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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**

**Medical Genetics in Dentistry**

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course title

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

**31.05.03 Dentistry**

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field of studies / speciality code and title

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

**31.05.03 Dentistry**

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higher education programme profile/specialisation title

## 1. COURSE GOAL(s)

The goal of the course “**Medical Genetics in Dentistry**” is to equip students with the knowledge of

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) "**Medical Genetics in Dentistry**" is aimed at the development of the following competences /competences in part: GC-1; GPC-5; GPC-6; PC-1; PC-2; PC-6.

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

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Competence formation indicators</b> (within this course)
GC-1	Able to carry out a critical analysis of problem situations based on a systematic approach, develop an action strategy	GC-1.1 Analyzes the problem situation as a system, identifying its components and relationships between them
GPC-5	Able to conduct a patient examination in order to establish a diagnosis in solving professional problems	GPC-5.1 Collects anamnesis, analyzing patient complaints, conducting a physical examination at a dental appointment
		GPC-5.2 Formulates a preliminary diagnosis and draws up a plan for laboratory and instrumental examinations of a dental patient
		GPC-5.3 Prepares medical documentation of a dental patient in accordance with regulatory requirements
		GPC-5.8 Conducts differential diagnosis with other diseases/conditions, including emergencies
GPC-6	Able to prescribe, monitor the effectiveness and safety of non-drug and drug treatment in solving professional problems	GPC-5.9 Establishes a diagnosis based on the current international statistical classification of diseases and related health problems
		GPC-6.1 Develops a plan for the treatment of a dental disease, taking into account the diagnosis, age and clinical picture in accordance with the current procedures for the provision of medical care, clinical recommendations (treatment protocols) on the provision of medical care, taking into account the standards of medical care GPC-6.2 Selects medical devices (including dental materials) for the preparation of a comprehensive plan for the treatment of dental

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Competence formation indicators</b> (within this course)
		diseases. Monitor the progress of the patient's treatment
PC- 1	Capable of examining the patient in order to establish a diagnosis	PC-1.1 Performs primary and/or re-examination of the patient in order to establish a preliminary diagnosis
		PC-1.2 Receives information from patients (their relatives/legal representatives), conducts a survey of patients on the subject of general health, identification of concomitant diseases in order to establish a preliminary diagnosis
		PC-1.3 Detects dentoalveolar and facial anomalies, deformities and prerequisites for their development, defects in crowns of teeth and dentition in patients based on examination of the patient, laboratory, instrumental, as well as additional examinations in order to establish a preliminary / final diagnosis
		PC-1.4 Identifies risk factors for oncopathology in patients (including various background processes, precancerous conditions) based on laboratory, instrumental and additional examinations in order to establish a preliminary / final diagnosis
		PC-1.5 Establishes a preliminary / final diagnosis based on the examination of the patient, laboratory and instrumental studies
PC-2	Capable of prescribing, monitoring the efficacy and safety of non-drug and drug treatments	PC-2.6 Conducts orthopedic treatment of persons with defects in teeth, dentitions within temporary prosthetics, prosthetics of single defects in the dentition, prostheses up to three units (excluding prosthetics on dental implants ), partial and complete removable lamellar dentures using modern methods of treatment permitted for applications in medical practice
PC-6	Able to analyze and publicly present medical information based on evidence-based medicine, to participate in scientific research, to introduce new methods and techniques aimed at protecting public health	PC-6.1 Conducts a search for medical information based on evidence-based medicine, interpreting data from scientific publications and / or preparing a presentation for the public presentation of medical information, the results of scientific research

