

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
24.06.2023
Reg. # UD- *07-29/2324* /edu.

**Контрольный
экземпляр**

RADIODIAGNOSIS AND RADIOTHERAPY

**Curriculum of the educational institution
in the academic discipline for the specialty**

1-79 01 07 «Dentistry»

Curriculum is based on the educational program «Radiodiagnosis and Radiotherapy», approved 27.06.2023, registration # УД-07-24/2324/уч.; on the educational plan in the specialty 7-07-0911-03 «Dentistry», approved 17.05.2023, registration # 7-07-0911-03/2324/mf.

COMPILERS:

A.I.Aleshkevich, Head of the Department of Radiation Diagnostics and Radiation Therapy of the Educational Institution «Belarusian State Medical University», Ph.D, Associate Professor;

T.F.Tikhomirova, Associate Professor of the Department of Radiation Diagnostics and Radiation Therapy of the Educational Institution «Belarusian State Medical University», Ph.D, Associate Professor;

G.A.Alesina, Senior Lecturer of the Department of Radiation Diagnostics and Radiation Therapy of the Educational Institution «Belarusian State Medical University»

RECOMMENDED FOR APPROVAL:

by the Department «Radiation Diagnostics and Radiation Therapy» of the Educational Institution «Belarusian State Medical University»
(protocol # 23 of 12.05.2023);

by the Scientific and Methodological Council of the educational institution «Belarusian State Medical University»
(protocol # 6 of 27.06.2023)

EXPLANATORY NOTE

«Radiodiagnosis and Radiotherapy» is an academic discipline of the module «General Clinical Therapy Module #1», which contains systematized scientific knowledge about the methods of radiodiagnosis and radiotherapy used in medicine.

The aim of the educational discipline «Radiodiagnosis and Radiotherapy» is the formation of basic professional competence to solve the problems of professional activity in the integrated use of radiation diagnostics and radiation therapy methods in dentistry for the purpose of timely detection of diseases of the maxillofacial area and treatment of tumor and non-tumor processes.

The objectives of the academic discipline «Radiodiagnosis and Radiotherapy» are to develop students' scientific knowledge about diagnostic capabilities and basic concepts of radiation diagnostic methods; about radiation symptoms and syndromes of pathological processes in the maxillofacial region; about the algorithm for using radiation studies in identifying pathological processes in the maxillofacial area, about the basic principles and methods of radiation therapy for malignant neoplasms and non-tumor diseases of the maxillofacial area, skills and abilities necessary for:

determination of the radiological diagnostic method, projection and area of study;

interpretation of the results of radiological diagnostic methods;

formulation of a conclusion based on the results of radiological research methods.

The knowledge, abilities and skills acquired in the study of the academic discipline «Radiodiagnosis and Radiotherapy» are necessary for the successful study of the following academic disciplines: «Internal Medicine», «Pediatrics», «Neurology and Neurosurgery», «Disaster Medicine», modules: «General Clinical Surgical Module», «Therapeutic Dentistry», «Periodontology», «Orthopedic Dentistry», «Pediatric Dentistry», «Maxillofacial Facial Surgery and Surgical Dentistry».

A student who has mastered the content of the educational material of the discipline «Radiodiagnosis and Radiotherapy» must have the following basic professional competence:

examine patients' condition applying radiation diagnostic methods, identify the main radiation symptoms and syndromes of human diseases applying the combined radiation imaging techniques and radiation therapy.

As a result of studying the discipline «Radiodiagnosis and Radiotherapy», the student should

know:

types and properties of ionizing radiation;

principles of protection against exposure to ionizing radiation;

physical and technical foundations of radiation diagnostics and radiation therapy;

diagnostic capabilities of radiation imaging methods;

symptoms and syndromes of pathological processes in the maxillofacial region, identified using various radiological diagnostic methods;

be able to:
 plan and conduct communication;
 analyze normative legal acts regulating legal relations related to the provision of medical care;
 determine indications and contraindications for radiological research methods;
 determine the method of radiation diagnostics, projection and area of study;
 interpret the results of various methods of radiation diagnostics;
master:
 the skills of registration of the protocol of research;
 the skills of formulating a conclusion based on the data obtained as a result of radiological research methods;

Total number of hours for the study of the discipline is 108 academic hours. Classroom hours according to the types of studies: lectures - 12 hours (including 4 hours of supervised student independent work), practical classes - 51 hours), student independent work (self-study) - 45 hours.

Intermediate certification is carried out in accordance with the curriculum in the specialty in the form of a credit (6th semester).

The form of education is full-time.

