
- structure and functions of pulp and periapical tissues of the tooth in health and disease;
- factors affecting the state of the dental pulp and periapical tissues;

international terminology and classification of the diseases of dental pulp and periapical tissues;

mechanism of development, clinical picture of the diseases of dental pulp and periapical tissues;

methods of clinical examination and planning of treatment of the diseases of dental pulp and periapical tissues;

principles of differential diagnosis and treatment of the diseases of dental pulp and periapical tissues;

clinical protocols for the diagnosis and treatment of dental pulp and periapical tissue diseases;

dental instruments, medicines and filling materials used for the treatment of the diseases of dental pulp and periapical tissues;

methods of evaluating the effectiveness of therapeutic measures in treatment of the diseases of dental pulp and periapical tissues;

methods of medical prevention and elimination of predisposing risk factors of the diseases of dental pulp and periapical tissues;

medical documentation of dental outpatient appointment;

contemporary directions of scientific research in the field of endodontics in Belarus and abroad;

the rules of medical ethics and deontology when providing medical care to patients at a dental appointment;

**be able to:**

create mutual understanding with the patient, respecting medical ethical principles in communication and actions;

organize the workplace of a dentist-therapist during endodontic treatment, taking into account ergonomics;

carry out medical procedures in compliance with the principles of antisepsis;

assess the patient's general condition before and during the diagnostic and treatment procedures;

carry out clinical examination of the patient with the diseases of dental pulp and periapical tissues;

interpret the results of clinical, physical, instrumental diagnostic (radiological) and other additional methods of examination in endodontics;

formulate and justify the diagnosis of the diseases of dental pulp and periapical tissues;

apply protocols for treatment of patients with the diseases of dental pulp and periapical tissues;

predict the results of treatment of the diseases of dental pulp and periapical tissues;

provide a plan of comprehensive treatment of the diseases of dental pulp and periapical tissues including prosthetic, surgical, physiotherapeutic and other measures;

provide a plan and carry out medical prevention of the diseases of dental pulp and periapical tissues;

determine a comprehensive dental treatment plan;

provide medical documentation at an outpatient therapeutic appointment;  
 provide medical assistance in the treatment of the diseases of dental pulp and periapical tissues that pose a threat to human life and (or) health;

**master:**

the methods of examination of patients with the diseases of dental pulp and periapical tissues;

the methods of diagnosis, differential diagnosis and treatment planning of the diseases of dental pulp and periapical tissues;

the methods of treatment of the diseases of dental pulp and periapical tissues;

the methods for carrying out the steps of endodontic treatment;

the methods of restoring the anatomical and functional integrity of the tooth after endodontic treatment;

the methods of integrating endodontics with other components of the patient's treatment plan (periodontics, prosthetics, surgery, etc.);

modern technologies for the treatment and medical prevention of caries and its complications (pulpitis, periodontitis), other diseases of the hard tissues of the teeth and the oral mucosa in adults;

the skills in providing medical care to the patients with diseases of pulp and periapical tissues of the tooth.

**Total number** of hours for the study of the discipline is 424 academic hours, including 252 classroom hours and 172 hours of student independent work. Classroom hours according to the types of studies: 21 hours of lectures (including 9 hours of supervised student independent work (SSIW)), 240 hours of practical classes.

Intermediate assessment is carried out according to the syllabus of the specialty in the form of a credit (7, 10 semester) and examination (9 semester).

Form of higher education – full-time.

### ALLOCATION OF ACADEMIC TIME ACCORDING TO SEMESTERS OF STUDY

| Code, name of the specialty | Semester | Total number of academic hours | Number of classroom hours |              |      |                   | Out-of-class self-studies | Form of intermediate assessment |
|-----------------------------|----------|--------------------------------|---------------------------|--------------|------|-------------------|---------------------------|---------------------------------|
|                             |          |                                | total                     | из including |      |                   |                           |                                 |
|                             |          |                                |                           | lectures     |      | practical classes |                           |                                 |
|                             |          |                                |                           | in-class     | SSIW |                   |                           |                                 |
| 7-07-0911-03<br>«Dentistry» | 6        | 80                             | 48                        | 3            | 3    | 45                | 32                        | –                               |
|                             | 7        | 52                             | 33                        | 3            | 3    | 30                | 19                        | credit                          |
|                             | 8        | 58                             | 32                        | -            | -    | 32                | 26                        | –                               |
|                             | 9        | 138                            | 90                        | 6            | 3    | 84                | 48                        | examination                     |
|                             | 10       | 96                             | 49                        | -            | -    | 49                | 47                        | credit                          |
| Total hours                 |          | 424                            | 252                       | 12           | 9    | 240               | 172                       |                                 |

## THEMATIC PLAN

| Section (topic) name                                                                                                                   | Number of class hours    |            |
|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------|
|                                                                                                                                        | lectures<br>(incl. SSIW) | practical  |
| <b>1. Introduction to the academic discipline «Endodontics». Medical ethics and deontology in the provision of dental medical care</b> | <b>1,5</b>               | <b>6</b>   |
| <b>2. Anatomical, histological and functional features of dental pulp and periapical tissues of tooth in health and disease</b>        | —                        | <b>6</b>   |
| <b>3. Mechanism of development, classification of the diseases of dental pulp and periapical tissues</b>                               | <b>1,5</b>               | <b>6</b>   |
| <b>4. Diagnosis of the diseases of dental pulp and periapical tissues</b>                                                              | —                        | <b>27</b>  |
| <b>5. Diseases of dental pulp and periapical tissues. Differential diagnosis</b>                                                       | <b>1,5</b>               | <b>21</b>  |
| 5.1. Clinical manifestations and differential diagnosis of the diseases of dental pulp                                                 | —                        | 12         |
| 5.2. Clinical manifestations and differential diagnosis of the diseases of periapical tissues of tooth                                 | —                        | 6          |
| 5.3. Differential diagnosis of the diseases of dental pulp and periapical tissues                                                      | 1,5                      | 3          |
| <b>6. Treatment of the diseases of dental pulp and periapical tissues. Principles of endodontic treatment</b>                          | <b>16,5</b>              | <b>160</b> |
| 6.1. Planning of treatment of the diseases of dental pulp and periapical tissues of the tooth                                          | 1,5                      | 3          |
| 6.2. Anesthesia in endodontic dental treatment                                                                                         | 1,5                      | 3          |
| 6.3. Operating field isolation methods in endodontics                                                                                  | —                        | 3          |
| 6.4. Methods of vital pulp therapy                                                                                                     | —                        | 3          |
| 6.5. Creation of endodontic access to the root canal system                                                                            | —                        | 3          |
| 6.6. Medical assistance in endodontics for conditions that pose a threat to life and (or) health of a person                           | —                        | 3          |
| 6.7. Preparation of the root canal system for obturation                                                                               | 3                        | 16         |
| 6.8. Methods of obturation the root canal system of the tooth                                                                          | 1,5                      | 12         |
| 6.9. Methods of treatment of dental pulp diseases                                                                                      | —                        | 6          |
| 6.10. Methods of treatment of periapical tissues' diseases of the tooth                                                                | —                        | 6          |
| 6.11. Indications for endodontic retreatment and tooth-preserving surgery                                                              | —                        | 4          |
| 6.12. Criteria for assessing the quality of endodontic treatment                                                                       | 1,5                      | 7          |
| 6.13. Endodontic retreatment of teeth                                                                                                  | 1,5                      | 7          |
| 6.14. Mistakes and complications in endodontic treatment                                                                               | 1,5                      | 21         |
| 6.15. Endodontic treatment in traumatic tooth injuries                                                                                 | 1,5                      | 14         |
| 6.16. Pathological tooth resorption. Methods of endodontic                                                                             | 1,5                      | 21         |

