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Subject:	<i>Preclinical Dental Medicine 3</i>		
Study programme:	Dental Medicine	Semester:	<i>1. semester</i>
Valuation:	<i>credit</i>	Obligation:	obligatory
Number of hours:	<i>2 h. lectures and 4 hours of lessons/ week</i>		70 hours

Place: Department of Stomatology and Maxillofacial Surgery
1 st Department of Stomatology
Department of Stomatology and Maxillofacial Surgery and Specialized
Hospital for Head and Neck Diseases, Academy of Košice, n.o

Lectures: Monday 07:30 – 09:00
Lecture room P3

<i>Week</i>	<i>Lectures</i>	<i>Practicals/Seminars</i>
1.	Introduction to Cariology Definition of cariology; scope and content of cariology; theories of dental caries; epidemiology of dental caries; economic impact of dental caries. 21.09.2026 07:30-09:00 MUDr.M. Tamášová, PhD.	Course organization and requirements for successful completion. Introduction to the basic terminology used in cariology. Assessment of epidemiological indices of dental caries (DMFT, dmft). Examination of dental caries experience. Calculation and interpretation of the DMFT index. Discussion of risk factors for dental caries and its economic impact.
2.	Hard Dental Tissues and the Pulp–Dentin Complex Anatomy and histology of enamel, dentin, and cementum; mineralization; physiology of hard dental tissues; protective mechanisms of the tooth. 28.09.2026 07:30-09:00 MDDr.Z. Minarčíková	Entry test covering the Preclinical Dentistry I and Preclinical Dentistry II curriculum. Introduction to the preclinical simulation laboratory. Rubber dam isolation, use of Optigrate, and maintenance of a dry operating field. Preparation of a Class I cavity on tooth 27 with appropriate pulp protection.
3.	Aetiology and Pathogenesis of Dental Caries Multifactorial aetiology of dental caries; Keyes' diagram; dental biofilm; host factors; dietary substrate; time factor; ecological hypothesis of caries development. 05.10.2026 07:30-09:00 MUDr.M. Tamášová, PhD.	Test – Black's cavities Class I – VI. Discussion of clinical cases with a focus on identifying the causes of dental caries development and proposing preventive measures aimed at modifying individual aetiological factors. Preparation of a Class I cavity on tooth 16 (occlusal surface) for composite restoration; use of 5th-generation adhesive systems combined with composite resin; application of the occlusal stamp technique.