ALLOCATION OF ACADEMIC TIME ACCORDING TO SEMESTERS OF STUDY

Code, name of the specialty	semester	Number of academic hours						Form of intermediate assessment
		total	in-class	including			out-of-class self-studies	
				lectures (including supervised independent work)	supervised student independent work	laboratory studies (practical classes and seminars)		
1-79 01 07 «Dentistry»	5	54	35	8	3	27	19	credit
	6	54	28	4	1	24	26	
Total hours		108	63	12	4	51	45	

THEMATIC PLAN

Section (topic) name	Number of class hours	
	lectures	practical classes
1. Radiation diagnostics	12	45
1.1. Introduction. Radiation diagnostic methods. X-ray research methods. Issues of ethics and deontology when conducting radiation research methods	2	6
1.2. Physical and technical foundations of ultrasound research. Application in medicine	-	3
1.3. Physical and technical foundations of computed tomography. Application in medicine	-	2
1.4. Physical and technical basis of magnetic resonance imaging Application in medicine	-	1
1.5. Radiation methods for examining the organs of the thoracic cavity. X-ray anatomy of the thoracic cavity. X-ray semiotics of pathological processes of the thoracic cavity organs	-	3
1.6. Radiation methods for studying the digestive system. X-ray anatomy of the gastrointestinal tract. X-ray semiotics of diseases of the gastrointestinal tract	-	3
1.7. Radiation methods for studying the osteoarticular system. X-ray semiotics of traumatic injuries and pathological processes of bones and joints. X-ray signs of inflammatory diseases, benign and malignant neoplasms of bones and joints	2	9
1.8. Radiation methods for studying the maxillofacial area	2	3
1.9. X-ray diagnosis of traumatic injuries of the maxillofacial area	2	3
1.10. X-ray diagnostics of inflammatory processes in the dentofacial area	2	3
1.11. X-ray diagnosis of cysts and neoplasms of the maxillofacial area	2	6
1.12. Radiation diagnostics of diseases of the salivary glands and temporomandibular joint	-	3
2. Radiation therapy	-	6
Total hours	12	51

EXPLANATORY NOTE

«Radiodiagnosis and Radiotherapy» is an academic discipline of the module «General Clinical Therapy Module #1», which contains systematized scientific knowledge about the methods of radiodiagnosis and radiotherapy used in medicine.

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The objectives of the academic discipline «Radiodiagnosis and Radiotherapy» are to develop students' scientific knowledge about diagnostic capabilities and basic concepts of radiation diagnostic methods; about radiation symptoms and syndromes of pathological processes in the maxillofacial region; about the algorithm for using radiation studies in identifying pathological processes in the maxillofacial area, about the basic principles and methods of radiation therapy for malignant neoplasms and non-tumor diseases of the maxillofacial area, skills and abilities necessary for:

determination of the radiological diagnostic method, projection and area of study;

interpretation of the results of radiological diagnostic methods;

formulation of a conclusion based on the results of radiological research methods.

The knowledge, abilities and skills acquired in the study of the academic discipline «Radiodiagnosis and Radiotherapy» are necessary for the successful study of the following academic disciplines: «Internal Medicine», «Pediatrics», «Neurology and Neurosurgery», «Disaster Medicine», modules: «General Clinical Surgical Module», «Therapeutic Dentistry», «Periodontology», «Orthopedic Dentistry», «Pediatric Dentistry», «Maxillofacial Facial Surgery and Surgical Dentistry».

A student who has mastered the content of the educational material of the discipline «Radiodiagnosis and Radiotherapy» must have the following basic professional competence:

examine patients' condition applying radiation diagnostic methods, identify the main radiation symptoms and syndromes of human diseases applying the combined radiation imaging techniques and radiation therapy.

As a result of studying the discipline «Radiodiagnosis and Radiotherapy», the student should

know:

types and properties of ionizing radiation;

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diagnostic capabilities of radiation imaging methods;

symptoms and syndromes of pathological processes in the maxillofacial region, identified using various radiological diagnostic methods;

be able to:
 plan and conduct communication;
 analyze normative legal acts regulating legal relations related to the provision of medical care;
 determine indications and contraindications for radiological research methods;
 determine the method of radiation diagnostics, projection and area of study;
 interpret the results of various methods of radiation diagnostics;
master:
 the skills of registration of the protocol of research;
 the skills of formulating a conclusion based on the data obtained as a result of radiological research methods;

Total number of hours for the study of the discipline is 108 academic hours. Classroom hours according to the types of studies: lectures - 12 hours (including 4 hours of supervised student independent work), practical classes - 51 hours), student independent work (self-study) - 45 hours.

Intermediate certification is carried out in accordance with the curriculum in the specialty in the form of a credit (6th semester).

