PRIVATE HIGHER EDUCATIONAL INSTITUTION
"INTERNATIONAL ACADEMY OF ECOLOGY AND MEDICINE"
Department of Dentistry

SYLLABUS
EDUCATIONAL DISCIPLINE

«Orthodontics»

LEVEL OF HIGHER EDUCATION The second (master's) level

DEGREE OF HIGHER EDUCATION Master

FIELD OF KNOWLEDGE 22 Healthcare

SPECIALTY 221 Dentistry

COURSE _3__

Considered and approved
at a meeting of the Department of Dentistry
Protocol № 1 from «01» 09 2020 p.
Acting head of the department _____
MD, prof. _____ Kuts P.V.

Kiev 2020

1. General information	
Subject	**Orthodontics**
Lector	Acting Head of the Department, Doctor of Medical Sciences, Professor, Kuts P.V. Goropatska A-M.O. Polishchuk I/S.
Teacher's e-mail	forum-for-me@bigmir.net
Discipline format	Normative discipline.
The volume of the discipline	120 hours , 4 ECTS
Link to the distance learning site	maem.kiev.ua
Consultations	Web conferences in various programs (Zoom, Skype, Myit, Jitsy, Teams, Viber, Facebook, Cisco Webs). Exchange tasks via e-mail, Wandrive

2. Annotation to the course

Orthodontics is a discipline that allows students to master the knowledge of etiology, pathogenesis, clinic, diagnosis, prevention and treatment of dental anomalies and deformities, as well as dentition defects. Teaching the discipline "Orthodontics" in the 3rd year gives students the opportunity to study the age characteristics of the development of the dental apparatus, methods of examination, diagnosis and basic principles of treatment of orthodontic patients. Teaching the discipline "Orthodontics" is aimed at mastering the special (professional) competencies of students, which are then used to diagnose and choose the right method of treatment, as well as the responsibility of the student as a future specialist for their level of training and improvement during training and professional activities .

The subject of study of the discipline "Orthodontics" is the acquisition of knowledge:
- Age features of human dental development in the antenatal and postnatal period
- Morpho-functional characteristics of temporary, variable and permanent periods of occlusion
- Characteristics of physiological and pathological types of bites
- Classifications of dental anomalies and deformities
- Methods and sequences of examination of orthodontic patients (clinical and additional)
- Classification and characteristics of orthodontic equipment
- Basic principles and methods of treatment of patients with dental anomalies and deformities

3. Purpose and objectives of the course

The purpose of teaching the discipline "Orthodontics" in the 3rd year is to master the methods of examination and diagnosis of patients with dental anomalies and deformities, basic principles and methods of treatment, as well as the impact of orthodontic equipment on periodontal tissues and temporomandibular joint.

1.2. The main tasks of studying the discipline "Orthodontics" are
- to examine orthodontic patients
- to analyze the results of examination of a patient with dental anomalies and deformities
- substantiate and formulate a preliminary diagnosis
- to substantiate and formulate a syndromic orthodontic diagnosis
- to carry out differential diagnosis in orthodontics
- identify the leading symptoms and syndromes in orthodontics
- to demonstrate mastery of moral and deontological principles of a medical specialist and the principles of professional subordination at orthodontic reception
- to carry out primary and secondary prevention of dental anomalies and deformations

4. Competencies and learning outcomes

Learning outcomes	Teaching methods
Have modern methods of prevention of diseases of the oral cavity	Lectures, practices, oral interviews, tests, dialogue with applicants for higher education, creative work with the creation of multimedia presentations and their

	presentation, independent work with literary sources

Integral:

Ability to solve problems and problems in the field of health care in the specialty "Dentistry" in a professional activity or in the learning process, which involves research and / or innovation and is characterized by uncertainty of conditions and requirements.

