



**APPROVED
EMD decision**

" 12 " 10 2021

Protocol No. 5

**Chairman of the EMC, Vice-Rector,
candidate of pedagogical sciences,
associate professor Apezova D.V.**

SYLLABUS by discipline

CC.3.8.11. RADIATION DIAGNOSTICS AND THERAPY

For students of the educational program higher professional education in the specialty 560001 "Medical business" (5-year education) specialty "Doctor"

Type of study work	Total hours
Course	2
Term	4
Number of weeks	18
Credits	2
<i>Total labor intensity of the discipline</i>	60
Classroom/practical studies (PS)	36/24
Student Independent Work (SIW)	24
Forms of control	
current control	
Frontier control	Testing, oral questioning, written test
Midterm	Testing
Final control	Testing
Semester rating by discipline:	exam
Classroom/practical studies (PS)	Point-rating system

Information about the teacher of the discipline

Full Name	Pavlova Galina Grigoryevna
Post	teacher
Academic degree	-
Academic title	-
Email address	
Location of the department (address)	KR, Bishkek, 128 Shabdan Baatyr str., floor 2, office 6
Telephone	-
Consultation hours	11.00-13.30

Characteristics of the academic discipline

The purpose of studying the discipline "Radiation diagnostics" is to master the skills of students in using a combination of radiological technologies in the diagnostic process. The best use of the arsenal of methods of radiation diagnostics in the differential diagnosis of diseases and the formulation of a more accurate clinical diagnosis, formed within the framework of the student's professional competencies aimed at preserving and improving public health. The study of the course of radiation diagnostics determines its place in modern clinical diagnostics, the peculiarities of the organization of the radiation diagnostics service in the healthcare

system. Also examines the issues of psychophysiology of perception of the ray image. Conditions and methodological techniques for viewing ray images. Psychological factors in the construction of the conclusion of the radiation study. Questions of ethics and deontology in the professional activity of a radiologist. Clinical picture, methods of diagnosis of diseases in adults and children, International Statistical Classification of Diseases and health-related problems. Students learn to use patient examination data to establish a patient's diagnosis, improve knowledge, skills and abilities in the field of radiation diagnostics and therapy of various organs and systems. Students should know about improving their knowledge of organizational issues of the radiological service, the physical and technical foundations of radiation diagnostics methods, the skills of using various methods of radiation diagnostics in examining patients, interpreting the results of radiation studies, modern trends and methods of radiation therapy. At the end of the course, students can interpret the results of collecting information from patients (their relatives / legal representatives), data from laboratory and instrumental studies; data from additional examinations of patients (including radiographs, telereöntgenograms, radiovisiograms, orthopantomograms, tomograms (on film and digital media). Students should demonstrate the skills of diagnosis to patients based on the interpretation of the data obtained during the examination.

Learning outcomes of the discipline according to the RO GPP

RO 6 - Evaluate and analyze achievements and discoveries in biomedical science and apply new knowledge in practice.

Within the framework of this discipline, it is expected to achieve the following results of teaching the discipline, which are implemented within the framework of achieving PC-7.

Competencies:

PC-7 is capable and ready to work with medical and technical equipment used in working with patients, to use the capabilities of modern information technologies to solve professional tasks.