| Section (topic) name                                                                              | Number of class hours    |            |
|---------------------------------------------------------------------------------------------------|--------------------------|------------|
|                                                                                                   | lectures<br>(incl. SSIW) | practical  |
| treatment of pathological tooth resorption                                                        |                          |            |
| 6.17. Justification of postendodontic restoration of anatomical and functional integrity of tooth | 1,5                      | 7          |
| 6.18. Methods for correcting the shade of non-vital tooth                                         | —                        | 7          |
| 6.19. Application of physiotherapeutic factors in endodontic treatment steps                      | —                        | 7          |
| 6.20. Odontogenic source of infection and focal disease                                           | —                        | 7          |
| <b>7. Interdisciplinary approach in endodontic treatment</b>                                      | —                        | <b>14</b>  |
| <b>Total hours</b>                                                                                | <b>21</b>                | <b>240</b> |

## CONTENT OF THE EDUCATIONAL DISCIPLINE

### **1. Introduction to the academic discipline «Endodontics». Medical ethics and deontology in the provision of dental medical care**

Goals and objectives of the academic discipline «Endodontics». Basic terms and definitions in endodontics. Challenges of modern endodontic treatment. Normative legal regulation of patient admission. Clinical protocols establishing requirements for the volume of medical care provided to a patient with diseases of the pulp and periapical tissues, approved by the Ministry of Health of the Republic of Belarus.

Medical ethics and deontology in the provision of dental medical care. Ethical and deontological aspects of a dentist's work during performing endodontic manipulations. Communication skills required for interactions between a dentist and a patient during endodontic treatment, aimed at building trust, reducing anxiety and promoting treatment adherence.

Organization of dental appointment during endodontic treatment: ensuring the safety of the doctor, assistant and patient. Asepsis and antisepsis during endodontic interventions. Ergonomic features of organizing the workplace of a dentist-therapist when performing endodontic manipulations.

### **2. Anatomical, histological and functional features of the dental pulp and periapical tissues of tooth in health and disease**

Anatomical, histological and functional features of dental pulp. The structure and functioning of the pulp-dentine complex of tooth tissues: morphological zones of the pulp, metabolism, innervation, blood supply system, reparation, calcification. Reaction of the pulp to the carious process and dental interventions. The influence of aging factors and pathological conditions of the organism on the pulp. The structure and functioning of the periapical complex of tooth tissues. Microbiology of endodontic infections. Biofilm. Strains of root canal microorganisms in pathology of pulp and periapical tissues of the tooth. Primary intraradicular, secondary persistent intraradicular and extraradicular infections. Biological and biochemical processes occurring normally and during pathology in the pulp and periradicular tissues of the tooth.

### **3. Mechanism of development, classification of the diseases of dental pulp and periapical tissues**

Pathogenesis and pathological anatomy of the diseases of dental pulp and periapical tissues, features of the course of inflammatory process. Definition, mechanism of development, epidemiology of the diseases of dental pulp and periapical tissues. Clinical morphological, clinical, statistical classifications of the diseases of dental pulp and periapical tissues.

#### **4. Diagnosis of the diseases of dental pulp and periapical tissues**

General principles for diagnosing diseases of dental pulp and periapical tissues. Basic and additional diagnostic methods provided by clinical protocols: examination of patients with the diseases of dental pulp and periapical tissues, collection of complaints and medical history of the disease, probing, percussion, palpation. Physical research methods: thermal pulp test (cold and heat), electric pulp test (EPT). Oncological alertness in the examination of a patient for the early detection of neoplasms of the head and neck.

X-ray research methods for the diseases of dental pulp and periapical tissues: intraoral (targeted contact intraoral radiography of teeth), extraoral radiography (orthopantomography; computed tomography). Indications for X-ray diagnostic methods in endodontics, provided by clinical protocols. Radiological signs and criteria defining the diseases of dental pulp and periapical tissues. Possibilities and challenges of using cone beam computed tomography in endodontics. Interpretation of data from radiological examination methods (contact dental intraoral radiography, cone beam computed tomography).

Basic principles and methods of visualization in dentistry. Types and characteristics of modern visualization tools (mouth retractors, mirrors, intraoral cameras, binoculars, microscopes). Methods for expanding the working field and the use of optical systems during endodontic manipulations. Use of an operating microscope in endodontics.

### **5. Diseases of dental pulp and periapical tissues. Differential diagnosis**

#### **5.1. Clinical manifestations and differential diagnosis of the diseases of dental pulp**

Clinical manifestations of pulp hyperemia. Basic and additional diagnostic methods provided by clinical protocols, interpretation of research results. Differential diagnosis of pulp hyperemia. Possible errors at the stage of diagnostics and differential diagnostics, methods of medical prevention. Making a clinical diagnosis of «pulp hyperemia» in accordance with the classification provided by the clinical protocol.

Clinical manifestations of acute forms of pulpitis. Basic and additional diagnostic methods provided by clinical protocols, interpretation of research results. Differential diagnosis of acute forms of pulpitis, possible errors at the stage of diagnostics and differential diagnostics, methods of medical prevention. Making diagnosis of «acute pulpitis», «purulent pulpitis» in accordance with the classification provided by the clinical protocol.

Clinical manifestations of chronic forms of pulpitis. Basic and additional diagnostic methods provided by clinical protocols, interpretation of research results.



Differential diagnosis of chronic forms of pulpitis, possible errors at the stage of diagnostics and differential diagnostics, methods of medical prevention. Making a diagnosis of «chronic pulpitis», «chronic ulcerative pulpitis», «chronic hyperplastic pulpitis» in accordance with the classification provided by the clinical protocol.

Clinical manifestations of pulp necrosis. Basic and additional diagnostic methods provided by clinical protocols, interpretation of research results. Differential diagnosis, possible errors at the stage of diagnostics and differential diagnostics of pulp necrosis, methods of medical prevention. Making a diagnosis of «pulp necrosis» in accordance with the classification provided by the clinical protocol.

Clinical manifestations of pulp degeneration. Basic and additional diagnostic methods provided by clinical protocols, interpretation of research results. Differential diagnosis, possible errors at the stage of diagnostics and differential diagnostics of pulp degeneration, methods of medical prevention. Making a diagnosis of «pulp degeneration» in accordance with the classification provided by the clinical protocol.

Processing of medical documentation for a therapeutic dental appointment of patients with dental pulp diseases.

## **5.2. Clinical manifestations and differential diagnosis of the diseases of periapical tissues of tooth**

Clinical manifestations of acute forms of diseases of periapical tissues. Basic and additional diagnostic methods provided by clinical protocols, interpretation of research results. Differential diagnosis, possible errors at the stage of diagnostics and differential diagnostics of acute apical periodontitis, methods of medical prevention. Making a diagnosis of «acute apical periodontitis» in accordance with the classification provided by the clinical protocol.

Clinical manifestations of chronic apical periodontitis. Basic and additional diagnostic methods provided by clinical protocols, interpretation of research results. Differential diagnosis, possible errors at the stage of diagnostics and differential diagnostics of chronic apical periodontitis, methods of medical prevention. Making a diagnosis of «chronic apical periodontitis» in accordance with the classification provided by the clinical protocol.

