FACULTY STOMATOLOGY

STUDY PROGRAM 0911.1 STOMATOLOGY

CHAIR OF ODONTOLOGY, PERIODONTOLOGY AND ORAL PATHOLOGY "SOFIA SÎRBU"

APPROVED
at the meeting of the Commission for Quality Assurance and Evaluation of the Curriculum in Stomatology
Minutes No. 1 of 22.09.2020
Chairman, PhD, associate professor
Stepco Elena _____
(signature)

APPROVED
at the Council meeting of the Faculty Stomatology
Minutes No. 2 of 30.09.2020
Dean of Faculty, PhD, associate professor
Solomon Oleg _____
(signature)

APPROVED
approved at the meeting of the chair Odontology, periodontology and oral pathology "Sofia Sîrbu"
Minutes No. 01 of 25.08.2020
Head of chair, PhD, DMD, professor
Ciobanu Sergiu _____
(signature)

CURRICULUM

DISCIPLINE MODERN ROOT OBTURATION TECHNIQUES IN DENTAL PRACTICE

Integrated studies

Type of course: **Optional**

Curriculum developed by the group of authors:

Roman Ion, PhD, associate professor

Chişinău, 2020

I. PRELIMINARY

- **General presentation of the discipline: the place and the role of the discipline in development of specific skills in process of professional training/ speciality.**

The course of modern techniques of root obturation in stomatological practice represents an important component in the field of Dentistry, namely - Endodontics, whose major objective is to study the methods of obturation of root canals after their mechanical and medicinal preparation, in different clinical situations.

- **The mission of the curriculum (purpose) in professional training**

The main goals of endodontics include:

1. Significant importance is the development of an appropriate endodontic treatment plan with the prevention of complications.
2. The correct application of the knowledge and practical skills in endodontic treatment with the application of appropriate and contemporary methods.
3. Using modern methods of radicular obturation.
4. Applying biomechanical and specific principles in postendodontic restorations.
5. Correlations and evidence of periodontal clinical situations in the postendodontic treatment, their influence.

- **Languages of teaching: Romanian, English, Russian.**

- **Beneficiaries: students of the 3rd Faculty of Stomatology** .

II. ADMINISTRATION OF THE DISCIPLINE

Code of the discipline		**S.06.A.075**	
Name of the discipline		**MODERN ROOT OBTURATION TECHNIQUES IN DENTAL PRACTICE**	
Responsable for the discipline		**PhD, associate professor, Roman Ion**	
Year	**III**	Se Semester / Semesters mestrul/Semestrele	**VI**
Total Year hours including:			**30**
Theoretical courses	**10**	Practical / laboratory Theoretical courses work	
Practical courses	**10**	Individual work	**10**
Form of evaluation	**CD**	Number of credits	**1**

III. TRAINING OBJECTIVES IN THE DISCIPLINE

✓ ***At the level of knowledge and understanding:***

Need to know:

1. The History of Endodontics. The subject of Endodontics - medical and surgical branch of the dental medicine sciences. Terminology Anatomy of the endodontic space. Morphology and physiology of dental pulp. Morphological and functional characteristics of the pulpo-dentinal complex and their role in the success of biostimulating therapeutical methods.
2. Etiological Factors of Pulp and Periapical Pathology. Elements of prophylaxis in endodontics. Means of diagnosis. Radiological examination. Tooth ratio with local anatomical structures.
3. Inflammatory manifestations of pulp tissue and periapical tissues. Symptoms of pulp and periapical pathology. Preoperative evaluation of the possibilities of correct endodontic treatment.
4. Reversible and irreversible character of pulp and periapical inflammation. Indications and principles concerning the preservation of dental pulp by conservative biological treatment. Contraindications in biologically conservative treatment of pulp inflammation.
5. Study on clinical and radiological interpretation.
6. Principles and methods of three-dimensional canal obturation
7. Instrumentation used in root canal obturation.
8. Approach to errors and complications in endodontic treatment.
9. Evaluation of endodontic treatment. Possible failures in endodontic treatment and clinical resolution.
10. Errors and complications in endodontic treatment.
11. Combating recurrences in endodontic treatments. Monitoring of patients with endodontic treatment.
12. Principles of the quality of morpho-functional coronary restoration in endodontically treated teeth.
13. Methods of coronary restoration of teeth treated endodontically.

✓ ***At the integration level:***

• be able to evaluate the place and role of Endodontics in the clinical training of the dental students;
• be able to differentiate rotary and manual instruments and working techniques with them.
• be able to appreciate the root canal filling technique in correlation with the diagnosis
• be able to explain the mechanism of harmful action of the root canal filling materials;
• be able to deduce the possible causes of the occurrence of complications after endodontic treatment;
• be able to implement the knowledge gained in the research activity;
• be competent to use critically and with confidence the scientific information obtained using the new information and communication technologies;
• be able to use multimedia technology to receive, evaluate, store, produce, present and exchange information;
• be able to learn to learn, which will contribute to the management of the professional development.