Content of the discipline

№№	Name of topics
1.	Section 1. Modern methods of radiation diagnostics. The history of the discovery of X-rays. General issues of radiation diagnostics. Methods of radiation diagnostics used in pediatrics. Fundamentals of radiation safety during radiation studies. (Lek)
2.	Ionizing methods of radiation diagnostics. Radiography, fluoroscopy, fluorography, mammography, CT, radionuclide diagnostics. Non-ionizing methods of radiation diagnostics. Ultrasound, MRI, thermography. (Lek)
3.	Introduction to the discipline. The history of the discovery of X-rays. General issues of radiation diagnostics. The use of radiation diagnostics methods in pediatrics. Fundamentals of radiation safety during radiation studies. Ionizing methods of radiation diagnostics. Non-ionizing methods of radiation diagnostics. (Pr)
4.	Ionizing methods of radiation diagnostics. Radiography, fluoroscopy, fluorography, mammography, CT, radionuclide diagnostics. (Pr)
5.	Non-ionizing methods of radiation diagnostics. Ultrasound, MRI, thermography. (Pr)
6.	Modern methods of radiation diagnostics: ultrasound, CT, MRI, RND, interventional radiology: 1. Modern methods of radiation diagnostics. 2. Ultrasound, CT, MRI, RND and PET. 3. Fundamentals of radiation safety during research. 4. Opportunities, advantages, disadvantages. 5. Principles of describing the results of radiation examination and terminology. 6. Radiation safety. (Wed)
7.	Section 2. Radiation diagnostics of various organs and systems.
8.	Radiation anatomy of the osteoarticular system. Radiosemiotics of diseases of the osteoarticular system. Changes in bone structure, periostitis. injuries. (Lek)
9.	Radiation anatomy of the osteoarticular system. Radiosemiotics of diseases of the osteoarticular system. Changes in bone structure, periostitis. injuries Radiation diagnosis of tuberculosis of bones and joints. osteomyelitis. Benign and malignant bone tumors. (Pr)

10.	Degenerative-dystrophic changes. Rheumatoid arthritis. Gout. Osteomyelitis. Bone tumors. The scheme of the description of the radiation image of the bone and joint system. Description of radiographs. (Cp)
11.	Chest X-ray anatomy. Methods of radiation diagnostics of the chest organs. The concept of the main sciological symptoms. Radiation diagnostics of nonspecific inflammatory lung diseases (pneumonia, abscesses, pleurisy, pneumothorax, foreign bodies, etc.). Tuberculosis of the lungs. Tumors of the lungs and mediastinum. (Pr)
12.	The lobular and segmental structure of the lungs. Bronchial tree. The concept of the main sciological symptoms. Urgent conditions. Differential diagnosis of lung diseases. Study and description of radiographs, CT series. The possibilities of ultrasound and MRI in the diagnosis of lung diseases. (Cp)
13.	Methods of radiation diagnostics of the chest organs. X-ray semiotics of lung diseases. Methods of radiation diagnostics of the cardiovascular system. Configurations of the heart. (Lek)
14.	Methods of radiation diagnostics of the cardiovascular system. Radiation diagnostics of the cardiovascular system. Methods of radiation diagnostics of the cardiovascular system. Configurations of the heart. Radiation diagnostics of congenital and acquired heart defects. Pericarditis. (Pr)
15.	The main configurations of the heart. Calculation of KTI. CT angiography, coronary angiography, MRI angiography, scintigraphy in the diagnosis of myocardial infarction. (Cp)
16.	Methods of radiation diagnostics of the gastrointestinal tract. Radiation diagnostics of diseases of the gastrointestinal tract. (Lek)
17.	Radiation examination of the gastrointestinal tract. Methods, Radiosemiotics of pathology of the gastrointestinal tract. Radiation diagnostics of diseases of the esophagus, stomach, and intestines (Pr)
18.	The main radiological syndromes of diseases of the digestive tract. X-ray diagnostics of diseases of the esophagus, stomach and intestines. Description of radiographs. (Wed)
19.	Methods of radiation diagnostics of diseases of the hepatobiliary system. Methods of radiation diagnostics of diseases of the urinary system. (Lek)
20.	Radiation diagnostics of diseases of the hepatobiliary system. Radiation diagnostics of diseases of the urinary system. Radiation diagnostics of diseases of the endocrine system. (Pr)
21.	Methods of radiation diagnostics of the endocrine system. Emergency radiation diagnosis of acute diseases of the chest and abdominal cavity. (Lek)
22.	Radiation diagnostics of diseases of the urinary system. (Pr)
23.	Emergency radiation diagnosis of acute diseases of the chest and abdominal cavity. (Pr)
24.	Radiation diagnostics of diseases of the Endocrine system. (Pr)
25.	The possibilities of ultrasound, CT, MRI, PET in the diagnosis of diseases of the hepatobiliary system, urinary system, diseases of the endocrine system. (Cp)
26.	Analysis of radiographs, tomograms. Analysis of the problem of clinical cases. Test. (Pr)

List of main and additional literature:

Main literature:

1. Korolyuk I.P. "Radiation diagnostics. 3rd ed. M. 2020

Additional literature:

1. Lezhnev D.A., Ivanova I.V. "Fundamentals of radiation diagnostics. Study guide". M. 2019.
2. Truten V. P. X-ray anatomy and X-ray diagnostics. M. 2017.
3. Raiser M., Baur-Melnik A. Radiation diagnostics. Musculoskeletal system. M. 2020

Internet resources:

<https://radiag.bmoc-spb.ru/jour>

Monitoring and evaluation of learning outcomes

The content of the rating system for assessing student performance

The rating assessment of students' knowledge in each academic discipline, regardless of its total labor intensity, is determined on a 100 (one hundred) - point scale and includes current, boundary, intermediate and final control.