The form of education is full-time.

ALLOCATION OF ACADEMIC TIME ACCORDING TO SEMESTERS OF STUDY

Code, name of the specialty	semester	Number of academic hours						Form of intermediate assessment
		total	in-class	including			out-of-class self-studies	
				lectures (including supervised independent work)	supervised student independent work	laboratory studies (practical classes and seminars)		
1-79 01 07 «Dentistry»	5	54	35	8	3	27	19	credit
	6	54	28	4	1	24	26	
Total hours		108	63	12	4	51	45	

CONTENT OF EDUCATIONAL MATERIAL

1. RADIATION DIAGNOSTICS

1.1. Introduction. Radiation diagnostic methods. X-ray research methods. Issues of ethics and deontology when conducting radiation research methods

The role and significance of radiation diagnostics in solving professional problems, its place in the medical education system and in the training of a doctor. Ethical and deontological aspects when conducting radiation research methods. Types of ionizing radiation used in medicine. Classification and main characteristics of radiation diagnostic methods. Principles of protection and occupational safety measures for the diagnostic use of radiation. Organization of dosimetric monitoring.

Construction of the X-ray department. X-ray equipment. Properties of X-ray radiation used for diagnostic purposes. The principle of obtaining an x-ray image. Characteristics of X-ray images. Classification and main characteristics of basic and special radiological research methods.

Definition and analysis of basic and special methods of X-ray examination: radiography, artificial contrast methods, linear and computed tomography.

1.2. Physical and technical foundations of ultrasound research. Application in medicine

Physical foundations of ultrasound. Ultrasonic vibration frequency, period and wavelength. Characteristics of ultrasonic waves, their properties (penetration, reflection, absorption, dispersion). Determination of indications for ultrasound examination. Possibilities of ultrasound techniques in studying the morphology and function of organs of the human body. The role of the ultrasound method in examining children and pregnant women. Ultrasound image formation. Piezo effect. Resolution capabilities of ultrasonic sensors, their types. General diagram of a pulse echo ultrasound device and Doppler ultrasound devices. Basic terms used when conducting ultrasound examination: echo-negative formation, echo-positive formation, acoustic shadow.

Analysis of the results obtained during ultrasound examination of patients with diseases of the thyroid gland and gallbladder.

1.3. Physical and technical foundations of computed tomography. Application in medicine

Physical and technical foundations of computed tomography. Determination of indications and contraindications for computed tomography. Dose loads and radiation protection during computed tomography. Computed tomographic semiotics of pathological changes in the brain and spinal cord, lungs and mediastinum, parenchymal organs.

Physical and technical foundations of cone beam computed tomography. Determination of indications and contraindications for cone beam computed tomography. Dose loads and radiation protection in cone-beam computed tomography.

Analysis of the results obtained during computed tomography of patients with diseases of the brain and spinal cord, lungs, and parenchymal organs.

Analysis of the results obtained during cone-beam computed tomography of patients with diseases of the maxillofacial region.

1.4. Physical and technical basis of magnetic resonance imaging Application in medicine

Physical and technical foundations of magnetic resonance imaging. Determination of indications and contraindications for magnetic resonance imaging. Magnetic resonance imaging semiotics of pathological changes in the brain and spinal cord, chest organs, liver, kidneys, soft tissues.

1.5. Radiation methods for examining the organs of the thoracic cavity. X-ray anatomy of the thoracic cavity. X-ray semiotics of pathological processes of the thoracic cavity organs

X-ray anatomy of the thoracic cavity. Radiation methods for examining the organs of the thoracic cavity. Interpretation of the most important radiological syndromes of lung diseases: extensive and limited shadow (radiolucency) of the pulmonary field, focal, round and ring-shaped shadow, pulmonary dissemination, pathological changes in the root and pulmonary pattern, impaired bronchial obstruction.

Radiation diagnostics for traumatic injuries and emergency conditions of the chest organs. Foreign bodies of the bronchi.

Determination of indications and contraindications for radiation methods for examining the chest organs, interpretation of results; preparation of a research protocol; formulating a conclusion based on the data obtained as a result of the study.

1.6. Radiation methods for studying the digestive system. X-ray anatomy of the gastrointestinal tract. X-ray semiotics of diseases of the gastrointestinal tract

X-ray anatomy of the gastrointestinal tract. Radiation methods for studying the esophagus, stomach, duodenum, small and large intestine. Double and triple contrast techniques. Pharmacological tests. Interpretation of the main radiological syndromes and symptoms of pathological changes in the esophagus, stomach, duodenum, small and large intestine. X-ray diagnosis of pathological changes in the esophagus, stomach, small and large intestines, emergency conditions of the abdominal cavity, foreign bodies.

