

**MEDICAL UNIVERSITY – PLOVDIV**  
**FACULTY OF MEDICINE**

**SYLLABUS**

**IN**

**PAEDIATRIC DENTISTRY**

**Approved by the Department Council on Protocol № 163/27.02.2024**

**Confirmed by the Faculty Council - Protocol № 5/24.04.2024**

**DENTAL PREVENTION**  
**Syllabus**

Discipline	Final exam/ semester	Auditorium classes				ECTS non-auditorium classes	ECTS total	Academic hours in years and semesters	
		Total	Lectures	Practices	ECTS			3 <sup>rd</sup> year	
								V	VI
<b>DENTAL PREVENTION</b>	V	60	30	30	3.8	-	3.8	1/1	1/1

**DISCIPLINE:**

DENTAL PREVENTION

**TYPE OF DISCIPLINE ACCORDING TO THE UNIFORM STATE REQUIREMENTS:**

Compulsory

**LEVEL OF QUALIFICATION:**

Master`s degree

**FORMS OF TRAINING:**

Lectures, seminar classes, self-study

**YEAR OF TRAINING:**

Third course

**DURATION OF TRAINING:**

Two semesters

**ACADEMIC HOURS:**

30 lecture hours, 30 seminar class hours

**TECHNICAL EQUIPMENT APPLIED IN THE TRAINING:**

Multimedia presentations, discussions, monitoring tests, demonstration of methods and agents for dental prevention, practical task solving, individualized preventive programme development

**FORMS OF EVALUATION:**

Ongoing monitoring, monitoring tests, individualized preventive programme development

**EVALUATION CRITERIA:**

Average assessment grade per semester

**ASPECTS OF EVALUATION CRITERIA:**

Participation in discussions, seminars and colloquia, monitoring tests

**SEMESTER EXAM:**

Test, preventive programme development, written and/or oral examination

**STATE EXAM:**

Test, clinical case task, written and/or oral examination in Pediatric Dentistry Part I, Dental Prevention and Pediatric Dentistry Part II

**LECTURER:**

Habilitated Professor of Pediatric Dentistry

**DEPARTMENT:**

Paediatric Dentistry

**ANNOTATION**

The discipline "Dental prevention" provides the opportunity to acquire knowledge and skills for the primary prevention of dental caries and periodontal diseases, which are the most common oral diseases. Dental prevention includes two main groups of preventive methods:

- methods for the formation of resistant hard dental tissues, gingiva and oral mucosa
- methods for assessment and control of the oral pathogenic environment

**BASIC AIMS OF THE DISCIPLINE**

Acquiring knowledge and skills to implement all contemporary forms, methods and means for primary dental prevention:

- personal oral hygiene
- professional oral hygiene
- endogenous fluoride prevention
- topical fluoride prevention
- nutritional prevention
- preventive sealing of pits and fissures
- application of mineralizing agents
- development of individualized preventive programs
- development of group-based preventive programs
- development of community-based preventive programs
- development of preventive programs for children with special needs

promotion of oral health

**EXPECTED RESULTS**

After completion of the course, students must have the following knowledge and skills:

- to know the basic principles of primary and secondary dental prevention
- to know the epidemiology, etiology, pathogenesis and histomorphology of dental caries
- to know the mechanisms of demineralization and remineralization in the hard dental tissues
- to know and apply the methods for assessment of oral hygiene, the methods and means for motivation and conducting of an adequate to age personal oral hygiene
- to know and apply modern methods and means for professional oral hygiene
- to know and apply the methods and means for endogenous fluoride prevention
- to determine the optimal individual preventive doses of fluoride
- to know and apply the methods and means for topical fluoride prevention

- to know the pre-eruptive and post-eruptive effects of diet and nutritional principles for caries prevention
- to recommend a diet to prevent dental caries and periodontal disease in children from different age groups
- to know and apply the methods and means for the prevention of dental caries by sealing of pits and fissures
- to know and apply the methods for the prevention of dental caries with mineralizing agents
- to assess the individual risk for developing dental caries and periodontal diseases
- to know the principles for the formation of complex, group and community-based prevention programs
- to elaborate individual prevention programs for children of different age groups based on the assessment of individual risk