Clinical manifestations of periapical abscess. Basic and additional diagnostic methods provided by clinical protocols, interpretation of research results. Differential diagnosis, possible errors at the stage of diagnostics and differential diagnostics of periapical abscess without sinus and periapical abscess with sinus, methods of medical prevention. Making a diagnosis of «periapical abscess without sinus», «periapical abscess with sinus» in accordance with the classification provided by the clinical protocol.

Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues.

## **5.3. Differential diagnosis of the diseases of dental pulp and periapical tissues**

Diagnostic criteria for making a clinical diagnosis «diseases of dental pulp and periapical tissues of permanent teeth». Signs and criteria that define pulp diseases, an algorithm for the differential diagnostics of acute and chronic forms of pulp diseases. Signs and criteria that determine the diseases of periapical tissues of

permanent teeth, an algorithm for the differential diagnostics of acute and chronic forms of the diseases of periapical tissues. Basic and additional methods of differential diagnostics provided by clinical protocols. Possible errors in the diagnostics of the diseases of dental pulp and periapical tissues, methods of medical prevention.

## **6. Treatment of the diseases of dental pulp and periapical tissues. Principles of endodontic treatment**

### **6.1. Planning of treatment of dental pulp and periapical tissues' diseases of permanent teeth**

Basic goals and objectives of endodontic treatment. Principles of treatment of the diseases of dental pulp and periapical tissues of permanent teeth. Justification of therapeutic manipulations aimed at preserving the vitality of pulp. Planning of endodontic treatment of patients with the diseases of dental pulp and periapical tissues.

The influence of physical status, general somatic pathology and certain medical conditions on the planning and prognosis of endodontic treatment. Planning of endodontic treatment during pregnancy. Interdisciplinary treatment planning.

### **6.2. Anesthesia in endodontic dental treatment**

Anesthesia methods used during endodontic dental treatment. General rules for local anesthesia. Medical indications and contraindications, criteria for choosing local anesthetics. Choosing a method of local anesthesia during endodontic manipulations. Features of the methods of injection anesthesia at the stages of endodontic treatment, technique of implementation.

Emergency conditions at a dental appointment during the treatment of the diseases of dental pulp and periapical tissues of the tooth that pose a threat to life and (or) health of a person: acute vascular failure (fainting, collapse, shock), acute respiratory failure, bronchial asthma, allergies, anaphylaxis. Medical prevention, diagnostics, provision of medical care.

### **6.3. Operating field isolation methods in endodontics**

Methods of partial and complete isolation of the operating field. Advantages and disadvantages of using isolation systems, indications for use. Selection of methods for isolating the operating field during endodontic manipulations. The method of application a rubber dam system depending on the clinical situation during endodontic manipulations.

### **6.4. Methods of vital pulp therapy**

Methods for preserving pulp vitality: vital pulp therapy. Goals, objectives and basic principles of the method. Indications for the use of the indirect pulp capping method. Mandatory and additional therapeutic measures in accordance with clinical protocols. Indications for the use of direct pulp capping and partial pulpotomy. Mandatory and additional therapeutic measures in accordance with clinical protocols. Selection of material for indirect and direct pulp capping. General and local contraindications to vital pulp therapy. Medical monitoring of treatment results.

### **6.5. Creation of endodontic access to the root canal system**

Creation of access to the orifices of root canals taking into account the anatomical and topographical features of pulp chambers of different functional

groups of teeth. Preparation and opening of pulp chamber. Instruments for preparation of root canal orifices, rules of their usage. Methods for navigation of root canals and determining of working length.

#### **6.6. Medical assistance in endodontics for conditions that pose a threat to life and (or) health of a person**

Indications for emergency measures in endodontic practice. Clinical manifestations of emergency conditions in the diagnosis and treatment of the diseases of dental pulp and periapical tissues. General diagnostic principles and algorithm of actions for pain, inflammation, bacteremia, local and systemic spread of infection in patients with the diseases of dental pulp and periapical tissues. Planning and determining the scope of emergency care for vital, necrotic and infected pulp, acute apical periodontitis, periapical abscess. Methods of providing emergency care in endodontics. Indications for surgical treatment of the diseases of dental pulp and periapical tissues, emergency hospitalization.

#### **6.7. Preparation of the root canal system for obturation**

Goals and objectives of instrumentation of the root canal. Methods of instrumentation of root canals. Working rules for endodontic instruments. Clinical indications for the choice of instrumentation technique and instruments. Quality criteria for preparation of the root canal system for obturation. Mistakes and complications that occur during the stages of instrumentation of the root canal. Clinical manifestations, methods of elimination. Goals and objectives of medical treatment of root canals of teeth. Methods of medical treatment of root canals. Agents, rules and sequence of use of agents for irrigation. Clinical indications for the choice of irrigation technique. Quality criteria for medical treatment of root canals of teeth. Mistakes and complications that occur during the stages of medical treatment of the root canal. Clinical manifestations, methods of elimination.

#### **6.8. Methods of obturation the root canal system of teeth**

Goals and objectives of obturation the root canal system. Preparing the root canal for obturation. Clinical rationale for the choice of materials and methods for obturation of root canals. Requirements for materials for obturation of root canals, indications for use. Methods of obturation of root canals of teeth with materials for temporary obturation. Methods and techniques for permanent obturation of the root canal using gutta-percha, sealers in combination with various methods of insertion and condensation. Sealing of orifices of canals. Mistakes and complications that occur during the root canal obturation stage. Clinical manifestations, methods of elimination. Medical prevention of complications.

#### **6.9. Methods of treatment of dental pulp diseases**

Goals and objectives of treatment of pulp diseases in permanent teeth. Treatment methods for pulpitis that exclude preservation of pulp vitality. Vital extirpation method. Indications for use. The sequence of endodontic manipulations in the treatment of pulp diseases using the vital extirpation method. Contraindications to the method of vital pulp extirpation. Indications for the use of non-vital extirpation. Devitalizing agents, complications of their usage. The sequence of endodontic manipulations in the treatment of pulp diseases using the method of non-vital extirpation. Justification of the limitations of using the method. Mandatory and

additional therapeutic measures in accordance with clinical protocols in the treatment of patients with the diseases of dental pulp of permanent teeth. Medical monitoring of treatment results. Prognosis.

#### **6.10. Methods of treatment of periapical tissues' diseases of the tooth**

Goals and objectives of treatment of periapical tissues' diseases in permanent teeth. Absolute and relative contraindications to conservative methods of treatment. Treatment algorithm, sequence of endodontic manipulations in the treatment of acute and chronic forms of periapical tissues' diseases. Mandatory and additional therapeutic measures in accordance with clinical protocols in the treatment of patients with periapical tissues' diseases in permanent teeth. Indications for conservative surgical methods of treatment, tooth-preserving operations. Medical monitoring of treatment results. Prognosis.

#### **6.11. Indications for endodontic retreatment and tooth-preserving surgery**

Reasons for progression or relapse of the disease after primary endodontic treatment. Persistent intraradicular and extraradicular infections, foreign body reaction, true cysts. Diagnosis, treatment planning. Prognosis. Determination of indications for endodontic retreatment without the use of surgery. Indications for periradicular surgery and tooth-preserving surgery.

