**№Стом-21-ИН**

Federal State Budgetary Educational Institution
higher education
"NORTH OSSETIAN STATE MEDICAL ACADEMY"
Ministry of Health of the Russian Federation

APPROVED
Rectorof FSBEI HE NOSMA
MOH Russia
O.V. Remizov
«24» May 2023

# WORKING PROGRAM OF THE DISCIPLINE
# "Oncostomatology and radiation therapy"

the main professional educational program of higher education - specialist's programs in the specialty 31.05.03 Dentistry ,
approved on May 24, 2023

The form learning full-time

Development period OPOP VO 5

Department of Radiation Diagnostics and Radiation Therapy with Oncology

Vladikavkaz, 2023

When developing the work program of the discipline, the following are taken as the basis:

1. Federal State Educational Standard of Higher Education in the specialty 31.05.03 Dentistry , approved by the Ministry of Education and Science of the Russian Federation on August 12, 2020 No. 984
2. Curriculum of the OPOP HE in the specialty 31.05.03 Dentistry
(Стом-21-01-21-**ИН**
Стом-21-02-22-**ИН**
Стом-21-03-23-**ИН**) ,

approved by the Academic Council of the FGBOU HE SOGMA of the Ministry of Health of Russia approved by the Academic Council of the FGBOU HE SOGMA of the Ministry of Health of Russia on May 24, 2022, Protocol No. 8

The work program of the discipline was approved at a meeting of the Department of Radiation Diagnostics and Radiation Therapy with Oncology on May 21, 2023, Protocol No. 10

The work program of the discipline was approved at a meeting of the central coordinating educational and methodological council on May 23, 2023, protocol No. 5.

The work program of the discipline was approved by the Scientific Council of the Federal State Budgetary Educational Institution of Higher Education SOGMA of the Ministry of Health of Russia dated May 24, 2022, Protocol No. 8

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**Content of the work program**

1. Name disciplines;
2. a list of planned learning outcomes in the discipline, correlated with the planned results of mastering the educational programs;
3. indication of the place of discipline in the structure of educational programs;
4. the volume of discipline in credit units indicating the number of academic or astronomical hours allocated for contact work of students with a teacher (by type of training) and for independent work students;
5. the content of the discipline, structured by topics (sections) indicating the number of academic or astronomical hours allocated to them and types of training sessions;
6. a list of educational and methodological support for independent work of students on discipline;
7. a fund of evaluation tools for conducting intermediate certification of students in the discipline;
8. a list of basic and additional educational literature necessary for mastering the discipline;
9. a list of resources of the information and telecommunications network "Internet" (hereinafter referred to as the "Internet" network) necessary for mastering the discipline;
10. guidelines for students on mastering disciplines;
11. a list of information technologies used in the implementation of the educational process in the discipline, including a list of software and information reference systems (with need);
12. description of the material and technical base necessary for the implementation of the educational process for discipline.
13. Conducting educational activities using e-learning and distance learning technologies.

