Abstract (general characteristics)
main professional educational program
in the Undergraduate program
19.03.01 Biotechnology
profile Molecular Biotechnology

Qualification - Bachelor of Technology
The standard development period is 4 years
Labor intensity - 240 credit points
Academic Baccalaureate Program

1. General Provisions

The main professional educational program (OBEP) for bachelor's degree, implemented by the Federal State Autonomous Educational Institution of Higher Education "Far Eastern Federal University" in the Undergraduate program 03.19.01 Biotechnology, profile "Molecular Biotechnology" is a system of documents developed and approved at FEFU taking into account the requirements of the labor market based on the educational standard of higher education, independently established by FEFU and determining the content of the training of a highly qualified specialist, the competencies developed, the components of the educational process by disciplines, the interrelation of disciplines, the forms and methods of organizing the educational process and monitoring the knowledge of students, educational and methodological and material and technical support of the educational process.

The main educational program has a profile that characterizes its orientation to specific areas of knowledge and types of activity and determines its subject-thematic content, the prevailing types of educational activities of students and the requirements for the results of its development.

OBEP is a set of basic characteristics of education, which are presented in the form of an annotation (general characteristics) of the educational program, curriculum, calendar curriculum, work programs of disciplines (modules), internship programs and state final certification, as well as information about the actual resource provision of the educational process.

In accordance with the selected activities and the requirements for the results of mastering the educational program, this OBEP is an academic bachelor's program.

System-wide requirements for the implementation of the bachelor's program are determined in accordance with the educational standard of higher education,

independently established by the FEFU in the field of training 03/19/01 Biotechnology, approved by the order of the rector of 03/22/2017 No. 12-13-485.

The implementation of OBOP is provided by scientific and pedagogical personnel with a basic education corresponding to the profile of the discipline taught, whose share in the total number of scientific and pedagogical workers is 72.98%.

The share of teachers with an academic degree and (or) academic title and the share of scientific and pedagogical workers from among the leaders and employees of organizations whose activities are related to the focus of the program being implemented in the total number of employees implementing the program is 69.8% and meets the requirements of the educational standard of higher education, independently established by FEFU in the Undergraduate program 03/19/01 Biotechnology, approved by order of the rector of 03/22/2017 No. 12-13-485.

The general management of the content of the bachelor's program 19.03.01 "Molecular Biotechnology" is carried out by the candidate of biological sciences, director of the Department of Medical Biology and Biotechnology of the School of Biomedicine V.V. Kumeiko.

OBOP is provided with educational and methodological documentation for all disciplines, including independent work of students, presented in the FEFU local network. During the entire period of study, each student is provided with unlimited access to the electronic library systems and electronic information and educational environment of FEFU, located on the BlackBoard Learn platform. The electronic information and educational environment of FEFU provides: the formation of an electronic portfolio of the student, including the preservation of the student's work, reviews and evaluations of these works by any participants in the educational process; interaction between participants in the educational process, including synchronous and asynchronous interaction through the Internet. The functioning of the electronic information and educational environment is ensured by the appropriate means of information and communication technologies and the qualifications of workers who use and maintain it. The library fund is equipped with printed and electronic editions of basic and additional literature published over the past five to ten years.

Workplaces for people with disabilities are equipped with displays and Braille printers; equipped with: portable devices for reading flat-printed texts, scanning and reading machines, video enlarger with the ability to regulate color spectra; magnifying electronic loupes and ultrasonic markers.

The educational process is provided with equipped classrooms and laboratories that meet fire safety requirements, designed for lectures, laboratory and practical classes in the disciplines of the curriculum, as well as rooms for

students' independent work. Through the Wi-Fi network, covering all educational buildings, students have access to the Internet. All lecture-type classrooms are equipped with multimedia systems, projectors, presentation screens.

All FEFU buildings are designed taking into account accessibility for persons with disabilities. In order to provide special conditions for the education of disabled people and people with disabilities in FEFU, all buildings are equipped with ramps, elevators, lifts, specialized places equipped with toilets, information and navigation support signs.

2. Regulatory framework for the development of OBOR

The regulatory legal framework for the development of OBOR is:

– Federal Law of December 29, 2012 No. 273-FZ "On Education in the Russian Federation";

– Normative documents of the Ministry of Education and Science of the Russian Federation, the Federal Service for Supervision in the Sphere of Education and Science;

– Order of the Ministry of Education and Science of the Russian Federation dated 05.04.2017 No. 301 "On approval of the Procedure for organizing and carrying out educational activities for educational programs of higher education - bachelor's programs, specialty programs, master's programs";

– Order of the Ministry of Education and Science of Russia of June 29, 2015 No. 636 "On approval of the Procedure for conducting state final certification for educational programs of higher education - bachelor's programs, specialist programs and master's programs";

– Order of the Ministry of Education and Science of Russia No. 1383 of November 27, 2015 "On Approval of the Regulations on the Practice of Students Mastering the Basic Professional Educational Programs of Higher Education"

– Educational standard independently established by FEFU in the Undergraduate program in the direction of preparation 03/19/01 Biotechnology, approved by the decision of the FEFU Academic Council, protocol No. 02-17 of 03/10/2017, put into effect by order of the FEFU rector dated March 22, 2017 No. 12-13-485;

– Order of the Ministry of Education and Science of the Russian Federation dated 09.11.2015 No. 1309 "On approval of the procedure for ensuring conditions for accessibility of facilities and services provided in the field of education for disabled people, as well as providing them with the necessary assistance";

– Order of the Ministry of Education and Science of the Russian Federation No. 1399 of 02.12.2015 “On Approval of the Action Plan (“ Road Map ”) of the Ministry of Education and Science of the Russian Federation to Increase the

Indicators of Accessibility of Facilities for Disabled People and the Services Provided for them in Education”

– FEFU Charter, approved by order of the Ministry of Education and Science of the Russian Federation dated May 06, 2016 No. 522;

- internal regulations and documents of the FEFU.

3. Goals and objectives of the main professional educational program

The purpose of OBOR isimplementation of higher professionally profiled education in the OBEP "Molecular Biotechnology" areas of training 03.19.01 Biotechnology, which allows a graduate to work successfully in the field of biotechnology, to have universal and subject-specific competencies that contribute to his social mobility and stability in the labor market; the formation of general cultural, general professional and professional competencies in students in accordance witheducational standard of higher education, independently established by FEFU in the Undergraduate program 03/19/01 Biotechnology, approved by order of the rector of 03/22/2017 No. 12-13-485.

The main objectives of OBOR:

1) determines the requirements for graduates in the field of training 03.19.01 Biotechnology;

2) regulates the sequence and modularity of mastering general cultural (GC), general professional (MIC), professional (PC) and unique (UK) competencies in accordance with the working curriculum and educational program of higher education at the bachelor's level;

3) forms informational, educational, methodological and material and technical support of the educational process;

4) determines the goals, objectives and content of the curriculum disciplines, their place in the structure of OBOP in this area and level of training, as well as qualifications - "academic bachelor";

5) regulates the criteria and means for assessing classroom and independent work (current and midterm certification) of students, the quality of learning outcomes (final certification).

4. Labor intensity of the main professional educational program

Training under the bachelor's program "Molecular Biotechnology" can be carried out in full-time, part-time and part-time forms of education. The volume of the bachelor's program is 240 credit units (hereinafter - c.u.), regardless of the form of study, educational technologies used, the implementation of the bachelor's

program using the network form, the implementation of the bachelor's program according to an individual curriculum, including accelerated learning.

Term of obtaining education under the bachelor's program:

– full-time education, including vacations provided after passing the state final certification, regardless of the educational technologies used, is 4 years. The volume of the full-time bachelor's degree program, implemented in one academic year, is 60 s. e .;

– in part-time or part-time forms of study, regardless of the educational technologies used, it increases by at least 6 months and no more than 1 year (at the discretion of the organization), in comparison with the period of receiving education in full-time form of study. The volume of a bachelor's degree program in part-time or part-time forms of study, implemented in one academic year, is determined by the organization independently and is no more than 75 c.u .;

– when studying according to an individual curriculum, regardless of the form of study, it is established by the organization independently, but not more than the period for obtaining education established for the corresponding form of study. When training according to an individual plan of persons with disabilities, the organization has the right to extend the period by no more than one year in comparison with the period established for the corresponding form of training. The volume of a bachelor's program for one academic year when studying according to an individual plan, regardless of the form of study, is no more than 75 c.u.

When implementing the bachelor's program, e-learning and distance learning technologies are used. When teaching people with disabilities, e-learning and distance learning technologies should provide for the possibility of receiving and transmitting information in forms accessible to them.

The implementation of the undergraduate program is possible using the network form.

5. The structure of the OBOR

The structure of the bachelor's program includes a compulsory part (basic) and a part formed by participants in educational relations (variable). This makes it possible to implement modules and undergraduate courses with various specializations within the same profile.

The bachelor's program "Molecular Biotechnology" consists of the following blocks:

Block 1 "Disciplines (modules)" 216-219 CU, which includes disciplines (modules) related to the basic part of the program 114-126 CU. and disciplines (modules) related to its variable part 93-102.

Block 2 "Practices", which in full refers to the variable part of the program - 12-18 c.u.

Block 3 "State final certification" in full 6-9 c.u. refers to the basic part of the program and ends with the assignment of a qualification specified in the list of specialties and areas of training for higher education, approved by the Ministry of Education and Science of the Russian Federation.

6. The focus of the educational program

The Bachelor's degree program in Molecular Biotechnology is focused on the areas of knowledge in the field of biopharmaceuticals and biomedicine, including the field of cellular biomedical technologies.

The development of the academic bachelor's program "Molecular Biotechnology" is focused on preparation for research and production and technological activities, as the main types of professional activities, design and organizational management, as additional types of professional activities.

6.1 Areas of professional activity graduates mastering the bachelor's program "Molecular Biotechnology" include:

– obtaining, research and use of enzymes, viruses, microorganisms, cell cultures of animals and plants, products of their biosynthesis and biotransformation;

– technologies for obtaining products using microbiological synthesis, biocatalysis, genetic engineering and nanobiotechnology;

– operation and quality management of biotechnological industries in compliance with the requirements of national and international regulations;

– organization and implementation of quality control of raw materials, intermediate products and finished products.

In addition, the area of professional activity of graduates who have mastered the bachelor's program includes areas of professional activity specific to this OBEP, such as:

– assessment of morphofunctional, physiological conditions and pathological processes in the human body;

– biochemical, biophysical and physiological processes and phenomena occurring at the cellular, organ and systemic levels in the human body;

– biomedical technologies;

– cellular biomedical technologies;

– systems medicine and bioinformatics;

– development of biological sample banks;

– infrastructural support for animal research.

6.2 Objects of professional activity graduates who have mastered the bachelor's program are:

– microorganisms, cell cultures of animals and plants, viruses, enzymes, biologically active chemicals;

– devices and equipment for studying the properties of microorganisms used, cell cultures and substances obtained with their help in laboratory and industrial conditions;

– installations and equipment for carrying out biotechnological processes;

– quality control tools for raw materials, semi-finished products and finished products;

– means of assessing the state of the environment and protecting it from the influence of industrial production.

Specific objects professional activities for this OBOR are:

– products of biosynthesis and biotransformation of cell cultures of animals and plants;

– cells and tissues of the human body;

– objects of genetic engineering, microbiological synthesis, biocatalysis, nanobiotechnology, molecular modeling.

6.3 Types of professional activities for which graduates who have mastered the bachelor's program are preparing:

– production and technological;

– organizational and managerial;

– research;

– design.

7. Types of professional activity. Professional tasks

The development of the academic bachelor's program "Molecular Biotechnology" is focused on preparing for research activities as the main type of professional activity and production and technological, design and organizational and managerial, as additional types of professional activity.

Mastering the academic bachelor's program "Molecular Biotechnology" is aimed at the graduate's readiness to solve the following professional tasks in production and technological activities:

1) management of individual stages of existing biotechnological industries;

2) organization of workplaces, their technical equipment, placement of technological equipment;

3) control of compliance with technological discipline;

4) organization and conduct of incoming control of raw materials and materials;

5) use of standard methods of quality control of manufactured products;

6) identification of the causes of defects in production and the development of measures for its prevention and elimination;

7) participation in works on fine-tuning and mastering of technological processes in the course of preparation for production of new products;

8) participation in commissioning, tuning and experimental testing of equipment and software;

9) checking the technical condition and residual life of the equipment, organizing routine inspections and maintenance, drafting applications for equipment and spare parts, preparing technical documentation for repair work.

Mastering the academic bachelor's program "Molecular Biotechnology" is aimed at the graduate's readiness to solve the following professional tasks in research activities:

1) studying scientific and technical information, performing literary and patent searches on the research topic;

2) mathematical modeling of processes and objects based on standard computer-aided design packages;

3) experimental research and testing according to a given method, mathematical processing of experimental data;

4) participation in the implementation of research and development results;

5) preparation of data for the preparation of reports, reviews, scientific publications;

6) participation in activities for the protection of intellectual property.

Mastering the academic bachelor's program "Molecular Biotechnology" is aimed at the graduate's readiness to solve the following professional tasks in project activities:

1) collection of initial data for the design of technological processes and installations;

2) calculation and design of individual stages of the technological process using standard design automation tools;

3) participation in the development of the main stages of the technological scheme, research of the technological process at pilot and pilot industrial installations;

4) participation in the development of design and working technical documentation;

5) negotiating with design organizations and suppliers of technological equipment, evaluating the design results of biotechnological enterprises at the project stage.

Mastering the academic bachelor's program "Molecular Biotechnology" is aimed at the graduate's readiness to solve the following professional tasks in organizational and managerial activities:

1) development of operational plans for the work of primary production units;

2) organization of the work of teams of performers;

3) participation in the preparation of technical documentation (work schedules, technological instructions, safety instructions, applications for materials and equipment, business correspondence documents);

4) collection and preparation of initial data for the selection and justification of scientific, technical and organizational decisions based on economic analysis;

5) preparation of documentation and participation in the implementation of the quality management system of the enterprise;

6) execution of works on preparation for certification of technical means, systems, processes, equipment and materials;

7) organization and implementation of measures to prevent industrial injuries, occupational diseases and environmental violations.

Mastering the academic bachelor's program "Molecular Biotechnology" is aimed at the graduate's readiness to solve the following professional tasks focused on specific areas of knowledge in molecular biotechnology:

Professional tasks, the solution of which is aimed at the formation of competencies	Competencies formed by the training program for solving professional problems
in research activities	
1) studying scientific and technical information, performing literary and patent searches on the research topic	− the ability to work with scientific and technical information, the ability to use Russian and international experience in professional activities (PC-8); − the ability and readiness to apply new research methods in research activities in the field of biotechnology, taking into account the rules of observance of copyright (UK-7)
2) mathematical modeling of processes and objects based on standard computer-aided design packages	− readiness to use modern computer-aided design systems (PC-13)
3) experimental research and testing according to a given method,	− possession of methods for planning an experiment, processing and presenting the results obtained (PC-10);

mathematical processing of experimental data	− the ability to search, store, process and analyze information from various sources and databases, to present it in the required format using information, computer and network technologies (OPK-1); − the ability and willingness to use the basic laws of natural sciences in professional activities, to apply the methods of mathematical analysis and modeling, theoretical and experimental research (OPK-2); − possession of the basic methods, methods and means of obtaining, storing, processing information, skills of working with a computer as a means of information management (OPK-5); − the ability to apply knowledge of the principles of the cellular organization of biological objects, biophysical and biochemical bases, membrane processes and molecular mechanisms of life (UK-1); − the ability and willingness to understand and analyze biochemical, physicochemical, molecular biological mechanisms of the development of pathological processes in the cells and tissues of the human body (UK-2); − the ability to apply basic ideas about the basic laws and modern achievements of genetics and breeding, about genomics, proteomics (UK-3); − the ability to assess morphofunctional, physiological conditions and pathological processes in the human body for solving professional problems (UK-4); − the ability to apply knowledge about the basics of biotechnological and biomedical industries, microbiological synthesis, biocatalysis, genetic engineering, nanobiotechnology, molecular modeling (UK-6); − the ability and readiness to apply new research methods in research activities in the field of biotechnology, taking into account the rules of observance of copyright (UK-7); − knowledge of the principles of obtaining, research and use of enzymes, viruses, microorganisms, cell cultures of animals and plants, products of their biosynthesis and biotransformation (UK-8)

4) participation in the implementation of research and development results	− possession of methods for planning an experiment, processing and presenting the results obtained (PC-10); − ability and readiness to implement applied and practical projects for the study of biochemical, biophysical and physiological processes and phenomena, occurring at the cellular, organ and systemic levels in the human body (UK-5)
5) preparation of data for the preparation of reports, reviews, scientific publications	− willingness to use modern information technologies in their professional field, including databases and software packages (PC-11)
6) participation in events for the protection of intellectual property	− ability and willingness to apply new research methods in research activities in the field of biotechnology, taking into account the rules of copyright compliance (UK-7)
7) creation of research potential for the production of competitive products	− the ability to work with scientific and technical information, use Russian and international experience in professional activities (PC-8); − knowledge of the principles of production, research and use of enzymes, viruses, microorganisms, cell cultures of animals and plants, products of their biosynthesis and biotransformation (UK-8); − possession of modern approaches to the design of medicines and diagnostic products (UK-9)
in production and technological activities	
1) management of individual stages of existing biotechnological industries	− the ability to carry out the technological process in accordance with the regulations and use technical means to measure the main parameters of biotechnological processes, properties of raw materials and products (PC-1); − ability to implement and manage biotechnological processes (PC-2); − the ability to apply knowledge about the basics of biotechnological and biomedical industries, microbiological synthesis, biocatalysis, genetic engineering, nanobiotechnology, molecular modeling (UK-6)
2) organization of workplaces, their technical equipment, placement of technological equipment	− readiness to evaluate technical means and technologies, taking into account the environmental consequences of their use (PC-3); − the ability to ensure compliance with safety regulations, industrial sanitation, fire safety and labor protection (PC-4).
3) control over the observance of	− readiness to implement a quality management

technological discipline	system for biotechnological products in accordance with the requirements of Russian and international quality standards (PC-6); − ability to conduct standard and certification tests of raw materials, finished products and technological processes (PC-9)
4) organization and conduct of incoming control of raw materials and materials	
5) use of standard methods of quality control of manufactured products	
6) identifying the causes of defects in production and developing measures to prevent and eliminate them	− readiness to implement a quality management system for biotechnological products in accordance with the requirements of Russian and international quality standards (PC-6); − the ability to systematize and generalize information on the formation and use of enterprise resources (PC-7).
7) participation in works on fine-tuning and mastering of technological processes in the course of preparation for production of new products	− the ability to show initiative and make responsible decisions, realizing responsibility for the results of their professional activities (OK-3); − the ability to find and evaluate new technological solutions, implement the results of biotechnological research and development (OPK-7); − willingness to participate in research of the biotechnological process at pilot and pilot industrial installations (PC-18);
8) participation in commissioning, tuning and experimental testing of equipment and software	− the ability to use modern methods and technologies (including information) in professional activities (OK-5); − the ability to carry out the technological process in accordance with the regulations and use technical means to measure the main parameters of biotechnological processes, properties of raw materials and products (PC-1); − readiness to evaluate technical means and technologies taking into account the environmental consequences of their use (PC-3); − the ability to systematize and generalize information on the formation and use of enterprise resources (PC-7).
9) checking the technical condition and residual life of equipment, organizing preventive examinations and current repairs, drafting applications for equipment and spare parts, preparing technical documentation for repair work	
in project activities	
1) collection of initial data for the design of technological processes and installations	− the ability to systematize and generalize information on the use of enterprise resources (PC-7)
2) calculation and design of individual stages of the technological process using standard design automation tools	− readiness to use modern computer-aided design systems (PC-13); − the ability to design technological processes using automated systems for technological preparation of production as part of the team of authors (PC-14).
3) participation in the development	− the ability to design technological processes using

of the main stages of the technological scheme, research of the technological process at pilot and pilot industrial installations;	automated systems for technological preparation of production as part of the team of authors (PC-15); − the ability to develop the main stages of the biotechnological process (PC-17); − willingness to participate in research of the biotechnological process at pilot and pilot industrial installations (PC-18);
4) participation in the development of design and working technical documentation;	− the ability to participate in the development of technological projects as part of the team of authors (PC-12); − willingness to participate in the development of design and working technical documentation (PC-19).
5) negotiating with design organizations and suppliers of technological equipment, evaluating the design results of biotechnological enterprises at the project stage.	− willingness to negotiate with design organizations and suppliers of technological equipment, evaluate the design results of biotechnological enterprises at the project stage (PC-16).
in organizational and management activities	
1) development of operational plans for the work of primary production units;	− the ability to organize the work of performers, find and make managerial decisions in the field of organization and regulation of labor (PC-5);
2) organization of the work of teams of performers;	
3) participation in the preparation of technical documentation (work schedules, technological instructions, safety instructions, applications for materials and equipment, business correspondence documents);	− the ability to systematize and generalize information on the use of enterprise resources (PC-7);
4) collection and preparation of initial data for the selection and justification of scientific, technical and organizational decisions based on economic analysis;	
5) preparation of documentation and participation in the implementation of the quality management system of the enterprise;	− readiness to implement a quality management system for biotechnological products in accordance with the requirements of Russian and international quality standards (PC-6);

6) execution of works on preparation for certification of technical means, systems, processes, equipment and materials;	− readiness to implement a quality management system for biotechnological products in accordance with the requirements of Russian and international quality standards (PC-6); − the ability to conduct standard and certification tests of raw materials, finished products and technological processes (PC-10);
7) organization and implementation of measures to prevent industrial injuries, occupational diseases and environmental violations;	− readiness to evaluate technical means and technologies taking into account the environmental consequences of their use (PC-3); − the ability to ensure compliance with safety regulations, industrial sanitation, fire safety and labor protection (PC-4).

8. Planned results of the development of OBOR

A graduate who has mastered the bachelor's program "Molecular Biotechnology" must have the following general cultural competences (CC), primarily university-wide, common for all FEFU graduates:

– the ability for self-improvement and self-development in the professional sphere, for raising the general cultural level (OK-1);

– readiness to integrate into the scientific, educational, economic, political and cultural space of Russia and the APR (OK-2);

– the ability to show initiative and make responsible decisions, realizing responsibility for the results of their professional activities (OK-3);

– the ability to creatively perceive and use the achievements of science and technology in the professional sphere in accordance with the needs of the regional and world labor market (OK-4);

– the ability to use modern methods and technologies (including information) in professional activities (OK-5);

– the ability to understand, use, generate and competently present innovative ideas in Russian[1] language in reasoning, publications, public discussions (OK-6);

– knowledge of a foreign language in oral and written form for the implementation of intercultural and foreign language communication (OK-7);

– the ability to use the foundations of philosophical knowledge to form an ideological position (OK-8);

[1] For international educational programs - in English.

– the readiness to use the basic methods of protecting production personnel and the population from the possible consequences of accidents, catastrophes, natural disasters (OK-9);

– the ability to analyze the main stages and patterns of the historical development of society for the formation of civic position (OK-10);

– the ability to use the basics of economic knowledge in various fields of activity (OK-11);

– the ability to use the basics of legal knowledge in various fields of activity (OK-12);

– the ability to work in a team, tolerantly perceiving social and cultural differences (OK-13);

– the ability for self-organization and self-education (OK-14);

– the ability to use methods and means of physical culture to ensure full-fledged social and professional activity (OK-15).

A graduate who has mastered the bachelor's program "Molecular Biotechnology" must have the following general professional competencies (GPC):

– the ability to search, store, process and analyze information from various sources and databases, to present it in the required format using information, computer and network technologies (OPK-1);

– the ability and willingness to use the basic laws of natural science disciplines in professional activities, to apply the methods of mathematical analysis and modeling, theoretical and experimental research (OPK-2);

– the ability to use knowledge about the modern physical picture of the world, spatio-temporal laws, the structure of matter to understand the world around and natural phenomena (OPK-3);

– the ability to understand the importance of information in the development of a modern information society, awareness of the danger and threat arising in this process, the ability to comply with the basic requirements of information security, including the protection of state secrets (GPC-4);

– possession of basic methods, methods and means of obtaining, storing, processing information, skills of working with a computer as a means of information management (OPK-5);

– possession of the basic methods of protecting production personnel and the population from the possible consequences of accidents, catastrophes, natural disasters (OPK-6);

– the ability to find and evaluate new technological solutions, implement the results of biotechnological research and development (OPK-7).

A graduate who has mastered the bachelor's program "Molecular Biotechnology" must have professional competencies (PC), the relevant types of professional activities, which the bachelor's program is focused on:

production and technological activities:

– the ability to carry out the technological process in accordance with the regulations and use technical means to measure the main parameters of biotechnological processes, properties of raw materials and products (PC-1);

– the ability to implement and manage biotechnological processes (PC-2);

– readiness to evaluate technical means and technologies, taking into account the environmental consequences of their use (PC-3);

– the ability to ensure compliance with safety regulations, industrial sanitation, fire safety and labor protection (PC-4);

organizational and management activities:

– the ability to organize the work of performers, find and make managerial decisions in the field of organization and regulation of labor (PC-5);

– readiness to implement a quality management system for biotechnological products in accordance with the requirements of Russian and international quality standards (PC-6);

– the ability to systematize and generalize information on the formation and use of enterprise resources (PC-7);

research activities:

– the ability to work with scientific and technical information, use Russian and international experience in professional activities (PC-8);

– possession of the basic methods and techniques of experimental research in their professional field (PC-9);

– the ability to conduct standard and certification tests of raw materials, finished products and technological processes (PC-10);

– possession of methods for planning an experiment, processing and presenting the results obtained (PC-11);

– willingness to use modern information technologies in their professional field, including databases and application packages (PC-12);

project activity:

– the ability to participate in the development of technological projects as part of the team of authors (PC-13);

– readiness to use modern computer-aided design systems (PC-14);

– the ability to design technological processes using automated systems for technological preparation of production as part of the team of authors (PC-15);

– willingness to negotiate with design organizations and suppliers of technological equipment, evaluate the design results of biotechnological enterprises at the project stage (PC-16);

– the ability to develop the main stages of the biotechnological process (PC-17);

– willingness to participate in research of the biotechnological process at pilot and pilot industrial installations (PC-18);

– willingness to participate in the development of design and working technical documentation (PC-19).

A graduate who has mastered the bachelor's program "Molecular Biotechnology" must have unique professional competencies (CC) corresponding to the main type of scientific research professional activity, which the bachelor's program is focused on:

– the ability to apply knowledge of the principles of the cellular organization of biological objects, biophysical and biochemical bases, membrane processes and molecular mechanisms of life (UK-1);

– the ability and willingness to understand and analyze the biochemical, physicochemical, molecular biological mechanisms of the development of pathological processes in the cells and tissues of the human body (UK-2);

– the ability to apply basic ideas about the basic laws and modern achievements of genetics and selection, about genomics, proteomics (UK-3);

– the ability to assess morphofunctional, physiological conditions and pathological processes in the human body to solve professional problems (UK-4);

– the ability and readiness to implement applied and practical projects for the study of biochemical, biophysical and physiological processes and phenomena occurring at the cellular, organ and systemic levels in the human body (UK-5);

– the ability to apply knowledge about the basics of biotechnological and biomedical industries, microbiological synthesis, biocatalysis, genetic engineering, nanobiotechnology, molecular modeling (UK-6);

– the ability and readiness to apply new research methods in research activities in the field of biotechnology, taking into account the rules of observance of copyright (UK-7);

– knowledge of the principles of production, research and use of enzymes, viruses, microorganisms, cell cultures of animals and plants, products of their biosynthesis and biotransformation (UK-8);

– possession of modern approaches to the design of medicines and diagnostic products (UK-9).

10. Characteristics of the educational environment of FEFU, ensuring the formation of general cultural competencies and the achievement of educational goals

In accordance with the FEFU Charter and the University Development Program, the main task of educational work with students is to create conditions for the active life of students, for civil self-determination and self-realization, to meet the needs of students in intellectual, spiritual, cultural and moral development. Educational activities at the university are carried out systematically through the educational process, practice, research work of students and extracurricular work in all areas. The university has created a campus environment that ensures the development of general cultural and socio-personal competencies of graduates.

The organization and content of the management system for educational and extracurricular activities at FEFU is provided by the following structures: Academic Council; administration; Vice-Rector for Academic and Educational Work; Schools; Department of Youth Policy; Creative Center; Joint Council of Students. Young people can put their efforts and implement their own projects in the Volunteer Training Center, the Parliamentary Debate Club, the Students' Trade Union, the United Student Scientific Society, the Center for the Development of Student Initiatives, the Youth Training Center, Student Professors. detachments.

The student council of the School of Biomedicine plays an important role in shaping the educational environment. As part of the activities of student associations, financial support is provided for the activities of student associations, student teams, student self-government, volunteer movement, the development of interest clubs, support for student sports, patriotic trends.

The SBM Student Council participates in the organization of extracurricular work of school students, identifies the factors that impede the successful implementation of the educational process at the university, brings them to the attention of the school management, considers issues related to the observance of academic discipline, internal rules, protects the interests of students in cooperation with administration, contributes to the students gaining experience in organizational and performing activities.

The educational environment of the university ensures that each student has the opportunity to be active, to be involved in social practice, in solving the problems of the university, city, country, while developing the corresponding general cultural and professional competencies. So, to support and motivate students at FEFU, a number of state and non-state scholarships have been defined: scholarship for success in scientific activity, scholarship for success in social activities, scholarship for success in sports activities, scholarship for success in creative activity, Scholarship of the V. Potanin Charitable Foundation , Oxford Russian Foundation Scholarship, Primorsky

Krai Governor Scholarship, Genzo Shimadzu Scholarship, BP Scholarship, Alpha Chance Scholarship Program, Mitsubishi Corporation International Scholarship, etc.

The university is a unique complex of buildings and structures, located on an area of about a million square meters, with a developed campus infrastructure, including hostels and hotels, sports facilities and facilities, a medical center, a network of canteens and cafes, gyms, grocery stores, pharmacies, post offices and banks, laundries, ateliers and other facilities that provide all conditions for living, food, health improvement, sports and recreation for students and staff.

All campus buildings are designed with accessibility for people with disabilities in mind. In order to provide special conditions for the education of disabled people and people with disabilities, FEFU maintains a specialized registration of disabled people and people with disabilities at the stages of their admission, training, and employment.

11. The system for assessing the quality of mastering the educational program by students

Assessment of the quality of mastering OBEP HE includes current control, intermediate certification and state final certification of graduates. For systematic work to support academic performance at the university, a rating assessment of students' knowledge has been developed.

The procedure for conducting current control and intermediate certification is regulated by the "Regulations on the current monitoring of academic performance, current and intermediate certification of students enrolled in higher education programs at FEFU", approved by order No. 12-13-1376 dated 05.07.2017; "Regulations on the rating system for assessing the progress of students in educational programs of higher education at FEFU", approved by order of 28.10.2014 No. 12-13-17184; "Regulations for monitoring the effectiveness of the educational process", approved by order of 28.10.2014 No. 12-13-1719.

The state final certification is regulated by the "Regulations on the state final certification for educational programs of higher education - bachelor's, specialist's, master's programs", approved by order of November 27, 2015 No. 12-13-2285. Evaluation tools in the form of a pool of evaluation tools for all forms of proficiency testing and monitoring are developed and provided in the BlackBoard Learn e-learning support system. Evaluation means are developed in accordance with the "Regulations on the funds of evaluation means of educational programs of higher education - programs of bachelor's, specialty, magistracy of FEFU", approved by order of 12.05.2015 No. 12-13-850. For each learning outcome in the discipline,

12. Specific features of OBOR

The strategic document defining the policy of the Russian Federation in the biotechnological sector of the economy is the Comprehensive Program for the Development of Biotechnologies in the Russian Federation for the Period up to 2020, approved by the Chairman of the Government of the Russian Federation V.V. Putin on April 24, 2012 N 1853p-P8.

The implementation of the action plan ("road map") "Development of biotechnology and genetic engineering" (hereinafter referred to as the "road map") is carried out both with the help of system-wide measures for the development of the biotechnology sector, and measures for the development of priority sectors in this area, including the following:

– biopharmaceuticals;
– biomedicine;
– industrial biotechnology;
– bioenergy;
– agri-food biotechnology;
– forest biotechnology;
– environmental (ecological) biotechnology.

Guided by the Federal Target Program "Development of the pharmaceutical and medical industry of the Russian Federation for the period up to 2020 and beyond" and the Order of the Government of the Russian Federation dated July 18, 2013 No. 1247-r "On the approval of the action plan (" road map ")" Development of biotechnology and genetic engineering », The following events are relevant:

– to improve the quality of training, advanced training and professional retraining of personnel for biotechnology (clause 6 of the plan No. 1247-r);

– on the formation of a list of professional standards most in demand in the field of biotechnology (clause 7 of the plan No. 1247-r);

– on the development of professional standards in the field of biotechnology (clause 8 of the plan No. 1247-r);

– on the development of proposals to stimulate demand for domestic innovative drugs, including biotechnological ones (clause 23 of the plan No. 1247-r);

– on the development of a draft Good Practice for the production of biomedical cell products (clause 32 of the plan No. 1247-r);

– on the creation of GTP-certified cell laboratories, allowing to accurately characterize and standardize cell lines and products obtained on their basis (clause 33 of the plan No. 1247-r).

According to the Department of Health, the Department of Education and Science, the Department of Fisheries and Aquatic Biological Resources of the Primorsky Territory Administration in the region, the demand for specialists in the field of training 03.19.01 Biotechnology, the program "Molecular Biotechnology" in connection with the development of "territories of advanced development" (TOP) and the current areas of activity of the biotechnology industry is very high.

The main current activities of the industry in the Primorsky Territory:

1) creation of a biotechnological cluster in accordance with the roadmap;

2) the introduction of the TR CU with special requirements for the qualifications of personnel;

3) construction of processing complexes and biotechnological modules.

The relevance of the main professional educational program "Molecular Biotechnology" in the direction 19.03.01 Biotechnology is to prepare a graduate who is ready to perform professional tasks, taking into account modern requirements for the development of biotechnology, in such interdisciplinary research areas as systems biology, marine biology, cell technologies, molecular biotechnology, biotechnology of aquatic biological resources.

The main professional educational program in the Undergraduate program 03/19/01 Biotechnology profile "Molecular Biotechnology" is focused on research and design and technological activities that are basic for the development of high-tech production and scientific and technological potential in the field of biotechnology, systems biology, cell technologies, molecular biotechnology, biotechnology of aquatic biological resources.

Professional competencies, as well as established activities and professional tasks correspond to the requests of the Comprehensive Program for the Development of Biotechnology in the Russian Federation for the Period up to 2020, since they make it possible to effectively use all the achievements of science in the biotechnology industry, meet the requirements of high-tech organizations leading developments for domestic and foreign pharmaceuticals. and biotech manufacturers.

The choice of disciplines of the variable part, their necessity and sufficiency for the formation of professional competencies of a graduate, taking into account the requests of employers and the requirements of the modern labor market, are aimed at solving the problems specified in the Federal Target Program "Development of the pharmaceutical and medical industry of the Russian Federation for the period up to 2020 and beyond" ...

The following enterprises and organizations for research and production of biotechnological products are successfully operating on the territory of the Primorsky Territory:

– Federal State Budgetary Institution of Science "National Scientific Center of Marine Biology" of the Far Eastern Branch of the Russian Academy of Sciences (NSCMB FEB RAS);

– Federal State Budgetary Scientific Institution "Pacific Research Fisheries Center" (FGBNU "TINRO-Center");

– Federal State Budgetary Institution of Science "Federal Scientific Center for Biodiversity of Terrestrial Biota of East Asia" of the Far Eastern Branch of the Russian Academy of Sciences (FSC BIODIVERSITY FEB RAS);

– Center for High Technologies "ChemRar";

– LLC "Biopolis";

– LLC "Pharmatika";

– LLC "Unicap".

These enterprises are the customers of specialists and the ideological inspirers of the projects being implemented, the heads of the enterprises are the chairmen and members of the state and certification commissions.

13. Characteristics of active / interactive methods and forms of organizing classes, electronic educational technologies used in the implementation of OBOP

In the educational processin the Undergraduate program 03.19.01 Biotechnology, profile "Molecular Biotechnology" provides for the widespread use of active and interactive methods and forms of conducting classes. According to the OBEP curriculum, 32.7% of classroom lessons are conducted using active and interactive methods and forms.

Table 1. Characteristics of active / interactive methods and forms of organizing OBOR classes

Methods and forms of organizing classes	**Characteristics of active / interactive methods and forms of organizing classes**	**Formed competencies**
1 Lecture-information	The purpose of the information lecture is to give students modern, holistic, interconnected knowledge, the level of which is determined by the target setting for each specific topic; to provide during the lecture the creative work of students together with the teacher; to educate students' professional and business qualities, love for the subject, and develop their independent creative thinking, arouse the necessary interest in students, give direction for independent work;	OK-1 OK-3 PC-5

	be at the current level of development of science and technology, contain a forecast of their development for the coming years; reflect the methodological processing of the material (highlighting the main ideas and provisions, emphasizing the conclusions, repeating them in various formulations).	
2 Lecture - press conference	Distinctive feature This form of lecture consists in enhancing the work of bachelors in class by informing each bachelor personally: the need to formulate a question and ask it competently initiates mental activity, and waiting for an answer to your question concentrates attention. The lecture press conference is designed to fill the knowledge gaps of students and diagnose their level of training. Organizationally, it is carried out as follows. The lecturer, having named the topic of the lesson, asks the bachelors to ask him questions in writing on the problem under study. Within two to three minutes, they formulate the most interesting questions and pass them on to the teacher. As one of the options for conducting such a form of lesson, questions can be prepared by bachelors at the request of the teacher in advance at the stage preceding the lecture. Within three to five minutes, the teacher sorts the questions by their content and begins the lecture. The lecture can be presented as a set of answers to the questions posed or as a coherent text, in the process of presentation of which the answers are formulated.	OK-1 OK-4 OK-8 OK-10 PC-7
3 Problem lecture	Unlike an information lecture, in which students receive information interpreted by the teacher, at a problem lecture, new theoretical material is presented as an unknown that needs to be discovered, to solve a problem situation The teacher's task is to predict a problem learning strategy, to ensure the participation of students in the analysis of the contradiction that has arisen. involve them in solving problems of their situations, teach them to put forward original ways to solve them, teach them to analyze the new information received in the light of well-known theories, put forward hypotheses and use various methods to solve them. To create a problem situation, you must use the following techniques: – direct problem statement; – problematic task in the form of a question; – communication of information containing a contradiction; – communicating opposing views on any issue; – paying attention to a particular life phenomenon that needs to be explained; – the communication of facts is bewildering; – comparison of life ideas with scientific ones; – posing a question to which the student must answer	OK-3 OK-4 OK-10 OK-11 OK-13 OPK-7

	after listening to part of the lecture and draw conclusions	
4 Lecture-discussion	Discussion of a controversial issue, problems during the presentation of the material by the lecturer. An important characteristic of a discussion that distinguishes it from other types of dispute is argumentation. Discussing a controversial (debatable) problem, each side, opposing the opinion of the interlocutor, argues its position. When presenting lecture material, the teacher not only uses the students' answers to their questions, but also organizes a free exchange of opinions in the intervals between logical sections. This revitalizes the educational process, activates the cognitive activity of the audience and allows the teacher to manage the collective opinion of the group (stream), using it for the purpose of persuasion, overcoming negative attitudes and erroneous opinions that arise among students. The effect is achieved only with the appropriate selection of questions for discussion and skillful, purposeful management of it.	OK-1 OK-2 OK-7 PC-5 PC-7
5 Scientific seminar	A scientific seminar is an active teaching method, in the application of which the productive and transformative activity of students should prevail. The scientific seminar should develop and consolidate students' skills of independent work, the ability to draw up plans for theoretical reports, their theses, prepare detailed messages and speak with them in front of the audience, participate in discussion and discussion. A scientific seminar is a group lesson under the guidance of a teacher, its main tasks are to implement the following goals: – to deepen and consolidate in students the knowledge gained at lectures and in the course of independent work; – check the effectiveness and efficiency of independent work on educational material; – to instill in students the skills of searching, generalizing and presenting educational material in the classroom; – develop the ability to formulate, substantiate and state their own judgment on the issue under discussion.	OK-3 OK-4 OK-6 OPK-1
6 Seminar-webinar	Webinars are online events. They are similar to regular seminars - sequential talks, demonstrations, questions and answers, but all of this happens in real time over the Internet. During a web conference, each of the participants is at their computer, and communication between them is maintained over the Internet through a downloadable application installed on each participant's computer, or through a web	OK-5 OK-6 OK-12 OK-13 OK-14 PC-7 PC-8

	application. In the latter case, to join the conference, you just need to enter the URL (site address) in the browser window. Webinars can be collaborative and include voting and polling sessions to ensure full interaction between the audience and the presenter. In some cases, the presenter can speak through the telephone, commenting on the information displayed on the screen, and the listeners can answer, preferably over a speakerphone. There are also technologies on the market that supportVoIP-audio technologies providing full-fledged audio communication over the network. Webinars (depending on the provider) can have the function of anonymity or "invisibility" of users, so that participants in the same conference may not be aware of each other's presence. In the early years after the advent of the Internet, the term "web conferencing" was often referred to as a forum thread or message board. Later, the term received the meaning of communication in real time. The webinar is currently being used within the systemdistance learning... At the next lesson, after a short introduction, the leader of the seminar gives, of his choice, the floor for a report to one of the prepared students. The report lasts 10 ... 12 minutes. Each student then asks the speaker one question. Questions and answers to them form the central part of the seminar. It is understood that in order to formulate a question, a student must have certain knowledge on the topic, first study the relevant literature. The nature of the questions is largely determined by the depth of independent work. The speaker answers the questions first. If the workshop leader considers the answer insufficient, he provides an opportunity to express their opinion on the question to other students, and then supplements what was said and makes the necessary adjustments.	
7 Seminar-discussion	Discussion of a controversial issue, problems during the seminar. An important characteristic of a discussion that distinguishes it from other types of dispute is argumentation. Discussing a controversial (debatable) problem, each side, opposing the opinion of the interlocutor, argues its position. During the seminar, the teacher not only uses the students' answers to their questions, but also organizes a free exchange of views in the intervals between logical sections. This revitalizes the educational process, activates the cognitive activity of the audience and allows the teacher to manage the collective opinion of the group (stream), using it for the purpose of persuasion, overcoming negative attitudes and erroneous opinions that arise among students.	OK-3 OK-7 OK-10 OPK-2

	The effect is achieved only with the appropriate selection of questions for discussion and skillful, purposeful management of it. The choice of questions for discussion is carried out by the teacher, depending on the degree of preparedness of the students, as well as those specific didactic tasks that the teacher sets for himself in this audience.	
9 Problem workshop	To create a problem situation, you must use the following techniques: – direct problem statement; – problematic task in the form of a question; – communication of information containing a contradiction; – communicating opposing views on any issue; – paying attention to a particular life phenomenon that needs to be explained; – the communication of facts is bewildering; – comparison of life ideas with scientific ones; posing a question to which the student must answer and draw conclusions	OK-12 OK-13 OK-14 OPK-2 OPK-6 PC-2 PC-3 PC-8
8 Seminar-round table	This method is a kind of dialogue. It requires teachers and involved specialists to implement the principle of collective discussion of the problem, the ability to combine elements of evidence and convictions during the discussion. The procedure for preparing and holding a "round table" is determined by the specifics of the method itself. The topic, start time, duration of the seminar are announced in advance. Students are encouraged to prepare questions of interest to them within a topic. For the "round table" a scenario is being developed, in which the possible sequence, content and schedule of speeches are tentatively determined. At the seminar, the presenter names its topic, introduces the trainers, introduces the audience to their specialization, explains the procedure for work. He then invites questions to be asked, forwards each question to a specialist, initiates and manages the discussion. At the end, he briefly summarizes. The "round table" can be held with the participation of both teachers specializing in certain sections of the academic discipline of the department, and specialists invited for these purposes. Specialists-scientists, representatives, government agencies, businessmen, etc. are invited to participate in such a seminar.	OK-13 OPK-7 PC-5 PC-6 PC-12
10 Training	Training(from the English train - to educate, teach, accustom) is the process of acquiring skills and abilities in any area through the implementation of sequential tasks,	OPK-3 OPK-4 OPK-5

	actions or games aimed at achieving the development and development of the required skill. The training allows to give its participants the missing information, to form skills of resistance to pressure, skills of safe behavior. The indisputable advantage of the training is the active involvement of all participants in the training process. Conducting a lesson by the method of group training requires a lot of preparatory work from the teacher. Preparation includes: – work on the plan - the scenario of the training; – work with students according to their attitude to actively participate in solving the problem brought up for training; – self-training of the teacher; – distribution of roles between the participants, although not everyone can get roles, but the majority will be in the role of outside observers and critics, and in this capacity take an active part in the training. An important feature of group training as a teaching method is the interaction of trainees that turns an ordinary study group into a visual model of various social and psychological phenomena, into a research ground for their study or a practical laboratory for their correction.	
11 Project development (project method)	A way to achieve a didactic goal through a detailed development of a problem (technology), which should end with a completely real, tangible practical result, formalized in one way or another. This is a set of techniques, actions of students in their specific sequence to achieve the set task - solving Problems, personally significant for students and designed in the form of some kind of final product. The main purpose of the project method is to provide students with the opportunity to independently acquire knowledge in the process of solving practical problems or problems that require the integration of knowledge from various subject areas. Design technology involves the use of a combination of research, search, problematic methods. For the teacher withinthe projectthe role of coordinator, expert, consultant is assigned. The project method is based on the development of students' cognitive skills, the ability to independently design their knowledge, the ability to navigate the information space, the development of critical and creative thinking. The project method is always focused on the independent activity of students - individual, pair, group, which students perform for a certain period of time. This	PC-1 PC-13 PC-14 PK-15 PC-16 PC-17 PK-18 PK-19 UPK-5

	method is organically combined with group methods. The project method involves solving a problem. The solution to the problem involves, on the one hand, the use of a set of various methods, meanslearning, and on the other hand, implies the need to integrate knowledge, the ability to apply knowledge from various fields of science, technology, technology, creative fields. The results of completed projects must be concrete, ready for use. If we talk about the method of projects as a pedagogical technology, then this technology presupposes a set of research, search, problematic methods that are creative in their very essence.	
12 Extracurricular Activity	A system of organizational measures, technical means and methods to prevent exposure to hazardous production factors.	OK-9 OK-15 PC-4
13 Laboratory workshop	Laboratory classes, like other types of practical exercises, are the middle link between the in-depth theoretical work of students in lectures, seminars and the application of knowledge in practice. Laboratory studies are one of the types of independent practical work of students, in which, through experiments, theoretical knowledge is deepened and consolidated in the interests of professional training. *By conducting a laboratory workshop with students, the following goals are achieved:* – deepening and consolidating the knowledge of the theoretical course through practical study in laboratory conditions of the laws and regulations set out in the lectures; – acquisition of skills in scientific experimentation, analysis of the results obtained; – the formation of primary skills in organizing, planning and conducting scientific research. Depending on the number of students, the content and volume of program material, the number of laboratory work, as well as the capacity of classrooms and the availability of equipment, universities use the following forms of laboratory classes: frontal, in cycles, individual and mixed (combined). The frontal form of laboratory studies involves the simultaneous execution of work by all students. Its use contributes to a deeper assimilation of the educational material, since the schedule for the laboratory work is set in strict accordance with the lectures and exercises. At the same time, a high methodological level of work is ensured, since at each lesson the teacher's attention is focused on only one work. Sometimes it is possible to use the organization of laboratory work in cycles. In this case, the work is divided into several cycles, corresponding to certain sections of the lecture course. In one cycle, 4-5	PC-1 PC-9 PC-10 PC-11 UPK-7 UPK-8 UPK-9

works are combined, carried out, as a rule, on the same type of stands. Students perform work on schedule, moving from one cycle to another.

The most often used is a mixed (combined) form of organizing laboratory studies, which allows using the advantages of each of the forms discussed above. In the courses taught at the beginning of the training, the frontal form is used, then they move on to the cyclic and individual. In all cases, the departments strive to ensure that each laboratory work is performed by students independently.

When carrying out laboratory work, three approaches to their implementation are possible:

– prescription actions of students when they show the ability to work mainly under standard conditions, as reflected in the laboratory practice manual;

– partially search actions, when students can act independently enough, solve simple creative problems with the help or direct guidance of the teacher;

– active creative actions of students when they show the ability to act in conditions close to real, using the stock of acquired knowledge.

It is recommended to plan laboratory work as follows:

– for first-year students - with strict regulation of activities;

– for second and third year students - with weakened regulation of activities, using a partial search method;

– for senior students - laboratory work of a research nature in conditions of complete independence, only with the indirect control of the teacher.

Features of the preparation of laboratory classes.

The preparation of a laboratory lesson begins with the study of the source documentation, the definition (clarification) of the goals and objectives of this lesson, the time allocated to students for preparation.

In preparation for laboratory work, the teacher must understand the problems, scope and content of the laboratory lesson, determine what concepts, definitions, theories can be illustrated by this experiment, what skills and abilities students should acquire during the lesson, what knowledge to deepen and expand. At the same time, he needs to decide at what stage of training the task should be set to prepare for laboratory work, how to achieve the activation of the cognitive activity of students.

The task of preparing for laboratory work can be posed either in a lecture or in a practical lesson with such a time calculation so that students can qualitatively prepare for it. At the same time, they are given the laboratory assignment and the description of laboratory work developed at the department. These teaching materials are prepared, as a rule, by a teacher who conducts the entire

	laboratory practice. Sections of these teaching materials reflect educational questions, brief information on the theory, the program of work, the content of the report, questions for preparation and literature recommended to prepare for the lesson. They also set tasks that students must solve in preparation for work, in the process of an experiment and in processing the results obtained. The instructions on the procedure for preparing the report determine the form of the report (in what form the digital and graphic material should be drawn up), the procedure for comparing the results obtained with the calculated ones and assessing the errors, the procedure for formulating conclusions and conclusions, as well as protecting the work performed. When conducting classes with strict regulations, the job description is actually a step-by-step list of what students should do on it. The description of work on a problem-oriented basis is somewhat different from the traditional one and includes the name and purpose of the laboratory work; the essence of the scientific problem to be solved; the approximate order of the experiment, as well as the expected result; general requirements for the report and conclusions on the work; questions for preparation; recommended literature. Preparation of students for laboratory work is carried out during the hours of independent work using textbooks, lecture notes and the above methodological materials. As a result of preparation, students should know the basic theoretical material, which is consolidated by laboratory work; purpose, content and methodology of its implementation, rules for using devices; safety measures at work. In addition, they must prepare diagrams, tables, graphs necessary to complete the work. *The official admission of students to the lesson is the delivery of the colloquium.* Colloquium (from Lat. Colloquium - conversation, conversation) - an interview between a teacher and students. ***The purpose of the colloquium***- controlling the depth of assimilation of theoretical material; understanding the essence of the phenomena illustrated by this laboratory work; checking the knowledge of instruments and equipment used in laboratory work; checking the knowledge of the procedure for conducting the experiment and its justification, ideas about the expected results, the ability to process and analyze them; checking knowledge of safety regulations and equipment operation during work. *The substantive part of the laboratory work plan includes*introductory part; the procedure for conducting the experiment and processing the results; general calculation of time by stages of the lesson (for assembling the installation, conducting an experiment, analyzing and	

	preparing a report); the final part of the lesson. The introductory part indicates the topic, purpose, procedure for performing the work and preparing the report. The progress of the laboratory work in the plan is reflected only in the most general form. When determining the procedure for conducting an experiment, it is advisable to note the sequence of work, an approximate calculation of time; features of working with this equipment; security measures; questions or tasks (problems) requiring students to make independent decisions or manifestations of creativity. The final part is devoted to summing up the results and setting the problem for the next lesson.	
14 Practical exercises	The method of reproductive education, which provides a connection between theory and practice, contributing to the development of students' skills and abilities to apply the knowledge gained in lectures and in the course of independent work, aimed at deepening scientific and theoretical knowledge and mastering certain methods of independent work. In the process of such classes, practical skills are developed (calculations, calculations, the use of tables, reference books, nomograms). Before the practical lesson, you should study the lecture notes and the literature recommended by the teacher, paying attention to the practical application of the theory and to the methodology for solving typical problems. In a practical lesson, the main thing is to understand the connection between the tasks being solved and theoretical positions. When solving the proposed problem, one should strive not only to get the correct answer, but also to master the general method for solving such problems. To take notes in practical classes, they usually start a separate notebook for each academic discipline. It is recommended to use the following order of writing the solution to the problem: – initial data for solving the problem (what is given); – what is required to be obtained as a result of the decision; – what laws and regulations should be applied; – general plan (sequence) of the solution; – calculations; – the obtained result and its analysis. The logical connection between lectures and practical lessons lies in the fact that the information obtained at the lecture, in the process of independent work in the practical lesson, is comprehended and processed, with the help of	UPK-1 UPK-2 UPK-3 UPK-4 UPK-6

	the teacher it is analyzed to the smallest detail, and then it is firmly assimilated.	

14. Features of the organization of the educational process according to the educational program for people with disabilities and persons with disabilities

FEFU implements an organizational model of inclusive education - ensuring equal access to education for all students, taking into account various special educational needs and individual capabilities of students. The model allows people with disabilities (HH) to use education as the most effective mechanism for the development of a personality, increasing their social status. In order to create conditions for ensuring inclusive education of people with disabilities and persons with disabilities, the structural units of the University perform the following tasks:

– the department for work with applicants organizes career guidance work among potential applicants, including among people with disabilities and people with disabilities: open days, career guidance testing, webinars for graduates of schools, educational institutions of vocational education, consultations for this category of students and their parents on admission issues and training, prepares advertising and information materials, organizes interaction with educational organizations;

– the Department of Youth Policy provides support for inclusive education for people with disabilities, solving issues of development and maintenance of the information and technological base of inclusive education, elements of distance learning for people with disabilities, creating a barrier-free environment, collecting information about people with disabilities and people with disabilities, ensuring their systematic registration at the stages of their admission, training, employment;

– the department of extracurricular work of FEFU ensures the adaptation of people with disabilities and persons with disabilities to the conditions and regime of educational activities, takes measures to create a socio-cultural tolerant environment necessary for the formation of a civil, legal and professional position of complicity, the readiness of all team members to communicate and cooperation, to the ability to tolerate social, personal and cultural differences;

– The department of career guidance and interaction with employers assists in the employment of graduates with disabilities and persons with disabilities in the form of: presentations and meetings of employers with senior students, individual consultations on employment issues, master classes and trainings.

The content of higher education in educational programs and the conditions for organizing training for persons with disabilities are determined by the adapted educational program, and for the disabled also in accordance with the individual

rehabilitation program, which is developed by the Federal Institution of Medical and Social Expertise. An adapted educational program is developed in the presence of an application from the student (parents, legal representatives) and medical indications. Training in educational programs for disabled people and students with disabilities is carried out by the organization, taking into account the characteristics of psychophysical development, individual capabilities and health status. The choice of teaching methods in each individual case is determined by the goals of training, the content of training, the level of professional training of teachers,

People with disabilities and people with hearing and speech impairments, visual impairments and limited abilities of the musculoskeletal system can receive education at the University according to this basic educational program in full-time education using elements of distance educational technologies.

The University provides students with disabilities and people with disabilities with the opportunity to master specialized adaptation disciplines included in the variable part of the OBOR. Teachers whose courses require the performance of certain specific actions and represent a problem or action that is not feasible for students who have difficulties with movement or speech, are obliged to take these features into account and offer people with disabilities and people with disabilities alternative methods of consolidating the studied material. Timely informing teachers about the disabled and people with disabilities in a particular group is carried out by the responsible person, established by the order of the school director.

In the reading rooms of the FEFU scientific library, workplaces for people with disabilities are equipped with displays and Braille printers; equipped with: portable devices for reading flat-printed texts, scanning and reading machines, video enlarger with the ability to regulate color spectra; magnifying electronic loupes and ultrasonic markers.

If necessary, individual curricula and individual training schedules can be developed for people with disabilities and people with disabilities. The term for obtaining higher education when studying according to an individual curriculum for people with disabilities and persons with disabilities, if desired, can be increased, but not more than by a year.

When sending a disabled person and a student with disabilities to an organization or enterprise to undergo the practice provided by the curriculum, the University agrees with the organization (enterprise) the conditions and types of work, taking into account the recommendations of the Federal Institution of Medical and Social Expertise and the individual rehabilitation program for the disabled person. If necessary, special jobs can be created for the internship in accordance with the nature of the violations, as well as taking into account the

professional type of activity and the nature of the work performed by the disabled student of labor functions.

For the implementation of ongoing monitoring of progress, intermediate and final certification of people with disabilities and persons with disabilities, funds of assessment tools are used, adapted for such students and allowing them to assess their achievement of learning outcomes and the level of development of all competencies declared in the educational program. The form of intermediate and state final certification for disabled students and persons with disabilities is established taking into account individual psychophysical characteristics (orally, in writing on paper, in writing on a computer, in the form of testing, etc.).

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Deputy Director
for educational and educational work
Schools of biomedicine E.V. Khozhaenko