

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



**WORKING PROGRAM OF THE DISCIPLINE**

**" Oncology "**

the main professional educational program of higher education - a specialist's program  
in the specialty 31.05.01 General Medicine, approved on 24.05.2023

**The form learning** full-time  
(full-time, part-time (evening), part-time)

**Development period BRI IN** 6 years  
(normative training period)

**department** radiation diagnostics and radiation therapy with oncology

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 31.05.01 General Medicine, approved by the Ministry of Education and Science of the Russian Federation on August 12, 2020 No. 988

1. The curriculum of the OPOP HE in the specialty 31.05.01 General Medicine (ЛД-21-01-21-ИИ, ЛД-21-02-22-ИИ, ЛД-21-03-23-ИИ, ), approved by the Scientific Council of the Federal State Budgetary Educational Institution of Higher Education SOGMA of the Ministry of Health of Russia on May 24, 2023, 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 Academic Council of the Federal State Budgetary Educational Institution of Higher Education SOGMA of the Ministry of Health of Russia on May 24, 2023, Protocol No. 8

2.

Developers:

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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 classes;
6. a list of educational and methodological support for independent work of students in the 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 - the network "Internet"), necessary for the development disciplines;
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	Number / index of competence	Content of competence (or her parts)	Topic of the lesson (section)	Competency achievement indicators	Development results		
					know	be able to	own
1	2	3	4	5	6	7	8
1.	<p><b>OPK-1</b>  <b>OPK-4</b>  <b>OPK-6</b>  <b>OPK-8</b>  <b>PC-1</b>  <b>PC-2</b>  <b>PC-5</b>  <b>PC-6</b></p>	Capable implement moral and legal norms, ethical and deontological principles in professional activities	<p>1. Physical basics of radiation therapy.</p> <p>2. Radiobiological basics of radiotherapy malignant diseases.</p> <p>3. Radiobiological basics of radiotherapy – non-tumor diseases.</p>	<p>ID-1 OPK-1  Complies moral and legal regulations professional activities.</p> <p>ID-2 OPK-1  Presents professional information intercultural interactions, respecting</p> <p>ID-1 OPK-2  Analyzes awareness population about healthy way life and medical literacy</p> <p>ID-2 OPK-2  Develops a plan of organizational</p>	<p>1. The history of the discovery of x-ray, gamma, alpha, beta radiation, 2. stages of development and formation, physical and technical foundations of radiation therapy.</p> <p>3. subject, structure and tasks of the beam therapy.</p> <p>3. Radiobiological foundations of radiation therapy for malignant and non-tumor diseases.</p> <p>4. effect of ionizing radiation on tumor biological effect of penetrating radiation.</p> <p>Essence biochemical and pathomorphological processes occurring under</p>	<p>1. Interpret clinical results.</p> <p>2. X-ray.</p> <p>3. endoscopic, other methods cancer research.</p> <p>4. Use medical terminology.</p>	<p>1. Methods deontology when working with oncologically we are sick</p> <p>2. Methods reference medical documentation.</p> <p>3. Medical terminology.</p>