**LECTURES**  
LECTURE PROGRAMME  
III course, V semester

№	TOPICS	HOURS
1.	Introduction to dental prevention- aim, basic directions, types, strategies and forms of dental prevention – responsibilities.	1
2.	Etiology of dental caries- role of primary and secondary factors.	2
3.	Pathogenesis of dental caries- theories, contemporary opinion, demineralization and remineralization of enamel	2
4.	Histopathology of dental caries.	1
5.	Oral hygiene – dental biofilm, methods for assessment of dental plaque accumulation.	2
6.	Oral hygiene – mechanical and chemical control of dental plaque, oral hygiene instructions, individual programmes.	3
7.	Nutritional prevention of oral diseases.	2
8.	Fluoride prevention of dental caries – fluoride metabolism, mechanisms of caries prevention, toxicology of fluoride.	2
	<b>Total</b>	<b>15 hours</b>

**LECTURE PROGRAMME**  
III course, VI semester

№	TOPICS	HOURS
1.	Endogenous and topical fluoride prevention - indications, methods and means.	2
2.	Prevention of dental caries with sealants - indications, methods and means.	2
3.	Dental caries prevention with mineralizing agents - indications, methods and means.	2
4.	Contemporary strategies for prevention of dental caries and periodontal diseases.	2
5.	Preventive programs.	2
6.	Oral health promotion and health education.	2
7.	Epidemiological control of oral diseases - epidemiology of dental caries and periodontal diseases.	2
8.	Epidemiological control of oral diseases - epidemiological study of oral diseases.	1
	<b>Total</b>	<b>15 hours</b>

**PRACTICES**  
**SEMINAR CLASS PROGRAMME**  
III course, V semester

№	TOPICS	HOURS
1.	Introduction to dental prevention.	2

2.	Etiology of dental caries.	2
3.	Pathogenesis of dental caries.	2
4.	Histopathology of dental caries.	2
5.	Oral hygiene – methods for assessment of dental plaque accumulation.	2
6.	Oral hygiene – mechanical and chemical control of dental plaque.	3
7.	Oral hygiene – oral hygiene instructions, individual programs. Test.	2
8.	Nutritional prevention of oral diseases.	1
	<b>Total</b>	<b>15 hours</b>

SEMINAR CLASS PROGRAMME  
III course, VI semester

№	TOPICS	HOURS
1.	Endogenous fluoride prevention.	2
2.	Topical fluoride prevention.	2
3.	Prevention of dental caries with sealants.	2
4.	Prevention of dental caries with mineralizing agents.	2
5.	Risk assessment of oral diseases, individual risk profile.	2

6.	Preventive programs. Oral health promotion and health education.	2
7.	Epidemiological control of oral diseases - epidemiology of dental caries and periodontal diseases.	2
8.	Epidemiological control of oral diseases - epidemiological study of oral diseases.	1
	<b>Total</b>	<b>15 hours</b>

#### **LECTURE № 1 – 1 hour**

INTRODUCTION TO DENTAL PREVENTION- AIM, BASIC DIRECTIONS, TYPES, STRATEGIES AND FORMS OF DENTAL PREVENTION – RESPONSIBILITIES.

1. Aim of dental prevention.
2. Main areas of dental prevention.
3. Types of dental prevention.
4. Strategies of dental prevention.
5. Forms of dental prevention.
6. Dental prevention - a responsibility of society.
7. Dental prevention resources.

#### **LECTURE № 2, 3 – 2 hours**

ETIOLOGY OF DENTAL CARIES- ROLE OF PRIMARY AND SECONDARY FACTORS.