General:

1. Ability to abstract thinking, search, analysis, synthesis; processing information from various sources, basics of evidence-based medicine. 2. Ability to lifelong learning. 3. Knowledge and understanding of the subject area and understanding of the profession. 4. Ability to implement knowledge in practice. 5. Ability to communicate orally and in writing in the state language. Ability to communicate in a foreign language. 6. Ability to effectively professional and interpersonal communication and use of information and communication technologies. 7. The ability to adapt to new conditions and situations and the ability to act autonomously in them. 8. Ability to identify and solve problems. 9. Ability to work in a team, including interdisciplinary and international. 10. Observance of deontological norms in professional activity. 11. Ability to implement a system of knowledge and practical skills to ensure a healthy lifestyle and patients. 12. Ability to self-assess their own achievements and increase their level. 13. Ability to assess the state of the environment, to help eliminate its negative effects on health. 14. Ability to act socially responsible and civic conscious. 15. Ability to organize legal support and management of professional activities. 16. Leadership in the development and implementation of innovations and their use in professional activities. 17. The ability to exercise their rights and responsibilities as a member of society, to realize the need for its sustainable development, the rule of law. 18. The ability to preserve and multiply moral, cultural, scientific values and achievements of society.

Special (professional, subject):

1. Collection of medical information about the patient's condition 2. Evaluation of the results of laboratory and instrumental research methods 3. Establishing a clinical diagnosis of dental anomalies and deformities 4. Planning and implementation of measures for the prevention of dental anomalies and deformities 5. Determining the nature and principles of treatment of dental anomalies and deformities 6. Performing medical and dental manipulations 7. Assessment of the impact of the environment on the development of the dental apparatus in the antenatal and postnatal periods 8. Keeping medical records 9. Processing of state, social and medical information

5. Organization of course training

The volume of the course

Type of lesson	***Total amount of hours***
Lectures	10
Practical classes	60
Independent work	50

Course signs

Semester 5-6	Specialty 221 Dentistry	Course (year of study) -3	Normative discipline

Course thematics

THEMATIC PLAN OF LECTURES
Thematic plan of lectures orthodontics
For students of 3 course 5 semester

№	Theme of lectures	Hours
1	Orthodontics. Definition. Stages of development. Problems. Structure. The role of domestic scientists in the development of the discipline. Teeth, dentition, occlusion. Classifications of dental anomalies and deformities.	2

2	Features of clinical examination of orthodontic patients. Medical history. Diagnosis of dental anomalies and deformations.	2
	Total	4

Thematic plan of lectures orthodontics
For students of 3 course 6 semester

№	Theme of lectures	Hours
1	Additional methods of examination of children with dental anomalies and deformities.	2
2	Methods of treatment of dental and maxillofacial anomalies and deformities. Characteristics of orthodontic equipment and the mechanism of adjustment of the masticatory apparatus under its influence.	2
3	Prevention of dental anomalies and deformities in children and adults.	2
	Total	6

THEMATIC PLAN OF PRACTICAL CLASSES
For students of 3 course 5 semester

№	Topic	Hours
1	Stages of development of the dental-maxillary apparatus - intraoral, extraoral. Anatoio-physiological features of the oral cavity and temporomandibular joint. Growth and formation of jaw bones in the age aspect. Features of development of masticatory muscles at children.	3
2	Morphofunctional characteristics of temporary, mixed and permanent occlusion.	3
3	The concept of norm in orthodontics. Orthognathic occlusion, its characteristics. Key occlusions according to E. Engle and Andrews. Physiological and pathological types of occlusions.	3
4	Periods of formation of occlusion height. Significance of Tsilinsky's symptom in the process of formation of permanent occlusion. Final planes according to L.J.Boume and A.M.Schwarz.	3
5	Clinical methods of examination of children with dental anomalies and deformities. Anthropometric methods of examination of orthodontic patients.	3
6	Methods of research of speech and respiratory function. Methods of research of masticatory function and swallowing.	3
7	Photometry in orthodontics.	3
8	Total control.	4
	Total	26

Thematic plan of practical training orthodontics
For students of 3 course 6 semester

№	Topic	Hours
1	X-ray examination methods. Methods of cephalometric (frontal and lateral).	3
2	Classifications of dental-maxillofacial anomalies and deformations. Classifications of orthodontic equipment.	3
3	Theories of periodontal tissue remodeling (Flurence, Kingsley-Walkhof and Oppenheim). Modern theories of periodontal tissue remodeling under the influence of orthodontic equipment. Features of temporomandibular joint remodeling during orthodontic treatment. Forces by AM Schwartz.	3

