MINISTRY OF SCIENCE AND HIGHER EDUCATION OF RUSSIAN FEDERATION
Federal State Autonomous Educational Institution of Higher Education
Far Eastern Federal University
(FEFU)
SCHOOL OF BIOMEDICINE

AGREED
Head of OP
_____
(Signed) (Full name)

CLAIM
Director of the Department of Medical Biology and Biotechnology
_____
(Signed) (Acting Name)
December 30, 2021

WORK PROGRAM OF THE DISCIPLINE
Commercialization of developments and technology transfer
Direction of training 06.04.01 Biology
(Molecular and Cell Biology)
Form of training: full-time

Course 2 semester 3
lectures 10 hours.
practical exercises 26 hours.
laboratory work - hour.
total hours of classroom load 36 hours.
independent work 72 hours.
Credit 3 semester
exam is not provided

The work program is drawn up in accordance with the requirements of the Federal State Educational Standard in the direction of training 06.04.01 Biology, approved by the order of the Ministry ofScienceof the Republic of Russia dated 11.08.2020. № 934.
The work program was discussed at the meeting of the Department of Medical Biology and Biotechnology Protocol dated December 30, 2021 No. 5
Director of the Department of the Implementing Structural Unit

Vladivostok
2021

Reverse side of the RPD cover page

1. The work program was revised at the meeting of the Department / department / department (implementing the discipline) and approved at the meeting of the Department / department / department (issuing structural unit), the protocol from "_____ __ № _____

2.The work program was revised at the meeting of the Department / department / department (implementing the discipline) and approved at the meeting of the Department / department / department (issuing structural unit), the protocol from "__ № _____

3.The work program was revised at the meeting of the Department / Department / Department (implementing the discipline) and approved at the meeting of the Department / Department / Department (issuing structural unit), the protocol from "____ № _____

4.The work program was revised at the meeting of the Department / Department / Department (implementing the discipline) and approved at the meeting of the Department / Department / Department (issuing structural unit), the protocol from "_____ __ № _____

5.The work program was revised at the meeting of the Department / Department / Department (implementing the discipline) and approved at the meeting of the Department / Department / Department (issuing structural unit), the protocol from "_____ __ № _____

1. Goals and objectives of mastering the discipline:

Purpose: to provide students with knowledge about the sources of financing of research and development work, the basics of intellectual property protection as an indispensable element in the process of commercialization and technology transfer, the formation of skills to critically evaluate and apply relevant information, as well as mastering the skills to perform a set of tasks related to the search, evaluation, transfer and further support of high-tech developments for their practical implementation in production and business.

Tasks:

- mastering by students of theoretical knowledge about the essence and tasks of the process of transfer and commercialization of the results of scientific research;
- mastering by students of the methodology of transfer and commercialization of scientific research results;
- familiarization of students with the possibilities of using information databases and patent search tools to form skills in the registration of patent applications;
- formation of students' practical skills in the transfer and commercialization of the results of scientific research and presentation of high-tech projects;
- development of students' skills in modeling transfer and commercialization of scientific research results.

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (the result of mastery)	Code and name of the competency achievement indicator
research	PC-4 is capable of conducting scientific research in molecular and cellular biology in order to develop the scientific potential of the Russian Far East and the development of the resources of the World Ocean.	PP-4.1 Conducts substantiation of scientific research in molecular and cellular biology in order to develop the scientific potential of the Russian Far East and the development of the resources of the World Ocean.
		PP-4.2 Performs applied and exploratory research and development in molecular and cellular biology aimed at developing the scientific potential of the Russian Far East and the development of the resources of the World Ocean.
		PP-4.3 Interprets the results of scientific research in molecular and cellular biology aimed at developing the scientific potential of the Russian Far East and the development of the resources of the World Ocean.

Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)

PP-4.1 Conducts substantiation of scientific research in molecular and cellular biology in order to develop the scientific potential of the Russian Far East and the development of the resources of the World Ocean.	Knows approaches to studying the attractiveness of participation in a high-tech project for a strategic investor and a technology partner Able to build theoretical models, analyze and meaningfully interpret the results obtained on the basis of the description of scientific research Proficient in the methodology of scientific research
PP-4.2 Performs applied and exploratory research and development in molecular and cellular biology aimed at developing the scientific potential of the Russian Far East and the development of the resources of the World Ocean.	Knows the features of the system of legal relations in the field of protection of intellectual property, the laws of transfer and commercialization of the results of scientific research Able to use sources of scientific and technical information and carry out the collection, analysis of data necessary to solve the set scientific and economic tasks Possesses the skills of interdisciplinary communication and the creation of interaction systems in a team of specialists of various profiles
PP-4.3 Interprets the results of scientific research in molecular and cellular biology aimed at developing the scientific potential of the Russian Far East and the development of the resources of the World Ocean.	Knows the main mechanisms for the implementation of technological transfer Able to analyze the initial data necessary for the calculation of economic and socio-economic indicators that characterize the state and prospects for the development of the technology market Owns modern methods of calculation and analysis of socio-economic indicators that characterize economic processes in the field of transfer and implementation of high-tech developments