				<p>and methodological measures aimed at improving public awareness of healthy lifestyle , prevention infectious and non-infectious diseases in adults population.</p> <p>ID-3 OPK-2 Develops an oral presentation or printed text that promotes a healthy lifestyle and increasing the literacy of the population in issues disease prevention.</p>	<p>the action of penetrating radiation, radiosensitivity</p> <p>Medical terminology.</p>		
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2.	<b>OPK-1</b> <b>OPK-4</b> <b>OPK-6</b> <b>OPK-8</b> <b>PC-1</b> <b>PC-2</b> <b>PC-5</b> <b>PC-6</b>	Ability to use medical devices envisaged in order rendering medical help, and also conduct surveys patient with purpose establishing diagnosis	Methods of radiation therapy. Technical support of radiotherapy	ID-2 OPK-4. Owns the algorithm of clinical examination of the patient.  ID-3 OPK-4 Owns the application algorithm medical products, provided for in the provision of medical care.	Know ethical and deontological principles in professional activities	Be able to implement ethical and deontological principles in professional activities	Own the basics of ethical and deontological principles
3.	<b>OPK-1</b> <b>OPK-4</b> <b>OPK-6</b> <b>OPK-8</b> <b>PC-1</b> <b>PC-2</b> <b>PC-5</b> <b>PC-6</b>	readiness for the medical use of drugs and other substances and their combinations when deciding professional tasks	Fundamentals of Radiation Therapy malignant tumors of the maxillofacial region.	ID-1 OPK-8 Knows basics of medical rehabilitation of patients ID-1 OPK-9 Knows management principles quality in professional activity	Know drugs and combinations in solving professional problems	Know how to properly prescribe medications. be able to combine	Master the basics of dosing medicines

4.	<b>OPK-1</b> <b>OPK-4</b> <b>OPK-6</b> <b>OPK-8</b> <b>PC-1</b> <b>PC-2</b> <b>PC-5</b> <b>PC-6</b>	PC-1 Provision of medical care in patient emergency or emergency forms	Fundamentals of Radiation Therapy malignant tumors of the chest and abdomen	ID-1 PC-1 Identifies clinical signs of conditions requiring medical attention in urgent form ID-2 PC-1 Performs activities for providing medical assistance in urgent form ID-3 PC-1 Detects states, requiring medical assistance in emergency form, including clinical signs of sudden termination of circulation and breathing	Know the types of activities aimed at maintaining and strengthening health, methods of early diagnosis	Be able to examine cancer patients: radiographs, mammograms, angiograms, CT, MRI, etc.	Be proficient in obtaining, processing and analyzing received medical images
5.	<b>OPK-1</b> <b>OPK-4</b> <b>OPK-6</b> <b>OPK-8</b> <b>PC-1</b> <b>PC-2</b> <b>PC-5</b> <b>PC-6</b>	Examination of the patient in order to establish a diagnosis	Fundamentals of Radiation Therapy malignant tumors of the central nervous system, thyroid gland, Retroperitoneal space, skeletal system,	ID-1 PC-2 Collects complaints and anamnesis life and illness of the patient and analyzes the received information ID-6 PK-2 Analyzes the results of the patient's examination, if necessary, substantiates and plans the scope of additional studies	Cancer and precancerous skin diseases. Cancer of the oral mucosa. Tumors of bones and soft tissues. Precancerous disease and breast cancer. Precancerous disease and lung cancer. Cancer of the esophagus, cancer of the stomach. malignant lymphomas. Myeloma. Cancer of the colon and rectum . Tumors of the hepatopancreatoduodenal zone.	Be able to recognize cancer and precancerous skin diseases. Cancer of the oral mucosa. Tumors of bones and soft tissues. Precancerous disease and breast cancer. Precancerous disease and lung cancer. Cancer of the esophagus, cancer of the stomach. malignant lymphomas. Myeloma. Cancer of the colon and rectum . Tumors of the hepatopancreatoduodenal	

