

**Semmelweis University, Faculty of Dentistry - single, long-cycle medical training -
Undivided, one-tier training in dentistry**

Name of the host institution (and any contributing institution):

Helyreállító Fogászati és Endodonciai Klinika

Name of subject in Hungarian: Endodontiai propedeutika

Name of subject in English: Endodontics, Pre-clinical

Name of subject in German: Endodontische Propädeutik

Credit value of the course: 3

Semester: 6th semester

(in which the subject is taught according to the curriculum)

Weekly hours	Lecture	Practice	Seminar
4.0	1.0	3.0	0.0

Semester hours	Lecture	Practice	Seminar
56.0	14.0	42.0	0.0

Type of course:

obligatory

Academic year:

2026/27

Language of instruction (for optional and elective subjects):

Angol

Course code:

FOKOKFK430_1A

(in the case of a new course, to be completed by the Dean's Office, following approval)

Course coordinator name: Dr. Kerémi Beáta

Course coordinator location of work, telephone availability: Department of Restorative Dentistry and Endodontics; +36-1-317-1598

Course coordinator position: associate professor

Course coordinator Date and number of habilitation: 2024.05.28.; 09/2024.

Objectives of the course, and its place in the curriculum of the medical training program:

This subject serves as the establishment of basic knowledge of Endodontics. The goal is to acquire theoretical and practical knowledge to facilitate the endodontic treatment of patients in clinical practice.

During the course of their studies, students will acquire:

- the anatomy of roots, root canals, and periapical space
 - the theoretical basics of endodontics
 - the symptoms, diagnosis, and therapy of pulpal diseases and their consequences
 - Access openings of the pulp chamber, root canal preparation, and obturation on plastic endodontic practice blocks/tooth
 - the use of mechanical root canal preparation tools and the apex locator
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Format of the course (lectures, group work, practical lessons, etc.):

1x45min lecture and 3x45min practice/week - hands-on practice, small-group instruction

Competencies acquired through completion of course:

Upon successful completion of the course, the student will know the process, conditions, diagnostics, and therapy of endodontic diseases; will know and use the instruments, tools, and machines necessary for endodontic treatment. They will acquire knowledge and proficiency in the principles of root canal treatment, enabling them to perform endodontic procedures with skill and precision. Furthermore, they will possess the expertise to restore the treated teeth, completing the comprehensive dental care process.

Course outcome (names and NEPTUN ID of related subjects):

FOKOKFK357_1A, FOKOKFK357_2A, FOKOKFK357_3A, FOKOKFK357_4A, FOKOKFK357_5A

Prerequisites for course registration and completion: (NEPTUN ID):

Restorative Dentistry, Pre-clinical II., Odontotechnology and Prosthodontics, Pre-clinical III., Preventive Dentistry

In the case of multi-semester courses, position on the possibility of and conditions for concurrent registration:

A one-semester course; concurrent registration is not permitted

The number of students required to start the course (minimum, maximum), method of selecting participants:

compulsory course - in accordance with the current number of students

Detailed course syllabus (if the course can be divided into modules, please indicate):
(Theoretical and practical instruction must be broken down into hours (weeks), numbered separately; names of instructors and lecturers must be listed, indicating guest lecturers/instructors. It cannot be attached separately! For guest lecturers, attachment of CV is required in all cases!)

The subject is taught with one theoretical (lecture) and three practical lessons per week.

Students will practice access cavity preparation (trepanation), root canal preparation, and root canal obturation on endodontic plastic blocks and extracted human teeth. Students' knowledge is continuously monitored.

Themes of the lectures (week-by-week):

1. Morphology of the tooth, pulp chamber, and root canals. Mechanical preparation of the natural tooth.
2. Anatomy of the root apex. Preoperative radiography. Determination of working length by radiographic method and electronic measuring instruments.
3. Pulpal and periapical pathology
4. Concept, purpose, indication, contraindication, and limitation of root canal therapy. Emergency procedures in endodontics. Vertical root fracture
5. Preventive endodontics: the importance of pulp protection. Endodontic diagnostics
6. Microbiological aspects of endodontics. Antiseptic solutions, drugs and their use in root canal treatment.
7. Procedural errors during root canal preparation. Hand and rotary root canal preparation techniques (beyond the step-back).
8. Evaluation of endodontic outcome. The revision of root canal treatment
9. Root canal obturation techniques (cold and warm guttapercha techniques)
10. Aesthetic and functional restoration of root canal treated teeth (post and core buildup, single crown, endocrown, indirect restorations)
11. Endodontic treatment of traumatic teeth
12. Surgical interventions in restorative dentistry and endodontics (crown lengthening, drainage, apicectomy, hemisection, bicuspidation, amputation)
13. Restorative and endodontic treatment for patients requiring special care. Odontogenic focal infection
14. Indications, contraindications, and methods of tooth whitening. Possible side effects and their prevention.