3. Laboriousness of discipline and types of training sessions in the discipline

The total labor intensity of the discipline is 3 credited units (108 academic hours), (1 credit unit corresponds to 36 academic hours).

Types of training sessions and work of the student in the discipline are:

Designation	Types of training sessions and work of the student
Lek	Lecture
Lek electr.	
Ave	Practical exercises
Pr electr.	
WED:	Independent work of the student during the period of theoretical training
including control	Independent work of the student and contact work of the student with the teacher during the period of intermediate certification

Structure of the discipline:

The form of training is full-time.

№	Name of the section Discipline	Se me ster	Number of hours by types of training sessions and work of the student						Intermediate attestation forms
			Lek	Lab	Av e	OK	WE D	Cont rol	

1.	Section No1. Sources of R&D funding	3	4	-	8	-	24	-	Credit
2.	Section No2. Protection of Intellectual Property	3	3	-	9	-	24	-	Credit
3.	Section No3. Technology Transfer	3	3	-	9	-	24	-	Credit
	Total:	3	10	-	26	-	72	-	Credit

THE STRUCTURE AND CONTENT OF THE THEORETICAL PART OF THE COURSE

Lectures of 10 hours.

Section No1. «Sources of R&D funding» (4 h)

Concepts of research, OCD and R&D, their features, basic concepts and terms, types of reporting. Public and private sources of financing, ways and mechanisms of their attraction.

Section No2. "Protection of intellectual property" (3 hours)

Types of intellectual property rights: Types ofpatent applicants, their features, patent search, processes of registration and consideration of patent applications.

Section No3. «Technology Transfer» (3 h)

The concept of technology transfer. Technology transfer in the "Triple Helix" model. Small innovative enterprises.

IV. STRUCTURE AND CONTENT OF THE PRACTICAL PART OF THE COURSE AND INDEPENDENT WORK

Practical training of 26 hours.

Section No1. «Sources of R&D funding» (8 h)

Hauch and researchaya Worksa: its structure, maintenance, implementation and reporting. Types aboutTorture and Constructiontheir Works and their features: nproduction of products under the state orderandpreparation of goods by order of a commercial organizationRproduct developmentinFulfillment orders of the Russian Ministry of Defense. RESEARCH as a complex nauch and researchtheir and aboutTorture and Constructiontheir works, basic concepts: зAkazchikGLavnaya

performerandexecutor components, nscientific development, nR&D system implementation chart.

State sources of funding for research and development: grants and state tasks, their features, main indicators, registration of applications and reports. Private sources of financing: venture funds and business angels, their features, ways of attraction, presentation of projects.

Section No2. "Protection of intellectual property" (9 hours)

Types of intellectual property rights: copyright, related rights patent law, rights to means of individualization, the right to production secrets (H-how),, rights to new varieties of plants. Typesof applicants and their features: and zobretation, nolamodel, nthought sample and withan exclusive achievement.

Patent search:international patent classification, databases, Russian, foreign and international patent offices. Example of registration and structure of a patent application for an invention: patent claim, field of science and technology, prior art, analogues and prototype, main content (technical problem, technical problem, technical solution), examples.

Section No3. «Technology Transfer» (9 h)

Approaches to technology transfer: technology push and orientation to market technological needs (market pull). Forms of technology transfer. Technology transfer centers. The "Triple Helix" model: government, business and research centers (universities), their interaction in the general and regional aspect. Small innovative enterprises: concept, signs, legislative regulation of status and mechanisms for creation with the participation of scientific and educational institutions.

Independent work of students

Section No1. «Sources of R&D funding» (24 h)

Preparation for oral questioning on lectures and practical exercises.

Section No2. "Protection of intellectual property" (24 hours)

Preparation for oral questioning on lectures and practical exercises.

Section No3. "Technology Transfer" (24 hours)

Preparation for oral questioning on lectures and practical exercises.

