

**MEDICAL UNIVERSITY, SOFIA
FACULTY OF DENTAL MEDICINE
DEPARTMENT OF PEDIATRIC DENTAL MEDICINE**

SYLLABUS

Name of discipline: “Propaedeutics of pediatric dentistry” or “Oral embryology, histology and biology”

Degree: Master

Kind of discipline: Obligate

Course Length: Two semesters – IV and V

Course level – M

Form of assessment: Continuous assessment, tests, colloquia, practical exam

Forms and methods of training: Lectures, seminars, microscopic observation, drawing of observed elements.

Terminal exam: Yes - V semester

Prof: Yes

Department: Pediatric dental medicine

Annotation:

Course in “Oral embryology, histology and biology” provides opportunity to acquire a basic knowledge about oral embryology, histology and biology, the development of teeth, eruption and shedding of the teeth, abnormalities in the morphology and physiology of the dental structures, oral physiology, oral ecosystem and oral defense mechanisms in childhood.

This knowledge are form the basis for the acquisition of competence to organize and implementation of prevention of oral diseases, and correct choice of treatment methods.

Course description: The course consists 60 academic hours:

- 30 hours of lectures;
- 30 hours of exercises.

Evaluation of the knowledge: Formed by the average current rating, assessment of the colloquium, assessment of the practical test, and assessment of the theory exam.

Aspects of assessment:

- Participation in discussions;
- Tests;
- Description of microscopic preparations;
- Result of exam.

Aids in teaching: Multimedia presentation, schemes, tests, microscopic preparations.

Purpose of the curriculum: Adoption of detailed basic knowledge of embryology, morphology and physiology of the oral structures and oral physiological processes.

Tasks of the program:

1. To obtain basic knowledge in embryology of the oral structures;
2. To obtain basic knowledge in morphology of the oral structures;
3. To obtain basic knowledge in physiology of the oral structures;
4. To know the dynamics of development of the temporary and permanent teeth;
5. To know the anatomical and physiological differences between temporary and permanent teeth;
6. Be aware of anomalies in tooth development;
7. To know the composition of oral liquid physiological content and its role in the oral physiology;
8. To know the genesis of the oral ecosystem and dynamics of the childhood;
9. To know the basic oral defense mechanisms;

Prerequisites: Basic knowledge of anatomy, histology and physiology.

Expected results:

1. To know all the processes taking place in every stages of the oral embryology;
2. Be aware of the microscop slide and describe each stage of the oral embryology;
3. To have a detailed knowledge of the morphology of oral structures;
4. To have a detailed knowledge of the fisiology of oral structures;

5. To know the terms in the dynamics of the dentition
6. To know the causes and mechanisms for the occurrence of abnormal development of teeth;
7. To know the composition and the role of the saliva and characteristics in childhood
8. To know the mechanisms and dynamics in the formation of the oral ecosystem;
9. To know the protective oral mechanisms and characteristics of child immunity.

