

MEDICAL UNIVERSITY – PLOVDIV
FACULTY OF MEDICINE

SYLLABUS
IN
ORTHODONTICS

Approved by the Department Council - Protokol № 5/25.09. 2023

Confirmed by the Faculty Council - Protocol № 5/24.04.2024

Syllabus

№	Subject by USR	Credits	Exams	CLASSES			Hours by years and semesters																			
				Course			I				II				III				IV				V			
				Semester			I		II		III		IV		V		VI		VII		VII I		IX		X	
				EC TS	Tot al	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L
Orthodontics	11,7	I X	225																							

	Undergraduate internship	Total credits	Credits internship	State exam	Days	CLASSES
1.	Orthodontics	7,5	5	2,5	15	90

DISCIPLINE:

Orthodontics

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

Mandatory

LEVEL OF QUALIFICATION:

Magister

FORMS OF TRAINING:

Lectures, practical lessons, self-preparation

YEAR OF TRAINING:

3rd year – summer semester, 4th year, 5th year winter semester

DURATION OF TRAINING:

Four semesters

ACADEMIC HOURS:

60 hours lectures, 165 hours practical lessons

TECHNICAL EQUIPMENT APPLIED IN THE TRAINING:

PPT presentation, discussions, clinical cases /diagnosis, treatment plan, appliances demonstration, thesis/

FORMS OF EVALUATION:

The students get a grade for each semester

EVALUATION CRITERIA:

Participation in discussions, MSQ results, thesis

ASPECTS OF EVALUATION CRITERIA:

Participation in discussions, MSQ results, thesis

SEMESTER EXAM:

Yes – practical exam, written and oral exam

STATE EXAM:

Yes – written and oral exams

LECTURER:

Professors of the orthodontic department

DEPARTMENT: Orthodontics

ANNOTATION

The discipline Orthodontics holds great responsibility for it is concerned with the hard and soft tissues in the oral cavity, the occlusion, periodontal health, TMJ, aesthetics and function – both during and after orthodontic treatment. Orthodontics has two distinctive characteristics:

- It is not only focused on treatment, but also in prevention of malocclusion.
- It is an artistic discipline, associated with other dental and medical disciplines.

BASIC AIMS OF THE DISCIPLINE

To gain knowledge and ability to use contemporary methods and appliances for initial and secondary prevention of dentofacial deformities.

EXPECTED RESULTS

After finishing the studies, the students must be able to:

- Recognize the main principles of initial and secondary prevention of malocclusion
- recognize the etiology, pathogenesis and clinical features of dentofacial malocclusions
- use the main clinical, biometrical and radiographic examination methods in orthodontics
- be familiar with the development of the dental arches and occlusion, with the growth of the skull and facial bones
- plan a proper treatment and give an accurate prognosis for the result of the said treatment
- recognize the mechanisms of action of orthodontic appliances and their use in treatment of dentofacial deformities and malocclusion

LECTURES

LECTURES SCHEDULE

III year , VI semester

№	TOPIC	CLASSES	DATE
1.	Scope of orthodontics and its interdisciplinary relations to other medical fields. Orthodontic terminology. Introduction to the development of the main orthodontic procedures and historical development of orthodontics in Bulgaria. Materials and instruments used in orthodontics.	1 h.	
2.	Biometric evaluation methods in orthodontics. Specific orthodontic diagnostics. Analysis of discrepancies of individual teeth, dental arch and occlusion.	2 h.	
3.	Biometric evaluation methods. Tooth-size discrepancies. Dental arch discrepancies: tooth-size analysis, arch segment analysis, dento-alveolar and craniofacial discrepancies.	1 h.	
4.	Norm in orthodontics. Classification of dento-alveolar discrepancies and deformations. Norm in primary, mixed and permanent dentition. Angle's Classification.	1 h.	
5.	Development of dental arches and occlusion. Development prognosis of primary, mixed and permanent dentition.	1 h.	
6.	Diagnostics in orthodontics. Clinical evaluation methods. Diagnostic approaches in clinical assessments – methods and means. Methods for assessment of the main functions of the orofacial complex. Diagnosis, differential diagnosis and treatment plan. Documentation in orthodontic practice.	1 h.	
7.	Orthodontic appliances' classification and their action. Basic elements of the lingual plate. Types of orthodontic appliances according to their purpose, source of force, type of action, place of application and mobility.	1 h.	