## 2. The list of planned learning outcomes in the discipline and the results of mastering the educational programs

| No. p/p | Competence number/ index | Content of competence (or parts of it) | Topic of the lesson (section) | Competency achievement indicators | Development results | | |
|---|---|---|---|---|---|---|---|
| | | | | | know | be able to | own |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1. | GPC-5 | Capable conduct examination of the patient in order to establish a diagnosis at decision professional tasks | Physical basis of radiation therapy. Radiobiological fundamentals of radiation therapy of malignant and non-tumor diseases | ID-1 OPK-5 Own the algorithm clinical examination of the patient.<br>ID-2 OPK-5 To be able to draw up a plan for laboratory and instrumental diagnostics.<br>ID-3 OPK-5 Own the algorithm of clinical, laboratory and functional diagnostics in solving professional tasks.<br>ID-4 OPK-5 Be able to evaluate the results of clinical, laboratory and functional diagnostics in solving professional tasks. | Physical basics ray therapy. Methods Technical support l Reaction organism on medical radiation impact. ray therapy. | Be able to choose method radiotherapy , plan radiation therapy reveal radiation reaction, protect bodies and tissues at carrying out ray therapy. | Be proficient in radiotherapy technique s planning _ radiation therapy, radiation reaction treatment methods. |
| 2. | PC-1 | Holding surveys patient with purpose | Radiation therapy planning. Prebeam period. | ID-7 PK-1 Justifies the need and scope additional surveys | Know Planirovanie ray | Be able to Planirovat method ray | Methods of radiation therapy, methods of manageme |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | establishing | Ray | | therapy. | therapy. | nt medically |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | diagnosis | period. The body's response to therapeutic radiation impact. Post-beam period. Radiation protection for organs and tissue during radiation therapy | patients (including radiographs, teleroentgenogram, radiovisiogram, orthopantomograms , tomograms (on film and digital media))<br><br>tomograms (on film and digital media.<br><br>ID-10 PC-1 Analyzes received<br><br>survey results.<br><br>ID-11 PK-1 Substantiates and plans the scope additional x research.<br><br>ID-19 PK-1 Interpret data additional examinations of patients (including radiographs, teleroentgenogram, radiovisiogram, orthopantomograms , tomograms (on film and digital media)).<br><br>ID-20 PC-1 Diagnoses dentoalveolar deformations and | Preradiation period. Beam period. Reactions of the body to therapeutic radiation exposure. Postbeam period. Antiradiation protection of organs and tissues during radiation therapy. | Recognize early symptoms of a reaction<br><br>body and on therapeutic radiation exposure. | th documentation. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | anomalies of teeth and jaws; reveal risk factors for oncopathology (including various background processes, precancerous conditions).<br><br>ID-21 PK-1 Applies funds individual protection. | | | |
| 3. | PC-4 | Holding and control efficiency and sanitary-anti-epidemic and other preventive<br><br>sky activities public health _ | Fundamentals of Radiation Therapy malignant tumors maxillofacial area, malignant tumors of the chest and abdomen cavities, Fundamentals of radiation therapy of malignant tumors of the central nervous system, thyroid gland, retroperitoneal space, skeletal system, | ID-1 PC-4 Conduct preventive check-ups categories of citizens<br><br>ID-2 PC-4 To prevent diseases of the teeth, periodontium, oral mucosa, lips, bone tissue jaws, peripheral nervous systems of the maxillofac ial region, temporal jaw joint, salivary glands<br><br>ID-4 PK-4 Uses methods of primary and secondary prevention<br><br>ID-5 PK-4 Applies methods | Know pathogenesis, diagnosis often meeting _ diseases.<br>- Clinical picture, methods diagnostics, classification maxillofacial diseases areas, chest and abdominal cavities of the central nervous system, thyroid , retroperitoneal ly _ spaces a, bone systems, -Meaning special and additional research methods for differential _ diagnostics.<br>- Medical indications and contraindicati ons | Be able to interpret rove clinical results x, radiological ,<br><br>others methods explored and I cancer patients x;<br><br>-calculate specific and general activity radioactive foot source.<br><br>define power doses with help X-ray tra.<br><br>- Calculate time and dose exposure sick.. | Own methods deontology when working with oncological sick;<br><br>- technology safety when working with radioactive sources;<br><br>-rehabilitation methods _<br><br>classification of radiation therapy.<br><br>reactions treatment methods and injury after radiation treatment,<br><br>managem ent methods medical documentatio n and |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | organization of primary prevention of dental diseases in any age group<br><br>ID-6 PK-4 Applies means personal protection | knowledge on the use of radiation therapy. | | |
| 4. | PC-6 | Organizational but-managerial and I activity. | Basics ray therapy of malignant tumors of the central nervous system, thyroid glands. space, skeletal system, | ID-1 PK-6 Analyzes quality rendering medical care.<br><br>ID-3 PK-6 fills medical records and control the quality reference medical documentation.<br><br>ID-4 PC-6 Draws up documentation required for medical social expertise.<br><br>ID-6 PK-6 Prepares a work plan and report on their work.<br><br>ID-7 PK-6 Analyzes the quality and effectiveness of management medical records | Know basics filling medical documentation _ Radiobiological _ basics<br><br>radiotherapy _ malignant and non-tumor x zab Methods ray therapy. Technical security ray therapy. Planned ie radiation therapy. olevanation. | Fill medical wow documentation and control quality of reference<br><br>Methods radiation therapy. Technically e providing e radial therapy. Planned ie radiation therapy. | Methods work in information no-analytical systems |

