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ФИО: Ястребов Олег Александрович
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**Federal State Autonomous Educational Institution of Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA named after Patrice Lumumba**

Medical Institute

educational division (faculty/institute/academy) as higher education programme developer

COURSE SYLLABUS

DIAGNOSTIC RADIOLOGY

course title

Recommended by the Didactic Council for the Education Field of:

31.05.03 Dentistry

field of studies / speciality code and title

**Mastering of the discipline is carried out within the framework of the
implementation of the main professional educational program of higher education
(EP HE):**

Dentistry

Moscow

2024

1. THE GOALS OF MASTERING THE DISCIPLINE

The purpose of the course RADIOLOGY is to provide training of dentists in the basics of radiological diagnostics of both benign and malignant conditions.

2. REQUIREMENTS to LEARNING OUTCOMES

The mastering of the discipline «Radiology» is aimed at the formation of the following competencies of students (parts of competences):

Table 2.1. The list of competencies formed by students during the development of the discipline (results of the mastering of the discipline)

Competence code	Competence	Indicators of Competence Formation (within the framework of this discipline)
GPC-9	Able to assess morphofunctional, physiological states and pathological processes in the human body to solve professional problems	GPC -9.2. Evaluates the results of clinical, laboratory and functional diagnostics in solving professional tasks
PC-1	Capable of conducting a patient examination in order to establish a diagnosis	PC-1.5. Establishes a preliminary/ final diagnosis based on the examination of the patient, laboratory and instrumental studies

3. THE COURSE IN THE HIGHER EDUCATION PROGRAMME STRUCTURE

The course «Radiology» refers to the Compulsory Disciplines of the EP HE.

Within the framework of the Educational Program, students also master other disciplines and/or practices that contribute to expected learning outcomes of the course «Radiology».

Table 3.1. List of Higher Education Program disciplines that contribute to expected learning outcomes

Competence Code	The competence	Previous Disciplines	Subsequent disciplines
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<p>GPC-9</p>	<p>Able to assess morphofunctional, physiological states and pathological processes in the human body to solve professional problems</p>	<p>Biological chemistry - Biochemistry of the oral cavity;</p> <p>Histology, embryology, cytology - Oral Histology;</p> <p>Normal physiology, physiology of the maxillofacial region;</p> <p>Microbiology, virology - Microbiology of the oral cavity</p>	<p>Pathophysiology - Pathophysiology of the head and neck;</p> <p>Forensic medicine;</p> <p>Obstetrics;</p> <p>Local anesthesia and anesthesiology in dentistry;</p> <p>Oral surgery;</p> <p>Maxillofacial and gnathic surgery;</p> <p>Diseases of the head and neck;</p> <p>Pediatric dentistry;</p> <p>Orthodontics and children's prosthetics;</p> <p>Medical rehabilitation;</p> <p>Implantology and reconstructive surgery of the oral cavity;</p> <p>Practice:</p> <p>Assistant dentist (children's);</p> <p>Assistant to a dentist (general practitioner), including research work</p>
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<p>PC-1</p>	<p>Capable of conducting a patient examination in order to establish a diagnosis</p>	<p>Immunology, clinical immunology;</p> <p>Dental prosthetics (simple prosthetics)</p>	<p>Pathological anatomy - Pathanatomy of the head and neck;</p> <p>Gnatology and functional diagnostics of the temporal mandibular joint;</p> <p>Prosthetics in the complete absence of teeth;</p> <p>Prosthetics of dentition (complex prosthetics);</p> <p>Pediatric maxillofacial surgery;</p> <p>Maxillofacial prosthetics;</p> <p>Pediatric dentistry;</p> <p>Orthodontics and children's prosthetics;</p> <p>Medical genetics in dentistry;</p> <p>Medical rehabilitation;</p> <p>Oncostomatology and radiation therapy;</p> <p>Practice:</p> <p>Assistant dentist (therapist);</p> <p>Assistant dentist (orthopedist);</p> <p>Assistant dentist (children's);</p> <p>Assistant to a dentist (general practitioner), including research work</p>
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4. THE DISCIPLINE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the discipline "**RADIOLOGY**" is equal to **3** credits.

