

NATIONAL PIROGOV MEMORIAL MEDICAL UNIVERSITY, VINNYTSYA

«APPROVE»

Acting rector of higher education institution  
\_\_\_\_\_ professor of HEI

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« 31 » 08 2023 y.

«AGREE»

Head Therapeutical Dentistry Department  
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SHINKARUK-DYKOVYTSKA

« 28 » 08 2023 y.

SYLLABUS  
of educational discipline  
CLINICAL ENDODONTICS

Specialty	221 Dentistry
Educational level	Master
Educational programme	EPP Dentistry. 2022
Academic year	2023-2024
Department	Therapeutic dentistry
Contact information	terstom@vnmu.edu.ua V.Stus Street, 2
Syllabus developer	Ass., PhD Vakhovskyi Vitalii

## 1. Status and structure of the discipline

Discipline status	elective
Discipline code in EPP/ discipline place in EPP	VK 4.7 //discipline professional training
Course / semester	4rd year (VII semester)
The amount of discipline ( the total number of hours / number of credits ECTS)	60 hours / 2 credits ECTS
Number of content modules	1 modules
The structure of the discipline	Practical classes – 30 hours Lectures – 10 hours Independent work - 20 hours
Language of study	English
Form of study	Full - time ( <i>or on-line by order</i> )

## 2. Description of the discipline

### Short annotation of the course, relevance

Clinical endodontics is an elective course, the methods of which are aimed at improving knowledge of modern methods of diagnosis and treatment of complicated caries.

In practical therapeutic dentistry today endodontic treatment of teeth is one of the most difficult types of treatment. The number of patients with various forms of pulpitis and apical periodontitis is growing every year, especially among young patients. In addition, the complexity of the manipulations at the stages of endodontic treatment leads to various errors and complications. That is why the most important task of the future dentist is the ability to correctly diagnose, plan and treat endodontic pathology.

### Prerequisites

- Human anatomy (clinical features of the structure of teeth, periodontium, oral mucosa and oral organs)
- Histology (histological features of the structure of teeth, periodontium, oral mucosa and oral organs, embryogenesis of oral organs)
- Bioorganic and biological chemistry (biochemical and biophysical processes in hard and soft tissues of the oral cavity)
- Pathological anatomy (pathomorphological signs of diseases of the oral cavity)
- Physiology (physiological processes occurring in the hard and soft tissues of the oral cavity, the transmission of pain impulse through the hard tissues of the tooth)
- Pathophysiology (pathological processes occurring in the hard and soft tissues of the oral cavity)

### The purpose of the course and its significance for professional activities.

The purpose of teaching the discipline "Clinical endodontics" is to train a dentist who can diagnose and treat endodontic diseases using modern approaches and technologies

### Postrequisites

The knowledge acquired in the process of studying the discipline "Clinical endodontics" helps students to study such disciplines as therapeutic dentistry, orthopedic dentistry, surgical dentistry. Develop professional skills for successful treatment of complicated

caries using modern techniques, tools and materials. This in turn allows you to keep devital teeth without the risk of complications.

### **Learning outcomes.**

Upon completion of the elective course "Clinical Endodontics" students **should know:**

- additional methods of examination of a dental patient with complicated caries;
- topographic anatomy of the pulp chamber and the root system of the teeth of the upper and lower jaw;
- modern endodontic systems, endodontic tips and endomotors;
- modern endodontic instruments;
- modern methods of instrumental processing of the root system;
- modern means and methods of drug treatment of the root system;
- modern methods and systems of root canal filling;
- physiotherapeutic means of diagnosis and treatment of complicated dental caries.
- diagnosis of endodontic and periodontal lesions
- tactics of the doctor at injuries of teeth
- modern methods of surgical treatment of endodontic pathology
- modern methods of intra-channel teeth whitening
- methods of retrograde filling

### **be able:**

- prescribe the necessary additional methods of examination of a dental patient with complicated caries and evaluate their results;
- use modern endodontic systems, endodontic tips and endomotors;
- use modern endodontic instruments;
- to process root canals, using modern methods of instrumental processing of the root system;
- to irrigate the root system using modern means and methods of drug treatment of the root system;
- to carry out filling of root canals with use of modern methods and systems;
- use physiotherapy for the diagnosis and treatment of complicated dental caries.
- use an endodontic microscope
- provide emergency care for dental injuries
- to carry out differential diagnosis of endodontic-periodontal lesions
- to carry out intracanal teeth whitening

### **Content and logistic of the discipline**

Module 1 ( title )	VII semester	Practical classes №15
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	60 hours / 2 credits	Topics for self- study №7
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The course includes 15 topics, which are divided into 1 thematic modules.