4	Methods of treatment of orthodontic patients.	3
5	Hardware treatment.	3
6	Surgical methods of treatment of orthodontic patients.	3
7	Physiotherapeutic methods of treatment of orthodontic patients.	3
8	Principles of organization of orthodontic care.	3
9	Bad habits in the development of teeth.	3
10	Preparation for orthodontic treatment.	3
11	Total control.	4
	Total	34

THEMATIC PLAN OF INDEPENDENT WORK OF STUDENTS (IWS)
From orthodontics For 3rd year students

№	Subject to take	Number hours
1.	Preparation for practical, seminar classes (theoretical, development of practical skills, abilities) Tasks for independent work - Deciphering the teleradiogram according to the Schwartz method. - Deciphering the teleradiogram by the Ricketts method. - Deciphering the teleradiogram according to the Steiner method . - Decoding of the teleradiogram by the SassouniPlus method. - Deciphering the orthopantomogram - Methods of photometry.	**40**
2.	Preparation for differentiated credit	**10**
	Total	**50**

6. Course evaluation system

General course evaluation system	**Current control** is performed based on the control of theoretical knowledge, skills and abilities in practical classes. Independent study students are assessed in practical classes, and is an integral part of the final grade of the student. Current control is performed during the training sessions and aims at checking the assimilation of students learning the material. Forms of current control are: a) test tasks with a choice of one correct answer, with the definition of the correct sequence of actions, with determination of the conformity, defining the specific portion of the photo or diagram ("detection"); b) individual oral questioning, interview; c) the solution of typical situational tasks; g) control of practical skills; Grades on the national scale ("excellent" - 5, "good" - 4, "satisfactory" - 3, "unsatisfactory" - 2), received by students, are displayed in the journals of attendance and academic group performance. **Final control** The final control is the form of a differentiated credit at the end of the 1st semester and at the end of the 2nd semester upon completion of the course of medical biology. The semester exam is a form of final control of mastering by the student of theoretical and practical material on academic discipline. The final control (exam) is carried out at the last control lesson. Students are admitted to the FC who have attended all the classes provided by the

curriculum in the discipline and while studying the module scored the number of points not less than the minimum (**72 points**). A student who, for good or bad reasons, has missed classes, is allowed to rework academic debt for a certain period of time.

Evaluation of current educational activities. During the assessment of mastering each topic for the current educational activity of the student scores are set on a 4-point (national) assessment scale. This takes into account all types of work provided by the discipline program. The student must receive a score on each topic. Scores on the traditional scale are converted into points. The final assessment of the current academic activity is the arithmetic mean (the sum of scores for each lesson is divided by the number of lessons per semester) and translated into points according to **Table 2.**

Table 2. Conversion of the average score for the current activity into a multi-point scale (for disciplines completed by diff.credit, exam)

4- point scale	**120-** point scale	**4-** point scale	**120-** point scale	**4-** point scale	**120-** point scale	**4-** point scale	**120-** point scale
5	120	4,45	107	3,91	94	3,37	81
4,95	119	4,41	106	3,87	93	3,33	80
4,91	118	4,37	105	3,83	92	3,29	79
4,87	117	4,33	104	3,79	91	3,25	78
4,83	116	4,29	103	3,74	90	3,2	77
4,79	115	4,25	102	3,7	89	3,16	76
4,75	114	4,2	101	3,66	88	3,12	75
4,7	113	4,16	100	3,62	87	3,08	74
4,66	112	4,12	99	3,58	86	3,04	73
4,62	111	4,08	98	3,54	85	3	**72**
4,58	110	4,04	97	3,49	84	<3	Not enough
4,54	109	3,99	96	3,45	83		
4,5	108	3,95	95	3,41	82		

The maximum number *of points that a student can collect for current educational activity during semester in order to be admitted to the exam is* ***120 points.***

The minimum number *of points that a student can collect for current educational activity during semester in order to be admitted to the exam is* ***72 points.***

Calculating of the number of points is based on obtained marks of student according to traditional scale while learning subject during the semester, by calculating the arithmetic mean (AM) that is rounded to two signs after comma.

Evaluation of independent work of students. Independent work of students, which is provided by the topic of the lesson together with the classroom work, is evaluated during the current control of the topic in the relevant lesson. Assimilation of topics that are submitted only for independent work is checked during the final module control.

Evaluation of final control.

