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**Federal State Autonomous Educational Institution of Higher Education
Peoples' Friendship University of Russia named after Patrice Lumumba
RUDN University**

Medical Institute

COURSE SYLLABUS

Course title

Three-dimensional x-ray Diagnostic Methods in Dentistry

Specialization

31.05.03 Dentistry

Graduate's Degree

Dentistry

1. Aims and objectives:

Purpose the development of the discipline: preparation of a dentist who owns the necessary skills and knowledge in the use of cone-beam computed tomography on the dental admission.

The objectives of the discipline are:

- training in the principles of operation of radiation diagnostics in dentistry
- training of students in radiation safety
- to teach the rules of visualization of anatomical structures and pathological conditions on an x-ray
- use algorithms with software computed tomography

2. Learning outcomes

The process of studying the discipline is aimed at the formation of the following competences:

Table 2.1 Competences

Competence code	Competence	Competence indicators
PC-5	Being able to examine patients to determine a diagnosis when solving professional tasks	PC-5.5. Referral of a patient for an instrumental examination if there are medical indications in accordance with the current procedure for the provision of medical care, clinical recommendations (treatment protocols) for the provision of dental care, considering standards. PC-5.6. Referral of a patient for a consultation with specialist doctors if there are medical indications in accordance with the current procedure for the provision of clinical medical care
SPC-1	Being able to make an examination of a patient in order to determine a diagnosis.	PC-1.3. Detecting if patients have dentoalveolar, facial anomalies, deformities and prerequisites for their development, defects in the crowns of teeth and dentition on the basis of the patient examination; laboratory, instrumental, and additional examinations in order to make a preliminary/final diagnosis.

3. Course in academic program structure

Discipline *Three-dimensional x-ray Diagnostic Methods in Dentistry* refers to the compulsory part of the curriculum.

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

№	Competence code	Previous disciplines	Subsequent disciplines
Professional competences			
	PC-5	Science of Dental Materials Hygiene	Propaedeutics of Dental diseases Radiology Prosthodontics Prevention and Public Dental Health Oral Surgery
Specialized Professional competences			
	SPC-1	Science of Dental Materials Hygiene	Propaedeutics of Dental diseases Radiology Prosthodontics Prevention and Public Dental Health Oral Surgery

4. Course workload and Academic Activities

Course workload is 3 credit units.

Table 4.1 Types of academic activities during the period of the Higher educational program mastering

Types of academic activities	Academic hours	Semester № 4
Lectures	-	-
Seminars (S)	-	-
Lab work (LW)	72	72
Self studies	36	36
Evaluation and assessment	9	9
Total	108	
hours		
credits	3	

5. Course Modules and Contents

5.1. Contents

№	Modules	Topics	Types of academic activities

1	Survey methods in dentistry. Basic and advanced.	Examination of the patient. Basic methods (visual inspection and inspection of the oral cavity). Two-dimensional and three-dimensional methods of radiation survey in dentistry	LW
2.	Radiation diagnostics in dentistry. Types of research - Intraoral radiography of teeth and jaws, panoramic zonography. Principles of image acquisition. Indication methods. Disadvantages	Intraoral dental radiography. Isometric far-focus method and X-ray of the teeth. Advantages and disadvantages. Orthopantomography panoramic zonography teeth or jaws.	LW
3.	Radiation diagnostics in dentistry. Types of research - cone-beam computed tomography. Principles of obtaining an image. Indication method. Disadvantages.	Invention of the CT scanner. Types of scanners. Principles of obtaining an image. Concepts and terms related to computed tomography.	LW

4.	Radiation safety during radiation examination during dental treatment. Types of imaging programs for computed tomography. Application features.	What is a sievert. Effective equivalent dose. absorbed dose. What are dosimeters. Rules for conducting x-ray studies in dentistry.	LW
5.	Radiological anatomy on CBCT data. Features visualization of anatomical structures in the maxillofacial region.	Scanning zone. X-ray anatomy of the paranasal sinuses, temporomandibular joint, the upper and lower jaws.	LW
6.	The algorithm works with Ez3D2009 program. Construction of the image for evaluation dental pathology.	Software includes Ez3D2009. Algorithms for constructing dental images, panoramic zonograms, implantation planning	LW
7	Workshop: Working with Ez3D2009 program.	Development of manual skills of building a tooth tomography, panoramic zonogram, implantation planning	LW
8	First milestone certification	Intermediate control of knowledge and skills	LW
9	The use of CBCT on the dental	X-ray semiotics of the main dental diseases (caries, pulpitis, periodontitis, periodontal disease, endotherapy)	LW