1. Role of primary factors.
  - 1.1. enamel resistance
  - 1.2. microorganisms
  - 1.3. carbohydrates
  - 1.4. time
2. Role of secondary factors.
  - 2.1. heredity
  - 2.2. family history
  - 2.3. environment

#### **LECTURE № 4, 5 – 2 hours**

PATHOGENESIS OF DENTAL CARIES- THEORIES, CONTEMPORARY OPINION, DEMINERALIZATION AND REMINERALIZATION OF ENAMEL

1. Theories of the pathogenesis of dental caries.
2. Modern understanding of the pathogenesis of dental caries.
3. Ionic exchange processes in enamel.
  - 3.1. post-eruptive mineralization
  - 3.2. demineralization-mechanisms
  - 3.3. remineralization-mechanisms

**LECTURE № 6 – 1 hour**

**HISTOPATHOLOGY OF DENTAL CARIES.**

1. Enamel caries.
  - 1.1. criteria for stage differentiation
  - 1.2. stages
  - 1.3. zones of carious lesion
2. Dentin caries.
  - 2.1. stages
  - 2.2. carious cone
3. Characteristics of the carious process in childhood

**LECTURE № 7, 8 – 2 hours**

**ORAL HYGIENE – DENTAL BIOFILM, METHODS FOR ASSESSMENT OF DENTAL PLAQUE ACCUMULATION.**

1. Role of dental plaque in the etiology of dental caries.
  - 1.1. definition
  - 1.2. stages of formation
  - 1.3. pathogenic potential
2. Assessment of dental plaque accumulation.
  - 2.1. visualization
  - 2.2. assessment indexes
3. Self-assessment of hygiene status and motivation for oral hygiene.

**LECTURE № 9, 10, 11 – 3 hours**

**ORAL HYGIENE – MECHANICAL AND CHEMICAL CONTROL OF DENTAL PLAQUE, ORAL HYGIENE INSTRUCTIONS, INDIVIDUAL PROGRAMMES.**

1. Types of oral hygiene.
  - 1.1. professional oral hygiene
  - 1.2. personal hygiene
2. Mechanical control of dental plaque.
  - 2.1. role of mechanical control
  - 2.2. factors associated with the efficiency of mechanical control
  - 2.3. agents and tools of mechanical control
  - 2.4. characteristics of mechanical control associated with childhood
3. Chemical control of dental plaque.
  - 3.1. role of chemical control
  - 3.2. factors associated with the efficiency of chemical control
  - 3.3. chemical control agents
  - 3.4. chemical control tools
  - 3.5. characteristics of chemical control associated with childhood
4. Oral hygiene methods.
5. Personalized programmes for oral hygiene.

**LECTURE № 12, 13 – 2 hours**

**NUTRITIONAL PREVENTION OF ORAL DISEASES.**

1. Physiological functions of food.
2. Diet and nutrition to prevent oral diseases.
  - 2.1. resorptive action
  - 2.2. postresorptive action
3. Role of essential nutrients for oral health.

4. Local effect of food in the oral cavity.
  - 4.1. cariogenic effect
  - 4.2. caries protective action
5. Nutritional physiological norms.
  - 5.1. diet and nutrition of the pregnant woman
  - 5.2. diet and nutrition in infancy
  - 5.3. early childhood nutrition
  - 5.4. nutrition in preschool age
  - 5.5. school-age nutrition
  - 5.6. nutrition in children with chronic diseases
6. Recommendations for nutritional prevention of oral diseases.

**LECTURE № 14, 15 – 2 hours**

**FLUORIDE PREVENTION OF DENTAL CARIES – FLUORIDE METABOLISM, MECHANISMS OF CARIES PREVENTION, TOXICOLOGY OF FLUORIDE.**

1. Fluoride metabolism.
2. Positive effects of fluoride.
3. Effect of endogenous fluoride prevention.
  - 3.1. during initial mineralization
  - 3.2. during pre-eruptive mineralization
  - 3.3. during post-eruptive maturation
4. Topical action of fluoride.
  - 4.1. in case of low concentrations
  - 4.2. in case of high concentrations
  - 4.3. effect on dental plaque
5. Toxicity of fluoride.
  - 5.1. acute intoxication
  - 5.2. chronic intoxication/dental fluorosis/