IV. PREVIOUS CONDITIONS AND REQUIREMENTS

Student of the year requires the following:

- to know the language of instruction;
- to have preclinic confirmed skills and clinical abilities (anatomy and morphology of the endodontic space, dental instrumentation, mechanical and chemical processing of root canals on the simulator, classification of pulp and periapical diseases and properties of endodontic obturation materials);
- digital competences (use of the Internet, document processing, electronic tables and presentations);
- ability to communicate and team work;
- qualities - tolerance, compassion, autonomy.

V. THEMES AND ORIENTATIVE REPARTISATION OF COURSES

Courses (lectures) and practical courses Year III, semester VI:

Nr. d/o	Theme	Number of hours			
		Lectures	Semi-nars	Prac-tice	Indivi dual
1.	Mechanical preparation of root canals in pulp extractions. Methods. Stages. Instruments.	1	1		1
2.	Mechanical and medicinal treatment of the root canal after extirpation of the pulp. Root canal sterilization. Chemical, physico-chemical methods. Remedies, mechanism of action.	2	2		2
3.	Canal filling materials. Classification. Physico-chemical properties.	1	1		1

Nr. d/o	Theme	Number of hours			
		Lectures	Semi-nars	Prac-tice	Indivi dual
4.	Root canal obturation methods, classification. Principles and methods of three-dimensional root canal obturation.	1	1		1
5.	The technique of blocking the channels by cold and warm lateral condensation. The technique of closing channels by vertical condensation.	1	1		1
6.	Modern canal obturation techniques. Magnification of the operating field in endodontics, devices and their characteristics. Morpho-functional restoration of endodontically treated teeth.	2	2		2
7.	Errors and complications in endodontic diagnosis and treatment.	1	1		2
Total		10	10		10

VI. PROFESSIONAL COMPETENCES (CY) AND TRANSVERSAL (CT) COMPETENCES AND STUDY FINDINGS

PROFESSIONAL COMPETENCES:

- ✓ CP1. Highlighting and preventing the etiological factors of pulp and periapical pathology by knowing the morphophysiology of the dental pulp and the anatomy of the endodontic space and the apical periodontium.
- ✓ CP2. Preoperative evaluation of the possibilities of correct endodontic treatment.
- ✓ CP3. The establishment of a correct diagnosis and treatment plan.
- ✓ CP4. Knowledge of endodontic treatment methods. Endodontic and dento-alveolar surgery. Knowledge of the biomechanical principles of performing morpho-functional restorations specific to the teeth treated endodontically;
- ✓ CP5. The identification of the factors that can affect the evolution and prognosis of an orthograde endodontic treatment, as well as the possibilities in case of need for its possible resumption. The description of the concept and types of prophylaxis and their application levels (individual, group, society).
- ✓ CP6. Demonstration and application of acquired knowledge in the clinical and paraclinical assessment of the patient. Selection and argumentation of communication techniques, data collection and patient preparation for endodontic treatment. Promoting the principles of tolerance and compassion towards patients.

TRANSVERSAL COMPETENCES:

CT1: Applying professional evaluation standards, acting according to professional ethics, as well as the provisions of the legislation in force. Promoting logical reasoning, practical applicability,

assessment and self-assessment in decision-making.
CT2: Performing activities and exercising the roles specific to teamwork within the curative cabinet. Promoting the spirit of initiative, dialogue, cooperation, positive attitude and respect for others, empathy, altruism and continuous improvement of their own activities;
CT3: Systematically assessing personal skills, roles and expectations, applying self-assessments to learned processes, acquired skills and professionalism needs, effective use of language skills, knowledge in information technologies, research and communication skills to deliver quality services and adapting to the dynamics of policy requirements in health and for personal and professional development.

STUDY FINALS

• To know the particularities of the organization of the dental service, the specifics of the endodontic office, equipment, location requirements, equipment and instrumentation.

• To understand the principles of structure of endodontic compartments.

• To understand the relationship: oral cavity microorganisms → hard dental tissues → carious process → lesion of non-carious origin → appearance of carious lesion or lesion of non-carious origin → occurrence of pulp and periapical inflammation → treatment of pulpal and periapical disorders by endodontic treatment.

• To know the classification of endodontic instruments

- To know and understand the methods of permiabilization, mechanical processing of root canals using optical microscopy, advantages and disadvantages.
- To know the method of root canal filling by different techniques (classical technique, condensation, injection).
- To know how to evaluate the errors in avoiding complications following endodontic treatment.
- To know the obturation materials (curative and permanent), the physico-chemical properties, the interaction with the hard dental tissues and the adhesive system.
- To know and apply the techniques of polymerization of the filling material (direct and indirect) after endodontic treatment.
- To know and realize the procedures for adjusting, grinding and polishing dental restorations.
- To be able to assess the place and role of molecular biology in the pre-clinical training of the student physician.
- To be able to implement the knowledge gained in the research activity;
- To be competent to use critically and with confidence the scientific information obtained using the new information and communication technologies.

VII. THE STUDENT'S INDIVIDUAL WORK

Nr.	The expected product	Implementation Strategies	Evaluation criterias	Deadline for evaluation criteria
	Working with information sources:	Read the lecture or the material in the manual to the theme, carefully. Read questions according to the theme, which require a reflection on this subject. To get acquainted with the list of additional information sources on the topic. Select the source of additional information for that theme. Reading the text entirely, carefully and writing the essential content. Formulation of generalizations and conclusions regarding the importance of the theme / subject.	Ability to extract the essentials; interpretative skills; the volume of work	During the semester
	Practical work with the patient:	Until clinical trials are performed, to analyze the information obtained from the anamnesis, the objective and paraclinical exam (EOD, eg. Radiography) established diagnosis and the treatment plan. Performing the steps of consecutive treatment. Description of the manuscripts made in the patient's medical record. Formulation of patient recommendations. Analysis and appreciation of the practical lesson on the thematic patient. Selection of additional information, using electronic sources and additional bibliography.	Volume of work, solving the clinical situation, ability to complete the medical record card of the thematic patient	During the semester
	Apply different learning techniques		Volume of work, degree of comprehension into different subjects, level of scientific argumentation, quality of conclusions, elements of creativity, demonstration of understanding the problem,	During the semester

Nr.	The expected product	Implementation Strategies	Evaluation criterias	Deadline for evaluation criteria
			formation of personal attitude	

	Working with online materials	Online self-assessment, study of online materials on the Chair SITE, expressing your own opinions through forum and chat	Number and duration of SITE entries, self-evaluation results	During the semester
	Preparing and supporting presentations / portfolios:	Selection of the theme, setting the exposure plan, setting the terms of realization. Establishing PowerPoint presentation components - theme, purpose, results, conclusions, practical applications, bibliography. Peer reviews. Teacher reviews	The volume of work, the essence of the topic, the level of scientific argumentation, the quality of the conclusions, the creativity elements, the formation of the personal attitude, the exposure coherence and the scientific correctness, the graphic presentation, the way of presentation	During the semester

VIII. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-EVALUATION

• Teaching methods used

In the endodontic discipline teaching (modern techniques of radicular obturation), different methods and didactic methods are used, oriented towards the efficient acquisition and achievement of the objectives of the didactic process. In the theoretical lessons, along with traditional methods (lesson-exposure, lesson-conversation), modern methods (lesson-debate, lecture-conference, problem-lesson) are also used. For a better learning of the material, different semiotic systems (scientific language, graphical and computerized language) and teaching materials (tables, schemes, photographs, video with clinical cases) are used. During the lessons and extracurricular activities are used Communication Technologies - PowerPoint presentations.

Recommended learning methods

- **Observation -** Identification of characteristic elements of inflammation of pulp and periapical tissues**.**
- **Analysis -** Systematization of subjective, objective and paraclinical examination information. Highlighting key clinical elements by differentiating between them and establishing a diagnosis and treatment plan.
- **Scheme / figure analysis -** Selection of required information. Recognition based on knowledge and information of the selected structures indicated in the drawing, scheme. Analysis of the functions / role of recognized structures.
- **Comparison -** Analysis of the first object / process in a group and determination of its essential features. Analysis of the second object / process and the determination of its essential features. Comparing objects / processes and highlighting common features. Comparing objects / processes and determining differences. Establishment criteria for decommissioning. Formulation of conclusions / diagnosis and treatment plan.
- **Classification -** Identification of the structures / processes to be classified. Determining the criteria on which the classification is to be made. Distribution of structures / processes by groups according to established criteria.
- **Elaboration of the scheme -** Selection of elements, which must be included in the scheme. Playing the selected elements by different symbols / colors and indicating their relationships. Formulation of an appropriate title and legend of the symbols used.
- **Modeling -** Identifying and selecting the elements needed to model the clinical situation. Imagination (R-graphic, photostatic) of the studied clinical situation. Solving the similar clinical situation using the developed model. Formulation of the diagnosis and treatment plan, deduced from the arguments and findings of the clinical and paraclinical examination.
- **Experiment** - Formulation of a hypothesis, based on known facts, on the studied process / phenomenon. Verifying the hypothesis by performing the studied processes / phenomena under laboratory conditions. Formulation of conclusions, deduced from arguments or findings.

