

Odessa National Medical University
Faculty of Medicine №2
Department of Radiation Diagnostics, Therapy and Oncology
Syllabus course
Radiology

Amount	4 credits, 120 hours
Term, year of study	V- VI term III year of study
Days, time, place	On schedule
Teacher (s)	Sokolov Viktor Mykolayovych Head of the Department, Professor, Doctor of Medical Sciences Tsvigovsky Vyacheslav Mikhailovich Associate Professor, Candidate of Medical Sciences Rozhkovska Halyna Mykhailivna Associate Professor, Candidate of Medical Sciences Doikova Kateryna Mykhailivna as., n \ d Kauk Ahmad Samiyovych as., n \ d Krupnik Inna Oleksandrivna as., n \ d Kabachinska Olena Genndiivna as., n \ d Slyusarenko Olesya Dmytrivna as., n \ d Chorny Oleksandr Ivanovych as., n \ d Levytska Tamara Hryhorivna as., n \ d
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Workplace	Department of Radiology 6 building office 11
Consultations	<i>Ocular advice: Every Thursday</i> <i>Online Consulting: Every Saturday at Windows Teams</i> 1) Radiology testing 3rd year (practice) 2) Radiology testing 3rd year foreigners (practice) 3) Radiology testing 3rd year (lectures)

COMMUNICATION

Communication with the student during the distance learning form: in person in the classrooms and offices of the department, remotely on the platform Microsoft Teams, in some cases with prior notice - through ZOOM and in Viber-groups.

COURSE ANNOTATION

The subject of study of the discipline are modern radiation research methods and radiation symptoms of diseases of various organs and systems and the main methods of radiation therapy.

Prerequisites and postrequisites of the course: mastering the discipline "Radiology" is based on the study of medical biology, parasitology and genetics by students; medical and biological physics; biological chemistry; bioorganic chemistry; bioinorganic chemistry; human anatomy; normal physiology and integrates with these disciplines, based on knowledge of pathomorphology and pathological physiology, which students receive in parallel with the study of radiology. All this lays the foundations for students to study propaedeutics of internal medicine with patient care; general surgery with anesthesiology and patient care; propaedeutics of children's diseases with child care, which involves the integration of teaching with these disciplines and the formation of skills to apply knowledge of radiology in the process of further study and professional activities.

The purpose of the discipline is to train future doctors in the diagnostic capabilities of radiation methods with the definition of radiation semiotics of diseases; learning the basics of radiation therapy, taking into account the indications and contraindications.

Tasks of the discipline:

- teach students to choose from the existing radiological methods of examination the optimal method of radiological research to identify functional and morphological changes in the pathology of various organs and systems;
- learn to analyze the radiation semiotics of functional and morphological changes in the pathology of various organs and systems;
- learn to choose the optimal method of radiation therapy for the treatment of tumors and non-neoplastic diseases.

Expected results

As a result of studying the discipline, the student must evaluate information about the diagnosis in a health care institution, its unit, using knowledge about the person, his organs and systems, be able to identify and record the leading radiation symptom or syndrome based on radiation research, be able to establish the most probable or syndrome diagnosis by comparison with standards, using preliminary patient history and patient examination data, in accordance with relevant ethical and legal norms. Prescribe an effective method of radiation treatment, taking into account the results of radiation and laboratory tests.

According to the requirements of the standard, the discipline provides students with the acquisition **of competencies:**

integral:

- ability to solve typical and complex specialized problems and practical problems in the learning process, which involves research and / or innovation and is characterized by complexity and uncertainty of conditions and requirements;

- **general:**

- - ability to apply knowledge of "Radiology (radiation diagnostics and radiation therapy)" in practical situations;
- - knowledge and understanding of the subject area of diagnostic radiology and radiation diagnostics;
- - ability to choose a communication strategy;
- - ability to work in a team;
- - ability to skills of interpersonal interaction;
- - ability to communicate both in the native language and in the second language orally and in writing;
- - ability to abstract thinking, analysis and synthesis;
- - ability to constantly learn and be modernly trained;
- - ability to evaluate and ensure the quality of work performed;
- - have the skills to use information and communication technologies.

special (professional, subject):

- know the possibilities of different methods of radiological examination of different organs and systems;

- be able to choose the optimal method of radiological examination of various organs and systems: lungs, mediastinum, heart and blood vessels, gastrointestinal tract, hepatobiliary system, urinary system, genital system, bones and joints, central nervous system, thyroid gland;

- be able to evaluate radiation semiotics to detect functional and morphological changes in pathology of the lungs, cardiovascular system, gastrointestinal tract, hepatobiliary system, genitourinary system, musculoskeletal system, central nervous system, endocrine system;

- be able to choose the optimal method of radiation therapy for the treatment of patients with tumors on the example: tumors of the lungs, esophagus, stomach, colon, breast, uterus, central nervous system, thyroid gland;

- be able to choose the optimal method of radiation therapy for the treatment of patients with non-neoplastic lesions on the example: radiculitis, inflammatory diseases of the rectum, fingers and hands, skin and subcutaneous tissue, osteomyelitis;

- be able to choose the optimal method of radiological examination for the diagnosis of emergencies and diagnose emergencies using these methods.

