COURSE SYLLABUS

Semmelweis University, Faculty of Dentistry,

Doctor of Medicine in Dentistry Program

Name of the course in Hungarian: Restauratív fogászati propedeutika II.

In English[1]: Restorative dentistry pre-clinical II.

In German[1]: Zahnerhaltungskunde Propädeutik II.

Credits: 4

Number of hours: 56, of which lectures: 14x1, practicals: 14x3 seminars: 0

Course type: **compulsory** compulsory elective elective

Semester in which the course is offered, according to the curriculum: 5th Semester

Frequency of announcement: per year

The educational research unit teaching the course:

Department of Restorative Dentistry and Endodontics

Academic year: 2025/26 1st Semester

Neptun code of the course: FOKOKFK355_2A

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 establishes basic knowledge of Restorative Dentistry with a special focus on indirect restoration. The goal is to acquire theoretical and practical knowledge that can be used to treat patients in clinical practice.

During practice, the students learn:

- the theoretical, practical steps of preparing inlays, onlays, overlays
- the use of the CAD/CAM systems (dental laboratory steps included)
- the use of intraoral scanners
- the whole digital workflow of single restoration

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

Dental Clinical and Training Centre, Pre-clinical labs;

H-1088 Budapest, Szentkirályi street 47.

Competencies acquired upon successful completion of the course:

Upon completing the subject, the student will learn the theoretical, practical, and technical

steps of inlay/onlay restoration and chairside CAD/CAM system.

Prepares/gets ready for clinical patient care.

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 I
- Odontotechnology and Prosthodontics Pre-clinical II
- Medical and Dental Physiology II

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

compulsory subject

How to apply for the course: in the Neptun system

Detailed course content[2]:

This subject includes one hour of theory and three hours of practice weekly.

During practice, the task is to prepare cavities for inlay/onlay restorations. They learn how to use intraoral scanners, design inlay/onlay with the design software that is part of the CAD/CAM system, learn about the milling process, and how to cement inlay/onlay in the prepared cavity.

Students' knowledge is continuously monitored.

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

1. Classification (inlay/onlay/overlay/endocrown/veneer/tabletop) and materials for indirect restorations. Indications, contraindications, materials, and clinical steps for metal inlays
2. Aesthetic (composite, ceramic, hybrid) indirect restorations. Dome concept
3. Analog and digital impressions for single restorations. Indication and application of gingival retraction. Chairside CAD/CAM technology. Basics of design and milling.
4. Glass ionomer cement and other polymeric materials (composition, indication, and application)
5. Application of liner, base, and temporary fillings. Polishing, removal, and toxicology of amalgam fillings
6. Fundamental concepts of the adhesive technique
7. Composites - material science (composition, classification, properties)
8. Practical considerations for the clinical use of composites and adhesive technique
9. Materials and cementation of indirect aesthetic restorations (material science of restoration and adhesive cement, surface treatments of the tooth and the restoration, clinical steps of cementation)
10. The concept, localization, and progression of caries in the anatomical crown
11. Caries diagnostic tools

12. Cervical lesion and its complex treatment
13. Patient admission and treatment plan (sequence of general rehabilitation and restorative and endodontic dental treatments)
14. The order of clinical practices, a compilation of student's case presentations, basic knowledge of dental photography

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

1. Instruments, matrix application, making of Class 5 and Class 2 composite filling (repetition)
2. Basics of inlay making; Class 2 cavity preparation for aesthetic inlay/onlay
3. Comparison of cavity preparation of metal and aesthetic inlays; Class 2 cavity preparation for aesthetic inlay/onlay
4. Preparation differences - for different types of fillings and inlays; Class 2 cavity preparation for aesthetic inlay/onlay
5. **Midterm 1: cavity preparation for indirect restorations, materials of inlays/onlays**
6. Scanning of cavities prepared for inlays, the design process of inlay/onlay and milling process
7. Treatment of crown fractures of anterior teeth; making the temporary filling (glass ionomer and/or phosphate cement)
8. Cavity preparation and filling - front teeth
9. The practice of rubber dam isolation
10. **Midterm 2: Digital workflow and cementation of indirect restorations**
11. Cementation of inlays
12. Equipment of the dental office; making composite filling I
13. Infection control; making composite filling II
14. Finishing, polishing – tools, and techniques

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

This subject establishes the knowledge and competence for Restorative Dentistry and Endodontics, and Clinical Dentistry subjects, so the knowledge acquired here will expand.