				<p>ID-11 PK-2 Provides early diagnosis of diseases of internal organs</p> <p>ID-12 PK-2 Conducts differential diagnosis diseases of internal organs from other diseases</p> <p>ID-13 PK-2 Defines sequence of volume, content and sequence of diagnostic measures</p>	<p>- Fundamentals of radiotherapy of malignant tumors of the maxillofacial region, - Fundamentals of radiotherapy of malignant tumors of the chest and abdominal cavities,</p> <p>- Fundamentals of radiation therapy of malignant tumors of the central nervous system, thyroid gland, Retroperitoneal space, skeletal system,</p>	<p>noah zones.</p> <p>-Choose the correct irradiation method.</p> <p>-Build a topometric map, calculate the dose and time of exposure, fields, etc.</p> <p>-Prescribe treatments for reaction and injury after radiation treatment</p>	
6.	<p><b>OPK-1</b> <b>OPK-4</b> <b>OPK-6</b> <b>OPK-8</b> <b>PC-1</b> <b>PC-2</b> <b>PC-5</b> <b>PC-6</b></p>	<p>Holding and holding control efficiency activities for prevention and formation healthy lifestyle and sanitary hygiene enlightenment population</p>	<p>holding preventive medical examinations, medical examination and implementation dispensary observation of patients with oncological pathology;</p>	<p>ID-3 PK-5 Conducts medical examination adult population with the aim of early identifying chronic non-infectious diseases, major factors the risk of their development</p> <p>ID-4 PC-5 Conducts dispensary</p>	<p>know the methods used in clinical examination patients with oncological pathology</p>	<p>be able to implement dispensary observation of patients with oncological pathology</p>	<p>Own methods of preventive medical examinations</p>



			<p>observation patients</p> <p>with identified chronic non-infectious diseases, including patients high and very high cardiovascular risk</p> <p>ID-5                      PK-5</p> <p>Assigns preventive measures to patients, taking into account risk factors for the prevention and early detection of diseases, including socially significant ones diseases</p>			
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7.	<b>OPK-1</b> <b>OPK-4</b> <b>OPK-6</b> <b>OPK-8</b> <b>PC-1</b> <b>PC-2</b> <b>PC-5</b> <b>PC-6</b>	Doing medical documentation and organization activities of the middle medical staff	<ul style="list-style-type: none"> <li>-Methods of irradiation of patients remote, contact).</li> <li>-Planning of radiotherapy.</li> <li>-Beam periods to reactions radiation (local and general).</li> <li>- Complications in radiation therapy. the power of the population</li> </ul>	ID-2 PK-6 Analyzes data from official statistical reporting, including forms of federal and sectoral statistical observations ID-3 PC-6 Works with personal data of patients and information constituting a medical secret ID-5 PK-6 Fills in the medical documentation, including in electronic form by Employees ID-6 PK-6 Controls execution medical duties district sister and others available – – medical ID-7 PK-6 Uses i n professional information	Organization of cancer care for the population., <ul style="list-style-type: none"> <li>-Build a plan for remote exposure (X-ray therapy, tele-gamma therapy).</li> <li>-Correctly identify beam method therapy.</li> <li>- Prepare the patient for treatment</li> <li>-Make a treatment plan.</li> <li>- prevention of radiation reaction</li> </ul>	To be able to organize oncological care for the population, <ul style="list-style-type: none"> <li>-Choose the correct irradiation method,</li> <li>-Build a topometric map, calculate the dose and time of exposure, fields, etc.</li> <li>-Prescribe treatments for reaction and injury after radiation treatment</li> </ul>	Own the Methods of organizing oncological care for the population, <ul style="list-style-type: none"> <li>-Methods of irradiation of patients ( remote , contact). - Rehabilitation methods classification of radiation therapy.</li> <li>-Methods of treatment reactions and injury after radiation treatment</li> </ul>
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				activities systems an d information and telecommunications network "Internet"			
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### 3. The place of discipline in the structure of educational programs

The discipline " Oncology " refers to the mandatory part of the Block of the Federal State Educational Standard of Higher Education in the specialty " **General medicine.** "

### 4. Scope of discipline

No. No .p /p	Type of work	Total credit units	Total hours	Semesters	
				12	
				hours	
1	2	3	4	5	
<b>1</b>	<b>Contact work of students with a teacher (total), including including:</b>	-	50	50	
2	Lectures (L)	-	10	10	
3	Clinical Practice (PP)	-	40	40	
4	Seminars (C)	-	-	-	
5	Laboratory work (LR)	-	-	-	
<b>6</b>	<b>Independent work of the student (SR)</b>	-	22	22	
<b>7</b>	<b>Type of intermediate certification</b>	credit (G)	+	+	+
		exam (E)	-	-	-
<b>8</b>	<b>TOTAL:</b> Total labor intensity	hours		72	72
		Z	2		2

