Факултет по дентална медицина
Катедра по оперативно зъболечение и ендодонтия
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ACADEMIC STANDARD
FOR THE ACADEMIC DISCIPLINES TAUGHT BY THE DEPARTMENT OF OPERATIVE DENTISTRY AND ENDODONTICS

1. EDUCATIONAL GOAL

The aim of the discipline is to provide students of Dental Medicine with fundamental theoretical knowledge and practical skills. In Conservative Dentistry, students acquire the theoretical knowledge and practical skills required for clinical practice in an outpatient dental setting, including the prevention, diagnosis, and treatment of diseases of the dental hard tissues (dental caries and non-carious lesions), dental pulp, and periodontium, as well as the management of endodontic emergencies in patients over 18 years of age.

2. EDUCATIONAL CONTENT

2.1 Curriculum

The training provided by the Department includes Conservative Dentistry – Part I (preclinical/phantom training), Conservative Dentistry – Part II (clinical training), and a pre-graduation internship.

The preclinical part is conducted during Semesters V and VI and comprises a total of 180 hours, including 60 hours of lectures and 120 hours of practical training in Conservative Dentistry. It concludes with a semester examination (test, written examination, and oral examination) at the end of Semester VI.

The clinical part is conducted from Semesters VII to X and comprises a total of 360 hours, including 60 hours of lectures and 300 hours of clinical training in Conservative Dentistry. It concludes with a semester examination (test, written examination, and oral examination) at the end of Semester X.

The pre-graduation internship comprises 30 working days (180 hours) and concludes with a State Examination (written and oral examination).

Discipline	**Exams**	**Hours**			**Hours, divided in years and semesters**					
	Semester	**Overall**	**Lectures**	**Practicals**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**
Conservative dentistry	VI, X	540	120	420	2/4	2/4	1/4	1/4	1/6	1/6

2.2 Lecture and Practical Training Programmes

LECTURE PROGRAMME
III course, V semester

№	**TOPIC**	**HOURS**
1.	**Dental caries – nature of the disease process and classification. Methods of caries treatment. Basic principles of operative treatment of dental caries. Isolation of the operative field during caries treatment – methods and means. rubber dam.**	**2 h.**
2.	**Class I and class II cavity preparation for non-esthetic restorative materials (direct and indirect).**	**2 h.**

3.	Class I and class II cavity preparation for esthetic restorative materials (direct and indirect).	2 h.
4.	Class III, IV, and V cavity preparation. Veneers. Direct and indirect restorations.	2 h.
5.	Dentin wound. The second basic principle of operative treatment of dental caries	2 h.
6.	The third basic principle of the operative treatment of dental caries.	2 h.
7.	Dental amalgam. Fabrication of amalgam restorations.	2 h.
8.	Glass ionomer cements – types, properties, technique of fabrication of glass ionomer obturations.	2 h.
9.	Composite materials – types, properties, indications, contraindications.	2 h.
10.	Adhesive systems – purpose, types.	2 h.
11.	Fabrication of direct composite restorations in frontal teeth.	2 h.
12.	Fabrication of direct composite restorations in distal teeth.	2 h.
13.	Indirect metal, porcelain, and composite restorations. CAD/CAM systems.	2 h.
14.	Cavity preparations and restoration strength in extensively damaged vital teeth.	2 h.
15.	Errors in the operative treatment of dental caries. Factors affecting restoration margins.	2 h.
	TOTAL:	30 h.

LECTURE PROGRAMME
III course, VI semester

№	TOPIC	HOURS
1.	Subject, goals, and objectives of endodontics. Topographic anatomy of the root canal system.	2 h.
2.	Endodontic treatment – objectives, biological and mechanical principles. Methods and techniques for isolation of the operative field. Rubber dam	2 h.
3.	Endodontic access.	2 h.
4.	Hand endodontic instruments – types, indications for use.	2 h.
5.	Contents of the root canal system – instruments and techniques for their removal. Working length of the root canals and methods for its determination.	2 h.
6.	Techniques for root canal preparation with hand instruments.	2 h.
7.	Machine-driven endodontic instruments – types, indications for use.	2 h.
8.	Techniques for root canal preparation using machine-driven instruments with rotary and reciprocating motion.	2 h.

9.	Characteristics of the prepared root canal system. Medication treatment – goals, agents, properties, methods. Irrigation and long-term medication.	2 h.
10.	Obturation of the root canal system – definition, objectives, materials, methods.	2 h.
11.	Cold gutta-percha obturation techniques for the root canal system – single-cone technique, lateral condensation.	2 h.
12.	Warm gutta-percha condensation techniques for root canal obturation. Vertical condensation – traditional and contemporary techniques. Obturators.	2 h.
13.	Restoration of endodontically treated teeth.	2 h.
14.	Errors in preparation, medication, and obturation of the root canal system.	2 h.
15.	Retreatment of endodontically treated teeth – instruments and techniques.	2 h.
	TOTAL:	30 h.

PRACTICAL TRAINING PROGRAMME

III course, V semester

№	TOPIC	HOURS
1.	Introduction to the technology and the workflow in the preclinical room. Dental caries.	4 h.
2.	Class I cavity preparation for amalgam.	4 h.
3.	Class II cavity preparation for amalgam.	4 h.
4.	Class I and class II cavity preparation for direct composite materials.	4 h.
5.	Class II cavity preparation for indirect restorations (esthetic and non-esthetic).	4 h.
6.	Class III and class V cavity preparation for direct composite materials.	4 h.
7.	Class IV cavity preparation for direct composite materials.	4 h.
8.	Class I, II, and IV cavity preparation for direct composite materials on extracted teeth.	4 h.
9.	Mid-term test on the first basic principle of caries treatment: praeparatio cavi dentis (written and practical task based on the syllabus). Assessment criteria.	4 h.
10.	The second basic principle of caries treatment: Medicatio cavi dentis. Varnishes, liners, bases.	4 h.
11.	The third basic principle of caries treatment: Obturatio cavi dentis. Dental amalgam. Fabrication of amalgam restorations.	4 h.
12.	Fabrication of direct composite restorations in the distal region.	4 h.
13.	Fabrication of direct composite restorations in the frontal region.	4 h.
15.	Acceptance of the finished practical work and verification of the semester.	4 h.
	TOTAL:	60 h.