#### **6.12. Criteria for assessing the quality of endodontic treatment**

Modern quality standard for endodontic treatment. Basic criteria for the quality of endodontic treatment. Factors influencing the outcome of endodontic treatment. Criteria for assessing the quality of endodontic treatment: subjective and objective criteria for treatment results. Clinical criteria for the quality of endodontic treatment: parameters for assessing sensitivity during percussion and palpation, pathological tooth mobility, periradicular pathology, signs of inflammation, patient complaints. X-ray criteria for the quality of endodontic treatment: parameters for assessing the quality of root canal obturation in terms of length, uniformity and density. Index assessment of endodontic status, X-ray parameters. Evaluation of the results of endodontic treatment: concepts of partial and complete reparation, progression of pathology. Functional criteria for the quality of endodontic treatment. Determining the time of the control examination.

#### **6.13. Endodontic retreatment of teeth**

Criteria and factors determining indications and contraindications for endodontic retreatment. Treatment planning. Features of the technique for performing treatment stages: creating repeated endodontic access, removing pin structures, restoring access to the apical region of the tooth canal. Methods of removing paste, gutta-percha, obturators, posts from the root canal and extracting instrument fragments. Tools and agents, application features. Mistakes and complications at the stages of endodontic retreatment, methods of prevention and elimination. Quality assessment criteria.

#### **6.14. Mistakes and complications in endodontic treatment**

Mistakes at the stages of diagnosis and treatment planning for the diseases of dental pulp and periapical tissues of the tooth. Mistakes and complications at the stages of endodontic treatment. Perforation of the wall, bottom of the pulp chamber,

root canal of the tooth. Causes, prevention methods, strategy. Causes of endodontic instrument separation in the root canal. Factors influencing the success of extracting instrument fragments from root canals. Methods for removing instrument fragments from the root canal. Reasons for the formation of a ledge, extrusion of obturation material beyond the apical foramen of the root canal, methods of medical prevention, methods of elimination.

#### **6.15. Endodontic treatment in traumatic tooth injuries**

Clinical manifestations of complicated crown fracture, crown-root fracture, root fracture, tooth luxation. Examination of patients: collection of complaints and medical history; clinical examination; providing a plan for additional examination; interpretation of research results. Making a clinical diagnosis in accordance with the classification provided by the clinical protocol, differential diagnostics, possible mistakes at the stage of diagnostics and differential diagnostics, methods of medical prevention.

Treatment planning. Indications for endodontic treatment of traumatic injuries in permanent teeth, choice of material, algorithm of treatment stages. Mandatory and additional therapeutic measures in accordance with clinical protocols. Prognosis. Medical supervision.

#### **6.16. Pathological tooth resorption. Methods of endodontic treatment of pathological tooth resorption**

Classification, criteria and signs of pathological tooth resorption. Mechanism of development of external and internal tooth resorption. Clinical manifestations. Basic principles of diagnostics, mandatory and additional diagnostic measures in accordance with clinical protocol. Making a diagnosis in accordance with the classification provided by the clinical protocol. General principles of medical prevention and planning of comprehensive treatment of pathological tooth resorption.

Indications for endodontic treatment of pathological resorption. Treatment planning. Mandatory and additional therapeutic measures in accordance with clinical protocol. Features of the implementation of stages of endodontic treatment for pathological resorption, selection of materials and methods, determination of the period of medical supervision.

#### **6.17. Justification of postendodontic restoration of anatomical and functional integrity of tooth**

Features of the structure of tooth tissues after endodontic treatment. Biomechanical assessment of the tooth, biomechanical strategy for restorative treatment. Examination of patients after endodontic treatment. Determination and interpretation of the occlusal surface destruction index of the tooth, selection of a method for restoring the anatomical and functional integrity of the tooth in accordance with clinical protocols (restoration, dental prosthesis). Therapeutic treatment measures: filling a tooth cavity after endodontic treatment using composite materials, compomers, giomers in combination with lining material or in combination with intracanal posts.

#### **6.18. Methods for correcting the shade of non-vital tooth**

Causes of changes of the shade of non-vital tooth. Intracoronary teeth bleaching. Indications and contraindications for bleaching of teeth after endodontic

treatment. Agents for intracoronary bleaching, methods of application. Methods of root canal isolation. Possible mistakes and complications. Prognosis. Shade-neutralizing technique for making veneers in non-vital tooth discoloration.

#### **6.19. Application of physiotherapeutic factors in endodontic treatment steps**

Physiotherapeutic factors: types, indications for use in endodontics. The use of ultrasound at the stages of endodontic treatment. Methodology for creation an access to the root canals, searching for root canal orifices, posts removal, removal of separated instruments, root canals irrigation, desobturation. The use of laser radiation at the stages of endodontic treatment. Methods of using laser radiation to prepare the root canal for obturation and activation of irrigation solutions. Photodynamic therapy. The use of ozone for additional disinfection of tooth root canals. The use of physiotherapeutic factors for elimination of postendodontic pain. Contraindications for the use of physiotherapeutic factors in endodontics, prevention of mistakes and complications.

#### **6.20. Odontogenic source of infection and focal disease**

Determination of the odontogenic source of infection and focal disease. Acute and chronic sepsis. The influence of odontogenic source of infection on the human organism. Diseases of patients with risk of bacteremia. Indications for prescribing systemic antibacterial therapy for conservative surgical methods of endodontic treatment in patients with concomitant systemic diseases. The use of medicines during endodontic treatment and in the postoperative period.

#### **7. Interdisciplinary approach in endodontic treatment**

Planning for comprehensive dental rehabilitation of patients. Modern concept of preserving teeth involved in the odontogenic destructive process in periapical tissues. Tooth-preserving biotechnologies, development prospects. Interdisciplinary interaction in treatment planning of patients with diseases of the dental pulp and periapical tissues of tooth. Methods of endodontic treatment at the stages of surgical treatment when performing tooth-preserving operations. Purpose of retrograde root canal filling, indications, technique. Interdisciplinary planning of endodontic treatment in the provision of prosthodontics care. Regenerative endodontic procedures. Application of cell technologies in comprehensive treatment of the diseases of dental pulp and periapical tissues.

**CURRICULAR CHART OF THE ACADEMIC DISCIPLINE «ENDODONTICS»  
OF THE «THERAPEUTIC DENTISTRY» MODULE**

| Section, topic # | Section (topic) name                                                                           | Number of class hours |           | Supervised student independent work | Literature   | Practical skill                                                    | Form of control                       |                                            |
|------------------|------------------------------------------------------------------------------------------------|-----------------------|-----------|-------------------------------------|--------------|--------------------------------------------------------------------|---------------------------------------|--------------------------------------------|
|                  |                                                                                                | lectures              | practical |                                     |              |                                                                    | of practical skills                   | of current / intermediate assessment       |
| 6 semester       |                                                                                                |                       |           |                                     |              |                                                                    |                                       |                                            |
|                  | Lectures                                                                                       | 3                     | -         | 3                                   |              |                                                                    |                                       |                                            |
| 1.               | Endodontics. Basic terms and concepts. Regulatory and legal framework of patient admission     | 1,5                   | -         | -                                   | 1, 10        |                                                                    |                                       |                                            |
| 3.               | Mechanism of development, classification of the diseases of dental pulp and periapical tissues | -                     | -         | 1,5                                 | 1, 10, 11    |                                                                    |                                       |                                            |
| 5.3.             | Differential diagnosis of the diseases of dental pulp and periapical tissues                   | -                     | -         | 1,5                                 | 1, 10, 11    |                                                                    |                                       | Report                                     |
| 6.1.             | Planning of treatment of the diseases of dental pulp and periapical tissues                    | 1,5                   | -         | -                                   | 1, 10        |                                                                    |                                       |                                            |
|                  | Practical classes                                                                              | -                     | 45        | -                                   |              |                                                                    |                                       |                                            |
| 1.               | Objectives of contemporary endodontic treatment.                                               | -                     | 6         | -                                   | 1, 9, 10, 11 | 1. Establishing psychological contact with the patient, explaining | Visual assessment of practical skill. | Interview, electronic tests, clinical case |

