MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS
Educational Institution
«BELARUSIAN STATE MEDICAL UNIVERSITY»

APPROVED
by Rector of the Educational Institution «Belarusian State Medical University»
S.P.Rubnikovich
30.09.2026
Reg. # UD-03-143/2627 /add.

Контрольный экземпляр

INNOVATIONS IN ORTHODONTICS

Curriculum of the educational institution in the additional course for the specialty

7-07-0911-03 «Dentistry»

2026

Curriculum of the additional course is based on the educational program «Инновации в ортодонтии», approved 30.06.2026, registration # УД-03-116/2627/ф.

AUTHORS:

Ya.I.Timchuk, Head of the Department of Prosthodontics and Orthodontics, Educational Institution «Belarusian State Medical University», Candidate of Medical Sciences, Associate Professor;

T.V.Gorlacheva, Associate Professor, Department of Prosthodontics and Orthodontics, Educational Institution «Belarusian State Medical University», Candidate of Medical Sciences, Associate Professor

V.V.Titkova, Senior Lecturer, Department of Prosthodontics and Orthodontics, Educational Institution “Belarusian State Medical University»

RECOMMENDED FOR APPROVAL:

by the Department of Prosthodontics and Orthodontics, Educational Institution “Belarusian State Medical University”
(Minutes No. 13 dated 22.04.2026)

by the Methodological Commission for Dental Disciplines, Educational Institution “Belarusian State Medical University”
(Minutes No. 1 dated 30.09.2026)

EXPLANATORY NOTE

«Innovations in Orthodontics» is an additional course comprising systematised contemporary scientific knowledge of the aetiology, clinical manifestations, diagnostic methods, treatment, and medical prevention of dentofacial anomalies.

The aim of the additional course "Innovations in Orthodontics" is to develop the competencies required to provide healthcare to patients with anomalies and deformities of the dentofacial system.

The objectives of the additional course "Innovations in Orthodontics" are to provide students with scientific knowledge of anomalies and deformities of the dentofacial system, their diagnosis and treatment, and the skills required for:

examining patients;

establishing and substantiating an orthodontic diagnosis;

developing treatment plans for patients with dentofacial disorders at different stages of occlusal development;

interpreting the results of primary and supplementary diagnostic investigations;

selecting the optimal treatment or preventive strategy according to the type of dentofacial anomaly.

Relationship with Other Academic Disciplines

Teaching and successful completion of the additional course "Innovations in Orthodontics" are based on the knowledge and skills acquired by students in the following disciplines: Maxillofacial Surgery and Outpatient Maxillofacial Surgery, Human Anatomy, Prevention of Dental Diseases, Pharmacology, First Aid, Diagnostic Imaging and Radiotherapy, Dental Materials Science and Fundamentals of Dental Prosthesis Fabrication, and Preclinical Dentistry.

As a result of studying the additional course «Innovations in Orthodontics», the student shall demonstrate:

knowledge of:

the indications for cephalometric radiography in orthodontics;

methods for performing measurements on a lateral cephalometric radiograph and interpreting the findings to select optimal treatment for patients with dentofacial anomalies;

the principles of orthodontic treatment planning with clear aligners;

the indications for the use of elastopositioners;

clinical techniques for handling resin-based composite materials used in orthodontics;

methods of dental caries prevention in patients undergoing orthodontic treatment;

the fundamentals of orthodontic mini-implant use;

the fundamental concepts of orthodontic retention;

be able to:

perform lateral cephalometric analysis;

substantiate the selected treatment modality for dentofacial anomalies;

determine indications for the use of elastopositioners;

use clear aligners to treat dentofacial anomalies;

use resin-based composite materials to bond components of orthodontic appliances;

motivate patients undergoing orthodontic treatment to follow caries-preventive measures;

justify the selection of a retention appliance;

master:

methods of cephalometric radiographic analysis;

skills in selecting the appropriate type and size of elastopositioner;

skills in bonding attachments for clear aligner therapy;

methods of dental caries prevention in patients undergoing orthodontic treatment;

interpretation of cone-beam computed tomography findings to identify the optimal site for orthodontic mini-implant placement;

skills in bonding a fixed wire retainer.

A total of 40 academic hours is allocated to the elective course, including 21 contact hours and 19 hours of independent student work. The contact hours comprise 21 hours of practical classes.

Mode of study: full-time, daytime attendance.

Interim assessment is conducted in accordance with the degree programme curriculum in the form of a pass/fail assessment in Semester 10.

THEMATIC PLAN

Topic	Contact hours
	Practical classes
1. Analysis of a Patient's Lateral Cephalometric Radiograph	7
2. Use of Elastopositioners in the Treatment of Dentofacial Anomalies	
3. Treatment of Dentofacial Anomalies with Clear Aligners	
4. Clinical Handling of Resin-Based Composite Materials in Orthodontics	7
5. Clinical Caries-Prevention Measures for Patients Undergoing Orthodontic Treatment	
6. Fundamentals of Orthodontic Mini-Implants for Skeletal Anchorage During Tooth Movement	
7. Rapid Maxillary Expansion Methods	7
8. Retention in Orthodontics	
Total hours	**21**

CONTENT OF THE EDUCATIONAL DISCIPLINE

1. Analysis of a Patient's Lateral Cephalometric Radiograph

Indications for cephalometric radiography, the imaging technique, interpretation of findings, and radiation exposure. Identification of cephalometric landmarks and assessment of the size and position of the maxillary and mandibular skeletal bases on a lateral cephalometric radiograph. Selection of the treatment modality according to the diagnostic findings and the patient's age.