### 5. Content disciplines

No./n	No. semester	Name of the topic (section) of the discipline	Types of learning activities					Forms of current progress control
			(in hours)					
			L	LR	PZ	SRS	Total	
1	2	3	4	5	6	7	8	9
1.	12	Physical basis of radiation therapy. Radiobiological bases of radiation therapy of malignant and non-tumor diseases	2	-	6	3	11	C,TS.SZ,UZ

2.	12	Methods of radiation therapy. Technical support of radiotherapy	2	-	6	3	11	C,TS.SZ,UZ
3.	12	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 conducting radiation therapy	2	-	6	3	11	C,TS.SZ,UZ
4.	12	Fundamentals of radiation therapy of malignant tumors of the maxillofacial region.	2	-	6	3	11	C,TS.SZ,UZ
5.	12	Fundamentals of radiation therapy of malignant tumors of the chest and abdominal cavities	2	-	6	3	11	C,TS.SZ,UZ
6.	12	Fundamentals of radiation therapy of malignant tumors of the central nervous system, thyroid gland, Retroperitoneal space, skeletal system,	-	-	6	4	11	C,TS.SZ,UZ
7.	12	Modular lesson offset	-	-	4	3	7	C,TS.SZ,UZ
<b>TOTAL:</b>			<b>10</b>		<b>40</b>	<b>22</b>	<b>72</b>	

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

<b>No./n</b>	<b>No. semester</b>	<b>Name of educational and methodical development</b>
<b>1</b>	12	Methodical manual: "Physical bases of radiation diagnostics and radiation therapy." Vladikavkaz 2008 (Associate Professor Candidate of Medical Sciences Olisaeva E.T).
<b>2</b>	12	Methodological guide: "Physical foundations of radiology. Radioactivity, radioactive radiation, their characteristics. Radionuclide diagnostics.» Vladikavkaz, 2008 (Associate Professor, Candidate of Medical Sciences Olisaeva E.T., Professor, Doctor of Medical Sciences S.G. Georgiadi, assistants Ph.D. I.Kh.Koraeva, Z.R.Sozanti).
<b>3</b>	12	Methodical manual: "Radial diagnosis of diseases of the pancreas and spleen, spinal cord and brain." Vladikavkaz 2009 (Associate Professor, Candidate of Medical Sciences E.T. Olisaeva, Professor of the Department S.G. Georgiadi Assistant Z.R. Sozanti, Ph.D. THEM. Koraeva
<b>4</b>	12	Methodical manual: "Radial diagnosis of diseases of the esophagus, stomach, intestines" Vladikavkaz 2009. (Associate Professor Ph.D. E.T. Olisaeva, Professor d.m.s. S.G. Georgiadi, assistants Ph.D. I.Kh.Koraeva, Z.R.Sozanti.
<b>5</b>	12	methodical allowance: "Radiation diagnostics diseases urinary system, liver and biliary tract and reproductive system of a woman.



	Radiation diagnostics: textbook. T.1	ed. G. E. Trufanov	M. : GEOTAR-Media, 2009 2011	198	one	"Student Advisor"  <a href="http://www.student-medlib.ru/ru/book/ISBN9785970419274.html">http://www.student-medlib.ru/ru/book/ISBN9785970419274.html</a>
	Radiation diagnostics:	ed. G. E.	M. : GEOTAR-	one		"Consultant"