PRACTICAL TRAINING PROGRAMME
III course, VI semester

№	TOPIC	HOURS
1.	**Endodontics: subject, goal and objectives.**	**4 h.**
2.	Endodontic treatment – goals, biological and mechanical principles. Rubber dam.	**4 h.**
3.	**Endodontic access cavity preparation.**	**4 h.**
4.	**Accessing cavum pulpae. Orifices location.**	**4 h.**
5.	**Hand and machine driven endodontic instruments – classification and standardization.**	**4 h.**
6.	**Contents of the root canals and instruments for their removal.**	**4 h.**
7.	**Root canal working length.**	**4 h.**
8.	**Hand endodontic instruments for cleaning and shaping of the root canals. Working technique.**	**4 h.**
9.	**Machine driven instruments for cleaning and shaping of the root canals – types, indications for a system selection. working technique.**	**4 h.**
10.	**Test on endodontic access, working length, instruments and techniques for root canal preparation.** **Characteristics of the prepared root canal and root canal medication.**	**4 h.**
11.	**Root canal obturation – definition, goals, means, methods.**	**4 h.**
12.	**Root canal filling materials – pastes that set inside the root canal – classification. Gutta-percha. Single cone technique.**	**4 h.**
13.	**Obturation of the root canals with termoplasticized gutta-percha.**	**4 h.**
14.	**Final test on endodontic treatment.** **Restoration of endodontically treated teeth.**	**4 h.**
15.	**Handing in of the finished practical work and verification of the semester. Assessment of radiographs.**	**4 h.**
	TOTAL:	**60 h.**

LECTURE PROGRAMME
IV course, VII semester
V

№	TOPIC	HOURS
1.	**Infection control in conservative dentistry** Significance of infection control. Modes and routes of transmission of infection. Protection of dental personnel, patients, and the environment. Methods of infection control. Specific aspects of infection control in operative dentistry and endodontics.	**1 h.**
2.	**Ergonomics of the workplace** Organization of the workplace. Ergonomic requirements for the basic equipment and instrumentation. Occupational disorders and their prevention. Teamwork.	**1 h.**

3.	**Dental caries** Definition, etiopathogenesis, and pathomorphology. Prevalence in adults. Etiological factors: dental biofilm with cariogenic microorganisms, dietary carbohydrates, enamel resistance, saliva, the individual and the surrounding geographical, domestic, and occupational environment. Pathogenesis (theories, hypotheses, and concepts). Pathomorphological changes in the dental hard tissues and the dental pulp related to the development of dental caries.	**1 h.**
4.	**Main symptoms of dental caries** Classification. Methods of examination. Increased sensitivity, discoloration, loss of tooth structure, and impaired function. Classification of dental caries according to the stage of development, localization, and course of the disease. Methods for the examination of clinically developed dental caries.	**1 h.**
5.	**Dental caries – clinical presentation, diagnosis, and differential diagnosis** Clinical presentation of the different nosological entities. Specific aspects of diagnosis. Differential diagnosis of the different nosological entities.	**1 h.**
6.	**Methods for early diagnosis of dental caries** Classification of methods for early diagnosis – conventional, radiographic, optical, and others. Salivary analysis. Caries risk assessment. Motivation for proper oral hygiene, modification of the patient's dietary habits, and increasing enamel resistance.	**1 h.**
7.	**Non-operative treatment approaches to dental caries** Non-operative treatment of dental caries (motivation for proper oral hygiene, modification of the patient's dietary habits, increasing enamel resistance, salivary analysis). Ozone therapy, air abrasion, laser treatment, fissure sealing, chemomechanical caries removal. Minimally invasive preparation (enameloplasty). Resin infiltration.	**1 h.**
8.	**Pain control in operative dentistry** Pain perception and response – reflex arc, Melzack and Wall's gate control theory. Pain control by: Central nervous system modulation (psychoprophylaxis, hypnosis, audioanalgesia, acupuncture, pharmacological management – premedication and general anesthesia). Local anesthesia (infiltration, nerve block, intraligamental, intraosseous). Blockade of pain impulses (atraumatic work, topical anesthesia, electroodontoanalgesia, TENS method).	**1 h.**
9.	**Dentin caries** Caries media, Caries profunda. Zones of caries progression in dentin. Biological principles of the treatment of the dentinal wound in deep caries – characteristics of the wound, types of dentin overlying the pulp, possibilities for clinical differentiation. Medicaments and materials for the treatment of deep caries – pharmacodynamics of the principal medicaments and materials, rationale for one-step and two-step treatment of deep caries.	**1 h.**
10.	**Root surface caries** Cementum – function. Risk factors for the development of root caries. Diagnosis, types, and stages of progression of root caries. Clinical presentation. Differential diagnosis. Treatment – specific features, problems and risks, materials and medicaments. Prophylaxis.	**1 h.**
11.	**Secondary caries** Definition, prevalence, localization, clinical features and diagnosis. Causes of development, specific aspects of treatment, prophylaxis.	**1 h.**
12.	**Clinical presentation, diagnosis and treatment of multiple caries** Medical approach to the treatment of dental caries. Clinical protocol for the treatment of multiple caries.	**1 h.**

