Odessa National Medical University
Faculty of Dentistry
Department of Orthodontics

Syllabus course
Mini implants and bone anchorage in orthodontics

Amount	104 hours; 3.5 credits
Semester, year of study	VI semesters; 3 years of study
Days, time, place	According to the schedule
Lecturer	Head of the Department Gorokhivsky Volodymyr Nestorovych, prof., Doctor of Medicine Associate Professor Suslova Oksana Viktorivna, Ph.D. Associate Professor Reizvykh Olga Eduardivna, Doctor of Medicine Associate Professor Denga Anastasia Eduardivna, Doctor of Medicine Assistant Kovalchuk Victoria Viktorivna, Ph.D. Assistant Kordonets Olena Leonidivna Assistant Stetsenko Dmytro Viktorovych Assistant Al-Serarate Mohammed Karim Assistant Karman Anastasia Arkadyevna Assistant Zheliznyak Natalia Anatoliyivna Assistant Kostenko Olga Viktorivna
Contact phone	048-798-71-66
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Workplace	University Dental Clinic ONMedU, department №1, Mechnikova st., 2B
Consultations	Thursday from 15:00 to 18:00, Saturday 9:00 to 15:00 each week

COMMUNICATIONS

Communication with students is carried out according to the schedule in the classroom. In the case of distance learning, communications can take place online according to the schedule on the Microsoft Teams platform, in some cases with prior notice - through ZOOM and in Viber-groups.

COURSE ANNOTATION

The aim of the course is to deepen students' knowledge of modern views on the theory of periodontal tissue reconstruction under the influence of orthodontic equipment,

methods of treating anomalies of free-standing teeth, dentition and occlusion using modern fixed equipment, as well as prevention and elimination of treatment errors. Study of the concept of anchorage in orthodontics. Biomechanics of moving teeth with mini implants. Indications for the use of mini-implants. Types of mini implants.

Course details:

- with human anatomy: features of antenatal and postnatal periods of development and formation of teeth, jaws, human face;
- with histology - histological structure of the hard tissues of the tooth, pulp and periodontium at different ages;
- with physiology - features of physiological processes occurring in periodontal tissues and the human body under the influence of orthodontic equipment;
- with chemistry - properties of chemical elements and bioorganic compounds used in dentistry;
- with physics - physical and mechanical properties of solids and liquids;
- with radiology - the ability to decipher X-rays (to determine the skeletal bone age, the degree of development of the jaws, the condition of the hard tissues of the periodontium);
- with propaedeutics of orthopedic dentistry - basic impression materials, their physical and chemical properties, technological processes of manufacturing individual orthodontic accessories;
- with orthodontics - etiology, pathogenesis, clinic, diagnosis, choice of treatment for dental anomalies and deformities.

Expected results:

As a result of studying the discipline, students must:

Know:

- growth and formation of jaw bones in the age aspect;
- the concept of the norm in orthodontics;
- have basic and additional methods for diagnosing patients with dental anomalies and deformities;

- clinical and biological bases of orthodontic treatment;
- features of the algorithm of action in the treatment of patients with braces;
- features of preparation of patients for treatment by fixed equipment;
- indications for complex methods of treatment of orthodontic patients;
- classification of orthodontic equipment, indications and contraindications to the use of devices of different mechanism of action;
- types of anchorage in orthodontics;
- main characteristics of orthodontic bone anchorage. Indications for its use;
- the possibility of using mini-implants in orthodontic treatment; main features of the design of mini-implants.
- Possible complications of mini-implants. Factors influencing the successful outcome of mini-implants.
- retention period, its duration and justification, types of retention devices;

Be able:
- to analyze the results of examination of a patient with dental anomalies and deformities;
- to determine dental anomalies and deformations according to the classification; Six keys to occlusion by Andrews.
- to determine the features of growth and development of the child in the antenatal and postnatal periods;
- have the basic and additional methods of diagnosis of patients with dental anomalies and deformities;
- to determine the clinical and biological basis of orthodontic treatment;
- to make an algorithm of action in the treatment of patients with braces;
- be able to determine the indications for the use of bone anchorage and mini-implants
- planning and installation of mini implants;
- to characterize features of preparation of patients for treatment by fixed equipment;
- to determine the indications for complex methods of treatment of orthodontic patients;
- determine the indications and contraindications to the use of devices of different mechanism of action;
- determine the retention period, its duration and justification; types of retention

devices;

COURSE DESCRIPTION:

Forms and methods of teaching:

The course will be presented in the form of lectures (6 hours) and seminars (30 hours), organization of independent work of students (68 hours).

Teaching takes place in the form of lectures, Power Point demonstrations and explanations, conversations, analysis of new information. During seminars the theoretical interrogation, the decision of test tasks, situational tasks is carried out. It is planned to hold consultations according to the schedule.

Course content:

Topic 1. Modern theories of bone remodeling under the influence of orthodontic equipment. Features of TMJ remodeling during orthodontic treatment.