	textbook	Trufanov	Media, 2010 2015			student"  <a href="http://www.stud-medlib.ru/ru/book/ISBN9785970425152.html">http://www.stud-medlib.ru/ru/book/ISBN9785970425152.html</a>
	Radiation therapy: textbook. T.2	Trufanov G. E., Asaturyan M. A., Zharinov G. M.	M. : GEOTAR-Media, 2009, 2010	197	one	"Student Advisor"  <a href="http://www.stud-medlib.ru/ru/book/ISBN9785970415658.html">http://www.stud-medlib.ru/ru/book/ISBN9785970415658.html</a>
	Radiotherapy: textbook	Trufanov G. E., Asaturyan M. A., Zharinov G. M.	M. : GEOTAR-Media, 2013			"Student Advisor"  <a href="http://www.stud-medlib.ru/ru/book/ISBN9785970425145.html">http://www.stud-medlib.ru/ru/book/ISBN9785970425145.html</a>
	Radiation diagnostics and therapy. General radiation diagnostics	S. To Ternova. and etc.	M. : GEOTAR-Media, 2014			« Consultant student »  <a href="http://www.stud-medlib.ru/book/ISBN9785970429891.html">http://www.stud-medlib.ru/book/ISBN9785970429891.html</a>
	Radiology: textbook. allowance	ed. A.Yu. Vasiliev	M. : GEOTAR-Media, 2008			"Student Advisor"  <a href="http://www.stud-medlib.ru/book/ISBN9785970409251.html">http://www.stud-medlib.ru/book/ISBN9785970409251.html</a>
	Radiation diagnostics in dentistry: textbook. allowance	Vasiliev A.Yu., Vorobyov Yu.I., Serova N.S.	M. : GEOTAR-Media, 2010			« Consultant student »  <a href="http://www.stud-medlib.ru/book/ISBN9785970415955.html">http://www.stud-medlib.ru/book/ISBN9785970415955.html</a>

**additional literature**



p / no.	Name	The authors)	Year, place of publication	Number of copies		EBS name
				in e libraries	at the department	Link to EBS
1	2	3	4	5	6	7
	Medical radiology and radiology (basics of radiation diagnostics and radiation therapy): textbook	Lindenbraten L. D.	M. : Medicine, 1993	278	one	« Consultant student » <a href="http://www.stud-medlib.ru/book/ISBN9785970415955.html">http://www.stud-medlib.ru/book/ISBN9785970415955.html</a>
	Brief atlas of digital radiography: textbook. allowance	ed. A. Yu. Vasiliev	M. : GEOTAR-Media, 2008	7	one	« Consultant student » <a href="http://www.stud-medlib.ru/book/ISBN9785970415955.html">http://www.stud-medlib.ru/book/ISBN9785970415955.html</a>
	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	-	« Consultant student » <a href="http://www.stud-medlib.ru/book/ISBN9785970415955.html">http://www.stud-medlib.ru/book/ISBN9785970415955.html</a>
	Radiation mammalogy	Ternovoy S. K.	M. : GEOTAR-Media, 2007.	5		« Consultant student » <a href="http://www.stud-medlib.ru/book/ISBN9785970415955.html">http://www.stud-medlib.ru/book/ISBN9785970415955.html</a>
	X-ray diagnostics dental diseases: textbook. allowance	Vodolatsky M. P., Vodolatsky V. M., Samokhina N. V.	Stavropol: SGMA, 2006	one		« Consultant student » <a href="http://www.stud-medlib.ru/book/ISBN9785970415955.html">http://www.stud-medlib.ru/book/ISBN9785970415955.html</a>
	Radiation diagnostics liver disease	ed. G. E. Trufanov	M. : GEOTAR-Media, 2007. -	2		"Student Advisor" <a href="http://www.stud">http://www.stud</a>