**3. The place of discipline in the structure of educational programs**

The discipline " Oncostomatology and radiation therapy " refers to the disciplines of the basic part of the block of the Federal State Educational Standard of Higher Education in the specialty "Dentistry"

**4. Volume disciplines**

| **No. No. p / p** | **Type of work** | | **Total credit units** | **Total hours** | **Semesters** |
|---|---|---|---|---|---|
| | | | | | **9** |
| | | | | | **hours** |
| 1 | 2 | | 3 | 4 | 5 |
| **1** | **Contact work of students with a teacher (total), including including:** | | - | 48 | 48 |
| 2 | Lectures (L) | | - | 12 | 12 |
| 3 | Clinical Practice (PP) | | - | 36 | 36 |
| 4 | Seminars (C) | | - | - | - |
| 5 | Laboratory work (LR) | | - | - | - |
| **6** | **Independent work of the student (SR)** | | | 24 | 24 |
| **7** | **Type of intermediate attestations** | credit (G) | + | + | + |
| | | exam (E) | - | - | - |
| **8** | **TOTAL:** Total labor intensity | hours | 72 | 72 | 72 |
| | | Z | 2 | 2 | 2 |

**5. Content disciplines**

| **No./n** | **Semester No.** | **Name of the topic (section) of the discipline** | **Types of learning activities (in hours)** | **Forms of current control** |
|---|---|---|---|---|

| | | | L | LR | PZ | SRS | Total | educational attainment |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | 9 | Physical basis of radiation therapy. Radiobiological bases of radiation therapy of malignant and non-tumor diseases | 2 | - | 5 | 4 | 1 | S, TS. |
| 2 | 9 | Methods of radiation therapy. Technical support of radiotherapy | 2 | - | 5 | 4 | 11 | S, TS. |
| 3 | 9 | Radiation therapy planning. Prebeam period. Beam period. Reactions of the body to therapeutic radiation exposure. Post-beam period. Radiation Protection of Organs and Tissues During Radiation Therapy | 2 | - | 5 | 4 | 11 | C,TS.SZ,UZ |
| 4 | 9 | Fundamentals of radiation therapy of malignant tumors of the maxillofacial region. | 2 | - | 5 | 4 | 11 | C,TS.SZ,UZ |
| 5 | 9 | Fundamentals of radiation therapy of malignant tumors of the chest and abdominal cavities | 2 | - | 5 | 4 | 11 | S,TS.SZ |
| 6 | 9 | Fundamentals of radiation therapy of malignant tumors of the central nervous system, thyroid gland, Retroperitoneal space, skeletal system, | 2 | - | 5 | 4 | 11 | C,TS.SZ,UZ |
| 7 | 9 | Modular lesson | - | - | 3 | - | 3 | C,TS.SZ,UZ |
| 8 | 9 | offset | - | - | 3 | - | 3 | C,TS.SZ,UZ |
| **TOTAL:** | | | **12** | | **36** | **24** | **72** | |

**6. The list of educational and methodological support for independent work of students on discipline**

| No./n | semester number | Name of educational and methodical development |
|---|---|---|

| | | |
|---|---|---|
| **1** | 9 | Methodical manual: "Physical bases of radiation diagnostics and radiation therapy." Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **2** | 9 | Methodological guide: “Physical foundations of radiology. Radioactivity, radioactive radiation, their characteristics. Radionuclide diagnostics.» Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **3** | 9 | Methodical manual:. "Radial diagnosis of diseases of the pancreas and spleen, spinal cord and brain." Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **4** | 9 | Methodical manual: "Radial diagnosis of diseases of the esophagus, stomach, intestines" Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **5** | 9 | Methodical manual: “Radial diagnosis of diseases of the urinary system, liver and biliary tract and the reproductive system of a woman. Toolkit. Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **6** | 9 | Methodological guide: "Radial diagnosis of diseases of the musculoskeletal locomotive system." Toolkit. Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **7** | 9 | Methodical manual: "Radial diagnosis of lung diseases." Toolkit. Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **8** | 9 | Methodical manual: "Radiation diagnosis of the heart and vessels. ”Methodological guide. Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **9** | 9 | Methodological guide: *Biological bases of radiation therapy. Classification and planning of radiation therapy.* Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **10** | 9 | Methodological guide: .*«Technological foundations of radiation therapy. Radiation therapy of malignant tumors The body's response to radiation treatment.* Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **11** | 9 | Methodological recommendations for performing independent extracurricular work of students on the cycle of radiation diagnostics and radiation therapy .- Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **12** | 9 | Methodological developments for practical exercises in radiodiagnosis and radiotherapy No. 10. Vladikavkaz 2020 (Khasigov A.V., Koraeva I.Kh., Krivov A.A.). |
| **13** | 9 | Thematic laminated tables |