The material of the practices (week-by-week, consultations; practices):

1. Tooth anatomy – anatomy of the root, root canals, and the periapical space; types of access cavities; tooth sections
2. Endodontics hand instruments; working length determinations
3. Introduction to step-back technique; the shaping of root canals
4. Rotary techniques for the shaping of root canals
5. Irrigation materials and instruments; the shaping of canals
6. Medicaments in endodontics; the shaping of canals
7. **Midterm test 1 - Anatomy, instruments, initial steps of root canal treatment, root canal shaping;** shaping of canals
8. Root canal obturation methods - lateral compaction technique; obturation of root canals
9. Root canal obturation methods - mechanical instruments - single cone technique; obturation of root canals
10. Temporary fillings in endodontics; obturation of root canals
11. Role of radiology in endodontics; presentation of clinical cases; obturation of root canals
12. **Midterm test 2 - Root canal obturation, medicaments, temporary fillings;** obturation of root canals
13. Evaluation of root canal obturations; making temporary fillings
14. Practicing in removing old root canal obturations

Other courses with overlapping topics (obligatory, optional, or elective courses) in interdisciplinary areas. To minimize overlaps, topics should be coordinated. NEPTUN ID(s) of courses (to be provided):

FOKOKFK357_1A, FOKOKFK357_2A, FOKOKFK357_3A, FOKOKFK357_4A, FOKOKFK357_5A

Requirements for attendance, options for making up missed sessions, and method of absence justification:

The materials of lectures and practices are essential for completing the practical work and passing the exam.

Attendance at the practices is compulsory, and absences at any one practice may not exceed 25% of the total number of practices. In the case of the practice scheduled on a national holiday, that

practice will not be held and cannot be replaced. Consequently, the total number of practices in the particular semester decreased. Therefore, the 25% is calculated from the decreased number.

After three instances of arriving late by less than 15 minutes, it will be counted as one absence. On the other hand, if you arrive late to the practice by more than 15 minutes, it will be directly counted as an absence. It is important to note that missed practices cannot be made up, regardless of whether it was a late arrival or an absence. Additionally, in the case of an absence, there is no need to provide a certificate.

Assessment methods during semester (number, topics, and dates of midterms and reports, method of inclusion in the course grade, opportunities for make-up and improvement of marks):

(number, topics, and dates of midterms and reports, method of inclusion in the course grade, opportunities for make-up and improvement of marks)

Students must arrive in the practice with knowledge of the material related to the scheduled program available on Moodle website. During the semester, small tests take place weekly. **Two midterms will be given, one on the 7th week (anatomy, instruments, initial steps of root canal treatment, root canal shaping) and the second on the 12th week (root canal obturation, medicaments, and temporary fillings).** The topic includes the material of the lectures and practices. If a student does not pass the exam the first time, the exam can be retaken in two weeks. A maximum of two additional attempts for the retake will be provided. It will be assessed following the procedure laid down in the Study and Examination Regulations of Semmelweis University.

The practice leaders will monitor and assess the work carried out on the practices at each stage. The results of the evaluations are included in the semester rating.

Number and type of individual assignments to be completed, submission deadlines:

not relevant

Requirements for the successful completion of the course:

A minimum of 75% attendance is required at the practices, and absence may not exceed 25% of the practices regardless of the reason (please refer to **Attendance on practices and lectures, replacement in case of missed sessions**).

For the signature of the semester, a sufficient level of continuous and consistent theoretical preparation in practice and a sufficient level of practical performance are required. The average grade of the theoretical part (the weekly test and the midterms) and the average grade of the practical part must reach the 2.0 grade separately.

Type of assessment:

Exam requirements (list of topics, topics of the test exam, and the optional project topics accepted as an exam)

Artificial intelligence may not be used in any form during the exam. Students are responsible for any incorrect information obtained from artificial intelligence during their preparation at home.

The grades given for each theoretical topic must separately reach grade 2.0. Properly identifying an extracted human tooth and instrument recognition must also reach grade 2.0, respectively.

The final exam fails if any part of the examination fails (does not reach 2.0).

Exam questions are available on the website and the Moodle interface.

