RUDN university

FACULTY OF SCIENCE

PHARMACEUTICAL ANALYSIS IN THE PRODUCTION AND DRUG QUALITY CONTROL

MASTER'S DEGREE PROGRAMME

PROGRAM ADVANTAGES

- The Master's program "Pharmaceutical Analysis in the Production and Quality Control of Drugs" is aimed at providing students with an opportunity to obtain up-to- date academic knowledge and practical skills in the synthesis, research of substances and materials; quality control of medicines, as well as an opportunity to conduct an independent research in the framework of the scientific direction of the profile department.
- Teaching is conducted in accordance with the international standards of good practice: GMP - Good Manufacturing Practice and GLP - Good Laboratory Practice.
- Training is carried out by the leading representatives of the faculty of the departments of pharmaceutical and toxicological chemistry and organic chemistry of RUDN University.
- The program is implemented in full-time or in the part-time format.
- Lectures, master classes, creative projects and conferences are regularly held with the participation of invited famous world-class scientists.
- RUDN University, Yerevan State University and National Polytechnic University of Armenia implement the master's program jointly in the CIS Network University.

STUDYING PROCCESS

120 credits
Lectures, practical classes and independent work, several types of vocational traineeships, researches.

PHARMACOPOEIA AND PHARMACOPOEIA ANALYSIS OF DRUGS

- Leading world pharmacopeias.
- Fundamentals of pharmacopoeia analysis.
- The specificity of terminology of drug compounds and pharmacopoeia analysis in general.
- Latin and chemical terminology.

ELEMENTAL ANALYSIS METHODS IN DRUG QUALITY CONTROL

- The main modern methods of studying the elemental composition of medicinal substances.
- The physical basis of the methods, the mechanism of devices and the purpose of the methods. studied in the course.

PHYSIC-CHEMICAL FUNDAMENTALS OF DRUG QUALITY CONTROL

- The scientific basis for the classification, nomenclature of inorganic and organic compounds.
- Basics of stereochemistry.
- Features of the reactivity of chemical compounds.
- General methods for assessing the quality of drugs.

CHEMISTRY OF NATURAL COMPOUNDS

- Proteins.
- Nucleic acids.
- Enzymes (enzymes).
- Lipids (fats).
- Vitamins.
- Terpenes and terpenoids.
- Hormones.
- Alkaloids.
- Photosynthesis.

CHEMICAL METHODS OF DRUG QUALITY CONTROL IN WORLD PHARMACOPOEIAS

- Elementary qualitative analysis.
- Hydrocarbons.
- Halogenated.
- Hydroxyl-containing compounds.
- Carbonyl compounds.
- Carboxylic acids and their derivatives.
- Nitrogen-containing organic compounds.
- Derivatives of carbonic acid.
- Carbohydrates.

EXPERIMENTAL RESEARCH METHODS IN ORGANIC CHEMISTRY

- Fundamentals of work safety in a chemical laboratory.
- The current state of research in this field of science, the comparison of the expected results with the ones of theworld level.
- Chemical experiments.
- Methods for the synthesis of organic substances.
- Analysis and generalization of the results.

STEREOCHEMISTRY

- Chirality.
- Types of spatial isomerism.
- Racemates.
- The nomenclature of spatial isomers.
- Methods for determining the configuration of asymmetric centers.
- Chiroptic methods.
- Asymmetric synthesis and catalysis.
- Enantio- and diastereoselective synthesis.

MASS-SPECTRAL ANALYSIS OF ORGANIC COMPOUNDS

- Principles of fragmentation of organic compounds under electron ionization (EI).
- Fragmentation of hydrocarbons in EI conditions.
- Fragmentation of heterocyclic compounds under EI conditions.
- Fragmentation of compounds with several functional groups under EI conditions.

BASICS OF DRUG DESIGN

- The main goals and concepts of medical chemistry.
- Target action of drugs.
- Lipids.
- Enzymes.
- The principles drugs speculative design.
- Receptors.
- Nucleic acids as targets of the action of drugs.
- Fundamentals of modern computer design of drugs.

STUDENTS FEEDBACK

KOLDINA ALENA, RUSSIA

I did not have any doubts when I started my master's program "Pharmaceutical Analysis in Production and Quality Control of Drugs" in 2015. There wasn't a program similar to that one at the university I graduated from! I came to the Open Day session and fell in love with the university, its program and leading departments. Firstly, I got surprised when I found out that the course was taught at two departments simultaneously, but later I realized that it allowed a deeper cover of the material. I really liked the lectures approach to teaching the subject. Everyone tried to make it so interested that I completely immersed myself in the subject and began to study it thoroughly. I was also impressed by the equipment of the departments, the first thought was: " Is it really true that such equipment is available in educational establishments?!" Previously I had thought it wasn't. The lecturers taught me how to operate it! It's really important to have practical skills in this area. Besides, before I started the course, I had not even expected to have an opportunity to see a control and analytical laboratory during training, to visit chemical exhibitions and to work together with the university staff on scientific projects. All the above allowed me to enter the field of chemistry quickly, and it became my major lifetime interest. I would like to express my deep gratitude to all professors who made me interested in Chemistry and shared their professional knowledge and experience with me!

STUDENTS FEEDBACK

ILAHA KAZIMOVA, AZERBAIJAN

There are so many beautiful words that will be difficult to fit in one brief review about the Master's program and about my graduation department. I would especially like to mention the teaching team, which is friendly and open. Such an attitude to me and my classmates I have never met anywhere before. Truly, you always feel the parental care and warmth. I could always count on the help and support of the teachers of the "Pharmaceutical Analysis in Production and Quality Control of Drugs" Master's program. The curriculum, in my opinion, is one of the most popular and interesting. In addition to academic knowledge you can get practical skills and abilities that will let you become truly embedded in your sector of choice. The program gives an opportunity to immerse deeply in research activities, gives an opportunity to present the results of this work at various conferences. It is an invaluable experience, incredible emotions and useful knowledge for a lifetime. I would sincerely like to wish further prosperity and development to everyone. Thank you!

HEAD OF THE PROGRAMME

LEONID G. VOSKRESSENSKY

Doctor of Chemical Sciences, Professor,
Professor of RAS, Faculty of Sciences Dean,
Organic Chemistry Department Head.

Areas of scientific interest:
new methods for the synthesis of heterocyclic compounds, medical chemistry, nuclear magnetic resonance spectroscopy, green chemistry, multi-component reactions, new domino reactions, organic synthesis and methodology.

- Author of more than 110 scientific articles in peer-reviewed Russian and foreign scientific journals (VAK, SCOPUS, Web of Science) and regularly gives reports at international conferences on the chemistry of heterocyclic compounds.

- Professor L.G. Voskressensky is a repited recipient of grants of Russian and foreign scientific funds for research and organization of scientific events.

- Professor L.G. Voskressensky is Deputy editor-in-chief of the journal “Chemistry of heterocyclic compounds”; a member of the editorial board of foreign journals: JOC, EuJOC, Organic Letters, Tetrahedron, Tetrahedron letter; a member of two specialized councils for the defense of candidate and doctoral theses.

- Professor L.G. Voskressensky was awarded the Gold Badge “Laureate” for his art in organic synthesis of heterocycles, established by the International Charitable Foundation “Scientific Partnership” and the International Foundation “Cultural Heritage”

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