8.	Lingual plate – planning, action and variations. Lingual plate – mechanism, action and making. Indications for application and activation. Lingual plate modifications and their action.	1 h.	
9.	Photographic analysis of sagittal, vertical and transversal facial proportions on side profile photograph and front face photograph. Intraoral periapical and occlusal radiograph, panoramic radiograph – necessity and diagnostics.	1 h.	
10.	Cephalometric radiography. Lateral cephalometric radiography application. Cephalometric analysis- points, lines, planes and angles. Normal values.	1 h.	
11.	Functional clinical and paraclinical tests and examinations. Diagnostics of parafunctions.	1 h.	
12.	Etiology of malocclusions. Genetic, functional and morphologic etiological factors causing norm deviations in dento-facial region.	1 h.	
13.	Etiology of malocclusions. Genetic, functional and morphologic etiological factors causing norm deviations in dento-facial region.	1 h.	
14.	Prenatal growth and development of cranio-facial region from orthodontics point of view.	1 h.	

TOTAL: 15 h.

LECTURES SCHEDULE

4rd Year, 7th Semester

№	TOPIC	CLASSES	DATE
1.	Postnatal growth and development of cranio-facial region from orthodontics point of view. Facial growth areas and patterns. Growth direction for maxilla, mandible and growth rotations. Hypo and hyper-divergent facial types.	1 h.	
2.	Individual tooth deviations – deviations in number, shape, size, structure and position. Diagnosis of rotations, inclinations and tooth position discrepancies. Etiology, diagnostics, clinic and treatment of tooth deviations – microdontia, macrodontia, hypo-and hyperodontia, anodontia, impacted teeth.	2 h.	
3.	Transversal dental arch deviations in the anterior segment: Diastemas and tremas - definition, types, etiology, diagnosis, differential diagnosis, prophylaxis, treatment and retention.	1 h.	
	Tranversal dental arch deviations in the posterior segment:	1 h.	

	Compression - definition, types, etiology, diagnosis, differential diagnosis, prophylaxis, treatment and retention.		
4.	Tranversal dental arch deviations in the posterior segment: Expansion- definition, types, etiology, diagnosis, differential diagnosis, prophylaxis, treatment and retention. Sagittal discrepancies in the anterior segment of the dental arch: Protrusion - definition, types, etiology, diagnosis, differential diagnosis, prophylaxis, treatment and retention.	1 h. 1 h.	
5.	Sagittal discrepancies in the anterior segment of the dental arch: Retrusion - definition, types, etiology, diagnosis, differential diagnosis, prophylaxis, treatment and retention. Sagittal discrepancies in the posterior segment of the dental arch: Mesialised posterior teeth - definition, types, etiology, diagnosis, differential diagnosis, prophylaxis, treatment and retention.	1 h.	
6.	Angle's class II deformations – definition, etiology, diagnosis, differential diagnosis, prevention, treatment and retention. Class II Division 1 and Class II Division 2.	2 h.	
7.	Angle's class III deformations – definition, etiology, diagnosis, differential diagnosis, prevention, treatment and retention.	2 h.	
8.	Anterior crossbite – definition, etiology, diagnosis, differential diagnosis, prevention, treatment and retention. Posterior crossbite - definition, etiology, diagnosis, differential diagnosis, prevention, treatment and retention.	2 h.	
9.	Laterognathia – definition, etiology, diagnosis, differential diagnosis, prevention, treatment and retention.	1 h.	

TOTAL: 15 h.

