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

CLINICAL PHARMACOLOGY

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

2026

1. COURSE GOAL(s)

The discipline **«Clinical pharmacology»** is included into the speciality programme «Dentistry» of the field 31.05.03 «Dentistry» and is studied in the 10th semester of the 5th year. The discipline is provided by the Department of Pharmacology and Clinical Pharmacology. The discipline consists of 2 modules and 13 topics and is targeted at the study of general and specific issues of clinical pharmacology for mastering the skills of rational use of medications in dentistry practice.

The aim of the course **«Clinical pharmacology»** is to equip students with theoretical knowledge and practical skills of choosing and prescribing effective, safe and economically reasonable drugs in order to be able to use rational and personalized pharmacotherapy based on the authentic data on pharmacokinetics, pharmacodynamics, drug interactions, adverse drug reactions, pharmacogenetics, pharmacoeconomics, pharmacoepidemiology and principles of evidence-based medicine.

2. REQUIREMENTS FOR LEARNING OUTCOMES

The mastering of the discipline **«Clinical pharmacology»** is aimed at the formation of the following competencies of students: GPC-6, GPC-10, 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)
GPC-6	Being able to prescribe non-drug and drug treatment, monitor its efficacy and safety when solving professional tasks	GPC-6.1. Developing a plan for dental disease treatment considering the diagnosis, age and clinical picture in accordance with the current procedures for the provision of medical care, clinical guidelines (treatment protocols) on the provision of medical care considering the medical care standards. GPC-6.3. Assessing the possible side effects of taking medicinal drugs. GPC-6.5. Organizing the prevention and treatment of complications, side effects, undesirable reactions, including the unforeseen ones, which can arise from diagnostic or medicinal manipulations, use of drugs and (or) medical devices, non-drug treatment at a dental appointment. GPC-6.7. Prescribing medicinal drugs, medical devices, considering the diagnosis, age and clinical picture, and in accordance with the current procedures for the provision of medical care, clinical guidelines (treatment protocols) on the provision of medical care considering medical care standards. GPC-6.9. Evaluating the efficacy and safety of using medicinal drugs, medical devices and other methods of treatment at a dental appointment.

GPC-10	Being able to organize the nursing care work of junior and paramedical staff	GPC-10.4. Drawing up a plan and report on their work.
PC-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. PC-2.4. Selecting the type of local anesthesia/anesthesia and assessing the possible complications caused by using it.

3. THE 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***
GPC-6	Being able to prescribe non-drug and drug treatment, monitor its efficacy and safety when solving professional tasks	Dermatovenerology; Pediatric Dentistry; Diseases of head and neck; Prosthodontics (Simple Prosthetics); Immunology, clinical immunology; Cariology and Hard Tissues Diseases; Clinical dentistry; Medical genetics in dentistry; General Surgery; Orthodontics and Pediatric Prosthodontics; Prosthodontics (Complex Prosthetics); Prosthodontics of Edentulous Patient; Surgical Diseases; Surgery of oral cavity; Maxillofacial and gnatic surgery; Basics of military training; Life safety; Internal medicine; Gerodontics and Oral Mucosa Diseases; Neurology; Periodontology; Pediatrics; Psychiatry and Narcology; Endodontics; Medical rehabilitation; Pharmacology; Material science; Obstetrics; Emergency Conditions in Outpatient Dentistry Practice	

GPC-10	Being able to organize the nursing care work of junior and paramedical staff	Practice for Obtaining the First Professional Skills in the Positions of Nursing Stuff (Observing and Assisting a Registered Nurse); Organization of patient care; Internal medicine; Public Health and Healthcare	
PC-2	Being able to prescribe, monitor the efficacy and safety of non-drug and drug treatment	Assistant of dentist (surgeon); Assistant of dentist (therapist); Assistant of dentist (pediatrics); Endodontics; Pediatric Dentistry; Cariology and Hard Tissues Diseases; Clinical dentistry; Orthodontics and Pediatric Prosthodontics; *Bioelements in medicine***; Gerodontics and Oral Mucosa Diseases; *Medical elementology***; Periodontology; Propedeutics of dental diseases; Prosthodontics (Simple Prosthetics); Medical genetics in dentistry; Prosthodontics (Complex Prosthetics); Prosthodontics of Edentulous Patient; Infectious diseases, phthisiology; Diseases of head and neck; Organization of patient care; Physiotherapy of dental diseases; Local anesthesia and anesthesiology in dentistry; Surgery of oral cavity; Maxillofacial and gnatic surgery; Innovative technologies in dentistry	

* - in line with the competence matrix
** - elective disciplines / practice

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "Clinical Pharmacology" 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**
			10
Classroom learning, ac.h.		*51*	*51*
Lectures (**Lec**)		*0*	*0*
Lab work (**Lab**)		51	51
Practical/seminar classes (**Sem**)		*0*	*0*
Self-studies of students, ac.h.		*18*	*18*
Control (exam/graded credit), ac.h.		*3*	*3*
Total workload of the discipline	ac.h.	**72**	72
	credits	**2**	2