The distribution of rating scores between types of control is established in the following ratio (according to the table of the score-rating system of assessments):

Form of control

current (CC)*	boundary control (BC)**	mid-term exams (MC)***	Final /exam (FE)	Discipline Rating (RD)
0-100 points	0-100 points	0-100 points	0-100 points	0-100 points, with the translation of points into a letter designation

Note:

* $TK(middle) = \frac{\sum_1^n \times point}{\sum_1^n}$, where n is the number of types of classroom and extracurricular work of students in the discipline;

** $PK(middle) = \frac{\sum_1^n credit \times point}{\sum_1^n credits}$, where n is the number of modules (credits) in the discipline;

*** $ПК(middle) = \frac{\sum_1^n \times point}{\sum_1^n}$, where n is the number of intermediate controls (2 controls per semester: in the middle and at the end of the semester) by discipline;

****ИК – examination conducted at the end of the study of the discipline

;

***** $РД = \frac{TK_{ср} + PK_{ср} + ПК_{ср} + ИК}{4}$, the final rating of the results of all types of control at the end of the discipline;

GPA = $\frac{\sum_1^n \times балл}{\sum_1^n}$ where, n is the number of disciplines in the semester (for the past period of study).

A student who has not passed the current, boundary and intermediate controls to the final control (exam) is not allowed.

The current control is carried out during the period of classroom and independent work of the student on time according to the schedule, at the end of the study of the discipline, the average score of the current control (CC) is calculated. *Forms of current control can be:*

- testing (written or computerized);
- performance of individual homework assignments, abstracts and essays;
- student's work in practical (seminar) classes;
- various types of colloquia (oral, written, combined, express, etc.);
- control of performance and verification of reporting on laboratory work;
- visiting lectures and practical (seminar, laboratory) classes;
- Incentive rating (up to 10 points).

Other forms of current monitoring of results are also possible, which are determined by the teachers of the department and recorded in the work program of the discipline.

The frontier control is carried out in order to determine the results of the student's development of one credit (module) as a whole. *Frontier control* should be carried out only in writing, at the end of the study of the discipline, the average score of boundary control (BC) is calculated. As forms of *frontier control* of the training module, you can use:

- testing (including computer testing);
- interview with written fixation of students' answers;
- test.

Other forms of intermediate control of results are also possible.

Intermediate control (mid-term exams) is carried out in order to check the completeness of knowledge and skills in the material in the middle and end of the semester (2 times per semester) of studying the discipline, by the end of the study of the discipline, the average score of intermediate control (PCsr) is calculated, *forms of intermediate control (mid-term exams) can be:*

- testing (including computer testing);
- interview with written fixation of students' answers;
- test.

Other forms of intermediate control of results are also possible.

The final control is carried out during the session, by conducting an exam, it can be carried out in the following forms:

- testing (including computer testing);
- written exam (ticketing system).

Correspondence of the point-rating system of assessments used by the institute and the assessments of the European system for the transfer of credit units, labor intensity (ECTS)