LECTURES SCHEDULE

V Year, IX Semester

№	TOPIC	CLASSES	DATE
1.	Prevention of dentomaxillary deformities. Types of prevention – aim, activities, executants. Primary prevention of orthodontic malocclusions during pregnancy and first year of development. Prevention during the development of the primary dentition- until the 3 rd year of development. Prevention in primary dentition between the 3 rd and 6 th years of development.	2 h.	
2.	Myogymnastics and myotherapy in orthodontics. Indications for application in cases of different malocclusions and muscles	2 h.	

	disfunctions. Interceptive appliances. Classification of interceptive appliances. Indications.		
3.	Combined orthodontic and prosthetic treatment of malocclusion . Role of the orthodontist. In preparation of the case.	2 h.	
4.	Combined orthodontic and periodontal treatment of malocclusion . Role of the orthodontist. In preparation of the case.	2 h.	
5.	Extraction of teeth. Combined surgical orthodontic treatment. Role of the orthodontist. Indications and contraindications for tooth extraction.	2 h.	
6.	Combined orthodontic and surgical treatment of malocclusion. Surgical approaches of treatment of malocclusions. Orthognatic surgery	2 h.	
7.	Congenital clefts of the lip, alveolar ridge and palate.	2 h.	
8.	Retention and retention periods, retention appliances duration of orthodontic retention. Orthodontic relapse. Factors for relapse. Types of relapse. Relapse after orthodontic treatment.	2 h.	

TOTAL: 16 h.

PRACTICES

SEMINARS SCHEDULE

3rd Year, 6th Semester

№	TOPIC	CLASSES	DATE
1.	Brief history and scope of orthodontics – introductory seminar	2 h.	
2.	Impression-taking procedure of the maxilla	2 h.	
3.	Impression-taking procedure of the mandible	2 h.	
4.	Centric occlusion registration. Orientation of the casts in relation to the three main orthodontic planes. Orthodontic cast analysis. Analysis of the single-tooth discrepancies.	2 h.	
5.	Orthodontic cast analysis. Dental arches analysis of permanent dentition	2 h.	
6.	Orthodontic cast analysis. Occlusion analysis of permanent dentition	2 h.	
7.	<u>Seminar</u> : Biometric analysis – single-tooth, dental arch and occlusion.	2 h.	
8.	Retentive elements of the lingual plate –Adams clasp	2 h.	
9.	Retentive elements of the lingual plate – Schwarz clasp	2 h.	
10.	Lingual plate. Vestibular arch	2 h.	

11.	Plastic part /plate/ as a compulsory element of the lingual plate. Other active elements of the lingual plate	2 h.	
12.	Demonstration of making orthodontic appliances from photopolymerizing acrylic	2 h.	
13.	Periapical radiography and panoramic radiography	2 h.	
14.	Lateral cephalometric radiography – general terms	2 h.	
15.	Handing in completed student's work. Receiving the associate professor's signature.	2 h.	

TOTAL: 30 h.

SEMINARS SCHEDULE

4rd Year, 7th Semester

№	TOPIC	CLASSES	DATE
1.	Introductory lesson	2 h.	
2.	Entry level seminar. Clinical and paraclinical methods of examination in orthodontics.	2 h.	
3.	Registration of new patients. Clinical evaluation – anamnesis and status. Impressions for diagnostic models.	2 h.	
4.	Orthodontic cast analysis and paraclinical examinations. Preparation of treatment plan for newly registered patients.	2 h.	
5.	Bending the wire elements of the orthodontic appliance.	2 h.	
6.	Growth and development of the facial skull. Inspection of old patients medical records.	2 h.	
7.	Tooth number, shape, size, position and structure discrepancies. Impacted and persistend deciduous teeth. Clinics, diagnostics, prevention and treatment. Inspection of old patients medical records.	2 h.	
8.	Placement of new appliances and instructing the patients for proper use of the appliances.	2 h.	
9.	Diastemas and tremas.	2 h.	
10.	Compression and expansion.	2 h.	
11.	Protrusion and retrusion. Mesialised teeth, Patients fallow up oppoitment	2 h.	
12.	Seminar – individual teeth and dental arch discrepancies.	2 h.	
13.	Class II deformation – Class II divisions 1 and 2.	2 h.	
14.	Class III deformation.	2 h.	
15.	Patient follow-up. Handing in completed student's work. Receiving the associate professor's signature.	2 h.	