<b>Thematic plan of practical classes in the discipline: "Clinical endodontics".</b>	
1.	Structure and functions of pulp. Anatomical and histological features of periapical tissues. Anatomy of root canals.
2.	Examination methods in endodontics. Determination of pulp vitality. Diagnosis. Drawing up a treatment plan.
3.	Preparation for endodontic treatment. Choice of anesthesia method. Modern methods of operating field isolation.
4.	Creating endodontic access. Magnification in endodontics: endodontic microscope. Methods for determining the working length of the root canal.
5.	Endodontic instruments. Classification. The structure of the endodontic instrument. Hand tools. Rules of working.
6.	Machine instruments. Classification, standardization, rules of work. Endomotor. Technique of machine preparation of the root canal.
7.	Modern methods of irrigation of the root canal system. The main irrigants in endodontics: sodium hypochlorite and complexones. Algorithm of root canal irrigation.
8.	Materials for temporary filling of the root canal system. Calcium hydroxide: indications for use, effects. The concept of "temporary filling" in endodontics.
9.	Materials for permanent filling of root canals. Modern sealers and fillers. Methods of root canal filling. Quality control of endodontic treatment.
10.	Secondary endodontics. Indications for re-treatment. Methods of filling material removing from root canal system. Removing of pins.
11.	Errors and complications in endodontics. Perforations. Removal of fragments of endodontic instruments.
12.	Endodontic-periodontal lesions. Diagnosis and treatment.
13.	Dental trauma. Тактика лікаря. Діагностика та лікування ендодонтичних ускладнень.
14.	Tooth discoloration and bleaching of non-vital teeth. Potential adverse effects from intracoronary bleaching
15.	Microsurgical endodontics. Indication. Retrograde filling of root canals.

№ п/п	The topics of the lecture	Hours
1.	Topographic anatomy of the pulp chamber of different groups of teeth. Diagnostics in endodontics. Endodontic microscope.	2
2.	Preparation for endodontic treatment. Methods of isolation of the operating field. Creation of endodontic access. Methods of determining the length of the root canal.	2
3.	Endodontic instruments. Hand and machine instruments. Classification. Rules of work. Mechanical processing of the root canal system by manual and machine methods.	2
4.	Microbiology in endodontics. Microbial biofilm. Basic irrigants in endodontics. Methods of irrigation of the root canal system.	2
5.	Materials for temporary and permanent sealing of the root canal system. Root canal sealing methods. Quality control of endodontic treatment.	2
		10

<b>Thematic plan of practical classes for independent work of students in the discipline: "Clinical endodontics".</b>	
1.	Pain in endodontics . Differential diagnosis of orofacial pain.
2.	Microbiology in endodontics. Microbial biofilm.
3.	Vital pulp therapy. Indication.. Algorithm.
4.	Emergencies in endodontics. First aid.
5.	Root resorption: classification, diagnosis, treatment methods.
6.	Features of postendodontic tooth restoration. Indications for the setting of pins. Preparation of the root canal under the pin.
7.	Use of laser in endodontics.

Practical classes provide a theoretical justification of the main issues of the topic and the acquisition of the following practical skills:

- 1) Diagnosis of various forms of acute and chronic inflammation of the pulp and pathology of the peri-apical tissues, using basic and additional methods of examination.
- 2) Providing emergency care to a patient with acute pulpitis.
- 3) Insulate the operating field using a system of rubber dams.
- 4) The choice of local anesthetic and type of local anesthesia for various forms of pulpitis and periodontitis.
- 5) Open the tooth cavity.
- 6) Search for the mouth of the root canals.
- 7) Amputation and extirpation of the pulp.
- 8) Determining the working length of the root canal using different methods.
- 9) Creating a "glide path"
- 10) Instrumental treatment of the root canal with modern hand tools.
- 11) Instrumental treatment of the root canal with modern machine tools.
- 12) Irrigation of the root canal. Remove the smeared layer.
- 13) Activation of irrigators by ultrasound.
- 14) Drying of the root canal.
- 15) Temporary obturation of the root canal with a paste based on calcium hydroxide.
- 16) Permanent obstruction of the root canal by various methods.
- 17) Evaluation of radiograph, computed tomography.
- 18) Closing the perforation in the area of furcation, in the mouth of the tooth root.
- 19) Sealing of the root canal.
- 20) Removal of a fragment of an endodontic instrument from the root canal.

The student's independent work provides preparation for practical classes and intermediate tests, study of topics for independent extracurricular work, writing essays, preparation of presentations, tables. The control of mastering the topics of independent extracurricular work is carried out at the intermediate control classes and the final control of the discipline.

Individual work includes the study of scientific literature, preparation of reviews on the topics provided for presentation at the meetings of the student scientific circle, the implementation of scientific and practical researches, participation in specialized competitions, scientific and practical conferences and organization of students' research works.

Calendar plans of practical classes, thematic plan of independent extracurricular work, volume and directions of individual work are published on the website of the department.

The route for obtaining materials: Department Therapeutic dentistry / for students / Full-time education / (specialty) / 4 course / Educational materials / or through the link

[https://www.vnmdu.edu.ua/en/department/Therapeutic\\_dentistry](https://www.vnmdu.edu.ua/en/department/Therapeutic_dentistry) #. Access to the materials is carried out through the student's corporate account [s000XXX@vnmdu.edu.ua](mailto:s000XXX@vnmdu.edu.ua).

## 5. Forms and methods of monitoring academic performance

Current control in practical studies	Methods: <i>oral or written survey, electronic survey, solving situational problems</i>
Control of mastering the thematic section of the discipline at intermediate control lessons	Methods: <i>oral or written survey, electronic testing, situational problem solving, control of practical skills</i>
Final control of the discipline (credit) at the end of the VII semester	According to the Regulation of the Academic process in National Pirogov Memorial Medical University, Vinnytsya (link <a href="https://www.vnmdu.edu.ua/en/general-regulations">https://www.vnmdu.edu.ua/en/general-regulations</a> )
Learning success diagnostic tools	Theoretical questions, tests, clinically-oriented situational tasks, practical tasks, practical skills demonstration

## 6. Assessment criteria

Knowledge assessment is carried out in accordance with the Regulations of the Academic process in National Pirogov Memorial Medical University, Vinnytsya (link <https://www.vnmdu.edu.ua/en/general-regulations> )

Continuous assessment	On a four point system of traditional assessments: 5 «excellent», 4 «good», 3 «satisfactory», 2 «unsatisfactory»
Midpoint separation assessment	On a four-point system of traditional assessments
Control of practical skills	According to the four-point system of traditional assessments
Discipline assessments:	On a 200-point scale (arithmetic mean for the semester is converted into points) Credited: from 122 to 200 points Not credited: less than 122 points (see Evaluation Scale).

## Discipline Score Scale: National and ECTS

The sum of grades for all types of educational activities	Score ECTS	Score on a national scale	
		For exam, course project (work), practice	for credit test
180-200	A	excellent	credited
170-179,9	B	good	
160-169,9	C		
141-159,9	D	satisfactory	
122-140,99	E	satisfactory	-

120-140,99	<b>E</b>	-	credited
119-61	<b>FX</b>	unsatisfactory with the possibility of reassembly	is not credited with the possibility of reassembling
1-60	<b>F</b>	unsatisfactory with a mandatory reexamination of discipline	is not credited with mandatory reexamination of discipline

## 7. Policy of discipline / course

The student has the right to receive high-quality educational services, access to contemporary scientific and educational information, qualified advisory assistance during the study of discipline and mastering practical skills. The policy of the department during the providing of educational services is a student-centered, based on normative documents of the Ministry of Education and the Ministry of Health of Ukraine, the Statute of the University and the Procedure for the Providing of Educational Services regulated by the main principles of the organization of the educational process in National Pirogov Memorial Medical University, Vinnytsya and the principles of academic integrity ( link <https://www.vnmu.edu.ua/en/general-regulations> ).