### 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*

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Previous courses/modules*</b>	<b>Subsequent courses/modules*</b>
GC-1	Able to carry out a critical analysis of problem situations based on a systematic approach, develop an action strategy	Latin language Psychology and pedagogy Bioethics Public health and healthcare	Medical rehabilitation Dentistry (module: Clinical dentistry) Orthodontics and pediatric prosthetics Children's dentistry
GPC-5	Able to conduct a patient examination in order to establish a diagnosis in solving professional problems	Latin language Psychology and pedagogy Bioethics Public health and healthcare	Medical rehabilitation Dentistry (module: Clinical dentistry) Orthodontics and pediatric prosthetics Children's dentistry
GPC-6	Able to prescribe, monitor the effectiveness and safety of non-drug and drug treatment in solving professional problems	Latin language Psychology and pedagogy Bioethics Public health and healthcare	Medical rehabilitation Dentistry (module: Clinical dentistry) Orthodontics and pediatric prosthetics Children's dentistry
PC-1	Capable of examining the patient in order to establish a diagnosis	Cariesology and disease of hard tissues of teeth Propaedeutics of dental diseases Dental prosthetics (simple prosthetics)	Dental prosthetics (complex prosthetics) Gnathology and functional diagnostics of the temporal mandibular joint
PC-2	Capable of prescribing,	Cariesology and disease of hard tissues of teeth	Dental prosthetics (complex prosthetics)

	monitoring the efficacy and safety of non-drug and drug treatments	Propaedeutics of dental diseases Dental prosthetics (simple prosthetics)	Gnathology and functional diagnostics of the temporal mandibular joint
PC-6	Able to analyze and publicly present medical information based on evidence-based medicine, to participate in scientific research, to introduce new methods and techniques aimed at protecting public health	Latin language Psychology and pedagogy Bioethics Public health and healthcare Pediatrics Propaedeutic dentistry (module Propaedeutics) Dentistry (module Fundamentals of Surgical Dentistry)	Medical rehabilitation Dentistry (module: Clinical dentistry) Orthodontics and pediatric prosthetics Children's dentistry

\* - filled in accordance with the matrix of competencies of higher education programme.

#### 4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course 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			
		9			
Classroom learning, ac.h.	<b>64</b>	<b>64</b>			
including:					
Lectures (LC)	-	-			
Lab work (LW)	64	64			
Seminars (workshops/tutorials) (S)	-	-			
<i>Self-studies</i>	38	38			
<i>Evaluation and assessment (exam/passing/failing grade)</i>	6	6			
<b>Course workload</b>	academic hours_	<b>108</b>	<b>108</b>		
	credits	<b>3</b>	<b>3</b>		

#### 5. COURSE CONTENTS

*Table 5.1. Course contents and academic activities types*

Course module title	Course module contents (topics)	Academic activities types
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Course module title	Course module contents (topics)	Academic activities types
<b>Module 1</b> Heredity and pathology	<b>Topic 1.1.</b> Medical genetics in the structure of the biomedical sciences of man. Heredity and health. Mutations as an etiological factor in hereditary diseases.	LW
	<b>Topic 1.2.</b> Classification of hereditary diseases. Heredity and pathogenesis. Heredity and clinical picture. Heredity and disease outcomes	LW
<b>Module 2</b> Semiotics of hereditary pathology and principles of clinical diagnostics	<b>Topic 2.1.</b> General and particular semiotics of hereditary pathology. Morphogenetic variants of development and their significance in the diagnosis of hereditary pathology. Anthropometry.	LW
	<b>Topic 2.2.</b> Congenital malformations. Family approach in the diagnosis of hereditary pathology.	LW
	<b>Topic 2.3.</b> Clinical and genealogical method for the diagnosis of hereditary diseases. Clinical features of the manifestation of hereditary diseases. Graphic representation of a pedigree. Pedigree analysis. Genealogical analysis in monogenic diseases. Genealogical analysis in multifactorial diseases	LW
<b>Module 3</b> Chromosomal diseases	<b>Topic 3.1.</b> Classification of chromosomal diseases. Frequency, pathogenesis and clinical features of chromosomal diseases. Clinical characteristics of some chromosomal syndromes (trisomy syndromes, partial aneuploidy syndromes).	LW
	<b>Topic 3.2.</b> Methods for diagnosing chromosomal diseases. Treatment of chromosomal diseases	LW
<b>Module 4</b> Monogenic diseases	<b>Topic 4.1.</b> Classification of monogenic diseases. Genetic heterogeneity and clinical polymorphism of monogenic diseases.	LW
	<b>Topic 4.2.</b> Methods for laboratory diagnosis of monogenic pathology (biochemical methods, molecular genetic methods).	LW
<b>Module 5</b>	<b>Topic 5.1.</b>	LW