13.	**Biomechanical considerations in restoration with dental amalgam and indirect metal restorations** Properties and disadvantages of amalgam restorations and indirect metal restorations – mechanical, physical, chemical, biological, and manipulative characteristics. Characteristics of cavity preparation according to the properties of the restorative material used.	**1 h.**
14.	**Biomechanical considerations in direct and indirect restorations with composite materials and glass ionomer cements** Properties and disadvantages of composite and glass ionomer cement restorations – mechanical, physical, chemical, biological, and manipulative characteristics. Characteristics of cavity preparation according to the properties of the restorative material used. Polymerization shrinkage of composite materials and methods for its compensation. Sandwich technique for restorations with esthetic materials.	**1 h.**
15.	**Errors and complications in the diagnosis and treatment of dental caries** Undiagnosed and misdiagnosed dental caries. Errors during cavity preparation, medication, and restoration of dental caries. Complications associated with these errors.	**1 h.**
	TOTAL:	**15 h.**

LECTURE PROGRAMME
IV course, VIII semester

№	TOPIC	HOURS
1.	**Anatomy and physiology of the dental pulp** Histology and function of the dental pulp. Basic physiological and pathological processes in the dental pulp.	**1 h.**
2.	**Etiology and pathogenesis of inflammatory diseases of the dental pulp** Mechanisms of inflammation, histopathology, characteristics of pulpal pain.	**1 h.**
3.	**Methods for the examination of diseases of the dental pulp** Interpretation of diagnostic tests. Classifications of diseases of the dental pulp.	**1 h.**
4.	**Non-inflammatory pathological processes of the dental pulp** Atrophy, dystrophy, calcific metaplasia, vascular disorders.	**1 h.**
5.	**Acute pulpitis** Classification and clinical presentation. Diagnosis, differential diagnosis, and treatment guidelines.	**1 h.**
6.	**Chronic pulpitis** Classification and clinical presentation. Diagnosis, differential diagnosis, treatment guidelines.	**1 h.**
7.	**Reversible and irreversible pulpitis** Critical analysis of the classifications, local and systemic factors associated with reversible pulp inflammation, and treatment guidelines. Methods for the treatment of the dental pulp. Classification of treatment methods. Indications and contraindications.	**1 h.**
8.	**Biological methods for the treatment of the inflamed dental pulp. Indirect pulp treatment** Indications, techniques, pharmacodynamics of the medicaments used, evaluation of treatment outcomes, and prognosis.	**1 h.**
9.	**Biological methods for the treatment of the inflamed dental pulp. Direct pulp capping. Vital amputation (pulpotomy under local anesthesia).** Definition, indications and contraindications, pulp capping biomaterials, treatment sequence, prognosis.	**1 h.**

10.	**Contemporary methods for regenerative treatment of diseases of the dental pulp. Revitalization and revascularization.** Definition, indications and contraindications, biomaterials, treatment sequence, prognosis.	**1 h.**
11.	**Vital extirpation (pulpectomy under local anesthesia)** Definition, indications and contraindications, anesthesia for individual teeth – primary and supplementary techniques. Vital extirpation technique – classical and special treatment protocols, complications and approaches to their management.	**1 h.**
12.	**Mortal methods for the treatment of the dental pulp** Types, definition, and critical analysis. Devitalization of the dental pulp – definition, goals, agents, indications and contraindications, treatment sequence, complications and approaches to their management.	**1 h.**
13.	**Anatomy and physiology of the periodontium. Classification of diseases of the periodontium** Main structural components, function, blood supply, and innervation. Pulp-periodontium relationship. Classification of apical periodontitis. Methods of examination.	**1 h.**
14.	**Acute serous periodontitis** Classification, clinical presentation, diagnosis, differential diagnosis, and treatment guidelines.	**1 h.**
15.	**Acute purulent periodontitis** Classification, clinical presentation, diagnosis, differential diagnosis, and treatment guidelines.	**1 h.**
	TOTAL:	**15 h.**

PRACTICAL TRAINING PROGRAMME
IV course, VII semester

№	TOPIC	HOURS
1.	**Introduction to the equipment in the clinical room.** Safety instructions. Patient registration. Demonstration of the initial patient examination. Clinical practice.	**4 h.**
2.	**Infection control in Conservative Dentistry.** Demonstration of the basic personal protective equipment. Disinfection of the operative field. Instrument processing and sterilization protocol. Clinical practice.	**4 h.**
3.	**Ergonomics of the workplace.** Demonstration of the ergonomic working position for different groups of teeth. Role of the dental assistant during treatment. Clinical practice.	**4 h.**
4.	**Dental caries.** Discussion of the main etiological factors of dental caries. Demonstration of caries-promoting factors – poor oral hygiene (visualization), inadequate restoration of defects, systemic diseases, and social status. Clinical practice.	**4 h.**
5.	**Main symptoms of dental caries.** Demonstration of the principal clinical signs of dental caries. Clinical practice.	**4 h.**
6.	**Dental caries – clinical presentation, diagnosis, and differential diagnosis.** Demonstration of cases with different clinical manifestations of dental caries. Clinical practice.	**4 h.**

7.	**Methods for early diagnosis of dental caries.** Demonstration of the available methods for early diagnosis of dental caries.	**4 h.**
8.	**Pain control in Operative Dentistry.** Clinical demonstration of the main methods of pain control in the treatment of dental caries. Clinical practice.	**4 h.**
9.	**Seminar:** Dental caries – etiology, main symptoms, diagnosis, and clinical presentation (syllabus). Clinical practice.	**4 h.**
10.	**Dentin caries – Caries media, Caries profunda.** Demonstration of clinical cases. Clinical practice.	**4 h.**
11.	**Root surface caries.** Demonstration of clinical cases.	**4 h.**
12.	**Secondary caries.** Demonstration of clinical cases. Clinical practice.	**4 h.**
13.	**Clinical presentation, diagnosis, and treatment of multiple caries. Demonstration of clinical cases.** Clinical practice.	**4 h.**
14.	**Biomechanical considerations in restoration with different restorative materials.** Demonstration of clinical cases. Clinical practice.	**4 h.**
15.	Discussion of completed clinical cases.	**4 h.**
	TOTAL:	**60 h.**