Topic 2. Types of tooth movement. Forces according to AM Schwartz. The main periods of orthodontic treatment of patients.

Topic 3. Methods of examination of patients with AMS and deformities

Topic 4. Planning orthodontic treatment. Methods of treatment in orthodontics.

Topic 5. Hardware method of treatment. General characteristics of the method. Indications for use at different ages. Components of braces - systems. Fixation methods. Characteristics of orthodontic arches, their types and applications.

Topic 6. The main characteristics of orthodontic bone anchorage.

The main features of the design of mini-implants.

Topic 7. Clinical indications for mini-implants. Complications of mini-implants are possible. Factors influencing the successful outcome of the installation of mini-implants.

Topic 8. Retraction of incisors: treatment planning, biomechanical principles of treatment, clinical stages of installation of mini-implants in the lateral areas of the jaws, possible complications and their solutions

Topic 9. Protraction of molars: treatment planning, biomechanical principles of treatment. Clinical stages of anchorage in the alveolar area. Clinical stages of anchorage in the area of the palatal suture.

Topic 10. Distallation of molars: treatment planning, biomechanical principles of

treatment. Distalization of the dentition of the mandible. Distalization of the dentition of the upper jaw. Principles of action of the mid-palatal distiller.
Topic 11. Intrusion and treatment of anterior open occlusion: treatment planning, biomechanical principles of treatment. Simultaneous intrusion of mandibular molars.
Topic 12. Transversal correction and asymmetry correction. Problems of asymmetry. Midline correction. Treatment planning, biomechanical principles of treatment. Unilateral intrusion. Transverse correction of ectopic teeth.
Topic 13. Mini-implants in orthognathic surgery: clinical features, biomechanical principles, technical features, clinical stages.
Topic 14. The concept of the retention period. Factors that ensure the stability of treatment results (aesthetic, functional, morphological). Removable and non-removable retention devices, their advantages and disadvantages. The concept of disease recurrence.

List of recommended literature:

1. Фліс П.С. Ортодонтія. Вінниця: «Нова книга», 2019. 308 с.
2. Фліс П.С., Леоненко Г.П., Філоненко В.В., Дорошенко Н.М. Під ред. ФлісаП.С. «Orthodontics. Dentognathic Anomalies and Deformations».
«Медицина», Київ 2015. 176 с.
3. Фліс П.С., Власенко А.З., Чупіна А.О. Технологія виготовлення ортодонтичних та ортопедичних конструкцій у дитячому віц». Київ: «Медицина», 2013. 256 с.
4. Суслова О. В., Стеценко Д. В., Кордонец Е. Л. Желизняк Н. А. Биометрические методы исследования в ортодонтии (учебно-методическое пособие). Одесса: Одесский национальный медицинский университет, 2018. 37 с.
5. Митчелл Л. Основы ортодонтии. 2017. 376 с.
6. Стефан Вільямс. Короткий посібник з телентгенографії. Під ред. проф. П.С. Фліса. Львів, 2006.
7. Куроедова В.Д., Ждан В.Н., Галич Л.Б. и др. Атлас ортодонтических аппаратов. Полтава: «Дивосвіт», 2011. 156 с.
8. Герасимов С. Н. Несьемная ортодонтическая техника. Санкт – Петербург, 2012.65с.

9. Коусли Ричард Р. Дж. Клинический справочник по ортодонтическим мини-имплантатам / Ричард Р. Дж. Коусли ; научные редакторы : М. С. Дрогомирецкая, М. М. Угрин. – Львов : ГалДент, 2014. – 184 с.

EVALUATION

Current control of the discipline is carried out in each classroom through various forms of surveys.

Methods and means of control: oral examination; situational tasks, tests. When assessing the mastery of the topic take into account the theoretical training and practical work of the student.

Evaluation of the success of the study of each topic of the discipline is performed on a traditional 4-point scale.

At least 50% of students should be interviewed in a practical lesson, and at least 30% in a seminar. At the end of the semester (cycle), the number of grades for students in the group should be the same on average.

At the end of the course, the current performance is calculated as the average current score, ie the arithmetic mean of all grades obtained by the student on a traditional scale, rounded to 2 (two) decimal places, for example 4.75.

In the last practical lesson, the teacher is obliged to announce to students the results of their current academic performance, academic debt (if it presents).

Forms and methods of final control:

Only those students who have no academic debt and have an average score of at least 3.00 for their current academic activity are allowed to take the final attestation. Questions that are included in the final control in the form of a test.

Independent work of students

Independent work of students is regulated by the working curriculum and is performed by students independently outside the classroom. The following types of independent work of students are possible: preparation for practical classes and study of topics that are considered only in terms of independent student work, search and study of additional literature, writing essays, reports for presentations in practical classes.

EVALUATION

Methods of current control

Current control is carried out on the basis of daily control of theoretical knowledge, practical skills in accordance with the specific objectives of each topic through an oral interview, test computer control using a database of test and situational tasks in each practical lesson.