TOTAL: 30 h

SEMINARS SCHEDULE

4rd Year, 8 Semester

№	TOPIC	CLASSES	DATE
1.	Introductory seminar.Documentation control on previous active patients	3 h.	
2.	New patients registration.	3 h.	
3.	Clinical diagnostics and treatment plan on new patient. Biometric analysis	3 h.	
4.	Paraclinical diagnostics and treatment plan on the new patient	3 h.	
5.	Crossbite in the anterior and posterior segment. Documentation control of previous and new patient	3 h.	
6.	Laterognathia.	3 h.	
7.	Vertical deviations in occlusion -deep bite. Adjustment of orthodontic appliance and instructions for the patient.	3 h.	
8.	Vertical deviations in occlusion overbite.	3 h.	
9.	Midterm exam ‘ Deviations in the occlusion’	3 h.	
10.	Functional appliances in the ortodontic practice- activator, monobloc, lingual plate with inclined bite plane, twin block. Patients follow- up	3 h.	
11.	Functional appliances in the ortodontic practice- Fränkel, Klammt, Balters. Patients folow-up	3 h.	
12.	Fixed appliances -basic elements and principles of operation. Patients follow-up	3 h.	
13.	Fixed appliances- stages of orthodontic treatment with fixed appliances. Patients follow-up	3 h.	
14.	Midterm exam ‘ Functional appliances‘	3 h.	
15.	Handing and accepting the documentation. Receiving the associate professor’s signature.	3 h.	

TOTAL: 45 h.

SEMINARS SCHEDULE

V Year, IX Semester – Theoretical exercises

No	TOPIC	CLASSES	DATE
1.	Terminology and the Norm concepts in Orthodontics.	2 h.	
2.	Etiology of malocclusions. Malocclusions as a result of hereditary factors and teratogenic factors. Endocrine disorders as etiological factors for malocclusion.	2 h.	
3.	Bad oral habits and parafunctions as etiological factors for malocclusion.	2 h.	
4.	Primary prevention of orthodontic malocclusions during pregnancy and first year of development.	2 h.	
5.	Prevention during the development of the primary dentition- until the 3 rd year of development.	2 h.	
6.	Prevention in primary dentition between the 3 rd and 6 th years of development.	2 h.	
7.	Prevention during primary and secondary schoolage.	2 h.	
8.	Types of measures eliminating the abnormal oral habits. Interceptive appliances- passive interceptive appliances.	2 h.	
9.	Types of measures eliminating the abnormal oral habits. Active interceptive appliances.	2 h.	
10.	Prosthetics treatment in childhood.	2 h.	
11.	Space maintainers indications and application.	2 h.	
12.	Types of measures eliminating the abnormal oral habits. Pre-fabricated interceptive appliances.	2 h.	
13.	Myofunctional preventive therapy normalizing tone muscles in maxillofacial region.	2 h.	
14.	The role of the general dental practitioner in prevention of malocclusions. Development of the dental arches and the occlusion.	2 h.	
15.	Arrangement and schedule of the interceptive procedures.	2 h.	

TOTAL: 30 h.

SEMINARS SCHEDULE

V Year, IX Semester – Clinics

No	TOPIC	CLASSES	DATE
1.	Introduction and documentation preparation.	2 h.	
2.	Admission of new patients and documentation preparation.	2 h.	
3.	Clinical evaluation, analysis and treatment plan discussion.	2 h.	
4.	Extraoral appliances – facemask, chin cup and headgear. Admission of patients and documentation preparation.	2 h.	

5.	Orthodontic forces. Admission of patients and documentation preparation.	2 h.	
6.	Tissue changes under the action of orthodontic forces. Admission of patients and documentation preparation.	2 h.	
7.	Biomechanics in Orthodontics. Tissue changes under the action of orthodontic forces. Exam.	2 h.	
8.	Congenital clefts of the lip, alveolar ridge and palate. Admission of patients and documentation preparation.	2 h.	
9.	The role of the general practitioner in collaboration with the orthodontist during the orthodontic treatment. Admission of patients and documentation preparation.	2 h.	
10.	The role of the orthodontist in the complex orthodontic-surgical treatment. Admission of patients and documentation preparation.	2 h.	
11.	The role of the orthodontist in the complex surgical -orthodontic treatment. Admission of patients and documentation preparation.	2 h.	
12.	The role of the orthodontist in the complex orthodontic-periodontal treatment. Admission of patients and documentation preparation.	2 h.	
13.	The role of the orthodontist in the complex orthodontic-prosthetic treatment. Admission of patients and documentation preparation.	2 h.	
14.	Retention and retention periods. Admission of patients and documentation preparation.	2 h.	
15.	Accepting the documentation. Signature from the associate professor.	2 h.	