|      |                                                                                                                                                         |   |   |   |              |                                                                                                                                                                                                                                                                                                                            |                                                                                                        |                                                            |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|      | Medical ethics and deontology in the provision of dental medical care. Requirements for the organization of patient reception for endodontic treatment. |   |   |   |              | the stages and risks of treatment, maintaining confidentiality and tact during the appointment.<br>2. Processing of medical documentation at therapeutic dental appointment of patients with the diseases of dental pulp and periapical tissues.<br>3. Compliance with ergonomic requirements during endodontic procedures | Filling out dental outpatient card.<br><br>Visual assessment of practical skill                        | studies, report                                            |
| 2.   | Anatomical, histological and functional features of the dental pulp and periapical tissues of tooth in health and disease                               | - | 6 | - | 1, 9, 10, 11 | 1. Carrying out pulp vitality tests: thermal test, electric pulp test.<br><br>2. Processing of medical documentation at therapeutic dental appointment of patients with the diseases of dental pulp and periapical tissues                                                                                                 | Performing practical skill during dental outpatient appointment.<br>Filling out dental outpatient card | Interview, electronic tests, clinical case studies, report |
| 3.   | Mechanism of development, classification of the diseases of dental pulp and periapical tissues                                                          | - | 6 | - | 1, 9, 10, 11 | Processing of medical documentation at therapeutic dental appointment of patients with the diseases of dental pulp and periapical tissues                                                                                                                                                                                  | Filling out dental outpatient card                                                                     | Interview, electronic tests, clinical case studies, report |
| 4.   | Diagnosis of the diseases of dental pulp and periapical tissues                                                                                         | - | 6 | - | 1, 9, 10, 11 | 1. Carrying out pulp vitality tests: thermal test, electric pulp test.<br>2. Processing of medical documentation at therapeutic dental appointment of patients with the diseases of dental pulp and periapical tissues                                                                                                     | Performing practical skill during dental outpatient appointment /solution to the clinical case study*  | Interview, electronic tests, clinical case studies, report |
| 5.1. | Clinical manifestations and differential diagnosis of acute diseases of dental pulp                                                                     | - | 6 | - | 1, 9, 10, 11 | Carrying out pulp vitality tests: thermal test, electric pulp test                                                                                                                                                                                                                                                         | Performing practical skill during dental outpatient appointment* /solution to                          | Interview, electronic tests, clinical case studies, report |



|      |                                                                                                   |   |   |   |              |                                                                    |                                                                                                                                          |                                                             |
|------|---------------------------------------------------------------------------------------------------|---|---|---|--------------|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
|      |                                                                                                   |   |   |   |              |                                                                    | the clinical case study                                                                                                                  |                                                             |
| 5.1. | Clinical manifestations and differential diagnosis of chronic diseases of dental pulp             | - | 6 | - | 1, 9, 10, 11 | Carrying out pulp vitality tests: thermal test, electric pulp test | Performing practical skill during dental outpatient appointment /solution to the clinical case study                                     | Interview, electronic tests, clinical case studies, report  |
| 5.2. | Clinical manifestations and differential diagnosis of the diseases of periapical tissues of tooth | - | 6 | - | 1, 9, 10, 11 | Carrying out pulp vitality tests: thermal test, electric pulp test | Performing practical skill during dental outpatient appointment /solution to the clinical case study                                     | Interview, electronic tests, clinical case studies, report  |
| 5.3. | Differential diagnosis of the diseases of dental pulp and periapical tissues                      | - | 3 | - | 1, 9, 10, 11 | Carrying out pulp vitality tests: thermal test, electric pulp test | Performing practical skill during dental outpatient appointment /solution to the clinical case study. Filling out dental outpatient card | Interview, electronic tests*, clinical case studies, report |

## 7 semester

|      |                                                                                                  |     |           |     |                 |                                                                                                    |                                                                                     |                                                            |
|------|--------------------------------------------------------------------------------------------------|-----|-----------|-----|-----------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------|
|      |                                                                                                  | 3   | -         | 3   |                 |                                                                                                    |                                                                                     |                                                            |
| 6.2. | Anesthesia in endodontic dental treatment                                                        | -   | -         | 1,5 | 1, 4, 10, 12    |                                                                                                    |                                                                                     | Report                                                     |
| 6.7. | Medical treatment of the root canals. Criteria for assessing the quality of endodontic treatment | 1,5 | -         | -   | 1, 3, 6, 12     |                                                                                                    |                                                                                     |                                                            |
| 6.7. | Instrumentation of the root canals. Endodontic retreatment of teeth                              | 1,5 | -         | -   | 1, 3, 7, 12     |                                                                                                    |                                                                                     |                                                            |
| 6.8. | Methods of obturation the root canal system of teeth                                             | -   | -         | 1,5 | 1, 3, 9, 12     |                                                                                                    |                                                                                     | Report                                                     |
|      | <b>Practical classes</b>                                                                         | -   | <b>30</b> | -   |                 |                                                                                                    |                                                                                     |                                                            |
| 6.1. | Planning of treatment of the diseases of dental pulp and periapical tissues                      | -   | 3         | -   | 1, 3, 9, 10, 12 | 1. Carrying out pulp vitality tests: thermal test, electric pulp test.<br>2. Processing of medical | Performing practical skill during dental outpatient appointment. Filling out dental | Interview, electronic tests, clinical case studies, report |

|      |                                                                                                         |   |   |   |              |                                                                                                                                                                                                                                                                            |                                                                                                     |                                                            |
|------|---------------------------------------------------------------------------------------------------------|---|---|---|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|      |                                                                                                         |   |   |   |              | documentation at therapeutic dental appointment of patients with the diseases of dental pulp and periapical tissues                                                                                                                                                        | outpatient card                                                                                     |                                                            |
| 6.2. | Anesthesia in endodontic dental treatment                                                               | - | 3 | - | 4, 10, 12    | Processing of medical documentation at therapeutic dental appointment of patients with the diseases of dental pulp and periapical tissues                                                                                                                                  | Performing practical skill during dental outpatient appointment. Filling out dental outpatient card | Interview, electronic tests, clinical case studies, report |
| 6.3. | Operating field isolation methods in endodontics                                                        | - | 3 | - | 1, 2, 12     | 1. Isolation of the operating field during endodontic manipulations.<br>2. Processing of medical documentation at therapeutic dental appointment of patients with the diseases of dental pulp and periapical tissues                                                       | Performing practical skill during dental outpatient appointment                                     | Interview, electronic tests, clinical case studies, report |
| 6.4. | Methods of vital pulp therapy                                                                           | - | 3 | - | 1, 9, 10, 12 | 1. Isolation of the operating field during endodontic manipulations.<br>2. Determination of the occlusal surface destruction index of the tooth, selection of a method for restoring the anatomical and functional integrity of the tooth (restoration, dental prosthesis) | Performing practical skill during dental outpatient appointment*                                    | Interview, electronic tests, clinical case studies, report |
| 6.5. | Creation of endodontic access to the root canal system                                                  | - | 3 | - | 1, 3, 10, 12 | Pulp chamber opening, amputation of coronal pulp, creation of endodontic access, extirpation of the root pulp                                                                                                                                                              | Performing practical skill during dental outpatient appointment                                     | Interview, electronic tests, clinical case studies, report |
| 6.6. | Medical assistance in endodontics for conditions that pose a threat to life and (or) health of a person | - | 3 | - | 5, 9, 10, 12 | Processing of medical documentation at therapeutic dental appointment of patients with the diseases of dental pulp and periapical tissues                                                                                                                                  | Performing practical skill during dental outpatient appointment                                     | Interview, electronic tests, clinical case studies, report |
| 6.9. | Methods of treatment of                                                                                 | - | 3 | - | 1, 3, 9,     | Pulp chamber opening, amputation                                                                                                                                                                                                                                           | Performing practical skill                                                                          | Interview, electronic                                      |