Course module title	Course module contents (topics)	Academic activities types
Multifactorial diseases	The most common nosological forms. General and private mechanisms for the implementation of hereditary predisposition. Factors and principles for identifying individuals with an increased risk of developing diseases with a hereditary predisposition. Ecogenetic diseases.	
<b>Module 6</b> Congenital and hereditary dental diseases	<b>Topic 6.1.</b> General characteristics of the structure of the teeth. Genetic control of normal development and formation of dental tissues. Genetic factors in the formation of dental anomalies.	LW
	<b>Topic 6.2.</b> Classification of anomalies in the development of teeth and dentition. Anomalies in the size and shape of teeth (macrodentia, microdentia, fused teeth, doubling, invagination of teeth, abnormal tubercles and enamel pearls, taurodentism ).	LW
	<b>Topic 6.3.</b> Hereditary diseases and syndromes with anomalies in the size and shape of the teeth. Anomalies in the number of teeth (dental agenesis, supernumerary teeth). Hereditary disorders of the formation of the structure of the teeth. Anomalies of teething. Hereditary anomalies of malocclusion.	LW
<b>Module 7</b> Congenital malformations of the maxillofacial region	<b>Topic 7.1.</b> Cleft lip and palate. The most common monogenic syndromes are cleft lip and palate. Atypical clefts of the craniofacial region. Principles of treatment and rehabilitation of patients with congenital orofacial clefts. Problems of rehabilitation of patients with congenital orofacial clefts. Principles of prevention of orofacial clefts	LW
<b>Module 8</b> Dental diseases of multifactorial nature.	<b>Topic 8.1.</b> Multifactorial malformations of the craniofacial region and dentition, syndromic forms Common dental diseases of a multifactorial nature (genetic aspects of caries, genetic aspects of periodontal disease)	LW
<b>Module 9</b> Prevention of congenital and hereditary dental	<b>Topic 9.1.</b> Medical genetic counseling. Methods of prenatal diagnosis of hereditary diseases. Methods for detecting chromosomal disorders	LW

Course module title	Course module contents (topics)	Academic activities types
pathology.	and monogenic diseases. Problems of medical genetic counseling and treatment of hereditary diseases in dentistry.	

## 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)
Lecture	An auditorium for lecture-type classes, equipped with a set of specialized furniture; board (screen) and technical means of multimedia presentations. (classrooms 245, 249)	Technical means: multimedia projector Laptop, WiFi available Internet access.  Software: Microsoft products (OS, office suite, including MS Office / Office 365, Teams)
Lab work	An auditorium for laboratory work, individual consultations, current control and intermediate certification, equipped with a set of specialized furniture and equipment.	Visual aids, computer presentations, projector, tables, dummies, simulators, posters
Self-studies	Classroom for self-studies of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to the internet.	

## 7. RESOURCES RECOMMENDED FOR COURSE STUDY

### *Main readings:*

- Medical and clinical genetics for dentists: a textbook / edited by O.O. Yanushevich . – M.: GEOTAR-Media, 2015
- Dentistry for children. Surgery: Textbook / Edited by S.V. Dyakova . - M.: Medicine, 2009. - 379 p .: tsv.il.

### *Additional readings:*

#### ***Electronic full-text materials :***

- Kurchanov , N.A. Human genetics with the basics of general genetics: textbook / N.A. Kurchanov . - 2nd ed., revised . and additional - St. Petersburg: SpecLit , 2009. - 192 p. : ill. - ISBN 978-5-299-00411-3; The same [Electronic resource]. - URL: <http://biblioclub.ru/index.php?page=book&id=105726> (09/17/2018).