Table 4.1. Types of academic activities during the period of mastering the RADIOLOGY program for FULL-time education

Types of academic activities	Total, ac h.	Semester(-s)			
		5	6	7	8
<i>Contact work, ac. h</i>	51	51			
including:					
Lectures (Lec)					
Laboratory work (Lab)	51	51			
Practical work/seminar work (SW)					
<i>Independent work of students, ac.h.</i>	39	39			
<i>Control (exam /credit with assessment), ac.h.</i>	18	18			
Total workload of the discipline	ac.h	108	108		
	credits	3	3		

5. THE COURSE MODULES AND CONTENTS

Table 5.1. The content of the discipline (module) according to the types of academic activities

Modules and Topics	Content of the topics	Type of academic activities
Module 1 The main methods of Diagnostic Radiology (general concepts)	X-ray examination method 3 hours	Lab
	Diagnostic ultrasonography 3 hours	Lab
	CT and MRI 3 hours	Lab
	The main radionuclide tests 3 hours	Lab
Module 2 Diagnostic Radiology in Dentistry	Radiographic methods for the jaw-facial region 3 hours	Lab
	Development and anatomy of teeth and jaws in X-ray imaging 3 hours	Lab
	Diagnosis of congenital and acquired deformities of the maxillofacial region 3 hours	Lab
	X-ray diagnostics of caries, pulpitis, periodontitis, paradontal diseases 3 hours	Lab
	Radiation diagnostics of traumatic injuries of the jaws and teeth. Radiation diagnostics of TMJ diseases 3 hours	Lab

Modules and Topics	Content of the topics	Type of academic activities
	Radiation diagnostics of benign tumors and cysts of the jaws. 3 hours	Lab
	Fundamentals of the diagnosis of malignant tumors of the jaws 3 hours	Lab
	Radiation diagnostics of diseases of the salivary glands. Contrast method of X-ray examination - 3 hours	Lab
	Radiation oncology - 3 hours	Lab

Name of the discipline's part	Content of the topics	Type of academic activities
1.X-ray diagnostics	1.1 Physical fundamentals of image acquisition in X-ray studies, methods of X-ray diagnostics	Lab
2. Diagnostic ultrasound	2.1 Physical characteristics of ultrasonic waves, sources and receivers of ultrasonic waves	Lab
3. Radionuclide methods	3.1 Principles of the radionuclide research method. 3.2 A typical radionuclide diagnostic scheme with classification of all radionuclide diagnostic studies	Lab
4. CT and MRI	4.1 Characteristics of X-ray computed tomography. 4.2 Methods of obtaining computed tomograms. distinguishing features of computed tomography from X-ray tomography	Lab
5. X-ray diagnostics of the facial-jaw region	5.1 Analysis of all methods of intraoral and extraoral radiography. 5.2 Classification, survey radiographs, extra-oral radiographs in oblique contact and tangential projections,	Lab
6. Development and anatomy of the facial-jaw region on X-ray images	6.1 radiological characteristics of the three periods of growth and formation of teeth, corresponding age frames. 6.2 Radiological characteristics of each period (degree of mineralization, stages of root formation).	Lab

Name of the discipline's part	Content of the topics	Type of academic activities
7. Diagnosis of congenital and acquired deformities of the maxillofacial region	7.1 Radiological signs of variants of anomalies in the development and position of teeth, including changes in the number, size, shape and structure of teeth.	Lab
8. X-ray diagnostics of caries, pulpitis, periodontitis, periodontal diseases	8.1 X-ray features to determine the depth of the process depending on the size and localization of carious lesions of the teeth. 8.2 X-ray picture of pulpitis. 8.3 Methods of X-ray diagnostics, classification of periodontitis	Lab
9. Radiation diagnostics of traumatic injuries of jaws and teeth	9.1 Classification of the main and indirect radiological signs characteristic of fractures of the upper and lower jaw, zygomatic bone.	Lab
10. Radiation diagnosis of malignant tumors of the jaw	10.1 Radiation diagnostics of the main groups of malignant tumors of the jaws, depending on their histological structure (cancer, sarcoma) and localization, all methods of radiation diagnostics used to detect tumors of the maxillofacial region.	Lab
11. Radiation diagnostics of benign tumors and cysts of the jaws.	11.1 Characteristics of the main groups of odontogenic and non-odontogenic cysts, their radiological signs allowing for differential diagnosis between different types of odontogenic and non-odontogenic cysts.	Lab
12. Radiation diagnostics of diseases of the salivary glands. Contrast methods.	12.1 Analysis of anatomical features of the structure of the parotid, submandibular, sublingual salivary glands. 12.2 Classification of radiological signs of salivary gland diseases	Lab
13. Basic methods of radiotherapy	13.1 Installations for radiotherapy. Tonometry. Methods of radiation therapy. Single- and multi-field irradiation. 13.2 External, interstitial irradiation.	Lab
14. Radiotherapy basics in facial-jaw region	14.1 Radiotherapy options, indications for their use in the treatment of malignant tumors of the maxillofacial region, 14.2 Indications for combined radiotherapy with other types of special treatment.	Lab

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENT

Table 6.1. Logistical and material provision of the discipline.

