COURSE SYLLABUS

Semmelweis University, Faculty of Dentistry,

Doctor of Medicine in Dentistry Program

Name of the course in Hungarian: Endodontiai propedeutika

In English[1]: Endodontics pre-clinical

In German[1]: Endodontische Propädeutik

Credits: 3

Number of hours: 56, of which lectures: 14x1, practicals: 14x3, seminars: ---

Course type: **compulsory** compulsory elective elective

Semester in which the course is offered, according to the curriculum: 6th semester

Frequency of announcement: per year

The educational research unit teaching the course:

Department of Restorative Dentistry and Endodontics

Academic year: 2025/26 Academic year 2nd Semester

Neptun code of the course: FOKOKFK356_1A

Course coordinator: Beáta KERÉMI DMD, PhD

Position: associate professor

Workplace, contact:

Department of Restorative Dentistry and Endodontics

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Course objectives and role within the Dental Curriculum:

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

Location of instruction (lecture hall, seminar room, etc.):

Dental Clinical and Training Centre, Pre-clinical laboratories,

H-1088 Budapest, Szentkirályi street 47.

Competencies acquired upon successful completion of the 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.

Prerequisites and eligibility requirements for enrollment and completion, in the case of a multiple-semester course, is continuous enrollment ("course rollover") allowed, and if so, under what conditions:

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

Enrollment requirements: minimum and maximum number of students, and selection criteria: ---

compulsory course

How to apply for the course: in the Neptun system

Detailed course content[2]:

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

Related courses covering overlapping or interdisciplinary topics (including both compulsory and elective courses) with possible overlapping areas of the course curriculum:

- Restorative Dentistry and Endodontics I.
- Restorative Dentistry and Endodontics II.
- Restorative Dentistry and Endodontics III.
- Restorative Dentistry and Endodontics IV.

- Restorative Dentistry and Endodontics V.
- Clinical Dentistry I.
- Clinical Dentistry II.

Completing this course will lay the foundation for the Restorative dentistry and endodontics course, and later, in Year V, the Clinical dentistry course. It will provide the student with a framework for patient management so that the knowledge acquired here can be repeated and effectively extended.

The application of artificial intelligence in teaching of the course:

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.

Specific academic requirements for successful course completion[3]:

Students are required to arrive prepared for each practice.

They should be familiar with the content of the teaching aids uploaded to the Moodle platform.

Attendance requirements and make-up policy:

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.

Methods of assessment during the study period[4]:

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.

Requirements for semester completion and signature:

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 examination:

*semifinal exam** - counted in the average, similarly to final exam – **oral exam**

Examination requirements[5]:

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 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).

Grading method and type[6], the option for grade offer and its conditions:

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.

Examination registration procedure:

in the Neptun system

Rules for examination retake:

In Neptun system based on the current university Study and Exam Regulations.

Recommended printed, electronic, and online study materials, textbooks, and references (include URLs for online materials):

1. Torabinejad M, Walton RE, Fouad AF: Endodontics. Principles and Practice. 5th ed. or higher, St.Louis, Missouri, Saunders/Elsevier, 2014
2. Hargreaves KM, Berman LH: Cohen's Pathways of the Pulp. 11th ed. or higher, St. Louis, Missouri, Mosby/Elsevier, 2015
3. Teaching materials uploaded to the Moodle site

Signature of course lecturer (course coordinator): **Beáta Kerémi DMD, PhD** associate professor
Signature of the head of coordinating department: **János Vág DMD, PhD, DSc** full professor, head of department
Date of submission: 2025.08.27.

Opinion of the Committee on Education and Credit Transfer:
Notes from the Dean's Office:
Signature of Dean:

[1] This section must be completed only if the course is offered in the given foreign language.

[2] Theoretical and practical instruction must be listed separately, broken down by hours (weeks) and numbered accordingly. Attachments are not permitted.

[3] E.g., fieldwork, case report analysis, conducting a survey, etc.

[4] E.g., homework, in-class presentations, midterm tests. Please specify topics and dates, as well as possibilities for make-up and retake.

[5] For a theoretical exam, please include the list of exam topics, for a practical exam, specify the scope and format of the examination.

[6] Description of how the theoretical and practical exams are weighted in the final grade. Description of midterm assessments contribute to the final grade.