• Applied didactic strategies / technologies (discipline specific);

"The round table"; "Group Interview"; "Clinical case study"; "Creative Controversy", "Presentations in Pawer Point". Clinical-video cases, Master-class

• Methods of assessment (including an indication of how the final grade is calculated).

- ✓ * **Current**: front and / or individual control through
- ✓ • (a) applying docimological tests,
- ✓ • (b) solving situational / clinical cases,
- ✓ • (c) analysis of case studies
- ✓ • (d) performing role-plays on the topics discussed.
- ✓ • (e) control work
- ✓ * **Final: Colocvium**

The final grade will consist of the average score of three samples: practical / clinical work, annual average and final aggregation (part 0,) and oral interview (part 0 ,)

The average annual mark and the marks of all the final exam stages will be expressed in numbers according to the scoring scale (according to the table), and the final mark obtained will be expressed in two decimal places to be passed in the note book.

Scoring scale

THE INTERMEDIATE NOTES GRILL (annual average, grades from the exam stages)	National rating system	Equivalent ECTS
1,00-3,00	2	F
3,01-4,99	4	FX
5,00	5	E
5,01-5,50	5,5	
5,51-6,0	6	
6,01-6,50	6,5	D
6,51-7,00	7	
7,01-7,50	7,5	C
7,51-8,00	8	
8,01-8,50	8,5	B
8,51-9,00	9	
9,01-9,50	9,5	A
9,51-10,0	10	

Failure to attend the examination without good reason is recorded as "absent" and is equivalent to 0 (zero). The student is entitled to 2 repeated claims of the unsuccessful exam.

IX. RECOMMENDED BIBLIOGRAPHY

A. Obligatory:

1. Nicolaiciuc, Valentina. Practical guide : clinical practical lessons for the 4th year of study 7th semester : subject : Apical periodontitis. Non-carious disease / V. Nicolaiciuc ; State University of Medicine and Pharmacy "Nicolae Testemitanu", the Department of Therapeutical Dentistry. - Chişinău : Medicina, 2012
2. Nicolaiciuc, Valentina. Dental pulpitis and elements of endodontic therapy : course of lectures for the 3rd year of study the 6th semester / V. Nicolaiciuc ; Public Institution the State University of Medicine and Pharmacy "Nicolae Testemitanu", Department of Therapeutical Dentistry. - Chişinău : Medicina, 2013

B. Additional:

1. Cohen. Pathways of the Pulp Expert Consult 11. Edition 2015;
2. Fuhrmann, Andreas. Dental radiology : a contemporary guide to dental radiology for students and practitioners / Andreas Furmann. - Stuttgart : Thieme, 2015

3.Nisha Garg, Amit Garg. Textbook of Endodontics. Jaypee Brothers Medical Publishers LTD

4.Theodore M. Roberson, Harald O. Heymann, Edward J. Swift. Operative Dentistry. Fourth Edition. Mosby 2002.

5. Urgente si afectiuni medicale in cabinetul stomatologic / coord. : A. Bucur, R. Cioaca. - Bucuresti : Etna, 2004
6. Stomatologie terapeutica : indrumar didactico - metodic / V. Burlacu, A. Eni, T. Rezman, A. Cartaleanu ; red. coord. V. Melnic. - Chisinau : Stiinta, 1996
7. Andrei Iliescu Tratat de endodontie, vol. I Editura: MEDICALA. Oras: Bucuresti. 2014, ISBN: 973-39-0773-2.
8. Nicolaiciuc V. Dental pulpitis and elements of endodontic therapy, Centrul Editorial Poligrafic Medicina, 2013.
9. Gafar M. Iliescu A. Odontologie. Endodonție clinică și practică. București, Ed. Medicală, 2002
10. Danici A., Roman I., Ciobanu S., Cucu D. Comparative study of endodontic intruments shaping properties. În: Medicina stomatologică. 2017, 1-2(42-43), ISSN 1857-1328 p.61-65
11. Nicolau Gh., Roman I., Danici A. Preserving the vitality of the dental pulp in traumatic pulpitis using mineral trioxide aggregate. În: A III-a conferință internațională a ARE. Craiova, România. ISBN 978-606-11-4946-9. p. 38
12. Nicolau Gh., Danici A., Roman I. Irigation of the root canals – its role in cleaning and sterilization of the endodontic space. În: A III-a conferință internațională a ARE. Craiova, România. ISBN 978-606-11-4946-9. p. 42