V. EDUCATIONAL AND METHODOLOGICAL SUPPORT OF INDEPENDENT WORK OF STUDENTS

Recommendations for independent work of students

The purpose of the independent work of the student is to work meaningfully and independently first with educational material, then with scientific information, to lay the foundations of self-organization and self-education in order to instill the ability to further continuously improve their professional qualifications.

The process of organizing the independent work of the student includes the following stages:

- preparatory (setting goals, drawing up a program, preparing methodological support, preparing equipment);
- basic (implementation of the program, the use of methods of information retrieval, assimilation, processing, application, transfer of knowledge, fixation of results, self-organization of the work process);
- final (assessment of the significance and analysis of the results, their systematization, assessment of the effectiveness of the program and methods of work, conclusions on the directions of labor optimization).

In the process of independent work, the student acquires the skills of self-organization, self-control, self-government, self-reflection and becomes an active independent subject of educational activity. Independent work of students should have an important impact on the formation of the personality of the future specialist, it is planned by the student independently. Each student independently determines the mode of his work and the measure of work spent on mastering the educational content in each discipline. He performs extracurricular work according to a personal individual plan, depending on his preparation, time and other conditions.

Methodical recommendations for independent work of students

As the material on the subject of the discipline is mastered, it is planned to perform independent work of students on the collection and processing of literary material to expand the field of knowledge in the discipline under study, which allows you to deepen and consolidate specific practical knowledge gained in classroom classes. To study and fully master the program material on the discipline, educational, reference and other literature recommended by this program, as well as specialized periodicals, are used.

When independently preparing for classes, students take notes on the material, independently study the issues on the topics covered, using the educational literature from the proposed list, periodicals, scientific and methodological information, databases of information networks.

Independent work consists of such types of work as the study of material on textbooks, reference books, videos and presentations, as well as other reliable sources of information; preparation for the zechet. To consolidate the material, it is enough, flipping through the notes or reading it, mentally restore the material. If necessary, refer to the recommended educational and reference literature, write down incomprehensible moments in the questions to understand them in the upcoming lesson.

Preparation for practical exercises. This type of independent work consists of several stages:

1) Repetition of the studied material. For this purpose, lecture notes, recommended basic and additional literature are used;

2) Deepening knowledge on the proposed topics. It is necessary to differentiate the available material in lectures, textbooks in accordance with the points of the plan of the practical lesson. Separately write out unclear questions, terms. It is better to do this in the margins of the lecture notes or textbook. Clarification should be carried out with the help of reference literature (dictionaries, encyclopedic publications, etc.);

3) Drawing up a detailed plan for the speech, or conducting calculations, solving problems, exercises, etc. In preparation for practical exercises, students take notes on the material, prepare answers to the above questions on the topics of practical exercises. In addition to the practical material, students independently study questions on the proposed topics, using educational literature from the proposed list, periodicals, scientific and methodological information, databases of information networks (Internet, etc.).

Requirements for the presentation and design of the results of independent work

There are no special requirements for the provision and design of the results of this independent work.

Control over the implementation of the plan of independent work of students is carried out by the teacher in practical classes by interviewing and by including in the final tasks specified in the lesson from the plan of independent work.

VI. MONITORING THE ACHIEVEMENT OF COURSE OBJECTIVES

No p/n	Supervised sections / topics of the discipline	Achievement indicator code and name	Learning outcomes	Assessment tools	
				current control	Intermediate-accurate certification

1.	Section No1. "Sources of R&D financing"	PC-4.1; PC-4.2; PC-4.3	knows the concepts of research, development and R&D and their features; is able to apply relevant terms and generate various types of reporting; owns ways to attract public and private sources of financing	Poll	Credit
2.	Section No2. "Protection of intellectual property"	PC-4.1; PC-4.2; PC-4.3	knows different types of intellectual property rights and types of patents; is able to perform patent searches; has the basic skills of registration and support of patent applications	Poll	Credit
3.	Section No3. «Technology Transfer»	PC-4.1; PC-4.2; PC-4.3	knows the concept of technology transfer and related terminology; is able to simulate technology transfer within the framework of the "Triple Helix" hypothesis; has basic skills in drawing up a plan for the development of a small innovative enterprise	Poll	Credit

VII. LIST OF REFERENCES AND INFORMATION AND METHODOLOGICAL SUPPORT OF THE DISCIPLINE

Main literature

1. Allanina, Lilia Mansurovna. Legal provision of innovative activity. General part [Text] : textbook / L. M. Allanina ; Tyumen IndustrialUniversity, 2018. - 209

p. https://library.dvfu.ru/lib/document/EK/58B0ABDD-CA5B-4A5A-B4ED-72CB8528CCAB/

2. Allanina, Lilia Mansurovna. The law of intellectual property. General part [Text] : textbook / L. M. Allanina ; Tyumen IndustrialUniversity, 2018. - 205 p. https://library.dvfu.ru/lib/document/EK/E57714FD-E6F2-43C8-862C-8E932D82C543/