Grade						Criterion
System of letters	digital system	Traditional system	Points (%)	Scored points (max - 100)	Evaluation by discipline without an exam	
A	4	5	95-100	95-100	Credited/ passed	"Excellent" - deserves a student who has shown a deep, systematic and comprehensive knowledge of the educational material, who freely performs practical tasks, who has mastered the recommended basic and additional literature on the discipline
A-	3,67		90-94	90-94		"Excellent" - deserves a student who has shown a deep, systematic and comprehensive knowledge of the educational material, who freely performs practical tasks, who has mastered the recommended basic literature on the discipline, but is not familiar with additional literature
B+	3,33	4	85-89	70-89		"Good" - exhibited to a student who has shown a systematic and comprehensive knowledge of the educational material, able to independently replenish and update this knowledge in the course of training, performing practical tasks, familiar with the main literature on the discipline
B	3,0		80-84			"Good" is given to a student who has shown a systematic and comprehensive knowledge of the educational material, who is able to independently replenish this knowledge in the course of training, performing practical tasks, but not fully familiar with the main literature on the discipline
B-	2,67		75-79			"Good" - is given to a student who has shown the systematic nature of knowledge in the discipline, who is able to independently replenish this knowledge in the course of training, performing practical tasks, but not fully familiar with the main literature on the discipline
C+	2,33		70-74			"Satisfactory" - is given to a student who does not have a systematic nature of knowledge in the discipline, who is not capable of independently replenishing and updating knowledge in the course of further education, performing practical tasks with errors
C	2,0	3	65-69	50-69		"Satisfactory" - is given to a student who made mistakes in completing assignments, but who has the necessary knowledge to eliminate them under the guidance of a teacher
C-	1,67		60-64			"Satisfactory" - is set to a student who made errors in the performance of tasks, but who has the possible knowledge to eliminate them under the guidance of a teacher
D+	1,33		55-59			"Satisfactory" - is set to a student who made errors in the performance of tasks, who does not have the necessary knowledge to eliminate them
D-	1,0		50-54			Satisfactory" - is given to a student who has made significant errors in the performance of tasks, who does not have the necessary knowledge to eliminate them
FX	0,5	2	25-49	Less of 50	not credited/not passed	"Unsatisfactory" - is set to a student who has not completed the task, does not have the necessary knowledge to eliminate them
F	0		0-24			"Unsatisfactory" - is set to a student who has not completed the task, does not have the necessary knowledge to eliminate them, even under the guidance of a teacher

Academic achievement requirements:

Attendance by students of all classroom classes without delay is mandatory.

In case of absence, classes are worked out in the order established by the dean's office.

If there are three passes, the teacher has the right not to allow the student to attend classes until the issue is administratively resolved.

If the absence of classes is more than 20.0% of the total number of classes, the student automatically enters the summer semester.

Note to the student:

- ✓ regularly review lecture material;
- ✓ Do not be late and do not miss classes;
- ✓ work off missed classes if you have permission from the dean's office;
- ✓ Actively participate in the classroom (individually and in groups;)
- ✓ timely and fully complete homework assignments;

- ✓ submit all assignments within the time specified by the teacher;
- ✓ independently study the material in the library and at home;
- ✓ timely and accurately fulfill the tasks of the teacher, individual tasks for the IWS to achieve learning outcomes;
- ✓ to master the basic and additional literature necessary for the study of the discipline;
- ✓ performing tasks, the student should not copy or reproduce the work of other students, scientists, practitioners, plagiarism;
- ✓ develop their intellectual and oratory skills;

In case of non-compliance with the requirements of the Memo, the student will be penalized in the form of deducting points (one point for each violated item).

If the requirements of the Memo are fully met, the student is encouraged in the form of an additional 10 points to the final control in the discipline.

Academic Integrity, Conduct and Ethics Policy:

- turn off your cell phone during class;
- Be polite;
- respect other people's opinions;
- formulate objections in the correct form;
- do not shout or raise your voice in the audience;
- independently complete all semester assignments;
- Eliminate plagiarism from your practice;

Methodical instructions.

It is recommended to organize the time required to study the discipline as follows:

When preparing for a practical lesson, you must first read the abstract with the teacher's explanations.

When performing exercises, you must first understand what you want to do in the exercise, then proceed to its implementation.

Literature work. The theoretical material of the course becomes more understandable when books are studied in addition to the abstract. After studying the main topic, it is recommended to perform several exercises.

Preparation for boundary and intermediate controls. In preparation for the boundary and intermediate control, it is necessary to study the theory: the definitions of all concepts before understanding the material and independently do several exercises.

Independent work of students is organized on all studied topics of each section. Independent work is carried out in the form of:

- work in Internet sites;
- work with basic and additional literature;
- fulfillment of written assignments;
- preparation of reports, abstracts, tables and posters on