PRACTICAL TRAINING PROGRAMME
IV course, VIII semester

№	TOPIC	HOURS
1.	**Safety instructions and order in the clinical room.**	**4 h.**
2.	**Anatomy and physiology of the dental pulp –** demonstration of the anatomical features of the pulp cavity in different groups of teeth using models and images. Clinical practice.	**4 h.**
3.	**Etiology and pathogenesis of inflammatory diseases of the dental pulp –** demonstration of the principal etiological factors of pulpal inflammation using patients and clinical images. Clinical practice.	**4 h.**
4.	**Methods for the examination of diseases of the dental pulp –** demonstration of medical and dental history examination, application of clinical and paraclinical methods of examination. Analysis of the results. Clinical practice.	**4 h.**
5.	**Non-inflammatory pathological processes of the dental pulp – atrophy, dystrophy, calcific metaplasia, and vascular disorders –** demonstration of different non-inflammatory conditions of the dental pulp using clinical images. Treatment guidelines. Clinical practice.	**4 h.**

6.	**Acute pulpitis.** Discussion of the clinical presentation and treatment planning. Clinical practice.	**4 h.**
7.	**Chronic pulpitis.** Discussion of the clinical presentation and treatment planning. Clinical practice.	**4 h.**
8.	**Reversible and irreversible pulpitis.** Discussion of the clinical presentation and treatment planning. Clinical practice.	**4 h.**
9.	**Seminar:** Etiological factors and clinical presentation of inflammatory diseases of the dental pulp (syllabus). Clinical practice.	**4 h.**
10.	**Biological methods for the treatment of the inflamed dental pulp –** demonstration of the indirect treatment method. Analysis of the medicaments used in the different treatment methods. Clinical practice.	**4 h.**
11.	**Biological methods for the treatment of the inflamed dental pulp –** demonstration of the direct treatment method. Analysis of the medicaments used in the different treatment methods. Clinical practice.	**4 h.**
12.	**Vital extirpation (pulpectomy under local anesthesia) –** definition, indications and contraindications, anesthesia for individual teeth – primary and supplementary techniques. Vital extirpation technique – conventional and special techniques, treatment sequence, complications and approaches to their management. Clinical practice.	**4 h.**
13.	**Mortal methods for the treatment of the dental pulp.** Types, definition, and critical analysis. Devitalization of the dental pulp – definition, goals, agents, indications and contraindications, treatment sequence, complications, and approaches to their management. Clinical practice.	**4 h.**
14.	**Anatomy and physiology of the periodontium –** demonstration of the anatomy of different groups of teeth using clinical images. **Acute serous apical periodontitis –** discussion of the etiological factors and their relationship to the treatment plan. Clinical practice.	**4 h.**
15.	**Acute purulent periodontitis –** discussion of the treatment plan according to the stage of the inflammatory process. Semester completion.	**4 h.**
	TOTAL:	**60 h.**

LECTURE PROGRAMME
V course, IX semester

№	TOPIC	HOURS
1.	**Necrobiosis, necrosis, gangrene of the dental pulp** Definition, etiology, pathogenesis, pathomorphology, clinical presentation and diagnosis, differential diagnosis, treatment guidelines.	**1 h.**
2.	**Chronic apical periodontitis – Periodontitis chronica fibrosa and Periodontitis chronica granulomatosa localisata** Etiology and pathogenesis, clinical presentation, differential diagnosis, treatment, prognosis.	**1 h.**

3.	**Periodontitis chronica granulomatosa progressiva (diffusa) sine (cum) fistula** Pathohistology, clinical presentation, differential diagnosis, treatment, prognosis.	**1 h.**
4.	**Treatment of chronic periodontitis** Apical level of root canal preparation and obturation, indications, contraindications, basic principles of treatment, single-stage/two-stage treatment, single-visit/multiple-visit treatment, oxidation-reduction concept, complications.	**1 h.**
5.	**Aspects of clinical endodontic microbiology** Endodontic triad. Interaction between macroorganisms and microorganisms, pathogenic and non-pathogenic microorganisms. Characteristics of the microflora in necrotic pulp. Isolation and identification of microorganisms from the root canal. Use of antibiotics in endodontics.	**1 h.**
6.	**Combined endo-periodontal lesions (interradicular and lateral periodontitis)** Classification, clinical presentation, diagnosis. Treatment.	**1 h.**
7.	**Endodontic retreatment – part 1** Definition, goals, advantages and disadvantages, principal indications for retreatment. Methods of endodontic retreatment – orthograde, retrograde, combined, endodontic-surgical. Basic steps of endodontic retreatment.	**1 h.**
8.	**Endodontic retreatment – part 2** Classification of obstructions within the root canal system indicated for endodontic retreatment. Systems and techniques for the removal of root canal obstructions. Complications.	**1 h.**
9.	**Planned endodontic surgery** Indications and contraindications. Contemporary methods of endodontic surgery. Intraoral incision. Indications and technique.	**1 h.**
10.	**Planned endodontic surgical procedures** Apical curettage, apicoectomy, root amputation, hemisection, bicuspidization, transcanal implants, stages of the procedure, postoperative care, possible complications, prognosis.	**1 h.**
11.	**Difficult differential diagnoses in endodontics with diseases of related fields** Differential diagnosis with sinusitis, rhinitis, neuritis, neuralgia, aerodontalgia, atypical facial pain, traumatic occlusion.	**1 h.**
12.	**Emergency endodontic treatment** Indications. Clinical management. Treatment of the different nosological entities.	**1 h.**
13.	**Pain control in endodontics** Pain as a general medical problem. Clinical management of endodontic cases with pain as the chief complaint.	**1 h.**
14.	**Diagnostic errors in pulpitis and apical periodontitis. Complications** Differential diagnosis with normal anatomical structures – foramen mentale, maxillary sinuses, follicular cysts. Differential diagnosis with diseases of related fields – sinusitis, rhinitis, neuralgia, denticles.	**1 h.**
15.	**Errors and complications in the treatment of pulpitis and apical periodontitis** Errors during endodontic treatment that endanger the treated tooth. Errors that may endanger the patient's life: aspiration and swallowing of an instrument, air emphysema.	**1 h.**
	TOTAL:	**15 h.**