The maximum number of points that a student can score during the exam is **80 points.**

The final control is considered credited if the student scored at least 60% of the maximum amount of points (for a 200-point scale - at least **50 points**).

Determining the number of points that a student scored in the discipline: the number of points that a student scored in the discipline is defined as the sum of points for the current academic activity (Table1) and for the final control (diff.credit, exam) (Table 3).

Table 3. Scale of assessment of differentiated (exam) credit:

Traditional scale	Points

	«5»	**70-80**
	«4»	**60-69**
	«3»	**50-59**
Requirements for written work	The final written work is performed in the form of a test.	
Practical classes	Classroom work	

The 1st semester

Classroom work - score from 2 to 5 for each topic.

Differentiated credit (semester control) Semester control at the end of the 1st semester is provided in the form of Differentiated credit. (Table 2) Provides a final grade on a 120-point scale as the sum of grades for the current control of knowledge (oral examination, written survey, Practical work, abstracts).
Semester control includes control of theoretical and practical training.

Amount: minimum 72 + 50 = 122, maximum 120 + 80 = 200

The 2nd semester

Classroom work - score from 2 to 5 for each topic.

Final module control is evaluated from 50 to 80 points and consists of:
Test control - 40 tests = 40 points (1 point for the correct answer to 1 test).
Answer to 2 theoretical questions of 20 points for each = 40 points. Amount: 80.

Amount: minimum 72 + 50 = 122, maximum 120 + 80 = 200

The list of theoretical questions to prepare students for the exam.

Content module № 1

"Age features of the development of the human dental apparatus".

1. Orthodontics - definition, purpose and tasks. Domestic and foreign scientists who have contributed to the development of orthodontics.
2. Development of the dental-maxillary apparatus in the intrauterine period. Features of the formation of the hard palate.
3. Periods of intrauterine bookmark temporary and permanent teeth.
4. Features of the newborn's slave cavity and their importance in the process of formation of the dental-maxillary apparatus.
5. Morpho-functional characteristics of temporary occlusion.
6. Periods of temporary occlusion.
7. Tsilinsky's symptom and its prognostic value.
8. Final planes by L.G. Boume and A.M. Schwars.
9. Morpho-functional characteristics of the variable period of occlusion.
10. Morpho-functional characteristics of permanent occlusion.
11. Physiological and pathological types of bites.
12. Orthognathic occlusion and its characteristics.
13. Keys of occlusion according to E. Engle and Andrews.
14. Features of development of masticatory muscles at children.
15. Features of the structure of the temporomandibular joints in children, the gradual improvement of lower jaw movements.
16. Factors that ensure the growth and development of the jaws.
17. Periods of formation of bite height.
18. The concept of "norm" in orthodontics.

Content module № 2

"Methods of examination of patients with dental anomalies"

1. Features of clinical examination of patients with dental anomalies and deformities.

2. Features of objective examination of orthodontic patients.
3. Determining the size of the crown of temporary and permanent teeth.
4. Measurement of the width of dental arches by the method of Pon.
5. Determination of the length of the dentition by the method of Korkhhaus.
6. Measurement of the height of the palatine arch by the method of Korhhaus.
7. Establishing the proportionality of the development of dental segments by the method of HG Gerlach.
8. Graphic method of studying the shape of dental arches by the method of Howley-Herbert-Herbst.
9. Measurement of models of jaws by the method of NG Snagina.
10. Methods of direct and indirect palatography.
11. Characteristics of speech function in normal and anomalies and deformations of the dental-maxillary apparatus.
12. The influence of impaired nasal breathing on the formation of the dental and maxillofacial apparatus and the body as a whole.
13. Methods of conducting a respiratory test.
14. Features of the type of swallowing, their characteristics.
15. The role of swallowing in the development of dental anomalies. Diagnosis of impaired swallowing.
16. Clinical functional tests according to R. Frenkel.
17. Methods of research of masticatory function.
18. Photometric research methods. Basic anthropometric landmarks.
19. X-ray methods of examination of the dental-maxillary apparatus in children. Aiming and axial radiography of teeth, orthopantomography, teleradiography.
20. Deciphering teleradiograms by AM Schwartz. Craniometric measurements,
their purpose, diagnostic value.
21. Gnatometric measurements by A.M. Schwartz, their diagnostic value.
22. Profilometric measurements by A.M. Schwartz, their diagnostic value.
23. The role of teleradiography in the diagnosis and prediction of the results of orthodontic treatment.
24. Classification of dental-maxillofacial deformities and anomalies by EN Englem and A.Ya. Katz their distinctive features.
25. Classification of dental-maxillofacial deformities and anomalies according to DA Calvelis, AI Betelman, V.Yu. Courland, L.W. Ilyina-Markosyan. The principle of their construction.
26. Advantages of the classification of dental-maxillofacial deformities and anomalies proposed by the WHO.