|       |                                                                                                                                 |   |   |   |                 |                                                                                                                                                                |                                                                 |                                                                    |
|-------|---------------------------------------------------------------------------------------------------------------------------------|---|---|---|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------|
|       | dental pulp diseases. Treatment of pulpitis using vital extirpation method                                                      |   |   |   | 10, 12          | of coronal pulp, creation of endodontic access, extirpation of the root pulp                                                                                   | during dental outpatient appointment                            | tests, clinical case studies, report                               |
| 6.9.  | Methods of treatment of dental pulp diseases. Treatment of pulpitis using non-vital extirpation method                          | - | 3 | - | 1, 3, 12        | Pulp chamber opening and application of devitalizing paste                                                                                                     | Performing practical skill during dental outpatient appointment | Interview, electronic tests, clinical case studies, report         |
| 6.10. | Methods of treatment of periapical tissues' diseases of the tooth. Treatment of acute and chronic forms of apical periodontitis | - | 3 | - | 1, 3, 9, 10, 12 | 1. Isolation of the operating field during endodontic manipulations.<br>2. Creation of endodontic access.<br>3. Determination of the root canal working length | Performing practical skill during dental outpatient appointment | Interview, electronic tests, clinical case studies, report         |
| 6.10. | Methods of treatment of periapical tissues' diseases of the tooth. Treatment of periapical abscess                              | - | 3 | - | 1, 3, 9, 10, 12 | 1. Isolation of the operating field during endodontic manipulations.<br>2. Creation of endodontic access.<br>3. Determination of the root canal working length | Performing practical skill during dental outpatient appointment | Interview, electronic tests, clinical case studies, report. Credit |

#### 8 semester

|      |                                                                                                                          |   |           |   |                |                                                                                                                                                                        |                                                                                                     |                                                            |
|------|--------------------------------------------------------------------------------------------------------------------------|---|-----------|---|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|      | <b>Practical classes</b>                                                                                                 | - | <b>32</b> | - |                |                                                                                                                                                                        |                                                                                                     |                                                            |
| 6.7. | Preparation of the root canal system for obturation Root canal instrumentation                                           | - | 4         | - | 1, 3, 7, 9, 12 | Root canal instrumentation                                                                                                                                             | Performing practical skill during dental outpatient appointment                                     | Interview, electronic tests, clinical case studies, report |
| 6.7. | Preparation of the root canal system for obturation. Mistakes and complications during instrumentation of the root canal | - | 4         | - | 1, 3, 7, 9, 12 | Root canal instrumentation                                                                                                                                             | Performing practical skill during dental outpatient appointment                                     | Interview, electronic tests, clinical case studies, report |
| 6.7. | Preparation of the root canal system for obturation. Medical treatment of the root canal                                 | - | 4         | - | 1, 3, 6, 12    | 1. Medical treatment of the root canal.<br>2. Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues | Performing practical skill during dental outpatient appointment. Filling out dental outpatient card | Interview, electronic tests, clinical case studies, report |

|      |                                                                                                                                                    |   |   |   |                 |                                                                                                                                                                                                                                                                       |                                                                                                      |                                                             |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| 6.7. | Preparation of the root canal system for obturation. Mistakes and complications during medical treatment of the root canal                         | - | 4 | - | 1, 3, 6, 12     | 1. Medical treatment of the root canal.<br>2. Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues                                                                                                | Performing practical skill during dental outpatient appointment                                      | Interview, electronic tests, clinical case studies, report  |
| 6.8. | Methods of obturation the root canal system of teeth. Methods and techniques of root canal obturation with materials for temporary obturation      | - | 4 | - | 1, 3, 9, 10, 12 | 1. Root canal obturation with materials for temporary obturation.<br>2. Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues                                                                      | Performing practical skill during dental outpatient appointment. Filling out dental outpatient card  | Interview, electronic tests, clinical case studies, report* |
| 6.8. | Methods of obturation the root canal system of teeth. Methods and techniques of root canal obturation with materials for permanent obturation      | - | 4 | - | 1, 3, 9, 10, 12 | 1. Root canal obturation with materials for permanent obturation.<br>2. Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues                                                                      | Performing practical skill during dental outpatient appointment. Filling out dental outpatient card* | Interview, electronic tests, clinical case studies, report  |
| 6.8. | Methods of obturation the root canal system of teeth. Mistakes and complications during root canal obturation. Medical prevention of complications | - | 4 | - | 1, 3, 9, 10, 12 | 1. Root canal obturation with materials for temporary obturation.<br>2. Root canal obturation with materials for permanent obturation.<br>3. Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues | Performing practical skill during dental outpatient appointment                                      | Interview, electronic tests, clinical case studies, report  |
| 6.11 | Indications for endodontic retreatment and tooth-preserving surgery                                                                                | - | 4 | - | 1, 9, 10, 12    | Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues                                                                                                                                              | Performing practical skill during dental outpatient appointment*                                     | Interview, electronic tests, clinical case studies, report  |

### 9 semester

|       |                            |          |   |          |          |  |  |  |
|-------|----------------------------|----------|---|----------|----------|--|--|--|
|       | <b>Lectures</b>            | <b>6</b> |   | <b>3</b> |          |  |  |  |
| 6.12. | Criteria for assessing the | 1,5      | - | -        | 1, 3, 13 |  |  |  |