LECTURE PROGRAMME
V course, X semester

№	TOPIC	HOURS
1.	**Treatment planning in endodontics** Scope of endodontic treatment, factors influencing the number of treatment visits. Initial treatment. Definitive treatment. Selection of treatment procedures, procedures within the scope of general dental practice, factors complicating endodontic treatment.	1 h.
2.	**Restoration of teeth after endodontic treatment** Characteristics of endodontically treated teeth – substantial loss of dental hard tissues, reduced elasticity, reduced tooth stability, reduced mechanical strength. Selection of the restorative method according to the extent of coronal destruction. Radicular posts – types, placement technique, instrumentation, errors and complications.	1 h.
3.	**Restoration of vital teeth with extensive coronal destruction** Complex cavities with cusp protection. Dentinal (parapulpal) pins – indications, errors, and complications. Dentinal chambers, locks, and peripheral collars. Bonded amalgam restorations. Onlay restorations – characteristics of cavity preparation, critical analysis, and prognosis. Veneers – indications, contraindications, preparation design, types, cementation technique.	1 h.
4.	**Vertical tooth fractures** Classification of vertical crown and root fractures. Fractures of endodontically treated teeth occurring during treatment and during function. Restorative procedures and materials. Complications.	1 h.
5.	**Non-carious lesions of the dental hard tissues** Chemical, thermal, and mechanical lesions – diagnosis, differential diagnosis, clinical presentation, treatment.	1 h.
6.	**Non-carious lesions of the dental hard tissues** Abrasion, attrition, erosion, wedge-shaped defects, abfraction. Epidemiology. Clinical presentation. Diagnosis. Differential diagnosis. Treatment approaches.	1 h.
7.	**Dentin hypersensitivity** Definition and etiology. Stages of development. Mechanism of action. Diagnosis. Treatment guidelines. Desensitizing agents. Prevention.	1 h.
8.	**Prophylaxis of dental caries** Main factors associated with the development of dental caries, levels of prevention. Caries risk assessment – rationale, patient groups, management guidelines for the different risk groups.	1 h.
9.	**Healing process after biological treatment of pulpitis** Indirect pulp treatment, direct pulp capping, and vital amputation (pulpotomy). Criteria for evaluation of treatment outcomes – clinical, electric pulp testing (EPT), and radiographic.	1 h.
10.	**Healing process after vital and mortal extirpation in pulpitis** Apical wound following vital and mortal extirpation – critical analysis, prognosis. Apical level of root canal treatment. Healing process after endodontic treatment performed short of, at, or beyond the apical foramen. Criteria for evaluation of treatment outcomes – early and late clinical outcomes, radiographic status of the treated teeth.	1 h.
11.	**Healing process after treatment of pulpal gangrene, acute and chronic periodontitis** Apical level of root canal treatment. Healing process after endodontic treatment performed short of, at, or beyond the apical foramen. Criteria for evaluation of treatment outcomes – early and late clinical outcomes, radiographic status of the treated teeth.	1 h.

12.	**Bleaching of discolored non-vital teeth** Causes of tooth discoloration. Bleaching methods – rationale, technique, complications.	**1 h.**
13.	**Bleaching of vital teeth** Causes of tooth discoloration, application techniques, contraindications, and complications. Criteria for evaluation and monitoring of treatment outcomes.	**1 h.**
14.	**Root resorption** Classification, clinical presentation, pathomorphological characteristics, treatment guidelines, prognosis.	**1 h.**
15.	**Clinical application of restorative materials in operative dentistry** Indications and contraindications. Relationship between the patient's caries risk and the selection of the restorative treatment plan.	**1 h.**
	TOTAL:	**15 h.**

PRACTICAL TRAINING PROGRAMME
V course, IX semester

№	TOPIC	HOURS
1.	**Necrobiosis, necrosis, and gangrene of the dental pulp –** clinical presentation and diagnosis. Differential diagnosis.	**6 h.**
2.	**Chronic apical periodontitis –** Periodontitis chronica fibrosa and Periodontitis chronica granulomatosa localisata. Etiology and pathogenesis, clinical presentation, differential diagnosis, treatment, prognosis.	**6 h.**
3.	**Periodontitis chronica granulomatosa progressiva (diffusa) sine (cum) fistula –** clinical presentation and diagnosis – anamnesis, clinical examination, vasoparesis sign, Crane's sign, Marmasse's sign, radiographic findings. Differential diagnosis. Treatment guidelines. Prognosis. Periodontitis exacerbata; Cysta radicularis – clinical presentation, differential diagnosis, treatment guidelines, prognosis.	**6 h.**
4.	**Chronic apical periodontitis.** Apical level of root canal preparation and obturation, indications, contraindications, basic principles of treatment, single-visit/multiple-visit treatment, and complications.	**6 h.**
5.	**Aspects of clinical endodontic microbiology – the endodontic triad.** Interaction between macroorganisms and microorganisms, pathogenic and non-pathogenic microorganisms, characteristics of the microflora in necrotic pulp. Isolation and identification of microorganisms in the root canal. Use of antibiotics in endodontics.	**6 h.**
6.	**Combined endo-periodontal lesions.** Anatomical and functional relationships between the endodontium and the periodontium. Classification of endo-periodontal lesions. Diagnosis. Symptoms associated with periodontal and pulpal involvement. Clinical presentation. Treatment.	**6 h.**
7.	**Endodontic retreatment –** systems and techniques for the removal of root canal obstructions. Materials, methods, and medicaments for the management of complications. Clinical practice.	**6 h.**

