SYLLABUS OF THE ELECTIVE COURSE ON ORTHODONTICS

"Modern technologies of application of non-removable orthodontic technique"

FOR 5TH YEAR STUDENTS

1. General information	
Name of faculty	Dentistry
Educational program (branch, speciality, level of higher education, form of education)	Field of knowledge 22 «Health care» Speciality 221 «Dentistry» second (master`s) level of higher education, full-time
Academic year	2021-2022
Name of discipline, code	Orthodontics elective course, SU-1.70 Kaf_orthodontics@meduniv.lviv.ua
Department	Orthodontics Dental center of Danylo Halytskiy Lviv National Medical University, Lviv, Pekarska street 69b Tel.+38 (032) 275-59-87 "Arden Plus" Lviv, Shota Rustaveli street 32/1 +38(032)276-76-38
Chief of department	Prof. Chukhray N.L. nchukhray@gmail.com
Year of study	5 year
Semester	X
Type of discipline/ module	Required
Teachers	Chukhray N.L. – professor, nchukhray@gmail.com Bezvushko E.V. – professor, elvira7773131@gmail.com Musij-Sementsiv K.H. – assos. prof., sementsivk@gmail.com Dubetska-Hraboys I.S. - assos. prof. dubetskaira@gmail.com
Erasmus yes/no	No
Person responsible for syllabus	Assos.prof. Musij-Sementsiv Kh.H. Assos.prof Dubetska-Hrabous I.S.
Number of credits ECTS	4
Number of hours (lectures/practical classes/individual work of student)	120/40/80
Language of studing	English
Information for consultation	Consultations are held in accordance with the schedule of consultations approved by the head of the department

Adress, ттelephon and schedule of clinical base	Dental center of Danylo Halytskiy Lviv National Medical University, Lviv, Pekarska street 69b Tel.+38 (032) 275-59-87 "Arden Plus" Lviv, Shota Rustaveli street 32/1 +38(032)276-76-38 (9.00-18.00)

2. Short annotation to the course

Elective course in orthodontics "Modern technologies of fixed orthodontic techniques" deepens students' knowledge of modern theories of reconstruction of periodontal hard tissues under the influence of orthodontic equipment, ability to conduct and analyze the results of additional methods of examination, diagnosis and examination, drawing up a treatment plan, determining the necessary materials for the manufacture of orthodontic appliances, their fixation and possible complications

3. The purpose and objectives of the course

The purpose of teaching the discipline "Orthodontics" is to study the etiology and pathogenesis of dental anomalies and deformities, congenital facial defects, dental injuries, defects of teeth and dentition, mastering the basic and additional diagnostic methods in orthodontics, early detection of surgical pathology. intervention, prosthetics, acquaintance with the main methods of treatment of orthodontic patients, classification of orthodontic equipment, for the possibility of their further use during clinical admission of patients and the formation of special (professional) competencies in the orthodontic clinic

The main tasks of studying

- ✔ deepening knowledge of anatomical and physiological features of the development of the dental apparatus in the prenatal and postnatal period of development;
- ✔ expansion of knowledge about modern views on the theory of reconstruction of periodontal tissues under the influence of orthodontic equipment;
- ✔ improving the skills of diagnosis of dental anomalies and deformities;
- ✔ deepening of knowledge about modern methods of treatment of anomalies of free-standing teeth, their groups and occlusion by fixed orthodontic technique;
- ✔ formation of an analytical approach to the individual choice of treatment method for orthodontic patients depending on age and clinical manifestations;
- ✔ analysis of errors and complications in the treatment of fixed orthodontic techniques and improvement of skills to prevent and eliminate them.

Competences and learning outcomes

General:

- Ability to abstract thinking, analysis and synthesis.
- Knowledge and understanding of the subject area and understanding of professional activity.
- Ability to apply knowledge in practice.
- Ability to communicate in the state language both orally and in writing.
- Ability to communicate in English.
- Skills in the use of information and communication technologies.
- Ability to search, process and analyze information from various sources.
- Ability to adapt and act in a new situation.
- Ability to identify, pose and solve problems.
- Ability to be critical and self-critical.
- Ability to work in a team.
- The desire to preserve the environment.