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4.	Microbiology of Dental Plaque Dental biofilm formation; oral microbiome; cariogenic bacteria; carbohydrate metabolism; acid production; dysbiosis; development of the caries process. 12.10.2026 07:30-09:00 MUDr.A.Petrášová, PhD.	Review of Lectures 3 and 4 Patient examination; dental records and documentation; clinical charting; calculation of DMFT, DMFS, RI, %P, %K, and %E indices. Preparation of a Class II cavity on tooth 14 (mesio-occlusal surface) for amalgam restoration. Review of radiographic examination, analyses, and radiographic interpretation.
5.	Demineralisation and Remineralisation Histopathology of dental caries; chemical mechanisms of the caries process; critical pH; dynamic mineral equilibrium; role of saliva; natural remineralisation; fluorides and remineralising agents. 19.10.2026 07:30-09:00 MDDr.A.Mičková	Test : Lectures 1-4 Mechanisms of action of fluorides. Fluoride-containing toothpastes, gels, varnishes, mouth rinses, and CPP-ACP remineralisation technology. Slot preparation of a Class II cavity: tooth 45 distal surface (D) for glass ionomer cement (GIC) restoration.
6.	Diagnosis of Dental Caries Clinical examination; ICDAS (International Caries Detection and Assessment System); radiographic diagnosis; transillumination; laser fluorescence; differential diagnosis. 26.10.2026 07:30-09:00 MUDr.A.Petrášová. PhD.	Review of Lecture 5 Risk factors for dental caries development; protective factors; modern methods of dental caries diagnosis. Preparation of a Class III cavity on tooth 22 distal surface (D) for composite restoration.
7.	Assessment of Dental Caries Risk Individual risk factors; protective factors; CAMBRA (Caries Management by Risk Assessment); ICCMS™ (International Caries Classification and Management System); development of an individualised preventive plan. 02.11.2026 07:30-09:00 MDDr.L. Soták-Benedeková	Test – Restorative Materials Management of deep dental caries; principles, treatment options, and materials used for pulp protection. Class IV cavity preparation on tooth 21 mesial surface (M): deep dental caries – composite resin restoration.
8.	Classification of Carious Lesions Black's classification; ICDAS classification; classification according to lesion activity, location, and depth; assessment of dental caries progression. 09.11.2026 07:30-09:00 MUDr.M. Tamášová, PhD.	Review of Lecture 7 Class IV cavity restoration – reconstruction using a palatal silicone index on tooth 11 mesial surface Preparation of a Class III cavity on carious tooth 11 distal surface (D). Review of Class II restorations, matrix systems, and practice using the Palodent matrix system.
9.	Dental Caries Prevention in Clinical Practice Primary, secondary, and tertiary prevention; oral hygiene; nutrition; patient education; preventive programmes. 16.11.2026 07:30-09:00 MDDr. Z.Minarčíková	Review of Lecture 8 Oral hygiene, nutrition, patient education, and practical training in patient education techniques. Preparation of a Class II cavity on carious tooth 36 (occluso-distal surface) for composite restoration; rubber dam isolation; phantom head simulation training.

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10.	Fluorides and Remineralising Agents Mechanisms of action of fluorides; topical and systemic fluoridation; fluoride varnishes and gels; CPP-ACP (casein phosphopeptide–amorphous calcium phosphate); hydroxyapatite-based remineralising agents. 23.11.2026 07:30-09:00 MDDr.Z. Minarčíková	Mechanisms of Action of Fluorides and Remineralising Agents Mechanisms of action of fluorides; fluoride toothpastes, gels, and varnishes; application of fluoride products; analysis of remineralising agents. Restoration of tooth 17 – Black’s Class II cavity (MOD) on a phantom model; use of the Palodent matrix system; sandwich technique restoration.
11.	Minimally Invasive Management of Dental Caries Non-operative treatment approaches; resin infiltration; fissure sealing; selective caries removal; stepwise excavation; silver diamine fluoride (SDF) therapy. 30.11.2026 07:30-09:00 MDDr.M. Futejová	<i>Test : Lectures 8, 9 & 10</i> Arresting dental caries; sealants; resin infiltration; ozone therapy; silver diamine fluoride (SDF). Preparation of a Class IV cavity on tooth 23 for composite resin restoration.
12.	Cavity Preparation and Restorative Materials Modern principles of cavity preparation; composite resin materials; glass ionomer cements; bioactive materials; indications for the use of individual restorative materials. 07.12.2026 07:30-09:00 MUDr.M.Tamášová, PhD.	Review of Lecture 11 Class IV Black’s cavity restoration - reconstruction using a palatal silicone index on tooth 11 mesial surface (M). Preparation of a Class III cavity on carious tooth 22 distal surface (D). Review of cavity preparation principles for individual Black’s cavity classes.
13.	Dental Pulp protection Dentin wound management: classification of materials and therapeutic agents used for the treatment of exposed or affected dentin, their properties, mechanisms of action, and clinical application. Calxyd and its significance in the field of cariology. 14.12.2026 07:30-09:00 MUDr.M.Tamášová, PhD.	Review of Lecture 12 Management of cervical lesions and root caries on extracted teeth. Complications associated with dental caries treatment. The student understands therapeutic approaches according to the location of the carious lesion.
14.	Comprehensive Management of the Patient with Dental Caries Diagnostic algorithm; individualised treatment planning; recall system; current trends in cariology and digital diagnostic methods. CREDIT TEST MDDr. Z.Minarčíková	Review of Lectures 13 and 14 Application of a composite resin sealant on tooth 36. Final assessment of knowledge; evaluation of the semester; review and verification of practical outcomes.