TOTAL: 30

BIBLIOGRAPHY

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CONSPECTUS

Medical University of Plovdiv- Faculty of Dental Medicine

Orthodontics Syllabus **Semester exam in orthodontics 5th course** **2021/2022**

1. Prenatal development from orthodontic point of view.
2. Craniofacial growth and development.
3. Primary dentition. Formation, time of eruption, characteristics and development.
4. Mixed and permanent dentition. Formation, time of eruption, characteristics and development.
5. Heredity and main etiological factors of dentofacial deformities during prenatal development.

6. Birth and nutrition as etiological factors.
7. Anodontia. Hypodontia and hyperdontia- factors for malocclusions.
8. Hormonal disorders and vitamin deficiencies- factors for malocclusions.
9. Bad habits as etiological factors for dentofacial deformities.
10. Carious damage and premature loss of primary and permanent teeth- factors for malocclusions.
11. Impaired nasal breathing and mouth breathing- factors for malocclusions.
12. Clinical methods of examination in orthodontics.
13. Biometric methods of examination in orthodontics
14. Facial photo analysis- lateral and front view.
15. Radiographic methods of examination in orthodontics. Intraoral periapical radiography, orthopantomography, X –ray of wrist and hand.
16. Radiographic methods of examination in orthodontics – Lateral and Frontal telereöntgenography.
17. Functional methods of examination in orthodontics.
18. Terminology and the norm concept in orthodontics.
19. Classification of malocclusions. Angle classification. Simons and Kantorovich classifications.
20. Primary prevention of orthodontic malocclusions during pregnancy and first year of baby's development.
21. Primary and secondary prevention of orthodontic malocclusions in nursery – age children and preschoolers (3-6- year old children).
22. Primary and secondary prevention of orthodontic malocclusions of (school aged children) (6-12 years).
23. Myofunctional therapy in orthodontics.
24. Interceptive orthodontic appliances- types, classification and application.

25. Biomechanics in orthodontics. Force sources. Characteristics of the orthodontic forces.
26. Main principles of action of the functional and mechanical appliances.
27. Lingual plate – design, indications, modifications/inclined and bite planes/
28. Angle's appliances. Contemporary modifications.
29. General characteristics of Edgewise technique.
30. Main characteristics of the extraoral orthodontic appliances.
31. Monoblock and Häupl-Anderson activator and its modern modifications.
32. Fränkel functional appliances.
33. Klammt elastic open activator.
34. Balters appliances.
35. Retainers.
36. Deviations in the number, size, shape and structure of teeth.
37. Deviations in tooth positions.
38. Impacted teeth and persistent deciduous teeth. Clinical manifestation and diagnosis. Prevention and treatment.
39. Diastema. Clinical manifestation and diagnosis. Prevention and treatment.
40. Compression (endognathia). Clinical manifestation and diagnosis. Prevention and treatment.
41. Expansion (exognathia). Clinical manifestation and diagnosis. Prevention and treatment.
42. Protrusion. Clinical manifestation and diagnosis. Prevention and treatment.
43. Retrusion. Clinical manifestation and diagnosis. Prevention and treatment.

44. Prognathia. Clinical manifestation and diagnosis. Prevention and treatment.
45. Deckbiss. Clinical manifestation and diagnosis. Prevention and treatment.
46. Progenia. Clinical manifestation and diagnosis. Prevention and treatment.
47. Cross bite in anterior and posterior segment. Clinical manifestation and diagnosis. Prevention and treatment
48. Laterognathia. Clinical manifestation and diagnosis. Prevention and treatment.
49. Open bite. Clinical manifestation and diagnosis. Prevention and treatment.
50. Deep bite. Clinical manifestation and diagnosis. Prevention and treatment.
51. Combined orthodontic-prosthetic treatment.
52. Combined orthodontic periodontal treatment
53. Combined orthodontic-surgical treatment of severe malocclusions, clefts and syndromes.
54. Tissue changes under the effect of orthodontic forces.
55. Extraction of teeth during orthodontic treatment – indications. Hotz serial extraction
56. Retention period and relapse after orthodontic treatment.