**LECTURE № 16, 17 – 2 hours**

**ENDOGENOUS AND TOPICAL FLUORIDE PREVENTION - INDICATIONS, METHODS AND MEANS.**

1. Endogenous fluoride prevention – definition.
2. Methods for endogenous fluoride prevention.
  - 2.1. water fluoridation
  - 2.2. naturally fluoridated water
  - 2.3. fluoride supplements/tablets, drops, granules/
  - 2.4. milk fluoridation
  - 2.5. salt fluoridation
3. Factors associated with endogenous methods of fluoride caries prevention.
4. Types of endogenous fluoride prevention
5. Topical fluoride prevention – definition, aims.
6. Methods for topical fluoride prevention.
  - 6.1. saliva
  - 6.2. fluoride solutions
  - 6.3. fluoride gels
  - 6.4. fluoride foam
  - 6.5. fluoride varnishes
  - 6.6. fluoride prophylaxis paste
  - 6.7. slow release fluoride systems
  - 6.8. dental materials
  - 6.9. Silver diamine fluoride

- 6.10. fluoride toothpastes
- 6.11. fluoride-impregnated dental floss
- 6.12. fluoride gums and lozenges
- 7. Factors associated with topical methods of fluoride caries prevention.
- 8. Recommendations for fluoride prevention

**LECTURE № 18, 19 – 2 hours**

**PREVENTION OF DENTAL CARIES WITH SEALANTS - INDICATIONS, METHODS AND MEANS.**

- 1. Definition
- 2. Indications for use.
- 3. Prerequisites for the development of occlusal caries.
- 4. Criteria for differential diagnosis between deep fissure and initial caries lesion
- 5. Types of sealants.
- 6. Factors associated with the efficiency of sealant application
- 7. Medicotechnical requirements for materials.
- 8. Steps of application.

**LECTURE № 20, 21 – 2 hours**

**DENTAL CARIES PREVENTION WITH MINERALIZING AGENTS - INDICATIONS, METHODS AND MEANS.**

- 1. De- and remineralization
- 2. Modern strategies for the management of caries lesion
- 3. Aims
- 4. Methods of prevention with mineralizing agents
- 5. Indications for use
- 6. Mechanisms of action.
  - 6.1. primary prevention
  - 6.2. secondary prevention
- 7. Factors associated with the efficiency of prevention with mineralizing agents
- 8. Methods of application.
- 9. Classification of the mineralizing agents

**LECTURE № 22, 23 – 2 hours**

**CONTEMPORARY STRATEGIES FOR PREVENTION OF DENTAL CARIES AND PERIODONTAL DISEASES.**

- 1. Management of the carious process by caries risk assessment.
- 2. Definition of risk factors, risk markers and risk indicators.
- 3. Levels for determining risk profile.
- 4. Risk factors for caries.
- 5. Dental caries control systems through caries risk assessment.
- 6. Assessment of the risk of periodontal diseases in childhood.

**LECTURE № 24, 25 – 2 hours**

**PREVENTIVE PROGRAMMES.**

- 1. Types of preventive programmes.
- 2. Elements of preventive programme
  - 2.1. situational analysis
  - 2.2. global goals
  - 2.3. strategy
  - 2.4. monitoring
- 3. Stages of implementation.

**LECTURE № 26, 27 – 2 hours**

**ORAL HEALTH PROMOTION AND HEALTH EDUCATION.**

1. Health education and health promotion.
2. Main aims of health promotion.
3. Strategies of health promotion.
4. Health promotion process.
5. Methods of health promotion.
  - 5.1. individual
  - 5.2. group
  - 5.3. public

**LECTURE № 28, 29 – 2 hours**

**EPIDEMIOLOGICAL CONTROL OF ORAL DISEASES - EPIDEMIOLOGY OF DENTAL CARIES AND PERIODONTAL DISEASES.**

1. Role of epidemiological control.
2. Contemporary trends.
3. Indexes.
4. Factors associated with the epidemiology of oral diseases
  - 4.1. socioeconomic development
  - 4.2. anatomy and morphology of teeth
  - 4.3. age and sex
  - 4.4. family history
  - 4.5. pregnancy
  - 4.6. general diseases
  - 4.7. occupation
  - 4.8. geographical and climatic factors
5. WHO Sustainable Development Goals (SDGs).