|       |                                                                                             |     |           |     |                 |                                                                                                                          |                                                                                                       |                                                            |
|-------|---------------------------------------------------------------------------------------------|-----|-----------|-----|-----------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|       | quality of endodontic treatment                                                             |     |           |     |                 |                                                                                                                          |                                                                                                       |                                                            |
| 6.13. | Endodontic retreatment of teeth                                                             | 1,5 | -         | -   | 1, 9, 10, 13    |                                                                                                                          |                                                                                                       |                                                            |
| 6.14. | Mistakes and complications in endodontic treatment                                          | -   | -         | 1,5 | 1, 3, 9, 10, 13 |                                                                                                                          |                                                                                                       | Report                                                     |
| 6.15. | Traumatic tooth injuries                                                                    | 1,5 | -         | -   | 1, 10, 13       |                                                                                                                          |                                                                                                       |                                                            |
| 6.16. | Pathological tooth resorption                                                               | 1,5 | -         | -   | 1, 10, 13       |                                                                                                                          |                                                                                                       |                                                            |
| 6.17. | Justification of postendodontic restoration of anatomical and functional integrity of tooth | -   | -         | 1,5 | 1, 8, 10, 13    |                                                                                                                          |                                                                                                       | Report                                                     |
|       | <b>Practical classes</b>                                                                    | -   | <b>84</b> | -   |                 |                                                                                                                          |                                                                                                       |                                                            |
| 4.    | Application of cone beam computed tomography in endodontics                                 | -   | 7         | -   | 9, 10, 13       | Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues | Performing practical skill during dental outpatient appointment /solution to the clinical case study* | Interview, electronic tests, clinical case studies, report |
| 6.12  | Criteria for assessing the quality of endodontic treatment                                  | -   | 7         | -   | 1, 3, 13        | Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues | Performing practical skill during dental outpatient appointment                                       | Interview, electronic tests, clinical case studies, report |
| 6.13. | Endodontic retreatment of teeth                                                             | -   | 7         | -   | 1, 9, 10, 13    | 1. Root canal instrumentation.<br>2. Medical treatment of the root canal                                                 | Performing practical skill during dental outpatient appointment                                       | Interview, electronic tests, clinical case studies, report |
| 6.14. | Mistakes in diagnosis and treatment of the diseases of dental pulp and periapical tissues   | -   | 7         | -   | 1, 3, 9, 10, 13 | 1. Root canal instrumentation.<br>2. Medical treatment of the root canal                                                 | Performing practical skill during dental outpatient appointment                                       | Interview, electronic tests, clinical case studies, report |
| 6.14. | Tooth perforation. Medical prevention. Methods of treatment                                 | -   | 7         | -   | 1, 3, 9, 10, 13 | 1. Root canal instrumentation.<br>2. Medical treatment of the root canal                                                 | Performing practical skill during dental outpatient appointment*                                      | Interview, electronic tests, clinical case studies, report |

|       |                                                                                                                                            |   |   |   |                 |                                                                                                                                                                                                       |                                                                                                      |                                                             |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| 6.14. | Endodontic instrument separation in the root canal. Management of fractured endodontic instruments                                         | - | 7 | - | 1, 3, 9, 10, 13 | 1. Root canal instrumentation.<br>2. Medical treatment of the root canal                                                                                                                              | Performing practical skill during dental outpatient appointment                                      | Interview, electronic tests, clinical case studies, report  |
| 6.15. | Traumatic tooth injuries. Classifications, clinical manifestations, diagnosis. Endodontic treatment in traumatic tooth injuries            | - | 7 | - | 1, 10, 13       | 1. Carrying out pulp vitality tests: thermal test, electric pulp test.<br>2. Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues | Performing practical skill during dental outpatient appointment /solution to the clinical case study | Interview, electronic tests, clinical case studies, report  |
| 6.15. | Endodontic treatment in traumatic tooth injuries                                                                                           | - | 7 | - | 1, 10, 13       | 1. Carrying out all the stages of endodontic treatment.<br>2. Performing postendodontic restoration of anatomical and functional integrity of tooth.                                                  | Performing practical skill during dental outpatient appointment                                      | Interview, electronic tests, clinical case studies, report  |
| 6.16. | Pathological tooth resorption. Classification, mechanism of development, criteria and features of pathological tooth resorption            | - | 7 | - | 10, 13          | Carrying out pulp vitality tests: thermal test, electric pulp test                                                                                                                                    | Performing practical skill during dental outpatient appointment /solution to the clinical case study | Interview, electronic tests, clinical case studies, report  |
| 6.16. | Pathological tooth resorption. Basic principles of medical prevention and planning of pathological root resorption comprehensive treatment | - | 7 | - | 10, 13          | Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues                                                                              | Performing practical skill during dental outpatient appointment                                      | Interview, electronic tests, clinical case studies, report  |
| 6.16. | Methods of endodontic treatment of pathological tooth resorption                                                                           | - | 7 | - | 1, 3, 10, 13    | 1. Carrying out all the stages of endodontic treatment.<br>2. Performing postendodontic restoration of anatomical and functional integrity of tooth                                                   | Performing practical skill during dental outpatient appointment. Filling out dental outpatient card  | Interview, electronic tests*, clinical case studies, report |
| 6.17. | Justification of postendodontic restoration of anatomical and functional integrity of tooth                                                | - | 7 | - | 1, 8, 10, 13    | 1. Determination of the occlusal surface destruction index of the tooth, selection of a method for restoring the anatomical and                                                                       | Performing practical skill during dental outpatient appointment                                      | Interview, electronic tests, clinical case studies, report  |

|  |  |  |  |  |  |                                                                                                                                                                 |  |             |
|--|--|--|--|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------|
|  |  |  |  |  |  | functional integrity of the tooth (restoration, dental prosthesis).<br>2. Performing postendodontic restoration of anatomical and functional integrity of tooth |  |             |
|  |  |  |  |  |  |                                                                                                                                                                 |  | Examination |

**10 semester**

|      |                                                                        |   |           |   |              |                                                                                                                                                                                                                                |                                                                                                          |                                                            |
|------|------------------------------------------------------------------------|---|-----------|---|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|      | <b>Practical classes</b>                                               | - | <b>49</b> | - |              |                                                                                                                                                                                                                                |                                                                                                          |                                                            |
| 4.   | Methods of visualization the operating field in endodontic practice    | - | 7         | - | 1, 9, 10, 13 | 1. Compliance with ergonomic requirements during endodontic procedures.<br>2. Carrying out all the stages of endodontic treatment.<br>3. Performing postendodontic restoration of anatomical and functional integrity of tooth | Visual assessment of practical skill.<br>Performing practical skill during dental outpatient appointment | Interview, electronic tests, clinical case studies, report |
| 4.   | Use of an operating microscope in endodontics                          | - | 7         | - | 1, 9, 10, 13 | 1. Compliance with ergonomic requirements during endodontic procedures.<br>2. Carrying out all the stages of endodontic treatment.<br>3. Performing postendodontic restoration of anatomical and functional integrity of tooth | Visual assessment of practical skill.<br>Performing practical skill during dental outpatient appointment | Interview, electronic tests, clinical case studies, report |
| 6.18 | Methods for correcting the shade of non-vital tooth                    | - | 7         | - | 1, 10, 13    | 1. Carrying out all the stages of endodontic treatment.<br>2. Performing postendodontic restoration of anatomical and functional integrity of tooth                                                                            | Performing practical skill during dental outpatient appointment*                                         | Interview, electronic tests, clinical case studies, report |
| 6.19 | Application of physiotherapeutic factors in endodontic treatment steps | - | 7         | - | 1, 6, 13     | 1. Carrying out all the stages of endodontic treatment.<br>2. Processing of medical documentation for a therapeutic                                                                                                            | Performing practical skill during dental outpatient appointment.<br>Filling out dental                   | Interview, electronic tests, clinical case studies, report |

|      |                                                                                                                       |           |            |          |           |                                                                                                                                                                                        |                                                                                                      |                                                                    |
|------|-----------------------------------------------------------------------------------------------------------------------|-----------|------------|----------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
|      |                                                                                                                       |           |            |          |           | dental appointment of patients with diseases of periapical tissues                                                                                                                     | outpatient card                                                                                      |                                                                    |
| 6.20 | Odontogenic source of infection and focal disease                                                                     | -         | 7          | -        | 1, 10, 13 | Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues                                                               | Filling out dental outpatient card                                                                   | Interview, electronic tests, clinical case studies, report         |
| 7.   | Interdisciplinary approach in treatment planning for patients with the diseases of dental pulp and periapical tissues | -         | 7          | -        | 9, 10, 13 | 1. Carrying out all the stages of endodontic treatment.<br>2. Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues | Performing practical skill during dental outpatient appointment*. Filling out dental outpatient card | Interview, electronic tests, clinical case studies*, report        |
| 7.   | Regenerative technologies in endodontics                                                                              | -         | 7          | -        | 9, 10, 13 | 1. Carrying out all the stages of endodontic treatment.<br>2. Processing of medical documentation for a therapeutic dental appointment of patients with diseases of periapical tissues | Performing practical skill during dental outpatient appointment. Filling out dental outpatient card  | Interview, electronic tests, clinical case studies, report. Credit |
|      | <b>Total hours for the academic discipline</b>                                                                        | <b>12</b> | <b>240</b> | <b>9</b> |           |                                                                                                                                                                                        |                                                                                                      |                                                                    |

\* is a mandatory form of current assessment.