Content module № 3

"Basic principles and methods of treatment of patients with dental anomalies and deformities."

1. Classifications of orthodontic equipment by AI Betelman and F.Ya. Khoroshilkina.
2. Functional orthodontic equipment, its characteristics and purpose.
3. Functional-guiding orthodontic equipment, its characteristics and purpose.
4. Mechanically operating equipment, its characteristics and purpose.
5. Orthodontic appliances of combined action, its characteristics and purpose.
6. Morphological changes in periodontal tissues during tooth movement.
7. The theory of bone remodeling during instrumental movement of Flurence teeth.
8. The theory of bone remodeling in the instrumental movement of the teeth of Walkhof-Kingsley.
9. The theory of bone remodeling during instrumental movement of Oppenheim teeth.
10. Modern theory of bone remodeling of the tooth DA Calvelis.
11. The theory of reconstruction of hard tissues SS Raizman.
12. The theory of reconstruction of hard tissues AI Poznyakova.
13. Biomechanics of horizontal movement of teeth according to DA Calvelis.
14. Morphological changes in the palatal suture during the expansion of the upper jaw.

15. Forces used in orthodontics. Rationale for use.
16. The distribution of forces on AM Schwartz and their characteristics.
17. Morphological changes in the TMJ during instrumental movement of the mandible.
18. Basic principles and methods of orthodontic treatment of dental anomalies and deformities.
19. Characteristics of the biological method of treatment.
20. Characteristics of the instrumental method of treatment.
21. Characteristics of surgical treatments.
22. Physiotherapeutic methods of treatment of orthodontic patients, indications for use.
23. The main methods of prevention of dental anomalies and deformities.
24. Principles of organization of orthodontic care.
25. Medical examination of children of preschool institutions by risk groups.
26. The role of heredity, bad habits, the state of the ENT organs on the occurrence of orthodontic pathology.

The list of practical skills for final module control

1. Be able to examine an orthodontic patient: - be able to collect anamnesis; - be able to conduct clinical methods of examination of an orthodontic patient; - be able to conduct auxiliary methods of examination of an orthodontic patient; - be able to establish a preliminary diagnosis. 2. Be able to fill in the medical history. 3. Be able to get prints from the upper and lower jaws with different impression materials. 4. Be able to keep control models. 5. Be able to conduct clinical diagnostic tests. 6. Be able to conduct auxiliary research methods for Pon, Korkhaus, Gerlach, Snagin. 7. Be able to decipher the lateral teleradiogram. 8. Be able to describe dental, axial X-rays and orthopantomogram. 9. Be able to establish a final diagnosis. 10. Be able to make a plan of orthodontic treatment. 11. Be able to determine the design of the orthodontic appliance. 12. Be able to fill the outfit in the dental laboratory. 13. Be able to fit and pass the orthodontic appliance. 14. Be able to correct and activate the device. 15. Ability to determine the lack of space in the dentition for abnormally located teeth on diagnostic models and in the oral cavity. 16. Be able to determine the depth and condition of the rudiments or retained teeth on radiographs. 17. Be able to conduct palatography. 18. Be able to determine the state of the swallowing function. 19. Be able to conduct a breathing test. 20. Be able to determine the configuration of the face and the proportions of parts of the face. 21. Be able to make a plan of preventive measures to prevent dental, maxillofacial anomalies and deformities. 22. Be able to determine the risk group of dental-maxillofacial anomalies and deformities. 23. Be able to make the necessary set of myogymnastic exercises. 24. Ability to determine a set of preventive measures aimed at preventing the development of persistent dental-maxillofacial deformities.