8.	**Endodontic retreatment –** indications for retreatment. Basic steps of endodontic retreatment. Clinical practice.	**6 h.**
9.	**Planned endodontic surgery –** indications and contraindications. Contemporary methods of endodontic surgery (laser, ultrasound). Materials, instruments, and techniques for retrograde root canal obturation. Clinical practice. **Colloquium:** Chronic apical periodontitis – clinical presentation and treatment. Endodontic microbiology. Endo-periodontal lesions. Endodontic retreatment.	**6 h.**
10.	**Planned endodontic surgical procedures –** apical curettage, apicoectomy, root amputation, hemisection, bicuspidization, transcanal implants. Stages of the procedures. Postoperative care, possible complications, prognosis.	**6 h.**
11.	**Difficult differential diagnoses in endodontics with diseases of related fields –** sinusitis, rhinitis, neuritis, neuralgia, aerodontalgia, atypical facial pain, traumatic occlusion.	**6 h.**
12.	**Emergency endodontic treatment** – rationale and indications. Management of emergency patients. Clinical practice.	**6 h.**
13.	**Pain control in endodontics –** pain management as a general medical problem. Clinical management of endodontic cases with pain as the chief complaint – pulpitis, acute periodontitis, exacerbated periodontitis, cracked tooth, crown fracture with pulp exposure. Colloquium: Planned endodontic surgery. Difficult and rare differential diagnoses. Emergency endodontic treatment. Pain control.	**6 h.**
14.	**Diagnostic errors in pulpitis and apical periodontitis.** Mental foramen, maxillary sinuses, follicular cysts. Sinusitis, rhinitis, neuralgia, denticles.	**6 h.**
15.	**Errors and complications in the treatment of pulpitis and periodontitis.** Errors during endodontic treatment that endanger the treated tooth – missed and untreated canal, unfilled canal, ledge formation, perforations, fractured instrument, overinstrumentation, overfilling, tooth discoloration. Prevention and management of procedural errors. Errors that may endanger the patient's life – allergic shock, swallowing or aspiration of an endodontic instrument, subcutaneous emphysema. Prevention of complications.	**6 h.**
	TOTAL:	**90 h.**

PRACTICAL TRAINING PROGRAMME
V course, X semester

№	TOPIC	HOURS
1.	**Treatment planning in endodontics –** scope of endodontic treatment, factors influencing the number of treatment visits, initial treatment, definitive treatment, selection of treatment procedures, procedures within the scope of general dental practice, factors complicating endodontic treatment.	**6 h.**
2.	**Restoration of teeth after endodontic treatment.** Characteristics of endodontically treated teeth – substantial loss of dental hard tissues, reduced elasticity, reduced tooth stability, decreased mechanical strength. Selection of the restorative method according to the extent of coronal destruction. Radicular posts – types, placement technique, instrumentation, errors and complications.	**6 h.**

3.	**Restoration of vital teeth with extensive coronal destruction.** Complex cavities with cusp protection. Dentinal (parapulpal) pins – indications, errors, and complications. Dentinal chambers, locks, and peripheral collars. Bonded amalgam restorations. Onlay restorations – characteristics of cavity preparation, critical analysis, and prognosis. Veneers – indications, contraindications, preparation design, types, cementation techniques.	**6 h.**
4.	**Vertical tooth fractures.** Fractures of endodontically treated teeth – causes. Restorative procedures and materials. Clinical examination. Treatment procedures. Complications – internal and external root resorption.	**6 h.**
5.	**Non-carious lesions of the dental hard tissues –** chemical, thermal, and mechanical lesions – diagnosis, differential diagnosis, clinical presentation, and treatment.	**6 h.**
6.	**Non-carious lesions of the dental hard tissues –** abrasion, attrition, erosion, wedge-shaped defects, and abfraction. Epidemiology. Clinical presentation. Diagnosis. Differential diagnosis. Treatment approaches.	**6 h.**
7.	**Colloquium:** Non-carious lesions of the dental hard tissues. Vertical crown and root fractures. Restoration of vital teeth with extensive coronal destruction. Restoration of teeth after endodontic treatment. Practical work.	**6 h.**
8.	**Dentin hypersensitivity –** definition, etiology, stages of development, mechanism of action, diagnosis, treatment guidelines, desensitizing agents. Prevention.	**6 h.**
9.	**Prophylaxis of dental caries.** Main factors associated with the development of dental caries, levels of prevention. Primary, secondary and tertiary prevention – objectives, main principles, methods, and means of achieving the objectives. Caries risk assessment – rationale, patient groups, and management guidelines for the different risk groups.	**6 h.**
10.	**Healing process after biological treatment of pulpitis –** indirect pulp treatment, direct pulp capping, and vital pulpotomy. Criteria for evaluation of treatment outcomes – clinical, electric pulp testing (EPT), radiographic.	**6 h.**
11.	**Healing processes following vital and mortal extirpation in pulpitis.** Apical wound after vital and mortal extirpation – critical analysis and prognosis.	**6 h.**
12.	**Healing process following treatment of pulpal gangrene, acute and chronic periodontitis.** Criteria for evaluation of treatment outcomes – early and late clinical outcomes, radiographic status of the treated teeth.	**6 h.**
13.	**Seminar:** Dentin hypersensitivity. Prophylaxis of dental caries. Healing process after biological treatment, extirpation in pulpitis and treatment of apical periodontitis.	**6 h.**
14.	**Bleaching of discolored non-vital teeth –** causes of tooth discoloration. Bleaching methods – rationale, technique, and complications.	**6 h.**
15.	**Bleaching of vital teeth.** Causes of tooth discoloration, application techniques, contraindications and complications. Criteria for evaluation and monitoring of treatment outcomes.	**6 h.**
	TOTAL:	**90 h.**

3. PREREQUISITES

For a student to commence clinical training in the discipline, they must have successfully passed the examination in Conservative Dentistry – Part I (Preclinical Training).