**LECTURE № 30 – 1 hour**

**EPIDEMIOLOGICAL CONTROL OF ORAL DISEASES - EPIDEMIOLOGICAL STUDY OF ORAL DISEASES.**

Stages of the epidemiological study.

- 1.1. aim
- 1.2. scope of the study
- 1.3. subjects of observation
- 1.4. units of observation
- 1.5. documentation
- 1.6. standardization
- 1.7. team calibration
- 1.8. statistical data processing

**SEMINAR CLASSES**

**SEMINAR CLASS № 1 – 2 hours**

**INTRODUCTION TO DENTAL PREVENTION.**

1. Introduction of students with the aim, strategies and forms of dental prevention, discussion on the topic.

**SEMINAR CLASS № 2 – 2 hours**

**ETIOLOGY OF DENTAL CARIES**

1. Presentation to the students of the etiology of dental caries, discussion on the topic.

**SEMINAR CLASS № 3 – 2 hours**

**PATHOGENESIS OF DENTAL CARIES.**

1. Presentation to the students of the pathogenesis of dental caries, and discussion on the topic.

**SEMINAR CLASS № 4 – 2 hours**

**HISTOPATHOLOGY OF DENTAL CARIES.**

1. Presentation to the students of histopathology of dental caries, discussion on the topic

**SEMINAR CLASS № 5 – 2 hours**

**ORAL HYGIENE – METHODS FOR ASSESSMENT OF DENTAL PLAQUE ACCUMULATION.**

1. Presentation to students of the role of dental plaque and the main methods and tools for visualization and assessment of dental plaque.
2. Demonstration of dental plaque assessment methods.
3. Practical tasks for students.

**SEMINAR CLASS № 6 – 2 hours**

**ORAL HYGIENE – MECHANICAL AND CHEMICAL CONTROL OF DENTAL PLAQUE.**

1. Presentation to students on the role of mechanical and chemical control of dental plaque in the prevention of dental caries and periodontal diseases.
2. Demonstration of various agents and tools for mechanical and chemical control of dental plaque.

**SEMINAR CLASS № 7 – 2 hours**

**ORAL HYGIENE – ORAL HYGIENE INSTRUCTIONS, INDIVIDUAL PROGRAMS. TEST.**

1. Development of personalized oral hygiene programmes for children with different risk profiles.
2. Control test

**SEMINAR CLASS № 8 – 1 hour**

**NUTRITIONAL PREVENTION OF ORAL DISEASES.**

1. Introduction to the students of the postabsorptive and pre-resorptive action of the essential nutrients and the dietary recommendations to prevent dental caries, discussion on the topic.

**SEMINAR CLASS № 9 – 2 hours**

**ENDOGENOUS FLUORIDE PREVENTION.**

1. Presentation to students of the positive effects of fluoride-endogenous methods.
2. Demonstration of agents and tools for endogenous fluoride prevention.

**SEMINAR CLASS № 10 – 2 hours**

**TOPICAL FLUORIDE PREVENTION.**

1. Presentation to students of the positive effects of topical fluoride prevention.
2. Demonstration of agents and tools for topical fluoride prevention.

**SEMINAR CLASS № 11 – 2 hours**

**PREVENTION OF DENTAL CARIES WITH SEALANTS.**

1. Introduction of the students to the indications of sealant application
2. Demonstration of materials and methods for sealant application

**SEMINAR CLASS № 12 – 2 hours****PREVENTION OF DENTAL CARIES WITH MINERALIZING AGENTS.**

1. Introduction of the students to the indications for the use of mineralizing agents
2. Demonstration of materials and methods for prevention with mineralizing agents

**SEMINAR CLASS № 13 – 2 hours****RISK ASSESSMENT OF ORAL DISEASES, INDIVIDUAL RISK PROFILE.**

1. Introduction of the students to the basic principles of assessment and prognosis of the risk of oral diseases.
2. Oral risk assessment