Orthodontics Syllabus
State exam in orthodontics

2021/2022

1. Prenatal development from orthodontic point of view.
2. Craniofacial growth and development.
3. Primary dentition. Formation, time of eruption, characteristics and development.
4. Mixed and permanent dentition. Formation, time of eruption, characteristics and development.
5. Normal occlusal relationships in primary, mixed and permanent dentition.
6. Heredity and main etiological factors of dentofacial deformities during prenatal development.
7. Birth and nutrition as etiological factors.
8. Hormonal disorders and vitamin deficiencies- factors for malocclusions.
9. Bad habits as etiological factors for dentofacial deformities. Impaired nasal breathing and mouth breathing- factors for malocclusions.
10. Caries lesions and premature loss of primary and permanent teeth- factors for malocclusions.
11. Fractures and traumas in childhood, bone and TMJ disorders - factors for malocclusions.
12. Clinical methods of examination in orthodontics
13. Biometrical analysis in orthodontics
14. Radiographic methods of examination in orthodontics.
15. Functional methods of examination in orthodontics.
16. Terminology and the norm concept in orthodontics. Angle's classification.
17. Primary prevention of orthodontic malocclusions during pregnancy. Prevention in infancy up to the age of 1.
18. Primary and secondary prevention of orthodontic malocclusions in preschool years (3- to 6-year-old children).
19. Primary and secondary prevention of orthodontic malocclusions of school aged children (6-12 years).
20. Myofunctional therapy in orthodontics.

21. Orthodontic appliances- types, classification and application.
22. Orthodontic forces. Main principles of biomechanics.
23. Interceptive appliance – types, classification and application.
24. Angle’s appliance.
25. General characteristics of fixed technique – principles and treatment phases.
26. Main characteristics of the extraoral orthodontic appliances – design and principles of action.
27. Lingual plate - design, indications
28. Schwarz appliance. Lingual plate modifications (with inclined and horizontal bite plane).
29. Monoblock and activator.
30. Fränkel functional appliances.
31. Klammt appliance (elastic open activator).
32. Balters appliances.
33. Tooth shape and size deviations. Clinical manifestation, diagnosis, prevention and treatment.
34. Deviations in the number of teeth. Impacted and persisting teeth. Clinical manifestation, diagnosis, prevention and treatment.
35. Deviations in tooth position. Clinical manifestation, diagnosis, prevention and treatment
36. Diastema and tremas. Clinical manifestation and diagnosis. Prevention and treatment.
37. Compression (endognathia). Clinical manifestation and diagnosis. Prevention and treatment.
38. Expansion. Clinical manifestation and diagnosis. Prevention and treatment
39. Protrusion. Clinical manifestation and diagnosis. Prevention and treatment.
40. Retrusion. Clinical manifestation and diagnosis. Prevention and treatment.
41. Prognathia. Clinical manifestation and diagnosis. Prevention and treatment.
42. Deckbiss. Clinical manifestation and diagnosis. Prevention and treatment.
43. Progenia. Clinical manifestation and diagnosis. Prevention and treatment.
44. Laterognathia. Clinical manifestation and diagnosis. Prevention and treatment.
45. Open bite. Clinical manifestation and diagnosis. Prevention and treatment.
46. Deep bite. Clinical manifestation and diagnosis. Prevention and treatment.
47. Cross bite in anterior and posterior segment. Clinical manifestation and diagnosis. Prevention and treatment.
48. Combined orthodontic-prosthetic treatment.

49. Combined orthodontic-surgical treatment of severe malocclusions, clefts and syndromes.
50. Tissue changes under the action of orthodontic appliances.
51. Relapse after orthodontic treatment - retention and retention appliances.
52. Indications for teeth extraction in orthodontic treatment. Hotz serial extraction.