### **Adherence to the rules of VNMU, safety techniques in practical classes.**

**Requirements for preparation for practical classes.** Student should be present at the practical lesson on time, theoretically prepared according to the topic.

### **Usage of mobile phones and other electronic devices.**

Forbidden

**Academic integrity.** When studying the discipline, the student must be guided by the Code of Academic Integrity and Corporate Ethics of National Pirogov Memorial Medical University, Vinnytsya (link: <https://www.vnmu.edu.ua/en/general-regulations>)/ Code of Academic Integrity).

In case of violation of the norms of academic integrity during the current and final controls student receives a grade of "2" and must work it out to his teacher in the prescribed manner within two weeks after receiving an unsatisfactory assessment).

**Missed classes.** Missed classes are working out in the manner prescribed by Regulations of the Academic process in National Pirogov Memorial Medical University, Vinnytsya (link <https://www.vnmu.edu.ua/en/general-regulations>) at the time of work out schedule (published on the website of the department <https://www.vnmu.edu.ua/> department Therapeutic dentistry #) to the teacher on duty. To work out missed lesson student \_\_\_\_\_ must answer 3 questions and demonstrate practical skills according to the topic of the missed lesson.

**The procedure for admission to the discipline final control** is given in the Regulations of the Academic process in National Pirogov Memorial Medical University, Vinnytsya (link <https://www.vnmu.edu.ua/en/general-regulations> ). To the final control allowed students who do not have missed practical classes and received an average traditional grade of at least "3".

**Additional points.** Individual points in the discipline (from 1 to 12) that student can receive for individual work, the amount of which is published on the website of the department in the educational methodical materials of the discipline, the number of points is determined by the results of IRS according to Regulation of the Academic process in National Pirogov Memorial Medical University, Vinnytsya (link <https://www.vnmu.edu.ua/en/general-regulations> ).

**Conflict resolution.** In case of misunderstandings and complaints to the teacher because of the quality of educational services, knowledge assessment and other conflict situations, student should submit his / her claims to the teacher. If the issue is not resolved, the student has the right to apply to the head of the department according to Complaints Consideration Procedure in VNMU named after M.I. Pirogov (link <https://www.vnmu.edu.ua/en/general-regulations> )

**Politics in terms of remote learning.** Distance learning regulated by the Regulations of the elements of remote learning in National Pirogov Memorial Medical University, Vinnytsya (<https://www.vnmu.edu.ua/> General information). The main training platforms for studying are Microsoft Team and Google Meets. Practical classes, exercises and consultations during distance learning is published on the website of the department ([https://www.vnmu.edu.ua/en/Department of \\_\\_\\_\\_\\_ / to Students or https://www.vnmu.edu.ua/en/Department of Microbiology / News](https://www.vnmu.edu.ua/en/Department of _____ / to Students or https://www.vnmu.edu.ua/en/Department of Microbiology / News)).

Feedback from teachers is via messengers (Viber, Telegram, WhatsApp) or e-mail (at the teacher's choice) during working hours.

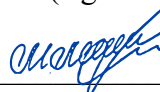
1. **Educational resources.**

Educational and methodological support of the discipline is published on the website of the department ([https://www.vnmu.edu.ua/en/department of \\_\\_\\_\\_\\_ / for students](https://www.vnmu.edu.ua/en/department of _____ / for students)). Consultations are held twice a week according to the schedule.

2. **The timetable and distribution of groups** with assigned teachers are published on the web page of the department (([https://www.vnmu.edu.ua/en/department \\_\\_\\_\\_\\_ / for students](https://www.vnmu.edu.ua/en/department _____ / for students)).

The syllabus of the subject "Clinical endodontics" was discussed and approved at the meeting of the department \_\_\_\_\_ (record № 1, dated "28" 08 2023)

Responsible for the course  Ass., PhD Vitalii VAKHOVSKIY  
(signature)

Head of the Department  Prof. of HEI Mariia SHINKARUK-DYKOVYTSKA  
(signature)