### ***Printed publications:***

- Medical genetics: a textbook for medical students. Universities in the specialty "Dentistry" / L.V. Akulenko (and others); edited by O.O. Yanushevich . – M.: GEOTAR-Media, 2015
- Medical genetics / Ginter E.K. - M.: Medicine, 2003. - 448 p.
- Dentistry for children. Surgery: Textbook / Edited by S.V. Dyakova . - M.: Medicine, 2009. - 379 p. : tsv.il.
- Congenital cleft lip and palate / S.V. Chuikin , L.S. Persin , N.A. Davletshin . - M. : MIA, 2008. -368 .: ill.
- Hereditary syndromes and medical genetic counseling / Kozlova S.I., Demikova N.S.: Atlas-reference book. 3rd ed., revised . and add . M.: T-in scientific publications of KMK; Author's Academy. 2007
- Hereditary syndromes and medical genetic counseling [Text] / S.I. Kozlov [i dr.]; S.I. Kozlova and others - M. : Medicine, 1987. - 320 p. : ill. - 2.10.
- Jones Kenneth L. Hereditary syndromes according to David Smith. Atlas reference book: Per. from English. / K.L. Jones. - M. : Practice, 2011. - 1024 p. : 488 ill. - ISBN 978-5-89816-086-9 : 0.00.
- Clinical genetics: A textbook for universities / N.P. Bochkov - publishing group “Geotar -media”, 2002
- The state of the dentoalveolar system in patients with congenital complete cleft lip and palate before prosthetics and recommendations for treatment. - Met. Recommendations / T.F. Kosyreva , N.S. Tuturov . – M.: RUDN University, 2012. – 47p.
- Mandel, B.R. Fundamentals of modern genetics: a textbook for students of higher educational institutions (bachelor's degree) / B.R. Mandel. - Moscow; Berlin: Direct-Media, 2016. - 334 p.: ill. - Bibliography . in book. - ISBN 978-5-4475-8332-3 ; The same [Electronic resource]. - URL: <http://biblioclub.ru/index.php?page=book&id=440752> (09/17/2018).
- Nakhaeva , V.I. Practical course of general genetics: textbook / V.I. Nakhaev . - 3rd ed., stereotype. - Moscow: Flinta Publishing House, 2016. - 210 p. - ISBN 978-5-9765-1204-7; the same [Electronic resource]. - URL: <http://biblioclub.ru/index.php?page=book&id=83544> (09/17/2018).
- Dental rehabilitation of children with various syndrome complexes ectodermal dysplasia [text] / T.A. Rzayeva [et al.] // Clinical Dentistry. - 2013. - No. 4. - S. 8 - 12 .

### *Internet sources*

1. RUDN ELS and third-party ELS, to which university students have access on the basis of concluded agreements:

- RUDN Electronic Library System - RUDN EBS <http://lib.rudn.ru/>
- ELS "University Library Online" <http://www.biblioclub.ru>
- EBS Yurayt <http://www.biblio-online.ru>
- ELS "Student Consultant" [www.studentlibrary.ru](http://www.studentlibrary.ru)
- EBS "Lan" <http://e.lanbook.com/>
- EBS "Trinity Bridge"

2. Databases and search engines:

- electronic fund of legal and normative-technical documentation <http://docs.cntd.ru/>
- Yandex search engine [https:// www .yandex.ru/](https://www.yandex.ru/)

- Google search engine <https://www.google.ru/>
- abstract database SCOPUS  
<http://www.elsevier.com/locate/SCOPUS>

*Training toolkit for self- studies to master the course* \*:

1. The set of lectures on the course “Medical genetics in dentistry”
2. The laboratory workshop (if any).on the course “Medical genetics in dentistry”
3. The guidelines for writing a course paper / project (if any) on the course “Medical genetics in dentistry”.
4. ....

\* The training toolkit for self- studies to master the course is placed on the course page in the university telecommunication training and information system under the set procedure.

## **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 (GC-1; GPC-5; GPC-6; PC-1; PC-2; PC-6.) 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:**

Associate Professor,  
Department of Pediatric  
Dentistry and Orthodontics

O.V. Loginopulo

position, department

signature

name and surname

### **HEAD OF EDUCATIONAL DEPARTMENT:**

Department of Pediatric  
Dentistry and Orthodontics

N.S. Tuturov

name of department

signature

name and surname

### **HEAD OF HIGHER EDUCATION PROGRAMME:**

Head department, professor,  
Department of propaedeutics  
of dental diseases

S.N. Razumova

position, educational department

signature

name and surname