**7. Fund of assessment tools for conducting intermediate certification of students in discipline**

| No ./ p | Competence List | No. semester | Indicator(s) evaluation | Criterion evaluation | Evaluation scale | Name FOS |
|---|---|---|---|---|---|---|
| **1** | **2** | **3** | **four** | **5** | **6** | **7** |
| **1** | GPC -5<br>PK-1<br>PK-4<br>PK-6 | **9** | see the standard for assessing the quality of education, approved. by order<br><br>FGBOU VO SOGMA Ministry of Health Russia from 07/10/2018, №264/o | see quality standard education, approved. By order of FGBOU VO SOGMA Ministry of Health of Russia dated 10.07.2018 G., №264/o | see education quality assessment standard, approved by order FGBOU VO SOGMA Ministry of Health Russia from 07/10/2018 city, №264/o | Questions to offset;<br>Test tasks;<br>Control tasks |

**8. The list of basic and additional educational literature necessary for mastering disciplines**

Main literature

| p / no. | Name | The authors) | Year, place of publication | Number of copies | | EBS name |
|---|---|---|---|---|---|---|
| | | | | in library | on the department | Link to EBS |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Radiation diagnostics: textbook. T.1 | ed. G. E. Trufanov | M. : GEOTAR-Media, 2009<br>2011 | 198 | one | "Student Advisor"<br>http://www.studmedlib.ru/ru/book/ISBN9785970419274.html |
| | Radiation diagnostics: textbook | ed. G. E. Trufanov | M. : GEOTAR-Media, 2010<br>2015 | one | - | "Student Advisor"<br>http://www.studmedlib.ru/ru/book/ISBN9785970425152.html |
| | Radiation therapy: textbook. T.2 | Trufanov G. E., Asaturyan M. A., | M. : GEOTAR-Media, 2009, | 197 | one | "Student Advisor"<br>http://www.studmedlib.ru/ru/b |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Zharinov G. M. | 2010 | | | ook/ISBN9785970415658.html |
| | Radiotherapy: textbook | Trufanov G. E., Asaturyan M. A., Zharinov G. M. | M. : GEOTAR-Media, 2013 | - | - | "Student Advisor" http://www.studmedlib.ru/ru/book/ISBN9785970425145.html_ |
| | Radiation diagnostics and therapy. General radiology | S. To Ternova. and etc. | M. : GEOTAR-Media, 2014 | - | - | "Student Advisor" http://www.studmedlib.ru/book/ISBN9785970429891.html |
| | Radiology: textbook. allowance | ed. A.Yu. Vasiliev | M. : GEOTAR-Media, 2008 | | | "Student Advisor" http://www.studmedlib.ru/book/ISBN9785970409251.html |
| | Radiation diagnostics in dentistry: textbook. allowance | Vasiliev A.Yu., Vorobyov Yu.I., Serova N.S. | M. : GEOTAR-Media, 2010 | - | - | "Student Advisor" http://www.studmedlib.ru/book/ISBN9785970415955.html |