SYLLABUS FOR THE EXAM

QUESTIONS FOR ORAL EXAMINATION

1. Development of the oral facial region – development of human tissues and neurulation.
2. Development of the oropharynx, pharyngeal arches, face and palate..
3. Dental germ – arising of the teeth. Stage of development and elements of dental germ.
4. Physiological stages in dental germ's development.Characteristic.
5. Morphological stages in dental development. Characteristic.
6. Amelogenesis. Stages of development.
7. Enamel matrix deposition and content. Ameloblast's functions.
8. Morphological features of enamel, chemical composition and permeability.
9. Dentinogenesis.
10. Morphological features of dentin. Dentin classification.
11. Structural organization and histology of the pulp.
12. Functions and physiological mechanisms of the pulp.
13. Chemical composition and function of cementum. Cemental repair and aging characteristics.
14. Histogenesis of the periodontium, organization and functions of the periodontal ligaments.
15. Histogenesis and structure of oral mucosa.
16. Histogenesis, structure and physiology of the gingiva. Periodont. Characteristics in childhood.
17. Physiological characteristics and function of the oral mucosa in childhood.
18. Dynamics of dental development. Chronology and stages of development of the primary and permanent dentition.
19. Eruption and shedding of the teeth. Phases of development and tissue changes.
20. Possible factors influencing the process of tooth eruption.
21. Resorptive process of primary teeth. Stages, organ of root resorption and pulp degeneration.
22. Human dental dentitions. Theories about the formation of various dental groups. Evolution of the dentition.
23. Comparisons of the primary and permanent dentitions.
24. Morphologic and physiologic differences between primary and permanent teeth.
25. Abnormalities in shape and size of teeth. Syndromes causing these anomalies.
26. Developmental disturbances in the structure of the teeth - dental dysplasia - risk factors, types of structural abnormalities, pathogenesis, classification and distribution.
27. Oral biological system. Characterization and interaction between elements of oral biological system.
28. Types and composition of saliva.
29. Physiology of the saliva - digestive function, buffering capacity, oral cleaning. Relationships with oral microflora.
30. Physiology of the saliva - role of salivary proteins. Saliva and mineral homeostasis.
31. Oral ecology. Resident oral microflora - characteristics of oral microorganisms.
32. Planktonic organisms and oral biofilms - formation and importance in oral ecosystem.
33. Protective factors of macro-organisms to maintain oral eubioza
34. Bacterial and exogenous factors to maintain oral eubioza
35. Protective properties of saliva in the oral environment. Secretory immunity.
36. Oral immunity - relevance to oral pathology. Protective mechanisms in the mouth.
37. Protective mechanisms of dental caries, periodontal diseases and diseases of the oral mucosa
38. Immunological reactions involved in the pathogenesis of oral diseases

QUESTIONS FOR WRITTEN EXAM

1. Ontogenetic development of the oral facial region, period and stages of prenatal development.
2. Development of the nose, nasal cavity, palate and tongue. Ossification of the maxillofacial bones. Defects in development.
3. Characteristics of the enamel organ. Disintegration of gubernaculum dentis.. Formation of the cervical loop.
4. Determining the shape of the crown. Formation of enamel knot, enamel cord, and enamel niche
5. Mineralization of enamel matrix. Theories of mineralization of enamel.
6. Permeability of dentin. Theories of dentin sensitivity
7. Vascularity and nerve supply of the dental pulp.
8. Development of cementum. Types of cementum on the root dentin surface.
9. Alveolar process – alveolar bone proper and supporting bone. Development, structure, remodeling and reorganization.
10. Types of oral mucosa. Location and characteristics of each type of mucosa. Specialized mucosa of the tongue.
11. Theories of tooth eruption. Regularities of tooth eruption.
12. Development of a tooth root. Stages of root development.
13. Liquid oral environment. Salivary secretory system - characteristic of the salivary glands. Secretory mechanism and control.
14. Gingival fluid – characteristics, role in physiology and pathology of periodontium.
15. Physico-chemical factors in maintaining of oral eubioza
16. Immunity and oral biological system. Nonspecific, specific immunity and immune tolerance
17. Development of the immune system in childhood. Development of oral immunity.

LECTURE PROGRAM OF THE COURSE:

„ORAL EMBRYOLOGY, HISTOLOGY AND BIOLOGY”

SECOND COURSE, 4 SEMESTER

Workload:

15 h lectures

6 lectures of 2 hours and 1 lecture of 3 hours

I lecture – 2 h

Ontogenetic development of the maxillofacial region

II lecture – 2 h

Tooth germ - the tooth germ elements and stages of development

III lecture – 2 h

Amelogenesis , morphology and physiology of tooth enamel. Theories of mineralization. Specific characteristics for temporary and permanent teeth

IV lecture – 2 h

Dentinogenesis, morphology and physiology of dentin. Specifications for temporary and permanent teeth

V lectures – 2 h

Histogenesis, morphology and physiology of the dental pulp. Specifications for temporary and permanent teeth.