- Ability to act socially responsibly and consciously.
- Ability to realize their rights and responsibilities as a member of society, to realize the values of civil (free democratic) society and the need for its sustainable development, the rule of law, human and civil rights and freedoms in Ukraine.
- Ability to preserve and increase moral, cultural, scientific values and achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology, use different types and forms of physical activity for active recreation and a healthy lifestyle.

Special (professional, subject):

- Know the classification of dental anomalies and deformities; Six keys of occlusion by Andrews;
- Know the antenatal and postnatal periods of growth and development of the maxillofacial complex;
- Have basic and additional methods for diagnosing patients with dental anomalies and deformities;
- Know the clinical and biological foundations of orthodontic treatment;
- Know the features of the algorithm of action in the treatment of patients with braces;
- Know the features of preparing patients for treatment with fixed appliances;
- Know the indications for comprehensive methods of treatment of orthodontic patients;
- Know the classification of orthodontic equipment, indications and contraindications to the use of devices of different mechanism of action;
- Know the retention period, its duration and justification; types of retention devices.

4. Prerequisites of the course

'Orthodontics" as a discipline

a) is based on previous study of human anatomy, histology, embryology and cytology, medical biology, medical chemistry, biological and bioorganic chemistry, physiology and pathological physiology, medical physics and integrates with these disciplines;

b) lays the foundations for students to study such clinical disciplines as prevention of dental diseases, pediatric therapeutic dentistry, pediatric surgical dentistry, orthopedic dentistry, orthodontics;

c) is based on the study of prevention of dental anomalies and deformities, propaedeutics of orthopedic dentistry and integrates with these disciplines;

d) forms an idea of the need for prevention of dental anomalies and deformities, detailed diagnosis and choice of treatment depending on the age of the child.

5. Program learning outcomes

List of learning outcomes

Learning outcome code	Learning outcome code	Learning outcome code
Kn -1; S -1; C-1.	Know the different classifications of dental anomalies and deformities;	PRKn -1
Kn -3; S -3; C -3.	Conduct an examination of an orthodontic patient; Master the basic knowledge of basic and additional diagnostic methods;	PRKn -2
Kn -3; S -3; C -3.	Conduct an examination of an orthodontic patient; Assign and analyze additional methods of examination of an orthodontic	PRKn -3

	patient; Master basic knowledge of basic and additional diagnostic methods;	
Kn -6; S -5; S-6; C -9.	Make a treatment plan for orthodontic patients with various pathologies ;	PRKn -8
Kn -2; S -2; C -2.	Know the classification of dental anomalies and deformities, know the etiology and pathogenesis of occlusion anomalies.	PRKn -15

6. Format and scope of the course

Course format	Eye	
Kind of occupations	Number of hours	Number of hours
Lectures	--	--
Practical classes	40	
Seminars	--	--
Individual work	80	

7. Topics and content of the course

Code type to borrow	Topic	Content of training	Code learning outcome	Teacher
P-1	Classification of dental anomalies and deformities (Engle, Calvelis, Khoroshilkina, WHO). Six elements of orthodontic philosophy according to Andrews.	Know the classification of dental anomalies and deformities.	Kn-1,2; S-1,2; C-1,2.	Prof. Chukhray N.L.
P -2	Clinical methods of diagnosis of a patient with malocclusion. Algorithm of static and dynamic examination. The importance of determining the parameters of facial aesthetics, smile, dentition and teeth for planning orthodontic treatment.	Know the algorithm of clinical examination of an orthodontic patient, know the indications and be able to analyze additional methods of examination of an orthodontic patient.	Kn -3; S -3; C -3.	
P -3	Classification of orthodontic appliances. Features of design of mechanically operating removable and non-removable	To know the classification of orthodontic equipment, to know and be able to determine the	Kn -8; S -8; C -8.	