Determination of indications and contraindications for radiation methods for examining the gastrointestinal tract, interpretation of results; preparation of a research protocol; formulating a conclusion based on the data obtained as a result of the study.

1.7. Radiation methods for studying the osteoarticular system. X-ray semiotics of traumatic injuries and pathological processes of bones and joints. X-ray signs of inflammatory diseases, benign and malignant neoplasms of bones and joints

Radiation methods for studying bones for studying bones and joints. Classification of fractures and dislocations of bones and joints. Radiation anatomy of the osteoarticular system is normal. Projections: X-ray semiotics of traumatic injuries of bones and joints, especially in childhood and old age. Healing of bone fractures in

x-ray image. X-ray diagnostics of complications of healing of traumatic injuries of bones and joints.

X-ray semiotics of pathological processes of bones and joints: changes in bone shape, bone size, bone structure, X-ray joint space. X-ray symptoms of inflammatory diseases of the skeleton: osteomyelitis, tuberculosis of bones and joints. Radiological signs of benign and primary malignant bone tumors. Radiological signs of secondary malignant bone lesions

Determination of indications and contraindications for radiation research methods for traumatic injuries, inflammatory diseases of bones and joints (osteomyelitis, tuberculosis of bones and joints), benign and malignant bone tumors, interpretation of results; preparation of a research protocol; formulating a conclusion based on the data obtained as a result of the study.

1.8. Radiation methods for studying the maxillofacial area

Radiation methods for studying the maxillofacial region. Design and equipment of an X-ray room, the main types of X-ray diagnostic units for studying the maxillofacial area. Safety precautions in the radiology department. Dosimetric monitoring during X-ray examinations in dentistry.

Determination of basic, special and additional methods of x-ray examination of teeth and jaws. Algorithm for describing the results of X-ray studies of the maxillofacial area. Types of patient positions used in dentistry.

Determination of anatomical objects based on the results of orthopantomography, teleradiography, cone-beam computed tomography.

1.9. X-ray diagnosis of traumatic injuries of the maxillofacial area

X-ray examination for injuries of the maxillofacial area. Basic radiological signs of fractures and fracture healing. Fractures of the upper and lower jaw along «lines of weakness». Fractures according to Lefort-1, Lefort-2, Lefort-3. Fractures of the lower jaw, fractures that occur simultaneously in two, three or more places. Dislocations of the temporomandibular joint.

Determination of indications and contraindications for x-ray examination for traumatic injuries of the maxillofacial area, interpretation of results; preparation of a research protocol; formulating a conclusion based on the data obtained as a result of the study.

1.10. X-ray diagnostics of inflammatory processes in the dentofacial area

X-ray semiotics of inflammatory diseases of the dental system.

Interpretation of the results of X-ray examinations for caries, periodontitis, periodontal atrophy, inflammatory processes of the maxillofacial area: sinusitis, osteomyelitis, suppuration of the radicular cyst. X-ray diagnosis of specific inflammatory processes of the jaws: actinomycosis, tuberculosis, syphilis.

Determination of indications and contraindications for x-ray examination in inflammatory processes of the dentofacial area, interpretation of the results; preparation of a research protocol; formulating a conclusion based on the data obtained as a result of the study.

1.11. X-ray diagnosis of cysts and neoplasms of the maxillofacial area

X-ray diagnosis of odontogenic and non-odontogenic cysts of the maxillofacial region. X-ray semiotics of neoplasms of the maxillofacial region: odontogenic and non-odontogenic benign neoplasms, primary malignant non-odontogenic neoplasms. Radiological signs of secondary malignant bone lesions.

Determination of indications and contraindications for x-ray examination for cysts and neoplasms of the maxillofacial area, interpretation of results; preparation of a research protocol; formulating a conclusion based on the data obtained as a result of the study.

1.12. Radiation diagnostics of diseases of the salivary glands and temporomandibular joint

Radiation methods for studying the salivary glands. X-ray anatomy of the salivary glands. X-ray diagnosis of salivary gland diseases. X-ray signs of benign and malignant neoplasms of the salivary glands.

Radiation methods for studying the temporomandibular joint. X-ray anatomy of the temporomandibular joint. X-ray semiotics of inflammatory and degenerative processes of the temporomandibular joint.

Determination of the structural elements of the temporomandibular joint based on the results of cone-beam computed tomography and zonography.

Determination of indications and contraindications for x-ray examination for diseases of the salivary glands and temporomandibular joint, interpretation of results; preparation of a research protocol; formulating a conclusion based on the data obtained as a result of the study.