COURSE DESCRIPTION

Forms and methods of teaching

The course will be presented in the form of lectures (20 hours) and practical classes (60 hours), organization of independent work of students (40 hours).

Lectures are presented in the form of a presentation. During the teaching of the discipline in practical classes the author's presentations are used, prepared by the teachers of the department taking into account the peculiarities of the students of each group. Individual assignments and radiographs for homework are provided for each student, which are discussed at the next practical lesson with the assessment of the answer given in the group, the assessment is published. The student has the opportunity to ask questions during the practical lesson and get an answer.

Teaching methods: surveying students, mastering practical skills.

The content of the discipline

Lecture topics

Topic 1. Types of radiology departments. Features of the device of radiological and radiological departments. OSPU. NRBU.

Topic 2. Physical and technical bases of X-ray and CT examination.

Topic 3. Physical and technical bases of radionuclide and MRI research.

Topic 4. Radiation research methods and radiation anatomy of the thoracic cavity.

Topic 5. Fundamentals of radiation semiotics of pathology of the thoracic cavity.

Topic 6. Radiation research methods and radiation anatomy of abdominal organs. Fundamentals of radiation semiotics of pathology of abdominal organs.

Topic 7. Radiation signs of kidney and urinary tract diseases.

Topic 8. Radiation signs of diseases of the musculoskeletal system.

Topic 9. X-ray diagnosis of emergencies.

Topic 10. Principles and methods of radiation therapy.

Topics of practical classes

Topic 1. The main properties of ionizing radiation. Biological effect of ionizing radiation on a healthy and pathologically altered cell.

Topic 2. Radioactivity and dose. Dosimetry of ionizing radiation: units and methods for determining radioactivity and radiation dose.

Topic 3. Physical and technical bases of X-ray diagnostics.

Topic 4. Physical and technical foundations of computed tomography.

Topic 5. Physical and technical bases of radionuclide research.

Topic 6. Physical and technical bases of magnetic resonance imaging.

Topic 7. Physical and technical bases of ultrasound diagnostics.

Topic 8. Radiation methods of research of respiratory organs.

Topic 9. Radiation signs of inflammatory diseases of the respiratory system.

Topic 10. Radiation signs of lung tumors.

Topic 11. Radiation methods for the study of the cardiovascular system.

Topic 12. Radiation signs of diseases of the cardiovascular system.

Topic 13. Radiation methods for the study of the gastrointestinal tract.

Topic 14. Radiation signs of diseases of the gastrointestinal tract.

Topic 15. Radiation research methods and radiation anatomy of the hepatobiliary system.

Topic 16. Radiation signs of diseases of the hepatobiliary system.

Topic 17. Radiation research methods and radiation anatomy of the urinary system.

Topic 18. Radiation signs of kidney and urinary tract diseases. Radiation signs of developmental abnormalities and tumors of the urinary system.

Topic 19. Radiation research methods and radiation anatomy of the musculoskeletal system. Injuries.

Topic 20. Radiation signs of inflammatory diseases of the musculoskeletal system.

Topic 21. Radiation signs of tumors of the musculoskeletal system.

Topic 22. Radiation research methods and radiation anatomy of the breast. Radiation signs of breast diseases.

Topic 23. Radiation research methods and radiation anatomy of the reproductive system. Radiation signs of diseases of the genital system.

Topic 24. Radiation research methods in endocrinology. Radiation signs of thyroid disease.

Topic 25. Radiation research methods and radiation anatomy of the CNS. Radiation signs of diseases and injuries of the CNS.

Topic 26. Radiation diagnostics in oncology.

Topic 27. Radiation signs of emergencies.

Topic 28. Basics of radiation therapy of tumor and non-tumor diseases.

Topic 29. Methods of radiation therapy: radiotherapy; contact methods; long-distance gamma therapy and radiation therapy with high energy sources.

Topic 30. Final control of mastering the discipline.

List of recommended reading

Basic:

1. Essential radiology for medical students, interns and residents // A. Ahuja. – OMF publishing. – 2017. – 518 p.

2. Kovalsky O. Radiology. Radiotherapy. Diagnostic Imaging: textbook for students of higher med. education establishments of IVth accreditation level / O. Kovalsky, D. Mechev, V. Danylevych. — 2nd ed. — Vinnytsia: Nova Knyha, 2017. — 504 p.

3. Diagnostic Radiology: textbook for medical students, residents, doctors, researches / M.I. Pilipenko, Y.E. Vikman, M.E. Slabodchikov [et al.]. - Kharkiv, 2018. - 260 p.