VI lecture – 2 h

Histogenesis, morphology and physiology of the cementum. Specifications for temporary and permanent teeth.

VII lecture – 3 h

Histogenesis, morphology and physiology of the periodontium. Specifications for temporary and permanent teeth.

LECTURE PROGRAM OF THE COURSE:
„ORAL EMBRYOLOGY, HISTOLOGY AND BIOLOGY”
III COURSE, 5 SEMESTER

Workload:

15 h lectures

6 lectures of 2 hours and 1 lecture of 3 hours

I lecture – 2 h

Histogenesis, morphology and physiology of gingival and oral mucosa. Features in childhood.

II lecture – 2 h

Dynamics of the dental development of temporary and permanent dentition - milestones and deadlines.

III lecture – 2 h

Anatomical and physiological characteristics of temporary and permanent teeth

IV lecture – 2 h

Dental dysplasia - etiology, pathogenesis and classification

V lecture – 2 h

Liquid oral environment – composition and role in the physiology of the mouth

VI lecture – 2 h

Oral ecosystem - origin and dynamics in childhood

VII lecture – 3 h

Characteristics in the children's immunity. Defence mechanisms in the mouth.

EXERCISE PROGRAM

II COURSE, IV SEMESTER

15 exercises

6 exercises of 2 h and 1 of 3 h

I exercise – 2 h

Ontogenetic development of the maxillofacial region

II exercise – 2 h

Tooth germ - the tooth germ elements and stages of development

III exercise – 2 h

Amelogenesis and morphology of dental enamel. Physiology of tooth enamel. Theories of mineralization. Specific characteristics for temporary and permanent teeth.

IV exercise – 2 h

Dentinogenesis, morphology and physiology of dentin. Specifications for temporary and permanent teeth

V exercise – 2 h

Histogenesis, morphology and physiology of the dental pulp. Specifications for temporary and permanent teeth.

VI exercise – 2 h

Histogenesis, morphology and physiology of the cementum. Specifications for temporary and permanent teeth.

VII exercise – 3 h

Histogenesis, morphology and physiology of the periodontium. Specifications for temporary and permanent teeth.

Recommended reading

Nanci A. Ten Cate's Oral Histology, Development, structure, and Function. Sixth Edition, Mosby, 2003

Garant P.R. Oral Cells and Tissues, Quintessence Publishing Co, Inc, 2003

Avery J, D. Chiego, Wssential of Oral Histology and Embryology: A clinical Approach, Mosby, 3 Edition, 2005

- .Jenkins.H.N. The physiology and biochemistry of the mouth,

-Schroeder,H. Differentiation of human oral stratified epithelia,Basel -1981

-Squier,C.A.,J.Meyer,Current concepts of the histology of oral mucosa,1971

-Stack,M.V.,R.W.Feaenhead.Tooth enamel;its composition, properties and fundamental structure,1965,Bristol

-Symons,N.B.Dentin and pulp;Their structure and reaction,1968,Lindon

-Vincent,D.,Provenza et all.Oral histology;Inheritance and development,1964

EXERCISE PROGRAM

III KURS, V SEMESTER

15 exercises

6 exercises of 2 h and 1 of 3 h

I exercise – 2 h

Histogenesis, morphology and physiology of oral mucosa.

II exercise – 2 h

Histogenesis, morphology and physiology of gingiva and periodontium.

III exercise – 2 h

Dynamics of the dental development of temporary and permanent dentition and periradicular structures.

IV exercise – 2 h

Anatomical and physiological characteristics of temporary and permanent teeth

V exercise – 2 h

Dental dysplasia - etiology, pathogenesis and classification

VI exercise – 2 h

Liquid oral environment – composition and role in the physiology of the mouth

VII exercise – 3 h

Oral ecosystem - origin and dynamics in childhood. Oral immunity.