**additional literature**

| **p / no.** | **Name** | **The authors)** | **Year, place of publication** | **Number of copies** | | **EBS name** |
|---|---|---|---|---|---|---|
| | | | | **in** | **on the** | **Link to EBS** |

| | | | | library | department | |
|---|---|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| | Medical radiology and radiology (fundamentals of radiation diagnostics and radiation therapy): textbook | Lindenbraten L. D. | M. : Medicine, 1993 | 278 | one | "Student Advisor" http://www.studmedlib.ru/book/ISBN9785970415955.html |
| | Brief atlas of digital radiography: textbook. allowance | ed. A. Yu. Vasiliev | M. : GEOTAR-Media, 2008 | 7 | one | "Student Advisor" http://www.studmedlib.ru/book/ISBN9785970415955.html |
| | Topographic anatomy and operative surgery: textbook. In 2 tons. | Sergienko V.I. Petrosyan E. A, Frauchi I. V. | M. : GEOTAR-Media, 2010 | T. 1–147 T.2 - 148 | - | "Student Advisor" http://www.studmedlib.ru/book/ISBN9785970415955.html |
| | Radiation mammology | Ternovoy S. K. | M. : GEOTAR-Media, 2007. | 5 | - | "Student Advisor" http://www.studmedlib.ru/book/ISBN9785970415955.html |
| | X-ray diagnostics dental diseases: textbook. allowance | Vodolatsky M. P., Vodolatsky V. M., Samokhina N. V. | Stavropol: SGMA, 2006 | one | - | "Student Advisor" http://www.studmedlib.ru/book/ISBN9785970415955.html |
| | Radiation diagnostics of liver diseases (MRI, CT, ultrasound, SPECT and PET) | ed. G. E. Trufanov | M. : GEOTAR-Media, 2007. - | 2 | - | "Student Advisor" http://www.studmedlib.ru/book/ISBN9785970415955.html |
| | Ray data analysis principle-based research | Vasiliev A.Yu., Maly A.Yu., | GEOTAR-Media, | - | - | "Student Advisor" |

| | | | | | | |
|---|---|---|---|---|---|---|
| | evidence-based medicine | Serov N.S. | 2008 | | | http://www.studmedlib.ru/book/ISBN9785970408698.htm |
| | Radiation diagnostics: textbook | Ilyasova E. B., Chekhonatskaya M. L., Priezzheva V. N. | M. : GEOTAR-Media, 2013 | - | - | "Student Advisor"<br><br>http://www.studmedlib.ru/book/ISBN9785970427200.html |
| | Atlas of Radiation Human Anatomy | Filimonov V.I., Shilkin V.V., Stepankov A.A., Churakov O.Yu. | M. : GEOTAR-Media, 2010 | - | - | "Student Advisor"<br><br>http://www.studmedlib.ru/book/ISBN9785970413616.html |
| | Magnetic resonance imaging: a guide for physicians | ed. G. E. Trufanov | St. Petersburg: Folio, 2007 | one | - | "Student Advisor"<br><br>http://www.studmedlib.ru/book/ISBN9785970415955.html |
| | Magnetic Resonance Imaging: Tutorial | ed. S.K. Ternovoy | M. : GEOTAR-Media, 2008 | - | - | "Student Advisor"<br><br>http://www.studmedlib.ru/book/ISBN9785970408353.html |

**9.** List of resources of the information and telecommunications network "Internet" required for mastering disciplines

1.Information and legal system "Garant" 2.Information and legal system "Consultant" 3.Information system "State Register of Medicines"

4. - "Student Advisor" .

Radiation therapy [Electronic resource] / Trufanov G.E., Asaturyan M.A., Zharinov G.M. - M. : GEOTAR-Media, 2013. - http://www.studmedlib.ru/book/ISBN9785970425145.html

Radiation diagnostics. In 2 volumes. Volume 1 [Electronic resource] / Akiev R.M., Ataev A.G., Bagnenko S.S. and others. Ed. G.E. Trufanov. - M. : GEOTAR-Media, 2011. - http://www.studmedlib.ru/book/ISBN9785970419274.html

Radiation diagnostics in dentistry [Electronic resource]: textbook / Vasiliev A.Yu., Vorobyov Yu.I., Serova N.S. and others - 2nd ed., add. and reworked. - M. : GEOTAR-Media, 2010. - http://www.studmedlib.ru/book/ISBN9785970415955.html