## INFORMATION AND INSTRUCTIONAL UNIT

### LITERATURE

#### **Basic (relevant):**

1. Kazeko, L. A. Therapeutic dentistry. Clinical endodontics : textbook / L. A. Kazeko, E. L. Kolb, O. S. Gorodetskaya. – Minsk : Vysheishaya shkola, 2022. – 238 p.

#### **Additional:**

2. Butvilovsky, A. V. Operating field isolation methods in endodontics : educ.-method. manual / A.V. Butvilovsky, L.N. Palianskaya. – Minsk : BSMU, 2025. – 19 p.
3. Butvilovsky, A .V. Modern principles of endodontic treatment : educ.-method. manual / A.V. Butvilovsky [et al.] –Minsk : BSMU, 2017. – 28 p.
4. Zakharava, I. A. Anesthesia in clinical therapeutic dentistry : educ.-method. manual / I. A. Zakharava, A. V. Butvilovsky. – Minsk : BSMU, 2021. – 24 p.
5. Zakharava, I. A. Emergency conditions, general diseases and other risk factors in dentistry: educ.-method. manual / I.A. Zakharava [et al.]– Minsk : BSMU, 2017. – 12 p.
6. Medical treatment of tooth root canal system : educ.-method. manual / A. V. Butvilovsky [et al.] –Minsk : BSMU, 2022. – 28 p.
7. Methods of root canal working length determination : educ.-method. manual / T. N. Manak [et al.]. – Minsk : BSMU, 2021. – 32 p.
8. Restorative materials and techniques. Endodontic treatment : educ.-method. manual / T. N. Manak [et al.]. – Minsk : BSMU, 2020. - 48 p.
9. Bjorndal, L. Textbook of Endodontology / L. Bjorndal, L.-L. Kirkevang, J. Whitworth. – 3<sup>rd</sup> ed. – Wiley-Blackwell, 2018. – 504 p.
10. Hargreaves, K. M. Cohen's Pathways of the pulp. / K. M. Hargreaves, L. H. Berman. – 11<sup>th</sup> ed. – Elsevier, 2016. – 907 p.

#### **Electronic courseware for the academic discipline «Endodontics»:**

11. <https://etest.bsmu.by/course/view.php?id=1511>.
12. <https://etest.bsmu.by/course/view.php?id=1601>.
13. <https://etest.bsmu.by/course/view.php?id=1700>.

### **METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF STUDENT'S INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE**

The time allotted for student independent work can be used by students for:

- preparation for the lectures and practical classes;
- preparation for the credits and examination on the academic discipline;
- studying topics (issues) assigned for independent work;
- doing the case studies;
- preparation of thematic reports, reports;
- practical assignments;
- taking notes on academic literature;
- compiling a review of scientific literature.

## **METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF SUPERVISED STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE**

**APPROXIMATE LIST OF TASKS FOR SUPERVISED STUDENT INDEPENDENT WORK:**  
preparing thematic reports and presentations.

**FORMS OF CONTROL OF SUPERVISED STUDENT INDEPENDENT WORK:**  
report.

### **LIST OF AVAILABLE DIAGNOSTIC TOOLS**

The following forms of current certification are used to diagnose competencies:  
interview;  
electronic tests;  
clinical case studies;  
report.

### **LIST OF AVAILABLE TEACHING METHODS**

Traditional method;  
active (interactive) methods:  
    Problem-Based Learning (PBL);  
    Team-Based Learning (TBL);  
    Case-Based Learning (CBL);  
    Research-Based Learning (RBL);  
    training based on simulation technologies.

### **LIST OF PRACTICAL SKILLS**

| Name of practical skills                                                                                                                                          | Form of practical skills control                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| 1. Establishing psychological contact with the patient, explaining the stages and risks of treatment, maintaining confidentiality and tact during the appointment | Visual assessment of practical skill                                                                |
| 2. Processing of medical documentation at therapeutic dental appointment of patients with the diseases of dental pulp and periapical tissues                      | Filling out dental outpatient card                                                                  |
| 3. Compliance with ergonomic requirements during endodontic procedures                                                                                            | Visual assessment of practical skill                                                                |
| 4. Carrying out pulp vitality tests: thermal test, electric pulp test                                                                                             | Performing practical skill during dental outpatient appointment/solution to the clinical case study |
| 5. Steps of endodontic treatment:<br>Isolation of the operating field during endodontic                                                                           | Performing practical skill during dental outpatient                                                 |

| Name of practical skills                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Form of practical skills control                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <p>manipulations.<br/> Pulp chamber opening and application of devitalizing paste.<br/> Pulp chamber opening, vital pulp amputation, creation of endodontic access, extirpation of the root pulp.<br/> Determination of the root canal working length.<br/> Root canal instrumentation.<br/> Medical treatment of the root canal.<br/> Root canal obturation with materials for temporary obturation.<br/> Root canal obturation with materials for permanent obturation</p> | <p>appointment</p>                                                     |
| <p>6. Determination of the occlusal surface destruction index of the tooth, selection of a method for restoring the anatomical and functional integrity of the tooth (restoration, dental prosthesis)</p>                                                                                                                                                                                                                                                                    | <p>Performing practical skill during dental outpatient appointment</p> |
| <p>7. Performing postendodontic restoration of anatomical and functional integrity of tooth</p>                                                                                                                                                                                                                                                                                                                                                                              | <p>Performing practical skill during dental outpatient appointment</p> |

**PROTOCOL OF THE CURRICULUM APPROVAL**

| Title of the discipline requiring approval | Department             | Amendments to the curriculum in the academic discipline | Decision of the department designed the curriculum (date, protocol # ) |
|--------------------------------------------|------------------------|---------------------------------------------------------|------------------------------------------------------------------------|
| Conservative Dentistry                     | Conservative Dentistry | Agreed.<br>No amendments and changes                    | 15.09.2025, protocol #2                                                |
| Pediatric Therapeutic Dentistry            | Pediatric Dentistry    | Agreed.<br>No amendments and changes                    | 15.09.2025, protocol #2                                                |
| Clinical Periodontology                    | Periodontology         | Agreed.<br>No amendments and changes                    | 15.09.2025, protocol #2                                                |

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\_\_\_\_\_ L.N.Palianskaya

Curriculum content, composition and the accompanying documents comply with the  
established requirements.

Head of the Office of Educational  
Activities of the Educational Institution  
«Belarusian State Medical University»

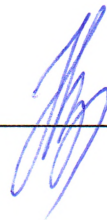
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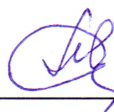
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