Topics for final exam:

Questions A

1. History taking, patient examination and treatment plan in endodontics
2. Tools for diagnosis in endodontics
3. Anatomy and histology of the pulp. Description of the pulp chamber
4. Anatomy of the root apex and periapical tissues
5. Pathophysiology, symptoms, diagnosis and therapy of pulpal and periapical diseases
6. Pathophysiology, symptoms, diagnosis and therapy of acute (symptomatic) and chronic (asymptomatic) apical periodontitis and condensing osteitis
7. Pathophysiology, symptoms, diagnosis and therapy of acute and chronic apical abscess.
8. Concept, purpose, indication, contraindication and limitation of root canal therapy
9. Preventive endodontics: the importance of pulp protection. Vital pulp therapies.
10. Emergency procedures in endodontics. Vertical root fracture.
11. Aesthetic and functional restoration of root canal treated teeth (post and core buildup, single crown, endocrown, indirect restorations)
12. Endodontic treatment of accidentally damaged teeth
13. Restorative and endodontic treatment for patients requiring special care. Odontogenic focal infection

Questions B

1. Manual and powered instruments in root canal treatment.
2. Purpose, protocol, and technique of root canal irrigation and local medication in endodontic treatment. Microbiological aspects of endodontics.
3. Access openings (trepanation) and pulp extirpation
4. Importance and methods of working length determination
5. Endodontic hand instruments techniques. Orifice opening and shaping
6. Preparation of the root canal using the step-back technique. Apical stop/apical seal.
7. Hand and rotary root canal preparation techniques (beyond the step-back)
8. Procedural errors during root canal preparation
9. Root canal obturation techniques (cold and warm guttapercha techniques)
10. Lateral condensation/compaction.
11. Evaluation of endodontic outcome. The indication, contraindication, and modality of the revision of root canal treatment
12. Steps of orthograde retreatment of failed root canal treatments.
13. Indications, contraindications, and methods of tooth whitening. Possible side effects and their prevention.
14. Surgical interventions in restorative dentistry and endodontics (crown lengthening, drainage, apicectomy, hemisection, bicuspidation, amputation).

Clear, specific minimum requirements for assessment. (The list of mandatory concepts, parameters, diagrams, calculations, and practical skills required to obtain a passing grade, as well as the criteria for the completion and evaluation of project assignments accepted as an exam.) A link published on the department's website referring to the minimum requirements of the course.

This is a major colloquium and oral exam in which students are required to explain two topics (A and B questions from topic lists), identify a human tooth extracted from a patient, and demonstrate knowledge of basic endodontic instruments.

Students must be familiar with the content of the teaching materials uploaded to the Moodle platform.

Method and type of grading (Share of theoretical and practical examinations in the overall evaluation. Inclusion of the results in the end-of-term assessment. Possibilities of and conditions for offered grades.): (Share of theoretical and practical examinations in the overall evaluation, Inclusion of the results in the end-of-term assessment, Possibilities of and conditions for offered grades)

The semester signature is a prerequisite for admission to the course.

The grading for the final exam is a five-point scale. Theoretical items (two questions) make up 60% of the final exam mark, tooth recognition makes up 20%, the endodontic tools recognition contributes 20% to the final exam. If any part of the exam fails, the whole exam does as well.

Not possible

Artificial intelligence systems used in the teaching of the subject and the manner of their application

The course is primarily based on textbooks, lectures, seminars, and practical exercises. Students may use artificial intelligence (ChatGPT) during the course, but they must consult with their instructor regarding the reliability of the information obtained.

List of coursebooks, textbooks, study aids and literature facilitating the acquisition of knowledge to complete the course and included in the assessment, precisely indicating which requirement each item is related to (e.g., topic by topic) as well as a list of important technical and other applicable study aids; possibility of individual or group student consultation, if available:

Online resources:

Type	Mandatory
Title	Teaching materials uploaded to the Moodle site
Link	https://itc.semmelweis.hu/moodle/course/view.php?id

Printed resources:

Type	Recommended
Author	Torabinejad M, Walton RE, Fouad AF
Title	Endodontics. Principles and Practice. 5th ed. or higher
Publisher	Saunders/Elsevier
Year of publication	2014

Type	Recommended
Author	Hargreaves KM, Berman LH
Title	Cohen's Pathways of the Pulp. 11th ed. or higher
Publisher	Mosby/Elsevier
Year of publication	2015

Signature of habilitated instructor (course coordinator) announcing the course:

Signature of the director of the host institution:

Date of submission:
