Federal State Autonomous Educational Institution of Higher Education
" Peoples' Friendship University of Russian »
the Shared Research and Educational Centre

Recommended by ISSN

The working program of the discipline

Name of the discipline

Methodology of scientific research / Методология научных исследований

Recommended for the field of / specialty:

33.06.01 Pharmacy

Direction of the program:

Pharmaceutical technology (in collaboration with the University of Basel)

2020

1. Goals and objectives of the discipline:

Goals of the discipline: obtaining basic knowledge on the organization of higher postgraduate education and science, which allows the graduate to have universal and specialized competencies that contribute to the application of the acquired skills and knowledge in scientific and pedagogical activities.

In the field of personality education according to the program "Methodology of scientific research" is the formation of social and personal qualities of graduate students: organization, hard work, attentiveness, dedication, communication skills, the ability to work in a team, responsibility for the final result of their professional activities, increasing their general culture and their desire to learn more.

Discipline objectives:

- Achievement of high quality education by deepening theoretical and practical individual training of graduate students in the basics of teaching and research;
- selection of an individual educational path in the field of pharmacy by postgraduate students;
- acquiring the skills of organizing and conducting scientific research, acquiring the necessary foundations for continuing scientific work in doctoral studies;
- the development of students' ability for self-improvement and self-development, the needs and skills of mastering the independent creation of new knowledge during their entire active life;

Training of specialists at a high level of professional culture, including a culture of professional communication, capable of formulating and solving modern scientific and practical problems, teaching in universities, successfully carrying out research and management activities

2. The discipline in the structure of the main program of higher education:

Knowing the history and methodology of science makes it possible to choose reasonable methods of studying a new scientific problem, because it reveals the laws of the development of science, the acquisition of new knowledge. The course helps to structure the field of information about the achievements of various disciplines that affect the problems of the development of human society, and, thereby, to see the interconnection and interdependence of the problems solved by specialists of various specialties. This becomes especially important in the modern world, in which the solution of emerging scientific problems is impossible without a broad interdisciplinary approach. Therefore, being a unique complex discipline that bears the character of interdisciplinarity, the methodology of science is important for science education.

Table № 1

Previous and subsequent disciplines aimed at the formation of competencies

№ п/п	Code and name of competence	Previous discipline	Subsequent disciplines (disciplines unit)
Universal competences			
1	UC-5 ability to follow ethical standards in professional activities	Higher school pedagogy Philosophy Pharmaceutical technology Biotechnology Pharmaceutical chemistry Pharmacognosy	Biopharmacy, Scientific research practice, Scientific research, State final certification

2	UC-6 ability to plan and solve problems own professional and personal development	Pharmaceutical technology Biotechnology Pharmaceutical chemistry Pharmacognosy Management and economy of the formation	Biopharmacy, The Role of Pharmacy in Solution social and medical biological problems, Issues of standardization at the stages of development of medicinal products, Issues of standardization at the stages of development of medicinal products, Pedagogical practice, Research practice, Scientific research
General professional competencies			
3	GPC-1: the ability and readiness to organize scientific research in the field of drug circulation	Medical statistics	Biopharmacy, The Role of Pharmacy in Solution social and medical biological problems, Issues of standardization at the stages of development of medicinal products, Issues of standardization at the stages of development of medicinal products, Research practice, Scientific research, State final certification
4	GPC-2: the ability and willingness to conduct scientific research in the field of drug circulation	Pharmaceutical technology Biotechnology Pharmaceutical chemistry Pharmacognosy	Biopharmacy, The Role of Pharmacy in Solution social and medical biological problems, Issues of standardization at the stages of development of medicinal products, Issues of standardization at the stages of development of medicinal products, Research practice, Scientific research, State final certification

3. Requirements for the results of mastering the discipline:

The process of studying the discipline is aimed at the formation of the following competencies:

Universal competences (UC):

1. UC-5 the ability to follow ethical standards in professional activity.
2. UC-6 ability to plan and solve problems of their own professional and personal development..

General professional competencies (GPC):

1. OPK-1: the ability and readiness to organize scientific research in the field of drug circulation
2. OPK-2: the ability and readiness to conduct scientific research in the field of drug circulation

As a result of studying the discipline, the post-graduate student must:

Know:

- Trends in the development of pharmacy and the current state of pharmaceutical science in Russia and in the world;
- The foundations of the fundamental sciences on which modern pharmacy is based;
- Fundamentals of university pedagogy and psychology;
- Main types of learning styles and teaching methods;
- Rules and methods of working in small groups;
- The essence of the problem-oriented and project-oriented teaching method;
- Methods for assessing knowledge, skills, attitudes, competence and practical implementation;
- Basic principles of creating a testing system in the study of the discipline;
- Principles of organization of postgraduate and continuing professional education;
- Methods of quantitative and qualitative analysis in scientific research in pharmacy and biomedical research;
- Modern concepts, theoretical and methodological foundations of scientific knowledge.

Be able to:

- Analyze prior knowledge using new teaching methods;
- Use teaching styles and teaching methods in pedagogical activities;
- Develop an individual educational path;
- Develop stages of problem-oriented and project-oriented teaching method;
- Draw up criteria for assessing knowledge, skills, attitudes, competence and their practical implementation;
- Compose written test assignments for basic and specialized disciplines;
- Plan and carry out their professional, scientific and pedagogical activities;
- Apply the scientific foundations of pharmacy and introduce innovative technologies in their professional activities;
- Use the knowledge of university psychology and pedagogy in practice;
- Solve research problems, relying on the principles of civilized, cultural and informational approaches to the analysis of the investigated processes;
- Integrate knowledge and express it in a correct, logically connected oral and written form;
- Use knowledge of fundamental sciences in their practical work to solve specific research, information retrieval, methodological problems in the chosen direction of training in the specialty;
- Scientifically analyze socially significant problems and processes.

Have the following skills:

- Development of an individual educational trajectory;
- Teaching active teaching methods;
- Evaluate knowledge, skills, attitudes, competencies and practical performance of tasks;
- Development of pilot research projects and participation in other projects, independent research work;
- Solutions of standard research and pedagogical problems;
- Work with an audience of students and specialists;
- Setting goals and formulating tasks related to the implementation of professional functions;
- Analysis of the achievements of pharmaceutical sciences from the position of philosophical principles, as a form of synthesis of all the previous development of mankind and its practical activities.

Be competent:

- In matters of pedagogical and scientific activities in pharmacy;
- In teaching pharmaceutical disciplines in organizations of higher and post-graduate education;
- In matters of development, introduction and production of medicines;
- In solving the problems of information retrieval, to be ready for personal and professional growth.

4. Объем дисциплины и виды учебной работы

Общая трудоемкость дисциплины составляет 3 зачетных единиц.

Type of study		Total hours	1st Course postgraduates
Classes (total)		36	36
Including:		-	-
Lectures		24	24
Practical lessons (PL)		12	12
Seminars (C)			
Laboratory work (LW)			
Independent work (IW) (total)		63	63
Including		-	-
Course projects			
Presentatios graphic works			
abstract		-	-
Other types of independent work		-	-
Intermediate validation (test, exam)		9	9
Total study time	hours	108	108
	credits	3	3

5. Содержание дисциплины

5.1. Содержание разделов дисциплины

№ п/п	The name of the discipline section	Section Contents
1.	Foundations of the methodology of science	Philosophical and psychological foundations Scientific foundations Ethical and aesthetic foundations
2.	Characteristics of scientific activity	Features of scientific activity Principles of Scientific Knowledge
3.	Means and methods of scientific research	Scientific research tools Scientific research methods
4.	Organization of the research process	Design phase of research Technological research phase Reflective phase of scientific research
5.	Organization of collective scientific research	Formation of a common theme of the team Planning. Implementation of the results Discussion rules
6.	The main directions in modern methodology of science	Modern modeling techniques Expanding the application of predicting New statistical tools

5.2. Sections of disciplines and types of classes

№ п/п	The name of the discipline section	lecture	Prac. Les..	Lab. classes.	seminars	IW	Total hours
1.	Foundations of the methodology of science	4	2			10	16
2.	Characteristics of scientific activity	4	2			10	16
3.	Means and methods of scientific research	4	2			10	16
4.	Organization of the research process	4	2			10	16
5.	Organization of collective scientific research	4	2			10	16
6.	The main directions in modern methodology of science	4	2			13	19

6. Laboratory workshop

Not provided

7. Practical lessons (seminars)

№ п/п	Name of practical classes (seminars)	Total hours
1	Ethical and aesthetic foundations of the methodology of science	1
2	Features of scientific activity	1
3	Scientific research tools	1
4	Scientific research methods	1
5	Empiricism and rationalism in the methodology of science	1
6	Research design phase.	1
7	Technological research phase	1
8	Planning	1
9	Implementation of the results	1
10	Discussion rules	1
11	The main directions in modern methodology of science	1
12	New statistical tools	1

МАТЕРИАЛЬНО-ТЕХНИЧЕСКОЕ ОБЕСПЕЧЕНИЕ ДИСЦИПЛИНЫ

В процессе реализации программы используются: персональный компьютер, мультимедийная аппаратура, лабораторное оборудование, изделия и образцы для испытаний.

Name of the specialized laboratory	Type of class	Equipment name
Room number 123 the Shared Research and Educational Center	Lectures	Computer, multimedia projector, screen, board
The laboratories of the Shared Research and Educational Centre	Laboratory classes	Premises and equipment of the research and development center: • Capsule filling machine Harro Höfliger "Modu C L". • Laboratory rotary press for the production of BOSCH tablets (Oystar Manesty) "XSpress". • Laboratory installation for granulation BOSCH (Oystar Hutline) "Micromix". • Mini-Coater Glatt "GMPCI". • Semiautomatic filling machine "PRP-VIPS-MED E 456.00". • Semi-automatic roller for seaming aluminum caps "PZR-M-

Questions for certification

For the discipline «Methodology of scientific research / Методология научных исследований»

- List the philosophical and psychological foundations of the methodology of science.
- Describe the stages of the formation of a common topic of collective research.
- List the scientific foundations of the methodology of science.
- Describe the steps involved in planning a collaborative research study.
- List the ethical and aesthetic foundations of the methodology of science.
- Give examples of the implementation of the results of collective research.
- Indicate the main features of scientific activity.
- Formulate rules for conducting discussions in research teams.
- Formulate the basic principles of scientific knowledge.
- List modern modeling techniques.
- List the means of scientific research.
- Give examples of the application of the extended forecasting method.
- List the methods of scientific research.
- List new statistical tools.
- Describe the research design phase.
- Describe the stages of the formation of a common topic of collective research.
- Describe the technological phase of scientific research.
- Describe the stages of the formation of a common topic of collective research.
- Describe the reflective phase of research.
- List modern modeling techniques

The developer:

Director of the the Shared Research and Educational Center _____ R.A. Abramovich

Head of the educational programs of higher education _____ R.A. Abramovich