5. THE COURSE MODULES AND CONTENTS

Table 5.1. The content of the discipline and types of academic activities

Course module title	Course module contents (topics)		Academic activities types
Module 1 General issues of clinical pharmacology.	1.1 Subject and tasks of clinical pharmacology. Clinical research. Principles of evidence- based medicine.	Clinical pharmacology as the basis for the rational selection, individualization, and safe use of medicinal products; aims, objectives, and methods of the discipline, clinical trial design, appraisal of evidence quality, and the application of evidence-based medicine principles in real-world clinical practice.	Lab
	1.2 Fundamentals of clinical pharmacokinetics.	Key pharmacokinetic processes and parameters; principles of dosing regimen selection and therapeutic drug monitoring, as well as dose adjustment in renal and hepatic impairment, and in pediatric, elderly, and comorbid patients.	Lab
	1.3 Fundamentals of clinical pharmacodynamics.	Mechanisms of action of medicinal products, receptor-mediated and non-receptor-mediated effects, the dose-response relationship, therapeutic window, clinically meaningful endpoints, and factors determining variability of the pharmacodynamic response in different patient populations.	Lab
	1.4 Drug-drug interactions.	Pharmacokinetic and pharmacodynamic drug-drug interactions, clinically significant drug combinations, the role of metabolizing enzymes and transport systems, as well as the fundamentals of pharmacogenetics and personalized pharmacotherapy.	Lab
	1.5 Drug safety. Adverse drug reactions.	Classification, risk factors, methods for detection, assessment of causality, prevention, and management of adverse drug reactions, as well as the fundamentals of pharmacovigilance and strategies to improve the safety of pharmacotherapy.	Lab
Module 2 Clinical pharmacological approaches to the selection and use of medicinal products in dental diseases and emergency conditions.	2.1 Clinical pharmacological approaches to choosing and prescribing antibacterial drugs in dentistry practice.	Clinical pharmacology of antibiotics and synthetic antimicrobial agents. Principles of rational anti-infective therapy. Targeted and empirical treatment of infections of the maxillofacial region. Prescribing in high-risk patient groups. Patient counselling and instruction on correct medication use. Monitoring the efficacy and safety of ongoing treatment. Rational drug combinations.	Lab
	2.2 Clinical pharmacological approaches to choosing and prescribing antifungal and antiviral drugs in dentistry practice.	Clinical pharmacology of antifungal and antiviral medicinal products. Prescribing in high-risk patient groups. Patient counselling and instruction on appropriate medication use. Monitoring the efficacy and safety of the ongoing therapy.	Lab

	2.3 Clinical pharmacological approaches to choosing and prescribing antiseptic drugs and irrigants in dentistry practice.	Clinical pharmacology of antiseptics. Frequency and specific aspects of their use in the management of odontogenic and non-odontogenic infections. Particularities of antiseptic use in high-risk patient groups. Rational and irrational combinations of antiseptics. Clinical pharmacology of irrigants and chelating agents. Compatibility of solutions used for irrigation.	Lab
	2.4 Clinical pharmacological approaches to choosing and prescribing analgesic drugs in dentistry practice.	Clinical pharmacology of local anesthetics. Measures for prevention and monitoring safety issues associated with local anesthetic use. Interactions of local anesthetics with medicinal products from other pharmacological classes. Selection of a specific local anesthetic (and vasoconstrictor) for routine dental procedures, as well as in patients with comorbidities and in high-risk groups. Clinical pharmacology of non-opioid and opioid analgesics, and co-analgesics. Core principles of the diagnosis and management of acute and chronic pain syndromes. Assessment of analgesic effectiveness. Specific aspects of pain control in cancer-related pain of grades 1-3 according to the WHO analgesic ladder. Analgesia in high-risk patient populations.	Lab
	2.5 Clinical pharmacological approaches to choosing and prescribing anti-inflammatory, anti-allergic drugs and immunomodulators in dentistry practice.	Clinical pharmacology of NSAIDs: general principles of prescribing and dosing, monitoring during long-term use, risk factors for major adverse reactions, and drug-drug interactions. Clinical pharmacology of glucocorticoids: methods for assessing the efficacy and safety of glucocorticoid pharmacotherapy, diagnosis, management, and prevention of adverse reactions, and potential drug interactions. Clinical pharmacology of antiallergic medicinal products: principles of drug selection for the management of immediate-type hypersensitivity reactions, methods for evaluating efficacy and safety, and potential drug interactions.	Lab
	2.6 Clinical pharmacological approaches to choosing and prescribing drugs in hemostasis disorders (bleedings and thrombosis).	Clinical pharmacology of hemostatic agents. Principles of the treatment and prevention of acute and chronic (delayed) bleeding. Control of bleeding associated with systemic diseases (cirrhosis, hemophilia). Rational use of available pharmaceutical formulations in dental practice. Clinical pharmacology of antiplatelet agents, anticoagulants, fibrinolytics. Laboratory monitoring of the efficacy and safety of these agents and management of overdose. Management strategies for patients with antithrombotic therapy undergoing dental procedures.	Lab