Independent work of students

Independent work of students (STS) is regulated by the working curriculum and is performed by students independently outside the classroom. The following types of independent work of students are possible: preparation for practical classes and study of topics that are considered only in terms of independent student work, search and study of additional literature, writing essays, reports for presentations in practical classes, filling an album for independent work.

Evaluation criteria

The results of students' academic performance are presented in the form of assessment on a national scale, 200-point and ECTS scale and have standardized generalized criteria for assessing knowledge:

national scale:

- the grade **"excellent"** is given to the student who systematically worked during a semester, showed during examination various and deep knowledge of a program material, is able to successfully carry out tasks which are provided by the program, has mastered the maintenance of the basic and additional literature, has understood interrelation of separate sections of discipline. importance for the future profession, showed creative abilities in understanding and using educational material, showed the ability to independently update and replenish knowledge; level of competence - high (creative);

- grade **"good"** is given to a student who has shown full knowledge of the curriculum, successfully completes the tasks provided by the program, mastered the basic literature recommended by the program, showed a sufficient level of knowledge of the discipline

and is able to independently update and update during further study and professional activities; level of competence - sufficient (constructive-variable);

- the grade "**satisfactory"** is given to the student who has shown knowledge of the basic educational program material in the volume necessary for the further training and the subsequent work on a profession, copes with performance of the tasks provided by the program, has made separate mistakes in answers on examination and at performance of examination tasks, but has the necessary knowledge to overcome mistakes under the guidance of a researcher; level of competence - average (reproductive);

- the grade "**unsatisfactor**y" is given to the student who did not show sufficient knowledge of the basic educational and program material, made fundamental mistakes in performance of the tasks provided by the program, cannot use the knowledge at the further training without the teacher's help, failed to master skills of independent work; the level of competence is low (receptive-productive).
The final control in the form of tests is evaluated on a two-point scale:
- the grade "passed" is given to a student who has completed the curriculum of the discipline, has no academic debt; level of competence - high (creative);
- the grade "not credited" is given to a student who has not fulfilled the curriculum of the discipline, has an academic debt (average score below 3.0 and / or absences); the level of competence is low (receptive-productive).

The multi-point scale characterizes the actual success of each student in mastering the discipline. Conversion of the traditional grade from the discipline to 200-point is performed by the information and computer center of the university program "Contingent" according to the formula:

average grade point average (current / discipline) x 40

national assessment	mark
«5»	185-200
«4»	151-184
«3»	120-150

The ECTS rating scale evaluates the achievements of students in the discipline who study in one course of one specialty, in accordance with the points obtained by them, by ranking, namely:

Mark ECTS	Statistical indicator
«A»	best 10 % students
«B»	next 25 % students
«C»	next 30 % students
«D»	next 25 % students
«E»	last 10 % students

The ECTS scale establishes the student's belonging to the group of the best or worst among the reference group of classmates (faculty, specialty), ie his rating. When converting from a multi-point scale, as a rule, the limits of grades "A", "B", "C", "D", "E" do not coincide with the limits of grades "5", "4", "3" on the traditional scale. A grade of "A" on the ECTS scale cannot be equal to a grade of "excellent", and a grade of "B" - a grade of "good" and so on.

Students who receive grades "Fx" and "F" ("2") are not included in the list of ranked students. Such students automatically receive a score of "E" after re-assembly.

The grade "Fx" is given to students who have scored the minimum number of points for the current educational activity, but who have not been credited with the final control. Grade "F" is given to students who have attended all classes in the discipline,

but did not score a grade point average (3.00) for current educational activities and are not admitted to the final control.

COURSE POLICY

The student must acquire knowledge, perform all types of educational tasks, pass all types of educational control, attend all types and forms of classes provided for in the curriculum, avoiding omissions and delays.

Deadline and recompilation policy.

The student completes the missed practical lesson by interviewing the regular teacher (twice a week on Thursday and Saturday).

Academic Integrity Policy

Adherence to academic integrity by students involves independent performance of educational tasks, tasks of current and final control of learning outcomes.

Unacceptable in the educational activities of participants in the educational process is the use of family or work ties to obtain a positive and higher assessment in the implementation of any form of control of learning outcomes, the use of prohibited aids or technical means (cheat sheets, headphones, telephones, smartphones, etc.); passing of procedures of control of results of training by fictitious persons.

For violation of academic integrity, the applicant may be held subject to the following academic liability:

- reduction of assessment (exam, test, etc.);
- re-assessment (exam, test, etc.);
- appointment of additional control measures (additional individual tasks, tests, etc.);
- re-passing the relevant educational component of the educational program;
- deductions from the university.

Attendance and lateness policy.

Absence of a student at lectures or practical classes is noted in the journal of visits in the form of a mark "nb". The student must work off the practical classes for 2 weeks.

Mobile devices

The use of a smartphone, tablet or other device is allowed with the permission of the teacher.

Behavior in the audience. Work in the team (student group, staff of the department, employees of the clinical base of the department) is provided. The communication environment is friendly, creative, open to constructive criticism.