The main goals and objectives of the discipline are to provide students with the necessary theoretical knowledge and practical skills in its core areas.

Upon completion of their training, students must have acquired the following knowledge and skills:

• knowledge of the etiology, pathogenesis, and histomorphology of dental caries;
• knowledge of the basic methods and means of caries prevention;
• knowledge and application of contemporary methods for the early diagnosis of dental caries;
• knowledge and application of contemporary methods for pain control in the treatment of dental hard tissues;
• knowledge and application of contemporary methods for the treatment of dental caries;
• knowledge and application of contemporary methods for the diagnosis and treatment of diseases of the dental pulp;
• knowledge and application of contemporary methods for the diagnosis and treatment of diseases of the periodontium;
• knowledge and management of endodontic emergencies.

4. ACADEMIC RESOURCES

The department provides the necessary number of academic teaching staff, according to the regulations for the teachers' workload of assistant professors in the Faculty of Dental Medicine, MU Plovdiv. The assistant professors have excellent theoretical and practical training and a specialty in Operative Dentistry and Endodontics. They are active participants in the department's scientific program, according to the latest achievements in the discipline.

5. MATERIAL RESOURCES

The department has the necessary number of rooms, equipped with phantom heads and dental units, special instruments, dental materials, apparatuses, computer configurations and multimedia.

The Department has modern teaching and clinical facilities, including one double preclinical room with a total of 22 workstations (12 of which are high-tech dental simulators), 6 clinical training rooms with 50 workstations, 1 clinical training room for undergraduate interns with 14 workstations, and 4 treatment rooms for PhD students and postgraduate trainees.

The preclinical and clinical training rooms and treatment rooms are equipped with:

- modern dental simulation units and clinical dental units;
- intraoral cameras;
- endodontic motors;
- warm gutta-percha condensation systems;
- devices for root canal irrigation and ozonation;
- high-energy laser systems;
- laser Doppler devices;
- devices for early caries detection;
- clinical endodontic microscopes, among other equipment.

6. LECTURES

Lectures are delivered by habilitated academic staff members of the Department (Associate Professors and Professors) who hold a PhD degree. Lectures are prepared and given in the form of multimedia presentations. They are provided to students in the electronic environment of Office 365, SharePoint, Faculty of Dental Medicine, Department of Operative Dentistry and Endodontics.

7. PRACTICAL EXERCISES

Practical training sessions are conducted by non-habilitated academic staff (Assistant Professors and Chief Assistant Professors). They hold a Master’s degree in Dental Medicine and are appointed through a competitive selection procedure. Many of them also hold a PhD degree and a specialty in Operative Dentistry and Endodontics.

PRACTICAL TRAINING IN CONSERVATIVE DENTISTRY - PRECLINICAL COURSE

Preclinical training is conducted in rooms equipped with dental simulation units, in groups of 5–8 students. Tests are administered during the practical training sessions to assess students' preparation and the knowledge and skills acquired in the respective session. Under the supervision of the assistant professor, students learn the principles and techniques of cavity preparation for the treatment of dental caries, as well as the instruments and equipment used. Students acquire knowledge of the basic characteristics, handling, and application of the relevant medicaments and dental materials. In Endodontics, they study the basic methods of root canal preparation and obturation.

PRACTICAL TRAINING IN CONSERVATIVE DENTISTRY - CLINICAL COURSE

Clinical training is conducted in clinical training rooms, in groups of 5–8 students. Tests are administered during the clinical training sessions to assess students' preparation and the knowledge and skills acquired in the respective session. Under the supervision of the assistant professor, students perform preventive and therapeutic procedures for diseases of the dental hard tissues, pulp, and periodontium at both early and advanced stages, with the aim of preventing severe complications and preserving oral health and masticatory function in adult patients.

8. INFORMATIONAL RESOURCES. LITERATURE. WEBSITES.

Academic teaching staff are required to provide students with the teaching materials for lectures and practical training in electronic format.

LITERATURE

CONSERVATIVE DENTISTRY - PRECLINICAL COURSE

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5. Инджов Б., Основи на кавитетна препарация, 2006
6. Summit J., Robbins J., Hilton T., Schwartz R. Fundamentals of operative dentistry. A contemporary approuch, 2006
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8. Torabinejad M., Walton R. Endodontics - Principles and Practice, 2009
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11. Power J. Craig's Restorative Dental Materials, 2011
12. Roberson T., Heymann H., Swift E., Sturdevant's art and science of operative dentistry, 2012
13. Филипов И., Сборник тестове по ендодонтия предклинична подготовка, МУ-Пловдив, 2013
14. Филипов И., Сборник тестове по оперативно зъболечение предклинична подготовка, МУ-Пловдив 2013
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18. Stefanova V, Georgiev K, Simeonov N, Pecheva A., Preclinical MCQ Tests in Endodontics. Vesela Stefanova Editor. Plovdiv, 2020
19. Todorova V, Todorova M. 2025. Self-preparation and self-assessment in conservative dentistry part I – Operative dentistry. ISBN 978-619-281-100-6 Университетско издателство "Паисий Хилендарски" Пловдив
20. Todorova M, Todorova V. 2025. Self-preparation and self-assessment in conservative dentistry part I – Endodontics. ISBN 978-619-281-101-3 Университетско издателство "Паисий Хилендарски" Пловдив

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1. Lecture course
2. Ingle J. Endodontics, 5 edition, Lea&Febiger, Philadelphia 1975
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7. Атанасов Б., Средства за хигиена, профилактика и лечение на устната кухина. Автопринт, Пловдив 2000
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22. Филипов И., Избелване на зъби, МУ-Пловдив, 2013
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9. ONGOING ASSESSMENT

Students are continuously and intensively engaged in assessment activities throughout the semester. Theoretical knowledge is assessed through tests and seminars. Students are provided with timely information and clarification regarding their assessment results in order to support their further preparation.