	admission. Evaluation of channel-root of the tooth system, periodontal, maxillary sinuses.	errors). The study of the structure of the canal-root system of the tooth	
10	The use of CBCT on the dental admission. Abnormalities of the teeth and jaws. Inflammatory processes in the maxillofacial area, neoplasms and their manifestations.	X-ray semiotics major dental diseases (anomalies teeth and jaws, sinus disease).	LW
11	The algorithm of the program Galileos. Construction of the image for evaluation dental pathology.	The software includes Galileos. Algorithms for constructing dental images, panoramic zonogram, implantation planning	LW
12	Workshop: How to use Galileos	Practicing manual skills in constructing tooth tomography, panoramic zonogram, implantation planning	LW
13	The algorithm works with Romexis Viewer software. Image building for evaluation of dental pathology.	The software includes Romexis Viewer. Algorithms for constructing dental images, panoramic zonogram, implantation planning	LW
14	Workshop: Working with Romexis Viewer software.	Practicing manual skills in constructing tooth tomography, panoramic zonogram, implantation planning	LW
15	The algorithm of the program OnDemand3d. Image building for evaluation of dental pathology.	The software includes OnDemand3d. Algorithms for constructing dental images, panoramic zonogram, implantation planning	LW
16	Workshop: Working with OnDemand3d program.	Practicing manual skills in constructing tooth tomography, panoramic zonogram, implantation planning	LW
17	Practical conference.	Reports on the topics of the course	LW
18	Second milestone certification	Intermediate control of knowledge and skills	LW

6. Classroom Equipment and technology Support Requirements

Table 6.1

Classroom Equipment and technology Support Requirements

Classroom for Academic Activity Type	Classroom Equipment	Classroom Equipment and technology Support Requirements
236 Academic Aktivity type- Lab work	Classroom for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	Installing the dental chair with Hiradent 654-3 -1 pc. ED 240 ovens with RS422 (Binder) (9010-0101) (LLC Diaem) - 1pc. RC-2ZT Phantom Frasco GmbH head trainer Germany (10130120/190315/0001935) - 1 pc. Dental tools (set) - 10 pcs. Workplace student / teacher as part of the system unit, monitor, keyboard - 1 pcs. Intraoral Camera (10125230/221108/0006472 Korea.) - 1 pc. Ultrasonic scaler DTE-7DLED - 4 pcs.
237, 436 Academic Aktivity type- Seminars	Classroom for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	Classroom, Equipped with a set of specialized furniture, wheteboard;a set of devices includes portable multimedia projector, laptop,projection screen,stable wireless Internet connection. Software: Microsoft Windows,MS Office\Office 365,MS TEAMS,Chrome Monitor LED LG 55" 55UF771V Ultra HD, 100Hz, DVB-T2, DVB-C, DVB-S2, USB, WiFi
437 Academic Aktivity type- Computer Lab	Classroom for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	Classroom, Equipped with a set of specialized furniture, wheteboard;a set of devices includes portable multimedia projector, laptop,projection screen,stable wireless Internet connection.

Classroom for Academic Activity Type	Classroom Equipment	Classroom Equipment and technology Support Requirements
		<p>Software: Microsoft Windows,MS Office\Office 365,MS TEAMS,Chrome Monitor LED LG 55" 55UF771V Ultra HD, 100Hz, DVB-T2, DVB-C, DVB-S2, USB, WiFi</p> <p>The workplace of the student / teacher as part of the system unit, monitor, keyboard - 8 pcs., there is an Internet connection.</p> <p>Software: Windows 8.1 Corporate (Microsoft Office Professional Plus 2007, Corporate Licensing Program (Microsoft Subscription) Enrollment for Education Solutions № 86626883от 01.04.2018 г.)</p> <p>Sirona Wibv-systems 1001-02-160-0445</p> <p>№№</p> <p>1)2-3067086, 2016 2)2-2707139 , 2016 3)2-2707136 , 2016 4)2-2707154 , 2016 5)2-2536154 , 2016 6)2-2707122 , 2016 7)2-2695658 , 2016 8)2-2707144 , 2016</p>

7. Recommended Sources for Course Studies

a) Main reading

1. Whaites Eric. Essentials of dental radiography and radiology [Текст] / E. Whaites, N. Drage. - 5th ed. ; Книга на английском языке. - London ; New York : Churchill Livingstone : Elsevier, 2013.
2. Oral and Maxillofacial Surgery, Radiology, Pathology and Oral Medicine. Volume One. - Книга на английском языке. - London : Elsevier, 2008. - 272 p

. b) Additional reading:

1. Mok DWH. Essential Radiology in Head Injure [Текст] : A diagnostic atlas of skull trauma / D. Mok, L. Kreel. - Great Britain : Heinemann Professional Publishing, 1988. - 213 p.

c) Internet sourcers:

Electronic libraries with access for RUDN students:

<http://lib.rudn.ru/MegaPro/Web>

<http://www.biblioclub.ru>

<http://www.biblio-online.ru>

www.studentlibrary.ru

<http://e.lanbook.com/>

Databases and search engines:

<http://docs.cntd.ru/>

<https://www.yandex.ru/>

<https://www.google.ru/>

<http://www.elsevierscience.ru/products/scopus/>

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