Conditions for Completing the Course: Preclinical Dental Medicine 3 (Cariology)

- 100% attendance at practical lessons, lectures, and seminars is required.
- Mandatory preparation: Before each practical session, students must study the assigned topic in advance.
- Topic proficiency: At the beginning of each session, knowledge of the topic is verified either orally or in writing.
- **Make-up for absences:** A student may have a maximum of 3 excused absences, which must be made up during the 14th week of the semester.

Protocols and Seminar Papers

Protocols: The student is required to submit written protocols for all completed practical tasks.

Seminar Papers: If seminar papers are assigned, they must be completed and submitted by the specified deadline.

Final Evaluation

Ongoing assessment of theoretical knowledge and practical skills, with recorded evaluations during practical training.

Completion of a final test with a minimum required score of 60%.

Final assessment of theoretical knowledge and skills during credit week, with a minimum passing score of 60%.

The final grade for the course may consist of a written test, oral examination, and evaluation of performance throughout the semester

.Retake policy: The student is entitled to 2 retake opportunities for each test.

Credits: Upon successful completion of the course, the student will receive the corresponding number of credits.

Recommended literature:

1. Banerjee, Watson: *Pickard's Manual of Operative Dentistry*, 2011, Oxford University Press
ISBN-13: 978-0199579150
2. Nanci A. *Ten Cate's Oral Histology: Development, Structure, and Function*. 9th ed. St. Louis: Elsevier; 2017.
3. Nelson SJ. *Wheeler's Dental Anatomy, Physiology and Occlusion*. 11th ed. St. Louis: Elsevier; 2020.
4. Anusavice KJ, Shen C, Rawls HR. *Phillips' Science of Dental Materials*. 12th ed. St. Louis: Elsevier; 2013.
5. Singh G. *Textbook of Dental Anatomy and Tooth Morphology*. 3rd ed. New Delhi: Jaypee Brothers Medical Publishers; 2014.
6. Schwartz RS, Summitt JB, Robbins JW. *Fundamentals of Operative Dentistry: A Contemporary Approach*. 4th ed. Chicago: Quintessence Publishing; 2013.
7. Craig RG, Powers JM. *Restorative Dental Materials*. 12th ed. St. Louis: Mosby; 2006.
8. Sturdevant CM, Roberson TM, Heymann HO, Swift EJ. *Sturdevant's Art and Science of Operative Dentistry*. 7th ed. St. Louis: Elsevier; 2019.
9. Garg N, Garg A. *Textbook of Operative Dentistry*. 3rd ed. New Delhi: Jaypee Brothers Medical Publishers; 2018.
10. Marwah N. *Textbook of Pediatric Dentistry*. Jaypee Brothers; 2018.
11. Kalsi DS, Kalsi P. *Textbook of Periodontology for Undergraduate Students*. CBS Publ.; 2025.
12. John PR. *Textbook of Dental Radiology*. 3rd ed. Jaypee; 2019.
13. Iannucci JM, Howerton LJ. *Dental Radiography: Principles and Techniques*. 6th ed. Elsevier; 2021.
14. Fejerskov O, Nyvad B, Kidd EAM (eds.). *Dental Caries: The Disease and Its Clinical Management*. 4th ed. Hoboken, NJ: Wiley-Blackwell; 2024. ISBN 978-1-119-67937-0.
15. Kidd EAM, Fejerskov O. *Essentials of Dental Caries*. 4th ed. Oxford: Oxford University Press; 2016. ISBN 978-0-19-105818-9.

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16. Fejerskov O, Nyvad B, Kidd EAM (eds.). *Dental Caries: The Disease and Its Clinical Management*. 3rd ed. Chichester: Wiley-Blackwell; 2015. ISBN 978-1-119-06177-9.