Circumstance of admission to the final control	1. Semester control at the end of the 1st semester is provided in the form of a differential credit. (Table 2) Provides a final score on a 120-point scale as the sum of scores for the current control of knowledge (oral examination, written survey, tests, verification of identification of micropreparations, abstracts), the results of 2 content modules. 2. Students are allowed to take the differentiated credit, exam only if there is no debt for the implementation of the curriculum.

7. Course policy

The organization of the educational process is carried out with the use of the European Credit Transfer System (ECTS) to assess student performance. The points gained in the current survey, independent work and points of the final control are credited. This must take into account the student's presence in class and his activity during practical work. Inadmissible: absences and late classes; use of a mobile phone, tablet or other mobile devices during the lesson (except for the cases provided by the curriculum and methodical recommendations of the teacher); copying and plagiarism; untimely performance of the task, the presence of unsatisfactory grades for 50% or more of the submitted theoretical and practical material.

8. RECOMMENDED LITERATURE

Required
1.FlisPS Orthodontics. -Vinnytsia: "New Book", 2006. -308 p.
2.Schmut GPF, Holtgrave EA, Drescher D. Practical orthodontics. Ed. prof. P.S. Flis. Per. with him. -Lviv: GalDent, 1999.
3.Stephen Williams. A short guide to telegraphy. Ed. prof. P.S. Flis. -Lviv, 2006.
4.Sharova GV, Rogozhnikov GI Pediatric orthopedic dentistry. M., "Medicine", 1991. p. 289.
5.Khoroshilkina F.Ya. Orthodontics. Defects of teeth, dentitions, occlusion anomalies, morphofunctional disorders in the maxillofacial region and their complex treatment Medical Information Agency (MIA), 2010, -592p.
6.Flis PS, Omelchuk NA, Rashchenko NV etal. Orthodontics. -K .: Medicine », 2008 p. -336 c.
7.Doroshenko SI, Kulginsky EA Fundamentals of teleradiography K .: Health, 2007. -72 p.
Additional:
1. Bennett J., R. McLowlin, ed. FlisP.S. "Bag of orthodontic treatment by the technique of a straight arch", Lviv: "GalDent", 2001.2. Golovko NV Prevention of dental anomalies. -Vinnytsia: Nova Kniga, 2005.-271p.3. Declan Millet, Richard Welbury. Solving problems in orthodontics and pediatric dentistry. -M .: MEDpress-Inform, 2009. -199 p.4. Doroshenko SI, Kulginsky EA Fundamentals of teleradiography. -K .: Zdorovja, 2007. -70 p.5. Kanyura OA, Savichuk NO, Golubchikov MV The main directions of reforming the children's dental service. -Kyiv: Medicine, 2010.6. Kuroyedova VD, Dmitrenko MI Modern methods of prevention of dental anomalies and deformations // World of Orthodontics. -Kyiv: Visnyk stomatologii, 2003. - No1 (4), p. 6-97.McLaughlin R., J. Bennett, X. Treviso / ed. FlisP.S. "Systematized mechanics of orthodontic treatment", Lviv: "GalDent", 2005.8.Malanchuk VO, Borisenko AV, FlisPS etc. Fundamentals of dentistry. -Kyiv: "Medicine", 2009.9.Persin LS Orthodontics M. OJSC "Medicine", 2004.10.Persin LS Orthodontics. Modern methods for diagnosing maxillofacial anomalies. A guide for doctors. -M .: OOO «Informknyga», 2007. –248p.11.Stephen Williams. A short guide to telegraphy. Ed. prof. P.S. Flis. -Lviv, 2006.12.Stanislav V. Maevski.Dental gnathology. -Lviv: GalDent, 2008.13.William R. Profit. Modern orthodontics. -M .: MEDpress-Inform, 2006. -559 p.14. Kuroedova VD, Zhdan VN, Galich LB etc. Atlas of orthodontic appliances. -Poltava: "Dyvosvit", 2011 -156 p.15. Ravindra Nanda, Sunil Kapila. Current therapy in orthodontics. -Mosby, 2010. -396p.16.RavindaNanda, Flavio Andres Ubire. Temporary Anhorage Devises in
orthodontis. -Mosby, 2008. -432p.17.Alexander R.G. The 20 principles of the ALEXANDER DISIPLINE. -Quintessence Publishing Co., 2008. -236p

Lector _____ Goropatska A-M.O.