2. RADIATION THERAPY

Physical and biological foundations of radiation therapy. Determination of indications, absolute and relative contraindications for radiation therapy. Principles of radiation therapy for malignant tumor and non-tumor processes. Classification of radiation therapy methods. Justification for the choice of method and devices used. The principle of choosing the type of treatment and determining therapeutic methods of influence (complexes). Selection of radiation exposure parameters: irradiation mode and technique, total absorbed dose, irradiation rhythm. Complications of radiation therapy: radiation reactions and radiation damage.

Drawing up a plan for radiation therapy of malignant neoplasms.

ACADEMIC DISCIPLINE CURRICULAR CHART

Section, topic number	Section (topic) name	Number of classroom hours			Self-studies	Form of control
		lectures (including supervised independent work)	supervised independent work	practical		
5th semester						
1.	Radiation diagnostics	8	3	27	19	
1.1	Introduction. Radiation diagnostic methods. X-ray research methods. Issues of ethics and deontology when conducting radiation research methods	2	1	-	-	
	Radiation diagnostic methods. Application in medicine. Construction of the X-ray department. X-ray equipment	-	-	3	1	interviews,
	X-ray research methods	-	-	3	1	control questioning
1.2	Physical and technical foundations of ultrasound research. Application in medicine	-	-	3	2	interviews, situational tasks, computer tests; conference reports
1.3	Physical and technical foundations of computed tomography.	-	-	-	-	control questioning, conference reports, interviews, situational tasks, computer tests
1.4	Application in medicine. Physical and technical foundations of magnetic resonance imaging. Application in medicine	-	-	3	2	
1.5	Radiation methods for examining the organs of the thoracic cavity. X-ray anatomy of the thoracic cavity. X-ray semiotics of pathological processes of the thoracic cavity organs	-	-	3	2	control questioning
1.6	Radiation methods for studying the organs of the digestive system. X-ray anatomy of the gastrointestinal tract. X-ray semiotics of diseases of the gastrointestinal tract	-	-	3	2	control questioning; computer tests

1.7	Radiation methods for studying the osteoarticular system. X-ray semiotics of traumatic injuries and pathological processes of bones and joints. X-ray signs of inflammatory diseases, benign and malignant neoplasms of bones and joints	2	1	-	-	interviews, control questioning
	Radiation methods for studying the osteoarticular system. X-ray semiotics of traumatic injuries of bones and joints	-	-	3	2	Control questioning; situational tasks
	X-ray semiotics of pathological processes of bones and joints	-	-	3	1	Interviews, control questioning. Situational tasks; computer tests
	X-ray signs of inflammatory diseases, benign and malignant neoplasms of bones and joints	-	-	3	2	
1.8	Methods of radiation examination of the maxillofacial area	2	0,5	-	2	Control questioning
1.9	X-ray diagnosis of traumatic injuries of the maxillofacial area	2	0,5	-	2	Situational tasks; computer tests
6th semester						
1.8	Methods of radiation examination of the maxillofacial area.	-	-	3	3	Control questioning, situational tasks, computer tests
1.9	X-ray diagnosis of traumatic injuries of the maxillofacial area	-	-	3	3	Control questioning, situational tasks, computer tests
1.10	X-ray diagnostics of inflammatory processes in the dentofacial area	2	0,5	3	3	Control questioning, situational tasks, computer tests
1.11	X-ray diagnostics of cysts and neoplasms of the maxillofacial area	2	0,5	-	-	Interviews, control questioning
	X-ray diagnosis of cysts in the maxillofacial area	-	-	3	3	Control questioning, situational tasks, computer tests
	X-ray diagnosis of neoplasms of the maxillofacial area	-	-	3	3	Control questioning; situational tasks; computer tests
1.12	Radiation diagnostics of diseases of the salivary glands and temporomandibular joint	-	-	3	3	Situational tasks; computer tests
2.	Radiation therapy	-	-	6	8	
	Radiation therapy. Physical and biological basis, indications, contraindications. Classification of radiation therapy methods. Complications of radiation therapy	-	-	3	4	Conference reports
	Final lesson on sections «Radiation therapy», «Radiation diagnostics»	-	-	3	4	Credit
	Total hours	12	4	51	45	

INFORMATION AND INSTRUCTIONAL UNIT

LITERATURE

Basic (relevant):

1. Diagnostic radiology : textbook / G. E. Trufanov, R. M. Akiev, K. N. Alekseev [et al.]; ed. G. E. Trufanov. – Moscow : GEOTAR-Media, 2021. – 444 p.
2. Овчинников, В. А. Лучевая диагностика и лучевая терапия: = Radiology and radiotherapy: textbook: учебное пособие для студентов факультета иностранных учащихся с английским языком обучения / В. А. Овчинников – Минск : Новое знание, 2020. – 504 с.