	2.7 Clinical pharmacology of drugs to treat phosphoric calcium metabolism disorders.	Clinical pharmacology of calcium and phosphorus preparations, vitamin D and its metabolites, calcitonin, bisphosphonates, sex hormone (estrogen) preparations, fluoride preparations, and other medicinal products that affect calcium and phosphorus metabolism.	Lab
	2.8 Clinical pharmacological approaches to choosing and prescribing drugs in urgent and life-threatening conditions in dentistry practice.	Principles of diagnosis and drug selection in the management of the following emergency conditions: anaphylactic shock, hypertensive crisis, angina attack, acute heart failure, paroxysmal supraventricular tachycardia, paroxysmal atrial fibrillation, paroxysmal ventricular tachycardia, pulmonary embolism, acute asthma attack, gastrointestinal bleeding, ketoacidosis coma, hypoglycemic coma, seizure syndrome, and opioid poisoning.	Lab

* - to be completed only for **FULL-TIME** education: *Lec – lectures; Lab – lab work; Sem – practical/seminar classes.*

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)
Computer lab	Computer classroom for classes, individual and group consultations, ongoing control and interim attestation equipped with PCs (26), whiteboard (screen) and technical means for multimedia presentations.	Electronic educational environment TUIS RUDN, Software (MS products).
Lab-work	Classroom for lab work, individual and group consultations, ongoing control and interim attestation equipped with laboratory and diagnostic equipment of clinical bases of the department.	Electronic educational environment TUIS RUDN, Software (MS products), multimedia projector, interactive board, demo lab and medical equipment samples.
Seminar	Classroom for practical classes, individual and group consultations, ongoing control and interim attestation equipped with a set of specialized furniture and technical means for multimedia presentations.	Electronic educational environment TUIS RUDN, Software (MS products), multimedia projector, interactive board, demo medical equipment samples.
Self-studies	Classroom for self-study (might be used for lab work and consultations) equipped with a set of specialized furniture and PCs with access to electronic educational environment.	Electronic educational environment TUIS RUDN, Software (MS products).

* - classroom for self-studies **MUST** be specified!

7. RESOURCES RECOMMENDED FOR COURSE STUDY

a) Main readings:

1. **Basic and Clinical Pharmacology / B. Katzung, S. Masters. - 16th ed.; Книга на английском языке. - New York: McGraw-Hill, 2024. - 1368 p.: il. - (Lange Medical Books). - ISBN 978-1260463309.**

b) Additional readings:

1. S.B. Fitilev, I.I. Shkrebneva, A.V. Vozzhaev. The Fundamentals of Rational Pharmacotherapy (Problem-Based Method of Teaching Clinical Pharmacology or How to Create Your Own Guideline) (учебное пособие на английском языке). Москва: РУДН, 2017. – 85 с.

Internet (based) sources

1. Electronic Library System (ELS) of the RUDN University and third-party ELS, to which university students have access on the basis of concluded contracts:
   - Electronic Library System (ELS) of the RUDN **http://lib.rudn.ru/MegaPro/Web**
   - ELS «Университетская библиотека онлайн» **http://www.biblioclub.ru**
   - ELS Юрайт **http://www.biblio-online.ru**
   - ELS «Консультант студента» **www.studentlibrary.ru**
   - ScienceDirect **https://www.sciencedirect.com/**
   - Springer **https://www.springer.com/gp**
2. Databases and search engines:
   - State register of drugs **http://www.drugreg.ru/Bases/WebReestrQuery.asp**
   - Source on pharmacogenetics **http://www.pharmgkb.org/**
   - Source of drug interactions **http://medicine.iupui.edu/flockhart/**

Learning toolkits for self-studies during the development of the discipline:*

1. Course of lectures for the discipline «Clinical pharmacology».

* - All teaching materials for self-studying of students are placed in accordance with the current procedure on the discipline page in the Electronic educational environment TUIS RUDN.

DEVELOPERS:

Associate professor, Department of General and Clinical Pharmacology		I.I. Shkrebniova
position, deparment	signature	Name
Professor, Department of General and Clinical Pharmacology		S.B.Fitilev
position, deparment	signature	Name
Professor, Department of General and Clinical Pharmacology		A.V. Vozhaev
position, deparment	signature	Name

Head of the Department:

of General and Clinical		

Pharmacology		S.K. Zyryanov
Department	signature	Name

HEAD OF THE HIGHER EDUCATION PROGRAM:

Deputy Director of Institute of Medicine for the field of studies Dentistry		S.N. Razumova
Position, department	signature	Name