Radiation diagnostics and therapy. General radiation diagnostics [Electronic resource] / Ternovoy S. K. et al. - M .: GEOTAR-Media, 2014. - http://www.studmedlib.ru/book/ISBN9785970429891.html

5. - Bulletin of radiology and radiology http://www.russianradiology.ru/jour

6. - Russian Electronic Journal of Radiation Diagnostics http://www.rejr.ru/perviy-nomer/vol-6-3-2016.html

7. National School of Radiology

http://www.radiology-school.ru

## 10. Guidelines for students on mastering disciplines

Training consists of contact work (48 hours), including a lecture course (12) and practical exercises (36), and independent work (24 hours). The main study time is allocated to practical work on the study of x-ray anatomy of organs, methods of radiation diagnostics, x-ray symptoms and differential diagnosis of various diseases. When studying the discipline, it is necessary to use the basic and additional recommended literature and master practical skills in radiation diagnostics of pathological processes.

Practical classes are held in the form of answers to tests, oral questioning, analysis and description of radiographs, presence in the X-ray room during an X-ray examination of patients, solving situational problems. In accordance with the requirements of the Federal State Educational Standard for Higher Education, active and interactive forms of conducting classes (video films, situational tasks, independent extracurricular work) are widely used in the educational process. The proportion of classes conducted in interactive forms is at least 5% of the classroom classes.

Independent work of students implies the preparation of the formation of a systematic approach to the analysis of medical information, includes the study of additional literature, work with medical documentation, writing X-ray protocols. With

educational literature is considered as a type of educational work in the discipline of radiation diagnostics and is performed within the hours allotted for its study (in the SIW section).

Each student is provided with access to the library funds of the academy and the department. During the study of the discipline, students independently draw up protocols for describing images of various organs and are present during radiological examination in offices.

The work of a student in a group forms a sense of collectivism and sociability.

**11. The list of information technologies used in the implementation of the educational process for discipline**

- Microsoft word
- •Microsoft excel
- •Microsoft Power point
- adobe photoshop
- Adobe Acrobat
- Adobe finereader

**12. Description of the material and technical base necessary for the implementation of the educational process for discipline**

| No ./ P | equipment identification | Quantity | Technical condition |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| **Special equipment** | | | |
| 1. | classrooms (19.1 sq.m, 22.7 sq.m, 13.6 sq.m) | 3 | good |
| 2. | staff room (18 sq.m) | 1 | satisfactory |
| 3. | lecture hall (141.8 sq.m) | 1 | good |
| 4. | computers | 3 | satisfactory |
| 5. | notebook | 1 | good |
| 6. | multimedia complex (laptop, projector, screen) | 1 | good |
| 7. | negatoscope | 10 | satisfactory |
| 8. | slidescope | 1 | satisfactory |
| 9. | set of radiographs, CT and MR | 370 | good |
| 10. | radiograph description protocols | 90 | good |
| 11. | vidio movies | | good |
| 12. | situational tasks | | good |
| 13. | tests | | good |
| 14. | laminated tables | 200 | good |
| 15. | X-ray diagnostic devices ROD | 4 | good |
| 16. | Radiation therapy devices GENUS | 3 | good |
| **phantoms** | | | |
| 17. | - | | |

| | | | |
|---|---|---|---|
| **dummies** | | | |
| eighteen. | - | | |

**13. Conducting educational activities using e-learning and distance learning technologies.**

In the context of the introduction of restrictive measures (quarantine) associated with an unfavorable epidemiological situation, the threat of the spread of a new coronavirus infection and other force majeure events that do not allow training sessions in full-time mode, it is possible to study this discipline or part of it using e-learning and distance learning technologies.

Teaching discipline in the situations described above will be carried out through the development of an electronic course with access to video lectures and interactive course materials: presentations, articles, additional materials, tests and various tasks. When conducting training sessions, current monitoring of progress, as well as intermediate certification of students, the platforms of the electronic information and educational environment of the academy and / or other e-learning systems recommended for use in the academy, such as Moodle, Zoom, Webinar, etc., can be used.

Lectures can be presented in the form of audio, video files, "live lectures", etc. Conducting seminars and practical classes is possible on-line in both synchronous and asynchronous modes. Seminars can be held in the form of web-conferences.