Additional:

3. Radiology. Radiotherapy. Diagnostic Imaging : textbook for stud. of higher med. establishment of IVth accred. Level : translated from Ukrainian / O. Kovalsky, D. Mechev, V. Danylevich. – Vinnytsia : Nova Knyga, 2013. – 496 p.

METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE

The time allotted for independent work can be used by students to:

- preparation for lectures, practical exercises;
- preparation for the test in the academic discipline;
- study of topics (questions) submitted for independent study;
- solution of practical problems;
- performance of research and creative tasks;
- preparation of thematic reports, abstracts, presentations;
- implementation of practical tasks;
- note-taking of educational literature;
- compiling a review of scientific literature on a given topic;
- design of information and demonstration materials (stands, posters, graphics, tables, newspapers, etc.);
- compiling a thematic selection of literary sources, Internet sources.

METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF SUPERVISED STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE

Main forms of supervised student independent work:

- preparation and presentation of abstracts;
- presentation of reports;
- studying topics and problems that have not been discussed at the lectures;
- participation in active forms of education;
- computer testing;

Control of supervised student independent work is carried out in the form of:
 test paper;
 final class, colloquium in the form of an oral interview, written work, testing;
 discussion of abstracts;
 checking up abstracts, written reports, accounts, prescriptions;
 individual interview;
 checking up notes of original sources, monographs and articles;

LIST OF AVAILABLE DIAGNOSTIC TOOLS

The following forms are used for competences assessment:

Oral form:

interviews;
 conference reports;
 situational tasks and tests.

Written form:

tests;
 control questioning;
 written classroom practical exercises;

Oral-written form:

credit.

Technical form:

electronic tests.

LIST OF AVAILABLE TEACHING METHODS

Traditional method (lecture, practicals);

Active (interactive) methods:

- Problem-Based Learning (PBL);
- Team-Based Learning (TBL);
- Case-Based Learning (CBL);
- Research-Based Learning (RBL).

LIST OF PRACTICAL SKILLS

1. Definition of basic, special and additional methods of x-ray examination of teeth and jaws.
2. Determination of anatomical objects on an orthopantomogram, teleroentgenogram and according to the results of cone-beam computed tomography.
3. Determination of the structural elements of the temporomandibular joint based on the results of zonography in the lateral projection and cone-beam computed tomography.
4. Interpretation of the x-ray examination results in emergency conditions of the chest organs.
5. Interpretation of X-ray results for traumatic injuries of bones and joints.
6. Interpretation of the x-ray examination results for inflammatory diseases of bones and joints (osteomyelitis - acute, chronic, tuberculosis).

7. Interpretation of the x-ray examination results of benign and primary malignant bone tumors.

8. Interpretation of x-ray examination results in emergency conditions of the abdominal cavity.

9. Interpretation of x-ray examination results for traumatic injuries of the maxillofacial area/

10. Interpretation of the radiation methods results for studying patients with inflammatory diseases of the dentofacial system.

11. Interpretation of the radiation methods results for studying patients with cysts and neoplasms of the maxillofacial area.

12. Interpretation of the CT examination results of patients with traumatic brain injuries (epidural and subdural hematomas of the brain).

13. Interpretation of the ultrasound examination results of patients with salivary stone disease.

LIST OF EQUIPMENT USED

1. Negatoscopes.
2. Computers.
3. Tablets.
4. Sets of X-ray images.
5. Sets of scanograms and scintigrams.
6. Sets of illustrations with the gamma chronography results of the liver and kidneys.
7. Sets of illustrations of ultrasound examinations.
8. Sets of illustrations of the computer and magnetic resonance imaging results.

LIST OF LECTURES

5th semester

Radiation diagnostics

1. Introduction. Radiation diagnostic methods. X-ray research methods. Issues of ethics and deontology when conducting radiation research methods.
2. Radiation methods for studying the osteoarticular system. X-ray semiotics of traumatic injuries and pathological processes of bones and joints. X-ray signs of inflammatory diseases, benign and malignant neoplasms of bones and joints.
3. Methods of radiation examination of the maxillofacial area.
4. X-ray diagnosis of traumatic injuries to the maxillofacial area.

6th semester

1. X-ray diagnosis of inflammatory processes in the dentofacial area.
2. X-ray diagnosis of cysts and neoplasms of the maxillofacial area.

LIST OF PRACTICAL STADIES

5th semester

Radiation diagnostics

1. Radiation diagnostic methods. Application in medicine. Construction of the

X-ray department. X-ray equipment.