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 for any reason 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 **two midterms will be written, one on the 5th week (inlay/onlay/overlay preparation and materials) and the second on the 10th week (digital workflow, cementation)**. The topic includes the material of the lectures and practices. If a student does not pass the midterm 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 practical work is graded at the end of each type of task. 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 and the average grade of the practical part must reach the 2.0 grade

separately. The theoretical part comprises the weekly test and the midterms. Each midterm must reach a 2.0 grade. The tooth recognition must reach a 2.0 grade.

The type tasks indicated in Moodle (e.g., preparing a cavity for inlays/onlays, making a filling, etc.) are min. 75% of the type tasks must be completed. Completely missing a specific assignment/task will result in a refusal to sign the end-of-semester.

Type of examination:

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 final exams comprise theoretical and practical parts with five partial marks. First part: correctly identifying an extracted human tooth (one partial mark), the instrument recognition&application (e.g., matrix placement) (one partial mark), and making rubber dam isolation (one partial mark) must also reach an average of 2.0, separately. Based on random generation, two questions should be chosen and answered (two partial marks). The grades given for each theoretical topic must separately reach grade 2.0. The final exam fails if any part of the examination fails (does not reach 2.0). The exam questions are available on the Moodle interface.

Theoretical topics for the final exam:

Questions A

1. The anatomy of the remaining teeth. Marking of teeth. Mühlreiter marks
2. Concept, localization, and progression of caries on the anatomical crown
3. Histology of caries (enamel, dentin, and root caries)
4. Manual and powered cutting equipment and instruments (micromotor, turbine, burs)
5. Isolation of teeth, methods, and tools
6. Classification of cavities by Black, the basis of classification. Preparation design, methods, and nomenclature
7. Rules and steps of cavity design for direct aesthetic restoration
8. Class I cavity preparation for a composite filling
9. Class II cavity preparation for a composite filling
10. Class III cavity preparation for a composite filling
11. Class IV cavity preparation for a composite filling. Treatment of crown fractures of anterior teeth.
12. Class V cavity preparation and cavities prepared for cervical filling
13. The aim and type of the fillings. Required properties of filling materials. Classification of filling materials.
14. Application of liners, bases, and temporary filling. Polishing, removal, and toxicology of

amalgam fillings

15. Glass-ionomer cement and other polymeric materials (composition, indication, and application)
16. Composites - materials science (composition, classification, properties)

Questions B

1. Fundamental concepts of the adhesive technique
2. Clinical application of the adhesive technique
3. Matrices and matrix systems
4. Clinical technique for direct class III and IV composite restoration
5. Clinical technique for direct class I and V composite restoration
6. Clinical technique for direct class II composite restoration
7. Contouring, finishing, and polishing of fillings
8. Classification (inlay/onlay/overlay/endocrown/veneer/tabletop) and materials for indirect restorations
9. Clinical steps and cavity preparation for indirect restorations. Similarities and differences compared to the plastic fillings
10. Indications, contraindications, materials, and clinical steps for metal inlays
11. Indications, contraindications, materials, and clinical steps for indirect aesthetic restorations (composite, ceramic, hybrid). Dome concept
12. Digital and analog impressions for indirect restorations. Indication and application of gingival retraction.
13. Chairside CAD/CAM technology. Basics of design and milling
14. Cementation of indirect aesthetic restorations (material science of adhesive cement, surface treatments of the tooth and the restoration, clinical steps of cementation)
15. Patient admission and treatment plan (sequence of general rehabilitation and restorative and endodontic dental treatments)
16. Equipment in the dental office, ergonomics, four-handed treatment, infection control
17. Caries diagnostic tools

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) comprise 60% of the final exam mark. Tooth recognition makes up 15%. The recognition and the use of the instruments contribute 10%, and rubber dam isolation contribute 15% 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 the Neptun system, it is 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. Ritter AV, Boushell LW, Walter R: Sturdevant's Art and Science of Operative Dentistry 7th ed. or higher, St. Louis, Mosby, 2018

2. 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.