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Federal State Autonomous Educational Institution of Higher Education

PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA

NAMED AFTER PATRICE LUMUMBA

RUDN University

Institute of Medicine

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

COURSE SYLLABUS

Radiodiagnosis

course title

Recommended by the Didactic Council for the Education Field of:

31.05.03 Dentistry

field of studies / speciality code and title

The course instruction is implemented within the professional education programme of higher education:

Dentistry

higher education programme profile/specialisation title

2024-2025

1. COURSE GOAL(s)

The goal of the course “Radiodiagnosis” is to provide training of dentists in the basics of radiological diagnostics of both benign and malignant conditions.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) «**Radiodiagnosis**» is aimed at the development of the following competences /competences in part: GPC-9,PC-1

Table 2.1. List of competences that students acquire through the course study

Competence code	Competence descriptor	Competence formation indicators (within this course)
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. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the core/variable/elective* component of (B1) block of the higher educational programme curriculum.

* - Underline whatever applicable.

Within the higher education programme students also master other (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
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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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* To be filled in according to the competence matrix of the higher education programme.

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "**Radiodiagnosis**" is **3** credits (108 academic hours).

*Table 4.1. Types of academic activities during the periods of higher education programme mastering (**full-time training**)**

Type of academic activities	Total academic hours	Semesters/training modules			
		5	6	7	8
<i>Contact work, ac. h</i>	51	51			

Type of academic activities		Total academic hours	Semesters/training modules			
			5	6	7	8
including:						
Lectures (LC)						
Lab work (LW)		51	51			
Seminars (workshops/tutorials) (S)						
<i>Self-studies</i>		39	39			
<i>Evaluation and assessment (exam/passing/failing grade)</i>		18	18			
Course workload	academic hours_	108	108			
	credits	3	3			

* To be filled in regarding the higher education programme correspondence training mode.

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Module 1 The main methods of Diagnostic Radiology (general concepts)	X-ray examination method 3 hours	LW
	Diagnostic ultrasonography 3 hours	LW
	CT and MRI 3 hours	LW
	The main radionuclide tests 3 hours	LW
Module 2 Diagnostic Radiology in Dentistry	Radiographic methods for the jaw-facial region 3 hours	LW
	Development and anatomy of teeth and jaws in X-ray imaging 3 hours	LW
	Diagnosis of congenital and acquired deformities of the maxillofacial region 3 hours	LW
	X-ray diagnostics of caries, pulpitis, periodontitis, paradontal diseases 3 hours	LW

Course module title	Course module contents (topics)	Academic activities types
	Radiation diagnostics of traumatic injuries of the jaws and teeth. Radiation diagnostics of TMJ diseases 3 hours	LW
	Radiation diagnostics of benign tumors and cysts of the jaws. 3 hours	LW
	Fundamentals of the diagnosis of malignant tumors of the jaws 3 hours	LW
	Radiation diagnostics of diseases of the salivary glands. Contrast method of X-ray examination - 3 hours	LW
	Radiation oncology - 3 hours	LW
1.X-ray diagnostics	1.1 Physical fundamentals of image acquisition in X-ray studies, methods of X-ray diagnostics	LW
2. Diagnostic ultrasound	2.1 Physical characteristics of ultrasonic waves, sources and receivers of ultrasonic waves	LW
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	LW
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	LW
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,	LW
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	LW

Course module title	Course module contents (topics)	Academic activities types
	(degree of mineralization, stages of root formation).	
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.	LW
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	LW
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.	LW
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.	LW
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.	LW
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	LW
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.	LW
14. Radiotherapy basics in facial-jaw region	14.1 Radiotherapy options, indications for their use in the treatment of malignant tumors of the maxillofacial	LW

Course module title	Course module contents (topics)	Academic activities types
	region, 14.2 Indications for combined radiotherapy with other types of special treatment.	

* - to be filled in only for **full**-time training: *LC* - lectures; *LW* - lab work; *S* - seminars.

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Lab-work (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 (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	Microsoft products (OS, office package) (Subscription Enrollment for Education Solutions (EES) No. 56278518 dated

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
	equipment.	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
Lab-work (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

* The premises for students' self-studies are subject to **MANDATORY** mention

7. RESOURCES RECOMMENDED FOR COURSE STUDY

Main readings:

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 readings:

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/>

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