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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**

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

**COURSE SYLLABUS**

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**Innovative Technologies in Dentistry**

course title

**Recommended by the Didactic Council for the Education Field of:**

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**31.05.03 Dentistry**

field of studies / speciality code and title

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

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**Dentistry**

higher education programme profile/specialisation title

## 1. COURSE GOAL(s)

**Goals and objectives of the discipline:** Dentistry is one of the fastest growing branches of medicine. The emergence of new technologies in dentistry contributes to the development of science: research and laboratory experiments. The goal of the course is a formation of students' ability to use modern innovative methods of diagnosis and treatment of dental pathology is the main goal of this discipline.

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) “Innovative Technologies in Dentistry” is aimed at the development of the following competences /competences in part: (GPC)- 8, (PC)- 2.

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

Competence code	Competence descriptor	Competence formation indicators (within this course)
<b>General Professional Competence</b> GPC – 8 (8.1; 8.2),	Being able to use main physical and chemical, mathematic and scientific notions and methods when dealing with professional tasks.	GPC-8.1. Applying basic fundamental physical and chemical knowledge to deal with professional tasks. GPC-8.2. Using applied natural science knowledge to deal with professional tasks.
<b>Professional Competence</b> PC –2 (2.2)	Being able to prescribe, monitor the efficacy and safety of non-drug and drug treatment	PC-2.2. Selecting drugs and medical devices (including dental materials) for dental disease treatment assessing the possible side effects of taking medicinal drugs..

## 3. THE COURSE IN THE 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*

<b>Com peten ce code</b>	<b>Competence descriptor</b>	<b>Previous courses/modules*</b>	<b>Subsequent courses/modules*</b>
GPC- 8.1.	Applying basic fundamental physical and chemical knowledge to deal with professional tasks.	Mathematics Physics Science of Dental Materials Chemistry of Biogenic Elements	Obstetrics Physiotherapy of Dental Diseases Preparation for and Passing the State Exam State Exam (Computer Testing) State Exam (Interdisciplinary Interview)
GPC- 8.2.	Using applied natural science knowledge to deal with professional tasks.	Mathematics Physics Biology	Obstetrics Physiotherapy of Dental Diseases Dental Modeling of Teeth Preparation for and Passing the State Exam State Exam (Computer Testing) State Exam (Interdisciplinary Interview)
PC- 2.2.	Selecting drugs and medical devices (including dental materials) for dental disease treatment assessing the possible side effects of taking medicinal drugs	Innovative Techniques in dentistry Local anesthesia and anesthesiology in dentistry	Clinical Pharmacology Endodontics Gerontostomatology and diseases of the oral mucosa Periodontics Oral surgery Maxillofacial and Orthognathic Surgery Head and Neck Diseases Pediatric Dentistry Orthodontics and Pediatric Prosthodontics Physiotherapy of Dental Diseases Implantology and Reconstructive Surgery Modern Endodontics Aesthetic Restoration Observing and Assisting a Dentist (Oral Surgery) Observing and Assisting a Dentist (Pediatric) Observing and Assisting a Dentist (General Dentistry), Including Research Practice Preparation for and Passing the State Exam State Exam (Computer Testing) State Exam (Interdisciplinary Interview)

\* To be filled in according to the competence matrix of the higher education programme.

#### 4. THE COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course “**Innovative technologies in dentistry**” is 2 credits (72 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			
			3			
<i>Contact academic hours</i>		34	34			
including:						
Lectures (LC)						
Lab work (LW)		34	34			
Seminars (workshops/tutorials) (S)						
<i>Self-studies</i>		27	27			
<i>Evaluation and assessment (exam/passing/failing grade)</i>		9	9			
<b>Course workload</b>	academic hours	72	72			
	credits	2	2			

\* 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
<b>Section 1</b> Non-invasive treatment methods	<b>Topic 1.1</b> Introduction to the discipline.	LW
	<b>Topic 1.2</b> Fissures. Types of fissures. Classification. Diagnostic preparation of fissures. Fissurotomy.	LW
	<b>Topic 1.3</b> Air-abrasion treatment of hard tissues. Indications. Composition of abrasive components. Rondoflex.	LW
	<b>Topic 1.4</b> Chemo-mechanical caries removal (CMCR). Carisolv. Indications, chemical composition, instruments.	LW
	<b>Topic 1.5</b> Remineralizing therapy. Indications, chemical composition, methods, mechanisms. Deep fluoridation of hard tooth tissues.	LW
	<b>Topic 1.6</b> Non-invasive dental treatment techniques: ICON, Saforaïd, and others. Indications, contraindications, technique.	LW
	<b>Topic 1.7</b> Ergonomics of working with a dental operational microscope (DOM).	LW

Course module title	Course module contents (topics)	Academic activities types
<b>Section 2</b> Innovative technologies in therapeutic dentistry	<b>Topic 2.1</b> Diagnostic methods in dentistry: fundamentals and introduction to artificial intelligence – Diagnocat.	LW
	<b>Topic 2.2</b> Fundamentals of 3D scanning in dental practice. Advantages and disadvantages.	LW
	<b>Topic 2.3</b> Fundamentals of photoprotocol: essential accessories for dentists.	LW
	<b>Topic 2.4</b> Laser use in dental practice.	LW
	<b>Topic 2.5</b> Ozone therapy in dental practice.	LW
	<b>Topic 2.6</b> Modern light-curing lamps. Phases of composite polymerization.	LW
	<b>Topic 2.7</b> Glass ionomer cements, compomers, flowable composites. Features, indications.	LW

## 6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENT

*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)
Lecture	A lecture hall for lecture-type classes, equipped with a set of specialised furniture; board (screen) and technical means of multimedia presentations.	
Lab work	A classroom for laboratory work, individual consultations, current and mid-term assessment; equipped with a set of specialised furniture and machinery.	List of specialised laboratory equipment, machinery, stands, etc.
Seminar	A classroom for conducting seminars, group and individual consultations, current and mid-term assessment; equipped with a set of specialised furniture and technical means for multimedia presentations.	List of specialised equipment, stands, visual posters, etc.
Computer Lab	A classroom for conducting classes, group and individual consultations, current and mid-term assessment, equipped with personal computers (in the amount of ___ pcs), a board (screen) and technical means of multimedia presentations.	List of specialised software installed on computers for mastering the discipline
Self-studies	A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialised furniture and computers with access to the electronic information and educational environment.	

## 7. RESOURCES RECOMMENDED FOR COURSE STUDY

1. Software- there is Microsoft office 2012 software for practical training
2. Resources of the information and telecommunication network "Internet":
3. EBS of RUDN University and third-party EBS to which university students have access on the basis of concluded agreements:
  - a. Electronic library system RUDN - EBS RUDN <http://lib.rudn.ru/MegaPro/Web>
  - b. EBS "University Library Online" <http://www.biblioclub.ru>
  - c. EBS Yurayt <http://www.biblio-online.ru>
  - d. EBS "Student Consultant" [www.studentlibrary.ru](http://www.studentlibrary.ru)
  - e. EBS "Doe" <http://e.lanbook.com/>
4. Databases and search engines:
  - a. PUBMED
  - b. SCOPUS abstract database <http://www.elsevierscience.ru/products/scopus/>
  - c. WHO Documentation Center <http://whodc.mednet.ru/>
5. Literature:
  - a. Modern Operative Dentistry, ed. Carlos Rocha Gomes Torres, ISBN 978-3-030-31772-0 (eBook), Springer.

## 8. ASSESSMENT TOOLKIT AND GRADING SYSTEM\* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL UPON COURSE COMPLETION

The assessment toolkit and the grading system\* to evaluate the competences formation level (GPC - 8, PC – 2) upon the course study completion are specified in the Appendix to the course syllabus.

\* The assessment toolkit and the grading system are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / order).

### DEVELOPERS:

Head of Conservative Dentistry

Department, Associate Professor

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position, department

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signature

Z.S. Khabadze

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name and surname

Head of Educational Process of  
Conservative Dentistry

Department, Associate Professor

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position, department

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signature

I.V. Bagdasarova

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name and surname

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Associate Professor of  
Conservative Dentistry  
Department

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position, department

M.K. Makeeva

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signature

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name and surname

**HEAD OF EDUCATIONAL DEPARTMENT:**  
of Conservative Dentistry

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name of department

Z.S. Khabadze

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signature

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name and surname

**HEAD  
OF HIGHER EDUCATION PROGRAMME:**  
Deputy Director of MI for  
Academic Affairs

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position, department

S.N. Razumova

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name and surname