2. X-ray research methods.
3. Physical and technical fundamentals of ultrasound research. Application in medicine.
4. Physical and technical fundamentals of ultrasound research.
5. Physical and technical fundamentals of computed tomography, magnetic resonance imaging. Application in medicine.
6. Radiation methods for examining the organs of the chest cavity. X-ray anatomy of the thoracic cavity. X-ray semiotics of pathological processes of the thoracic cavity organs.
7. Radiation methods for studying the organs of the digestive system. X-ray anatomy of the gastrointestinal tract. X-ray semiotics of diseases of the gastrointestinal tract.
8. Radiation methods for studying the osteoarticular system. X-ray semiotics of traumatic injuries of bones and joints.
9. X-ray semiotics of pathological processes of bones and joints.
10. X-ray signs of inflammatory diseases, benign and malignant neoplasms of bones and joints.

6th semester

1. Radiation examination methods of the maxillofacial area.
2. X-ray diagnosis of traumatic injuries of the maxillofacial area
3. X-ray diagnosis of inflammatory processes in the dentofacial area.
4. X-ray diagnosis of cysts in the maxillofacial area.
5. X-ray diagnosis of neoplasms of the maxillofacial area.
6. Radiation diagnostics of diseases of the salivary glands and the temporomandibular joint.

Radiation therapy

7. Radiation therapy. Physical and biological basis, indications, contraindications. Classification of radiation therapy methods. Complications of radiation therapy.
8. Final lesson on sections «Radiation therapy», «Radiation diagnostics».

**PROTOCOL OF THE CURRICULUM APPROVAL
BY OTHER DEPARTMENTS**

Title of the discipline requiring approval	Department	Amendments to the curriculum in the academic discipline	Decision of the department, which designed the curriculum (date, protocol No)
Pediatric dentistry	Department of Pediatric dentistry	No comments	Protocol No. 23 of 12.05.2023
Internal Diseases	1-st Department of Internal Diseases	No comments	Protocol No. 23 of 12.05.2023
Neurology and Neurosurgery	Department of Nervous and Neurosurgical Diseases	No comments	Protocol No. 23 of 12.05.2023

COMPILERS/AUTHORS:

Head of the department of radiation diagnosis and radiation therapy, educational institution “Belarusian State Medical University”, PhD, Associate Professor



signature

A.I. Aleshkevich

Associate Professor of the department of radiation diagnosis and radiation therapy, educational institution “Belarusian State Medical University”, PhD, Associate Professor



signature

T.F. Tikhomirova

Senior Lecturer of the department of radiation diagnosis and radiation therapy, educational institution “Belarusian State Medical University”



signature

G.A. Alesina

Curriculum content, composition and the accompanying documents comply with the established requirements.

Dean of the Medical Faculty for International Students of the educational institution «Belarusian State Medical University»

24.06.2023



O.S. Ishutin

Methodologist of the educational institution «Belarusian State Medical University»

24.06.2023



S.V. Zaturanova

2024г.

Министерство здравоохранения
Республики Беларусь

Учреждение образования
«Белорусский государственный
медицинский университет»

УТВЕРЖДАЮ

Ректор учреждения образования
«Белорусский государственный
медицинский университет»

С.П.Рубникович

29.12.2023

ВЫПИСКА ИЗ НОМЕНКЛАТУРЫ ДЕЛ

29.12.2023 № 01-43

г. Минск

на 2024 год

Индекс дела	Название раздела (подраздела), заголовок дела (тома, части)	Кол-во дел (томов, частей)	Срок хранения дела (тома, части) и № пунктов (статей) по перечню	Примечание
1	2	3	4	5

05.2. Учебно-методический
отдел Управления образова-
тельной деятельности

05.2-01 Кодекс Республики Беларусь
об образовании, постановле-
ния и распоряжения Совета
Министров Республики Бе-
ларусь по высшему образо-
ванию

До минования
надобности
п.1.2

05.2-02 Приказы, постановления
Министерства образования
Республики Беларусь

До минования
надобности
п.7.2

05.2-03 Приказы, постановления
Министерства здравоохра-
нения Республики Беларусь

До минования
надобности
п.7.2

05.2-04 Приказы и распоряжения
ректора университета. Копии

До минования
надобности
пп.21.1, 21.2,
21.3

ДЭВ
Подлинники в
ОДО (дела
01-03, 01-04,
01-05, 01-06,
01-07, 01-08),
в бухгалтерии
(дело 13.2-04)