Classrooms for Academic Activity Type	Classroom Equipment	Specialized educational/demonstration equipment, software and materials for the mastering of the discipline
Laboratory (225)	An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	Microsoft products (OS, office package) (Subscription Enrollment for Education Solutions (EES) No. 56278518 dated 23/04/2019) Guarantor (Agreement No. 13A/46/2018 dated 02/04/2018) Consultant Plus (Information Support Agreement dated 01/09/2013) Regt number of the central office-03-207-7474 from September.2013
Seminar room (225)	An auditorium for conducting seminar-type classes, group and individual consultations, ongoing monitoring and interim certification, equipped with a set of specialized furniture and multimedia presentation equipment.	Microsoft products (OS, office package) (Subscription Enrollment for Education Solutions (EES) No. 56278518 dated 23/04/2019) Guarantor (Agreement No. 13A/46/2018 dated 02/04/2018) Consultant Plus (Information Support Agreement dated 01/09/2013) Regt number of the central office-03-207-7474 from September.2013
IT room (212)	A computer classroom for conducting classes, group and individual consultations, ongoing monitoring and interim certification, equipped with personal computers (in the amount of 3 pcs.), a blackboard (screen) and multimedia presentation equipment.	Microsoft products (OS, office package) (Subscription Enrollment for Education Solutions (EES) No. 56278518 dated 23/04/2019) Guarantor (Agreement No. 13A/46/2018 dated 02/04/2018) Consultant Plus (Information Support Agreement dated 01/09/2013) Regt number of the central office-03-207-7474 from September.2013

Classrooms for Academic Activity Type	Classroom Equipment	Specialized educational/demonstration equipment, software and materials for the mastering of the discipline
Laboratory (225) Dental Diagnostics Office	An auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to EIOS.	Microsoft products (OS, office package) (Subscription Enrollment for Education Solutions (EES) No. 56278518 dated 23/04/2019) Guarantor (Agreement No. 13A/46/2018 dated 02/04/2018) Consultant Plus (Information Support Agreement dated 01/09/2013) Regt number of the central office-03-207-7474 from September.2013

7. RECOMMENDED SOURCES FOR COURSE STUDIES:

Main reading

1. Whaites E. and Drage N. Dental Radiology and Radiography Elsevier/2013, 465 p.
2. Karjodkar Freny R. Essentials of Oral and Maxillofacial Radiology, JaypeeDogital 2019, <https://www.jaypeedigital.com/book/9789352705696>
3. Rajat Jain, Virendra Jain. Review of Radiology. JaypeeDogital 2017, <https://www.jaypeedigital.com/eReader/chapter/9789385999000/ch1>
4. Herring William. Learning Radiology : recognizing the basics / W. Herring. - 4th edition - Philadelphia : Elsevier, 2020. - 382 p. : ill. - ISBN 978-0-323-56729-9 : 4730.00.
5. Pramod John R. Textbook of Dental Radiology. 2nd Edition. — Jaypee Brothers, 2011. — 289.

Additional reading

1. Trofimova T.N. Grapach I.A., Belchikova N.S Radiation Diagnosis in Dentistry / 2010 - 6- 186.
2. Ilasova E.B., Chekhonatskaya M.P., Priyozheva V.N. Radiation Diagnosis, 2009-, GOELAR-Medicine,-275 S.
3. Sinitsyn E.V., Ustyuzhanin D.V. Magnetic Resonance Imaging/ 2008-, 208 S.
4. Bazhanov N.N., Bieberman J.M., Efanov O.I., etc. Inflammatory diseases of the maxillofacial area and neck / Under ed. A.G. Shargorodsky. - M.: Medicine, 1985. 351s.
5. Vorobyov Y.I., A.G. X-rays of the upper jaw on orthopantograms / Dentistry. – 1989. N 6. 40-43.
6. Rabukhina N.A., Arzhantsev AP / X-ray diagnostics in dentistry. 1999.

Internet-based sources

- 1. Electronic libraries with access for RUDN students:
 - Electronic library network of RUDN – ELN RUDN <http://lib.rudn.ru/MegaPro/Web>
 - ELN «University Library online» <http://www.biblioclub.ru>
 - ELN Urait <http://www.biblio-online.ru>
 - ELN «Student Advisor» www.studentlibrary.ru
 - ELN «Lan» <http://e.lanbook.com/>

- 2. Databases and search engines:
 - electronic fund of legal and regulatory and technical documentation <http://docs.cntd.ru/>
 - search system Yandex <https://www.yandex.ru/>
 - search system Google <https://www.google.ru/>

- abstract database SCOPUS <http://www.elsevierscience.ru/products/scopus/>

DEVELOPERS:

Department of Oncology and Diagnostic Radiology

Associate Professor _____ G.M.Zapirov _____
Position, department name, initials, surname)

Associate Professor _____ M.A. Kunda _____
Position, department name, initials, surname)

Head of the Department: _____ Academician, Professor A.D.
Kaprin , MD

HEAD of the Higher Education Program:

Deputy Director of MI _____ C.N Razumova _____