	devices. Devices for fast expansion of a palatal seam, devices for distalization of teeth. The choice of orthodontic appliances depending on the period of bite formation.	indications and contraindications to the use of devices of different mechanism of action.		
P -4	Features of designing functional and functional-guiding devices, indications for their use. Features of designing functional-operating devices, indications for their use. Preventive devices. Trainers. The choice of orthodontic appliances depending on the period of bite formation.	To know the classification of orthodontic equipment, to know and be able to determine the indications and contraindications to the use of devices of different mechanism of action.	Kn - 6,7,8; S - 6,7,8; C – 6,7,8.	
P -5	Features of bracket system application. Types of braces, their recipes. Types of arcs and their characteristics. Complications of the treatment with fixed appliances. Use of microimplants.	Know the clinical and biological foundations of orthodontic treatment; features of the algorithm of action in the treatment of patients with braces.	Kn – 4,5,6; S - 4,5,6; C – 4,5,6.	
P -6	Retention. Types of retention devices. Recurrence after orthodontic treatment.	Know and be able to determine the retention period, its duration; types of retention devices.	Kn -9; S -9; C -9.	
Ind-1 (individual work)	Describe the types of tooth movement.	Use the picture to get acquainted with the types of moving teeth.	Kn -4; S -4; C -4.	
Ind -2	Clinical methods of diagnosis of a patient with malocclusion	Schematically record the clinical methods of diagnosis of an orthodontic patient.	Kn -3; S -3; C -3.	
Ind -3	Determining the parameters of facial aesthetics, smile, dentition and teeth for	Make a note of the parameters of the aesthetics of the	Kn -3; S -3; C -3.	

	planning orthodontic treatment.	face, teeth and dentition.		
Ind -4	Describe the six elements of orthodontic philosophy according to Andrews.	Visualize the classification of occlusal forms according to Engle.	Kn -1; S -1; C -1.	
Ind -5	Draw a fixed bracket system.	Use the picture to depict the structural elements of the bracket system.	Kn -8; S -8; C -8.	
Ind -6	Types of supports (intraoral, extraoral). Moyer's support classification.	Write down the types of supports, their classification.	Kn -8; S -8; C -8.	
Ind -7	Removable and non-removable devices, and elements of the system that provide full-fledged anchorage.	Draw the structural elements of removable and non-removable devices that provide anchorage.	Kn -8; S -8; C -8.	
Ind -8	Types of microimplants. Indications for their use.	Write down the classification of microimplants, indications for use.	Kn -8; S -8; C -8.	
Ind -9	Types of orthodontic rings, their characteristics. Classification of orthodontic rings.	Write down the classification of orthodontic rings.	Kn -8; S -8; C -8.	
Ind -10	Characteristics of orthodontic tubes and buttons, their types and identification, indications for their use.	Write down the characteristics of orthodontic tubes and buttons.	Kn -8; S -8; C -8.	
Ind -11	Characteristics of ligatures used to fix the arches in the bracket. Metal, elastic ligatures.	Describe ligatures, their classification.	Kn -8; S -8; C -8.	
Ind -12	Elastic threads, chains: their classification and characteristics, indications for their use.	Describe elastic threads, write down their classification.	Kn -8; S -8; C -8.	
Ind -13	Characteristics of tools used to fix braces (positioner, tweezers, probe). Tools used to	Write down the characteristics of the tools for fixing and removing braces.	Kn -8; S -8; C -8.	

	remove braces and rings.			
Ind -14	Damper for the tongue: indications for use, varieties, installation technique (draw).	Schematically draw a damper for the tongue.	Kn -8; S -8; C -8.	
Ind -15	Forsus device: write indications for use.	Record readings before using the Forsus.	Kn-8; S -8; C -8.	
Ind -16	Types of devices used for rapid expansion of the palatal suture (Derichsweiler apparatus, maxillary expander, etc.), indications for their use (draw).	With the help of the picture to get acquainted with the structural elements of the devices for rapid expansion of the palatal suture.	Kn -8; S -8; C -8.	
Ind -17	Describe devices for distalization of teeth (removable and non-removable; intraoral and extraoral)	With the help of the description to get acquainted with the structural elements of the devices for distalization of teeth.	Kn -8; S -8; C -8.	
Ind -18	Natural anatomical and topographic and artificial factors to ensure the stabilization of molars.	Write down the natural anatomical and topographic and artificial factors to ensure the stabilization of molars.	Kn -8; S -8; C -8.	
Ind -19	Record indications and timing for surgery and the possibility of orthognathic surgery.	Write down the indications and terms before surgery.	Kn -7; S -7; C -7.	
Ind -20	Record violations of braces fixation. Their analysis and methods of elimination.	Write down the types of violations of fixation of braces.	Kn -7,8; S -7,8; C -7,8.	