**SEMINAR CLASS № 14 – 2 hours****PREVENTIVE PROGRAMS. ORAL HEALTH PROMOTION AND HEALTH EDUCATION.**

1. Introduction of the students to the basic principles of preventive programmes development
2. Development of preventive programmes by students
3. Introduction of the students to the goals and methods of oral health promotion, methods of health education, discussion on the topic

**SEMINAR CLASS № 15 – 2 hours****EPIDEMIOLOGICAL CONTROL OF ORAL DISEASES - EPIDEMIOLOGY OF DENTAL CARIES AND PERIODONTAL DISEASES.**

1. Introduction of the students to current trends in the epidemiology of dental caries, discussion on the topic

**SEMINAR CLASS № 16 – 1 hour****EPIDEMIOLOGICAL CONTROL OF ORAL DISEASES - EPIDEMIOLOGICAL STUDY OF ORAL DISEASES.**

1. Introduction of the students to the basic principles of collection of information and data processing.

**BIBLIOGRAPHY**

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5. *American Dental Association.* ADA statement on enamel (dental) fluorosis.  
[www.ada.org/prof/resources/positions/statements/fluoride\\_community\\_enamel.asp](http://www.ada.org/prof/resources/positions/statements/fluoride_community_enamel.asp)
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7. *FDI/WHO/ADR.* Global consultation on oral health through Fluoride.  
<http://www.fdiworldental.org>.
8. *World Health Organization.* Global oral health status report: towards universal health coverage for oral health by 2030.  
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## CONSPECTUS

1. Basics of dental prevention – aim, basic directions, types, strategies and forms of dental prevention - responsibilities of the society, resources for dental prevention.
2. Etiology of dental caries – the role of primary factors.
3. Etiology of dental caries – the role of secondary factors.
4. Pathogenesis of dental caries – theories, contemporary opinion, exchange processes in the enamel /post-eruptive mineralization, demineralization and remineralization of enamel/.
5. Histopathology of dental caries in the enamel - criteria for stage differentiation, stages, zones of carious lesion, characteristics of the carious process in childhood.
6. Histopathology of dental caries in the dentin – stages, caries cone, features of the carious process in childhood.
7. Oral hygiene - dental plaque, structure, pathogenic potential.
8. Oral hygiene - assessment of dental plaque accumulation /methods and means/. Professional oral hygiene – methods and means, features in childhood.
9. Oral hygiene – personal oral hygiene. Mechanical and chemical control of dental plaque, factors determining the effectiveness. Methods and means for personal oral hygiene, features in childhood.
10. Instructions for oral hygiene. Methods for tooth brushing – techniques, duration, frequency. Features in different age groups. Individual programs for oral hygiene.
11. Nutritional prevention of oral diseases – topical and postabsorptive effect of the diet /role of carbohydrates, sugar substitutes/.
12. Nutritional prevention of oral diseases – topical and postabsorptive effect of the diet /role of proteins, fats, minerals and vitamins/.
13. Fluoride prevention of dental caries - fluoride metabolism in the human body, mechanisms of caries preventive action, positive effects of fluoride.
14. Fluoride prevention of dental caries - toxicology of fluoride, risks for overdose, clinical view and indices for assessment of dental fluorosis.
15. Endogenous fluoride prevention – mechanisms of action, optimal daily doses, methods and means.
16. Local fluoride prevention – mechanisms of action, methods and means.
17. Prevention of dental caries with mineralizing agents - aim, indications, mechanisms of action, factors determining the efficiency, methods and means.
18. Prevention of dental caries with dental sealants - aim, indications, mechanism of action, factors determining the efficiency, methods and means.

19. Epidemiology of dental caries - contemporary tendencies, indices for evaluation, determining factors, global goals of WHO.
20. Epidemiological study of dental caries – aim and stages of the study. Statistical indicators (prevalence of dental caries, tooth decay intensity, activity of dental caries, reduction of dental caries).
21. Contemporary strategies for prevention of dental caries and periodontal diseases. Evaluation and prediction of the risk of oral diseases, systems for risk assessment, and individual oral risk profile.
22. Preventive programs - types, goals, organization and control.
23. Promotion of oral health - guidelines, principles, strategies, process of health promotion, methods of health promotion, health education