	(MRI, CT, ultrasound, SPECT and PET)					medlib.ru/book/I SBN978597041 5955.html
	Analysis of X-ray data based on the principles of evidence-based medicine	Vasiliev A. Yu., Malyi A. Yu., Serov N.S.	GEOTAR-Media, 2008			« Consultant student »  http://www.stud - medlib.ru/book/I SBN978597040 8698.htm
	Radiation diagnostics: study guide	Ilyasova E. B., Chekhonatskaya M. L., Priezzheva V. N.	M. : GEOTAR-Media, 2013			« Consultant student »  http://www.stud - medlib.ru/book/I SBN978597042 7200.html
	Radiation Atlas human anatomy	Filimonov V.I., Shilkin V.V., Stepankov A.A., Churakov O. Yu.	M. : GEOTAR-Media, 2010			« Consultant student »  http://www.stud - medlib.ru/book/I SBN978597041 3616.html
	Magnetic Resonance Imaging: A Guide for Physicians	ed. G. E. Trufanov	St. Petersburg: Folio, 2007	one		« Consultant student »  http://www.stud - medlib.ru/book/I SBN978597041 5955.html
	Magnetic resonance imaging: tutorial	ed. S.K. Ternovoy	M. : GEOTAR-Media, 2008			« Consultant student »  http://www.stud - medlib.ru/book/I SBN978597040 8353.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 radiation diagnostics  
<http://www.rejr.ru/perviy-nomer/vol-6-3-2016.html>

7. National School of Radiology  
<http://www.radiology-school.ru>

"Student Advisor":

<http://www.studmedlib.ru/book/ISBN9785970407127.html>

<http://www.studmedlib.ru/book/ISBN9785970414163.html>

<http://www.studmedlib.ru/book/ISBN9785970425329.html>

<http://www.studmedlib.ru/book/ISBN9785970427194.html>

<http://www.studmedlib.ru/book/ISBN9785970427194.html>

RosOncoWeb - Internet portal of the Russian Society of Clinical Oncology: <http://www.rosoncoweb.ru/standards/RUSSCO/>

Association of Oncologists of Russia. Clinical guidelines for the diagnosis and treatment of tumors: <http://www.oncology.ru/association/clinical-guidelines/>

Journal "Oncology"

[http://www.oncology.kiev.ua/archiv/19\\_1/index.php](http://www.oncology.kiev.ua/archiv/19_1/index.php)

Journal "Practical Oncology"

<http://www.rosoncoweb.ru/library/journals/practic>

[al oncology/](#)

Journal "Modern Oncology"

<http://con-med.ru/magazines/contemporary/contemporary-01-2017/>

Magazine

"Oncourology"

<http://oncourology.abvpress.ru/oncurology>

[ess.ru/oncurology](http://oncurology.abvpress.ru/oncurology)

Journal "Tumors of the female reproductive system" <http://ojrs.abvpress.ru/ojrs>

Journal "Tumors of the head and neck"

<http://ogsh.abvpress.ru/journal>

[o ur](http://ogsh.abvpress.ru/journal)

### 10. Guidelines for students on mastering disciplines

Training consists of contact work (50 hours), including a lecture course (10 hours) and practical classes (40 hours), and independent work (22 hours). Main study time is allocated for practical work on the study of the anatomy of organs, methods of radiation diagnostics of 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 conducted in the form of answers to tests, oral questioning, analysis and descriptions of clinical cases, presence during the examination and treatment of patients, solving situational problems. In accordance with the requirements of the Federal State Educational Standard of Higher Education, active and interactive forms of conducting classes are widely used in the educational process. (videos,

situational tasks, independent extracurricular work). 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 records, writing X-ray protocols Work with educational literature is considered as a type of educational work in the discipline radiation diagnostics and is performed within the hours allocated for its study (in the SRS 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 description protocols images of various organs and are present during radiation examination in the 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	70	good
10.	vidio movies	4	good
11.	situational tasks	34	good
12.	tests		good
13.	Diagnostic devices ROD	4	good
14.	Devices for radiotherapy ROD	3	good
<b>phantoms</b>			
15.	-		
<b>dummies</b>			
16.	-		

### 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 can be used,

recommended for use in the academy, such as Moodle, Zoom, Webinar, etc. 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.