1). Test control of knowledge;
2). Oral questioning and discussion of the topic;
3). Multimedia presentations;
4). Video materials;
5). Anthropometric studies on plaster models, evaluation of radiographs, decoding of TRG using the program Audax Ceph, clinical examination on each other (using dental instruments, impression materials), EMG.

8. Verification of learning outcomes

Current control

Learning outcome code	Learning outcome code	Learning outcome code	Learning outcome code
Kn-1,2; S-1,2; C -1,2.	P-1 Ind -4	Test control; determination of 6 occlusion keys on diagnostic models. Analysis of situational tasks;	Evaluation: Test control: 50-60% - "satisfactory", 70-80% - "good", 90-100% - "excellent"; Situational tasks (includes three questions): **"excellent"** - gave correct, complete answers to 3 control questions; **"Good"** - gave correct, complete answers to 2 control questions and one incomplete or inaccurate answer - to the third**;** **"Satisfactory"** - gave the correct answer to one control question and two incomplete or inaccurate answers - to two questions. Practical experience: Credited / not credited
Kn -3; S-3; C -3.	P -2 Ind -2,3	Test control; Analysis of situational tasks; Carrying out of additional methods of diagnostics on models; Imprinting and casting models.	
Kn -8; S -8; C -8.	P -3 Ind -7,14,15,16,17	Test control; Analysis of situational tasks; Analysis of orthopantomograms, sighting radiographs, decoding TRG, Multimedia presentation on the topic: Orthodontic appliances, a set of orthodontic appliances.	
Kn - 6,7,8; S - 6,7,8; C – 6,7,8.	P -4 Ind -7,14,15,16,17	Test control; Analysis of situational tasks; Analysis of orthopantomograms, sighting radiographs, decoding TRG, Multimedia presentation on the topic: orthodontic appliances, a set of orthodontic appliances.	
Kn-1,2; S -1,2; C-1,2.	P -5 Ind -1,5,6,8,9,10, 11,12,13,19	Test control; Analysis of situational tasks; Multimedia presentation on the topic: Features of the bracket system. Conducting EMG.	
Kn-3; S -3; C -3.	P -6 Ind-18,20	Test control; Analysis of situational tasks; Checking independent work.	

Final control		
General evaluation system	Participation in the work during the semester / exam - 60% / 40% on a 200-point scale	
Rating scales	traditional 4-point scale, multi-point (200-point) scale, ECTS rating scale	
Conditions of admission to the final control	The student attended all practical (laboratory, seminar) classes and received at least 120 points for current performance	
Type of final control	Methods of summary control	Methods of summary control
Credit	All topics submitted for current control must be included. Grades from the 4-point scale are converted into points on a multi-point	The maximum number of points is 200. The minimum number of points is 120 The calculation of the number of points is based on

	(200-point) scale in accordance with the Regulation "Criteria, rules and procedures for evaluating the results of student learning activities"	the grades obtained by the student on a traditional scale during the study of the discipline during the semester by calculating the arithmetic mean (CA), rounded to two decimal places. The resulting value is converted into points on a multi-point scale as follows: X= CA x 200 / 5

9. Course policy

Indicates the policies of academic integrity, the specific policies of the program that are relevant to the course

The policy of the discipline is determined by certain requirements for the student in the study of the discipline "Orthodontics" and is based on the principles of academic integrity. The importance of acquiring new knowledge, academic norms that must be followed, their importance, what is academic integrity, what are its values and functions are discussed with students. The essence, features and reasons of inadmissibility of academic plagiarism are explained, applicants of higher education are encouraged to independently perform tasks, correct reference to sources of information in case of borrowing ideas. The policy of the discipline is: mandatory observance of academic integrity by students, namely: - independent performance of all types of work, tasks, forms of control provided by the working program of the discipline;

Adherence to the principles and norms of ethics and deontology by higher education students:

- actions in professional and educational situations, taking into account academic integrity and professional ethics and deontology;
- compliance with the rules of internal regulations of the clinical base of the department, to be tolerant, friendly and balanced in communication with students and teachers, patients, medical staff of health care institutions.