05.2-05	Положение об учебно-методическом отделе Управления образовательной деятельности. Копия	До минования надобности п.28	Подлинник в отделе кадрового обеспечения высшего образования (дело 18.1-08)
05.2-06	Должностные инструкции работникам учебно-методического отдела Управления образовательной деятельности. Копии	До минования надобности п.31	Подлинники в отделе кадрового обеспечения высшего образования (дело 18.1-13)
05.2-07	План работы учебно-методического отдела Управления образовательной деятельности на 2024 год и отчет о его выполнении	3 года пп.172, 179	

1	2	3	4	5
05.2-08	План повышения квалификации и переподготовки педагогических работников университета на 2024 год и отчет о его выполнении		3 года пп.172, 179	
05.2-09	Образовательные стандарты высшего образования специальностей		До замены новыми п.723.2	ДЭВ Переходящее
05.2-10	Примерные учебные программы по учебным дисциплинам, модулям для специальностей. Копии		До замены новыми п.863.1	ДЭВ Подлинники на кафедрах (дела 09-11) Переходящее
05.2-11	Учебные программы университета по учебным дисциплинам, модулям. Копии		До минования надобности п.863.1	ДЭВ Подлинники на кафедрах (дела 09-12) Переходящее
05.2-12	Учебные программы курсов по выбору и факультативных дисциплин. Копии		До минования надобности п.863.1	ДЭВ Подлинники на кафедрах (дела 09-12) Переходящее
05.2-13	Учебные программы университета по учебным дисциплинам, модулям для специальностей магистратуры. Копии		До минования надобности п.863.1	ДЭВ Подлинники на кафедрах (дела 09-12) Переходящее
05.2-14	Программы по практикам. Копии		До минования надобности п.935	ДЭВ Подлинники в учебном отделе (дело 05.1-11)
05.2-15	Документы об организации образовательного процесса, его методическом обеспечении на кафедрах университета (справки, информации и др.) Копии		До минования надобности п.726	Подлинники в деле 05-11

1	2	3	4	5
05.2-16	Документы о планировании и организации повышения квалификации педагогических работников университета (планы, докладные записки и др.)		5 лет пп.120, 175	
05.2-17	Документы о выдаче выписок из учебно-программной документации (заявления граждан, копии платежных поручения и др.)		5 лет ЭПК п.100	
05.2-18	Документы о работе системы менеджмента качества (акты, отчеты и др.). Копии		До минования надобности	Подлинники в отделе мониторинга менеджмента качества (дело 05.3-11)
05.2-19	Графики работы работников отдела учебно-методического отдела Управления образовательной деятельности		3 года п.485	После замены новыми
05.2-20	Переписка с Министерством здравоохранения Республики Беларусь, Министерством образования Республики Беларусь, учреждениями высшего образования об обеспечении учебно-методической документацией		5 лет п.744	
05.2-21	Переписка с государственными учреждениями образования и иными организациями о профессиональной подготовке, переподготовке, повышении квалификации и стажировке работников		5 лет ЭПК п.986	

1	2	3	4	5
05.2-22	Журнал регистрации выдачи выписок из учебно-программной документации по заявлениям граждан		3 года п.123	
05.2-23	Журнал регистрации примерных, учебных программ по учебным дисциплинам		3 года п.123	
05.2-24	Журнал учета выдачи примерных, учебных программ в структурные подразделения университета		3 года п.123	
05.2-25	Журнал учета выдачи учебных программ по учебным дисциплинам, курсов по выбору, факультативных дисциплин, сопроводительных документов электронных учебно-методических комплексов (далее – ЭУМК) в структурные подразделения университета		3 года п.123	
05.2-26	Журнал регистрации прохождения курсов повышения квалификации педагогическими работниками университета		3 года п.123	
05.2-27	Журнал регистрации и учета выдачи направлений на повышение квалификации		3 года п.123	
05.2-28	Журнал регистрации наборных рукописей учебных пособий, методических разработок, иных учебных изданий для рассмотрения на заседании научно-методического совета университета		3 года п.123	
05.2-29	Журнал регистрации выдачи копий документов в структурные подразделения университета		3 года п.123	

1	2	3	4	5
05.2-30	Журнал учета бланков документов с изображением Государственного герба Республики Беларусь		3 года п.116	ДЭВ Переходящее
05.2-31	Журнал регистрации прихода и ухода работников отдела		1 год п.1114	
05.2-32	Журнал регистрации служебных разъездов работников отдела		1 год п.1114	
05.2-33	Выписка из номенклатуры дел университета на 2024 год		3 года п.114	
05.2-34				
05.2-35				
Начальник отдела документационного обеспечения				И.В.Бородина
Верно				
Начальник отдела документационного обеспечения				И.В.Бородина
03.01.2024				