2. Use of Elastopositioners in the Treatment of Dentofacial Anomalies

Types of elastopositioners, their design characteristics, indications and contraindications, and clinical application.

3. Treatment of Dentofacial Anomalies with Clear Aligners

Indications for clear aligner therapy. Specific considerations in orthodontic treatment planning and the biomechanics of tooth movement with clear aligners.

4. Clinical Handling of Resin-Based Composite Materials in Orthodontics

Principles of enamel preparation for bonding orthodontic appliance components. Cytotoxicity of orthodontic adhesives and measures aimed at reducing it. Removal of resin-based composite material from enamel following completion of orthodontic treatment.

5. Clinical Caries-Prevention Measures for Patients Undergoing Orthodontic Treatment

Risk of dental caries in patients undergoing orthodontic treatment. Identification of patients with oral-health-related contraindications to orthodontic treatment. Selection of appropriate professional caries-prevention methods and agents for orthodontic patients.

6. Fundamentals of Orthodontic Mini-Implants for Skeletal Anchorage During Tooth Movement

Indications and contraindications for orthodontic mini-implants; techniques for placement, clinical use, and removal following completion of orthodontic treatment. Use of cone-beam computed tomography to assess individual maxillofacial anatomy when planning mini-implant placement.

7. Rapid Maxillary Expansion Methods

Types of rapid maxillary expansion, indications, appliances used, and activation protocols.

8. Retention in Orthodontics

Causes of relapse of dentofacial anomalies. Types of retention. Retention appliances: types, fabrication methods, and clinical considerations.

TEACHING AND METHODOLOGICAL MAP OF THE EDUCATIONAL COURSE «INNOVATIONS IN ORTHODONTICS»

Section/topic No.	Section/topic title	Contact hours	Independent student work	Assessment methods
		Practical classes		
		7	**6**	
1.	Analysis of a Patient's Lateral Cephalometric Radiograph	3	2	Case-based problem solving. Oral questioning
2.	Use of Elastopositioners in the Treatment of Dentofacial Anomalies	2	2	
3.	Treatment of Dentofacial Anomalies with Clear Aligners	2	2	
		7	**6**	
4.	Clinical Handling of Resin-Based Composite Materials in Orthodontics	2	2	Case-based problem solving. Oral questioning
5.	Clinical Caries-Prevention Measures for Patients Undergoing Orthodontic Treatment	2	2	
6.	Fundamentals of Orthodontic Mini-Implants for Skeletal Anchorage During Tooth Movement	3	2	
		7	**7**	
7.	Rapid Maxillary Expansion Methods	3	3	Case-based problem solving. Pass/fail assessment
8.	Retention in Orthodontics	4	4	
	Total	**21**	**19**	

INFORMATION AND INSTRUCTIONAL UNIT

LITERARURE

Basic:

1. Handbook of Orthodontics / Martyn T. Cobourne, Andrew T. DiBiase. – Elsevier, 2024. – 608 p.

Additional:

2. Orthodontics. Current principles and techniques / Graber, Lee W., Vanarsdall, Robert L., K. W. L. Vig. - 5th ed. - : Elsevier Mosby, 2012. - 1092 p.
3. Orthodontics. Dentognathic anomalies and deformations: textbook / P. S. Flis [и др.] ; ed. P. S. Flis. - Kuiv : Medicine Publishing, 2015. - 176 p.

LIST OF AVAILABLE DIAGNOSTIC TOOLS

The following forms of ongoing assessment are used to evaluate competencies:
oral questioning;
case-based problem solving.

LIST OF AVAILABLE TEACHING METHODS

linear (traditional) teaching;
active (interactive) methods:
problem-based learning (PBL);
case-based learning (CBL).

LIST OF PRACTICAL SKILLS

Name of practical skills	Form of practical skills control
Analysis of a Patient's Lateral Cephalometric Radiograph	Direct observation of skill performance
Determine the required elastopositioner size	Performance of the practical skill during an outpatient appointment
Bond clear-aligner attachments on a patient's dental-arch model	Performance of the practical skill using simulation equipment
Select the instruments required for bracket debonding and subsequent removal of residual resin-based composite from enamel	Direct observation of skill performance
Identify contraindications to fixed-appliance orthodontic treatment	Performance of the practical skill during an outpatient appointment
Determine the site for orthodontic mini-implant placement	Performance of the practical skill using simulation equipment
Select a rapid maxillary expansion method	Performance of the practical skill using simulation equipment
Activate a palatal expander	Performance of the practical skill using simulation equipment
Select a retention appliance and determine the duration of the retention phase	Performance of the practical skill during an outpatient appointment
Use digital technologies and artificial intelligence to predict the progression and treatment outcomes of dentofacial anomalies	Performance of the practical skill using simulation equipment

AUTHORS:

Head of the Department of Prosthodontics and Orthodontics, Educational Institution «Belarusian State Medical University», Candidate of Medical Sciences, Associate Professor — Ya.I.Timchuk

Associate Professor, Department of Prosthodontics and Orthodontics, Educational Institution «Belarusian State Medical University», Candidate of Medical Sciences, Associate Professor — T.V.Gorlacheva

Senior Lecturer, Department of Prosthodontics and Orthodontics, Educational Institution «Belarusian State Medical University» — V.V.Titkova

The formatting of the Educational Institution's elective-course curriculum and the accompanying documents complies with the established requirements.

Head of the Academic Affairs Department, Educational Institution «Belarusian State Medical University» — I.L.Kotovich

30.09. 2026

Methodologist, Teaching and Methodological Unit of the Academic Affairs Department, Educational Institution «Belarusian State Medical University» — N.A.Kukashinova

30.09. 2026