Attending classes by higher education students:

- Attendance at all classes is mandatory for the purpose of current and final assessment of knowledge (except for good reasons).

Practice of missed classes by applicants for higher education:

- practice of missed classes is according to the schedule of practice
- rearrangement of the topic of the lesson, for which the student received a negative grade, is carried out at a convenient time for the teacher and the student outside the classroom,

maximum score - "good"

- rearrangement of the topic during the current training and final control in order to increase the assessment is not allowed

10. Literature

Basic literature

1. Flis PS Orthodontics. - Vinnytsia: "New Book", 2006. - 308 p.
2. Schmut GPF, Holtgrave EA, Drescher D. Practical orthodontics. Ed. prof. PS Flis. - 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 MA, Rashchenko NV etc. Orthodontics. - K .: Medicine, 2008. - 360 p.
7. Flis PS, Omelchuk NA, Rashchenko NV et al. Orthodontics. - K .: Medicine 2008 . - 336 p.
8. Doroshenko SI, Kulginsky EA Fundamentals of teleradiography K .: Health, 2007. - 72 p.

Additional literature:

1. Bennett J., R. McLowlin, ed. Flis P.S. "Bag of orthodontic treatment by the technique of a straight arch", Lviv: "GalDent", 2001.
2. Golovko NV Prevention of dental anomalies. - Vinnytsia: Nova Knyga, 2005.
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 .: Health, 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. - №1 (4), p. 6-9
7. McLaughlin R., J. Bennett, X. Treviso / ed. Flis P.S. "Systematized mechanics of orthodontic treatment", Lviv: "GalDent", 2005.
8. Malanchuk VO, Borisenko AV, Flis PS 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 «ИЗПЦ« Информкнига », 2007. - 248 p.
11. Ravinda Nanda. Biomechanics and aesthetics in clinical orthodontics. - M .: MEDpress-Inform, 2009. - 386 p.
12. Stephen Williams. A short guide to telegraphy. Ed. prof. P.S. Flis. - Lviv, 2006.

13. Stanislav V. Maevski. Dental gnathology. - Lviv: GalDent, 2008.
14. William R. Profit. Modern orthodontics. - M .: MEDpress-Inform, 2006. - 559 p.
15. Kuroedova VD, Zhdan VN, Galich LB etc. Atlas of orthodontic appliances. - Poltava: "Dyvosvit", 2011 - 156 p.
16. Ravindra Nanda, Sunil Kapila. Current therapy in orthodontics. - Mosby, 2010. - 396p.
17. Ravinda Nanda, Flavio Andres Ubire. Temporary Anhorage Devises in orthodontis. - Mosby, 2008. - 432p.
18. Alexander R.G. The 20 principles of the ALEXANDER DISIPLINE. - Quintessence Publishing Co., 2008. - 236p.

11. Equipment, logistics and software of the discipline

Methodical support of practical classes:

1. Guidelines of practical classes for teachers.
2. Guidelines for practical classes for students.
3. Test questions and tasks to check the initial level of knowledge on each topic and the final control.
4. Situational tasks.
5. Video materials in accordance with the subject of classes.

Logistics

1. Electromyograph.
2. Computer program for decoding TRG (Audax Ceph).
3. A set of radiographs.
4. A set of plaster models.
5. A set of orthodontic appliances.
6. Impression masses and spoons for imprinting.
7. Gypsum for casting models.

12. Additional Information

Responsible for the educational process at the department:
Assos.prof. Musij-Sementsiv Kh.H.
sementsivk@gmail.com
Contact details of the person responsible for the research workshop at the department
Assos.prof. Hordon-Jura H.S.
information about the place of classes:
Lviv, street Pekarska, 69, Department of Orthodontics (Dental Medical Center of Danylo Halytsky Lviv National Medial University, 4th floor)
links to website / department pages https://new.meduniv.lviv.ua/kafedry/kafedra-ortodontiyi/