For students undergoing preclinical training, the mandatory practical work is performed on dental simulation models and extracted teeth. The required practical workload for Semesters V and VI is specified in the respective curriculum and must be completed in order to obtain semester certification. Each semester, students receive two interim assessments and one graded practical assignment.

For students undergoing clinical training, the mandatory practical work is performed on patients in a clinical setting

and is assessed using a points-based system, as specified in the curriculum for Semesters VII, VIII, IX, and X, as follows:
The system awards a specified number of points for each stage of the treatment of diseases affecting the dental hard tissues, dental pulp, and periodontium. Additional activities, such as diagnostic procedures or the use of modern isolation systems, are also awarded points within the points-based system. Successful completion of each semester requires students to accumulate a minimum number of points: 33 points for Semester VII, 44 points for Semester VIII, 66 points for Semester IX, and 77 points for Semester X.
Obtaining semester certification is not based solely on achieving the minimum number of points. Students are also required to restore a specified number of tooth surfaces, complete endodontic treatment of a specified number of root canals, place a specified number of prefabricated direct posts, fabricate a specified number of indirect cast post-and-core restorations, and place a specified number of indirect restorations, in accordance with the requirements set out in the curriculum for each semester.
The results of the assessment of theoretical knowledge and practical skills are taken into account for semester certification. If a student fails to complete the required practical workload, semester certification is not granted.

10. INDEPENDENT WORK AND STUDENT COMMITMENT

The independent work of the students is under the control and supervision of the assistant professor.
Each student solely and independently completes the assigned tasks. The self-assessment tests are published in a separate book and uploaded on the site of the Medical University of Plovdiv.

11. COLLABORATION BETWEEN STUDENTS AND ACADEMIC STAFF

Academic staff members are actively involved in the education and preparation of students during practical training, as well as through:

- scheduled consultation hours;
- organizing departamental scientific student study groups
- students' participation in research teams, projects and other scientific activities.

12. EXAMS

The ongoing assessments specified in the curriculum include:

- Ongoing assessment by colloquiums conducted during the semester;
- Ongoing assessment of the student's overall practical work during the semester;
- The preclinical examination in the discipline, conducted after the end of Semester VI, is multicomponent and includes an examination test (with a passing threshold of 70%), a written examination, and an oral examination.
- The clinical examination in the discipline, conducted after the end of Semester X, is multicomponent and consists of a practical and a theoretical examination. The practical examination is conducted after the end of Semester X over 8 astronomical hours, divided between two consecutive days. Students who fail the practical examination are not permitted to proceed to the theoretical examination. The theoretical examination is conducted on a separate day and includes an examination test (with a passing threshold of 70%), a written examination, and an oral examination.

13. ASSESSMENT STANDARDS

Clear assessment standards have been developed.

- Excellent (6) - the mark is given for excellent knowledge of the material and good knowledge of the informational sources. The student must have thorough knowledge of the basic and supplementary skills. The student must be exact and precise when presenting a topic, with excellent language competence. The student must have independent, critical thinking and draw their own conclusions.
- Very good (5) - the mark is given for very good knowledge of the material and good knowledge of the informational sources. The student must have good knowledge of the basic and supplementary skills. The student must have good language competence. The student experiences some difficulty when finding solutions by themselves.
- Good (4) - the mark is given for good knowledge of the material, as well as of the basic and supplementary skills. The student lacks thorough knowledge when interpreting the material and cannot make reasoned decisions by themselves.
- Average (3) - basic knowledge of the studied material, poor language competence. The student has basic knowledge for solving easy problems.

- Poor (2) - does not meet any of the criteria listed above.

At the beginning of the course, students are informed of the assessment standards, the procedures for ongoing assessment, and the opportunities for receiving feedback on their progress during the semester.

14. FINAL ASSESSMENT AND GRADE:

The final grade is based on the following components:

- Ongoing assessment during the semester
- practical examination (a component of the clinical examination after Semester X)
- entrance examination test
- written examination
- oral examination

If a student receives a grade of Poor (2) for any one of the components, the final examination grade is also Poor (2).

15. DOCUMENTATION, RECORD KEEPING AND CONTROL OF THE ASSESSMENT PROCESS

Students being assessed have the right and obligation to be informed of the rules, procedures, and results of the assessment.

Corrections to grades are permitted only in cases of identified technical omissions or errors in the student record book, examination record, or the relevant record in the official register, and may be made only by the course coordinator.

Any objections or appeals by students must be submitted in writing to the assessment team, which is required to provide a reasoned response.

Examination materials are stored in the office of the Department's technical assistant. Students have the right to review the examination materials and the grounds for their assessment in accordance with the rules and procedures established in the present Academic Standard. The period during which students may review their examination materials is 3 (three) working days from the date of the examination.

The Academic Standard is provided to the students at the beginning of their education. This requirement is fulfilled in accordance with Article 56, Paragraph 1 of the Higher Education Act: "The teachers are required to develop and announce in an appropriate manner a description of the lecture course, led by them, including the topics and their sequence, recommended literature, assessment procedures and examination formats".

Compiled by the Head of Department:
/Prof. Neshka Manchorova, PhD/

The Academic Standard for the discipline was approved and ratified by a Decision of the Department Council № /10.09.2026.