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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

**CONE BEAM COMPUTED TOMOGRAPHY IN THE DIAGNOSIS PLANNING AND
EVALUATION OF THE EFFECTIVENESS OF DENTAL SOLUTIONS**

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 «**Cone Beam Computed Tomography in the Diagnosis Planning and Evaluation of the Effectiveness of Dental Solutions**» refers to the facultative 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	Three-dimensional x-ray Diagnostic Methods in Dentistry Propaedeutics of Dental diseases Radiology Prosthodontics Prevention and Public Dental Health Oral Surgery
Specialized Professional competences			
	SPC-1	Science of Dental Materials Hygiene	Three-dimensional x-ray Diagnostic Methods in Dentistry 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 № 8
Lectures		17	17
Seminars (S)		-	-
Lab work (LW)		17	17
Self studies		38	38
Total	hours	72	72
	credits	2	2

5. Course Modules and Contents

5.1. Contents

№	Modules	Topics	Types of academic activities
1	Cone beam computed tomography in the practice of a dentist	Radiation methods for examining dental patients: 1. Basic examination methods in dentistry 2. Additional examination methods in dentistry: dental radiography and orthopantomography 3. Additional examination methods in dentistry: cone beam computed tomography 4. Main advantages and disadvantages of each method	LC
2.	Radiation safety during CBCT. Errors and shortcomings of CT, ways to eliminate them	1. Issues of radiation safety. SanPin norms. Rules for conducting radiological examination methods 2. Risk groups during research (pregnant women and children) 3. Objective and subjective errors of computed tomography. Artifact concept. Types of artifacts, ways to eliminate them.	LC
3.	X-ray anatomy according to CBCT	1. Visualization of important anatomical structures of the maxilla and mandible for dental treatment planning 2. Determination of types of bone density according to CT data	LC
4.	X-ray semiotics according to CBCT data at the therapeutic and periodontal reception	1. Diagnosis of caries and its complications. 2. Evaluation of the canal-root system of teeth according to CBCT. Malformations and features 3. Diagnosis of complications of endodontic treatment 4. X-ray picture of apical periodontitis 5. The structure of the periodontium. Determination of bone pockets and lesions of the furcation zone according to CBCT data.	LW
5.	X-ray semiotics according to CBCT data at surgical and ENT appointments	1. Diagnosis of anomalies of teeth and jaws. Visualization principles 2. Planning of dental implantation. Isolation of the mandibular canal according to CBCT data 3. Determining the volume of bone tissue in matters of bone augmentation 4. ENT pathology and normal structure of the paranasal sinuses according to cone beam computed tomography	LW

6.	X-ray manifestations of osteomyelitis of various origins.	<p>1.The concept of osteomyelitis. Classification, types of osteomyelitis. Acute, primary chronic and secondary chronic osteomyelitis of the jaws.</p> <p>2.Osteoradionecrosis and drug-induced necrosis of the jaws</p> <p>3.Osteomyelitis of drug addicts. Features of the x-ray picture.</p>	LW
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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 lectures, laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	<p>Installing the dental chair with Hiradent 654-3 -1 pc.</p> <p>ED 240 ovens with RS422 (Binder) (9010-0101) (LLC Diaem) - 1pc.</p> <p>RC-2ZT Phantom Frasco GmbH head trainer Germany (10130120/190315/0001935) - 1 pc.</p> <p>Dental tools (set) - 10 pcs.</p> <p>Workplace student / teacher as part of the system unit, monitor, keyboard - 1 pcs.</p> <p>Intraoral Camera (10125230/221108/0006472 Korea.) - 1 pc.</p> <p>Ultrasonic scaler DTE-7DLED - 4 pcs.</p>
237, 436 Academic Aktivity type- Seminars	Classroom for lectures, laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	<p>Classroom, Equipped with a set of specialized furniture, wheteboard;a set of devices includes portable multimedia projector, laptop,projection screen,stable wireless Internet connection.</p> <p>Software: Microsoft Windows,MS Office\Office 365,MS TEAMS,Chrome Monitor LED LG 55" 55UF771V Ultra HD, 100Hz,</p>

Classroom for Academic Activity Type	Classroom Equipment	Classroom Equipment and technology Support Requirements
		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.	<p>Classroom, Equipped with a set of specialized furniture, whetebboard;a set of devices includes portable multimedia projector, laptop,projection screen,stable wireless Internet connection.</p> <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. Drape. - 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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Подпись

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