4. William Herring MD FACR\ Learning Radiology: Recognizing the Basics 3rd Edition\ May, 2019\451 p.

5. Jo-Anne O Shepard MD\Thoracic Imaging The Requisites (Requisites in Radiology) 3rd Edition\ March, 2018 \496 p

6. Mista R., Planner A., Uthappa M. \ A-Z of Chest Radiology \ Cambridge University, 2017\224 p.

Auxiliary:

7. Chen M. Basic Radiology / Michael Y. M. Chen, Thomas L. Pope, David J. Ott. — 2nd ed. — McGraw Hill Professional, 2017. — 408 p. Radiation medicina = Radiation medicine Textbook for medical universities 3-4 years, approved by the Ministry of Education and Science \ ed. MI Pilipenko. K., 2013. 232p.

8. Haller J. O., Slovis T. L., Joshi A. Pediatric Radiology 3rd Ed. \ Springer-Verlag Berlin Heidelberg 1995, 2015. Printed in Germany, 298 p. Radiology.

Electronic information resources <https://radiopaedia.org>

1. <http://radiologyassistant.nl>
2. <https://radiographia.info/>
3. <http://nld.by/help.htm>
4. <http://learningradiology.com>
5. <http://www.radiologyeducation.com/>
6. <http://www.radiologyeducation.com/>
7. <https://www.sonosite.com>
8. <https://www.ncbi.nlm.nih.gov/pmc>
9. <http://accessmedicine.mhmedical.com>
10. <https://ips.ligazakon.net/document/view/RE10832?an=22>

EVALUATION

Methods of current control: test control, oral examination, written answer to the teacher's question, description of diagnostic radiation images according to the schemes, solving clinical problems.

Students must complete the notes for each practical session. A student who has a degree in any of the courses in the course "Radiology" during the year or has an average score lower than "3" is not allowed to differentiate.

A student who has not completed 2 independent works (1 abstract and 1 presentation) and who at the time of diff. the test was checked and evaluated by the teacher with a grade not lower than "3". The work must be completed and submitted at least 2 days before the diff. credit so that the teacher has the opportunity to check the work in a timely manner.

Forms and methods of final control: control of practical skills acquisition (work with diagnostic radiation images, determination of radiation symptoms of diseases, appointment of radiation therapy method for appropriate diagnoses with calculation of total and focal doses), test control, written answer to ticket questions.

How will the assessment of knowledge (distribution of points) of higher education students be carried out?

The maximum number of points assigned to students when mastering each module (ECTS credit) is 200.

Content module number, number of study hours / number of credits	Number of topics their numbers	Number of practical lessons	Points awarded to students.				When performing an individual task	Min. number points
			For grades in class.					
			„5”	„4”	„3”	„2”		
Content modules 1-9. 120/4	39 (№№ 1-39)	29	4	3	2	0	4	58

Average score for discipline	The ratio of the resulting student the average score for discipline to the maximum possible value of this indicator	Score from discipline on a 4-point scale (traditional assessment)
4,45 – 5,0	90-100%	5
3,75 – 4,44	75-89%	4

3,0 – 3,74	60-74%	3
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Additionally, the department holds a competition of abstracts and presentations. Students who have prepared the best works receive a diff. credit automatically if the student's average score in the discipline "Radiology" is 4.5 and above.

Independent work of students

Each student during the two semesters of the course "Radiology" must perform and report in a group 1 essay and 1 presentation, which are evaluated and taken into account when receiving the average score for the period of study. The student can get advice from his teacher on the topics of essays and presentations in extracurricular activities.

The student chooses the topics of the work freely according to the topics, the list of which was published at the first lesson. Topics should not be repeated in the group.

COURSE POLICY

Policy on deadlines and rearrangement: For students who want to improve their performance in mastering the content modules, it is possible to conduct a re-final control of the discipline (content module) during the exam in the commission.

Academic Integrity Policy:

Violation of academic integrity is not allowed when working on writing essays, presentations, preparing reports, etc. When using Internet resources and other sources of information, the student must indicate the source used during the task.

If plagiarism is detected, the student receives an unsatisfactory grade for the task and must re-complete the task.

Write-offs during testing and differential test are prohibited (including with the use of mobile devices).

Attendance and lateness policy:

Delay of a student more than 15 minutes before a lecture or a practical lesson is counted as absence from the practical lesson.

Mobile devices:

Mobile devices in practice can be used exclusively for educational purposes. Namely: consideration of the presentation, which is worked on in class, solving the problems of the teacher. The use of mobile devices for other purposes during a lecture or practical lesson is prohibited, a student who ignores these requirements will be suspended from the lecture or practical lesson.

Audience behavior:

During a lecture or practical lesson, the student should not interfere with the learning of other students and distract the teacher. A student is not allowed to eat or drink alcohol during a lecture or practical session. The student can leave the classroom, where there is a lecture or practical lesson of their choice only for health reasons.