3. Knyazhitskaya, Oksana Iosifovna. Scientific research work - key resource of intellectual capital [Text] / O. I. Knyazhitskaya ; St. Petersburg University of Managementof I and Economics, 2015. - 181 p. https://library.dvfu.ru/lib/document/EK/AC389E57-70DF-4B73-BFEB-95D1416285BD/

4. Fundamentals of commercialization of scientific developments and technology transfer [Text] : a textbook for universities / Y. N. Mansurov, D. B. Solovyov, Sh. A. Ramazanov [et al.] ; Far Eastern Federal University, InzhEnernaya Shkola, 2014. - 263 p. https://library.dvfu.ru/lib/document/EK/FC35EAF8-1270-4DB8-8AD8-504705DFCDA5

5. Innovative activity of federal universities [Text] / [Y. N. Mansurov, G. P. Starkova, A. A. Andreeva et al.] ; Far Eastern Federal University, Vladivostok State University ofEconomics and Service, 2015. - 235 p. https://library.dvfu.ru/lib/document/EK/0995D033-A9E9-4570-AEA1-CB1B8E9591B4/

Further reading

1. Akmaeva, Raisa Isaevna. Innovative management of a small enterprise, working in the scientific and technical sphere [Text] : a textbook for universities / R. I. Akmaeva, 2012. - 542 p. https://library.dvfu.ru/lib/document/EK/63256B4B-48C8-4DB6-9C25-2DD59210A0D4

2. Allen, Kathleen R. Promotion of new technologies on the market [Text] / K. R. Allen; per. s eng. E. V. Ruchkina., [2012]. - 455 p. https://library.dvfu.ru/lib/document/EK/D740D63B-6278-45BE-A621-C1997EC6FFCD/

3. Innovations [Text] : uchebnoe posobie / A. V. Barysheva, K. V. Baldin, I. I. Peredereev [i dr.] ; pod obshch. red. A. V. Baryshevoy., 2012. - 380 p. https://library.dvfu.ru/lib/document/EK/119EA44A-8E86-4E5A-ADCF-A1553EDF5FB4

4. Commercialization of the results of scientific and technical activity: European experience, possible lessons for Russia [Text] / [V. M. Buznik, V. V. Ivanov, N. I. Ivanova et al.] ; ed. by V. V. Ivanova [i dr.]., 2006. - 263 p.

https://library.dvfu.ru/lib/document/EK/C657ACBF-5A4F-4BDF-9642-2EE1CA3A40A0

5. Huseynova E.Sh. Protection of Intellectual Property in Medicine. – Makhachkala: Dagestan State Medical University, 2022. – 151 p. https://elibrary.ru/item.asp?id=50032762

6. Kapustin R.F., Starchenko N.Y. Bibliography, patent search and protection of intellectual property. – Maisky: Belgorod State Agrarian University named after V.Y. Gorin, 2021. – 251 p. https://elibrary.ru/item.asp?id=47332520

7. Alekseev G.V., Leu A.G. Fundamentals of intellectual property protection. Creation, commercialization, protection. – St. Petersburg: Lan Publishing House, 2018. – 388 p. https://elibrary.ru/item.asp?id=35074356

List of resources of the information and telecommunication network "Internet"

1. http://elibrary.ru/ - scientific electronic library
2. http://molbiol.ru/ is an information resource on molecular biology
3. http://macroevolution.narod.ru/ is an electronic resource on evolutionary biology.
4. http://science.km.ru/- electronic resource on different sections of biology
5. http://elementy.ru/ is an information and cognitive resource dedicated to the natural sciences.
6. http://www.iprbookshop.ru/ is an electronic library system IPRbooks.
7. http://znanium. com/ - EBS "Znanium".
8. https://nplus1. ru/ - N+1, a popular science online publication on science, engineering and technology
9. http://antropogenez.ru/ - popular science information resource about human evolution
10. http://web.a.ebscohost.com/ehost/search/basic?sid=851485f8-6200-4b3e-aaab-df4ba7be3576@sessionmgr4008&vid=1&tid=2003EB is a collection of books on various sections from the EBSCOhost database.
11. http://rosalind.info/problems/locations/- resource for self-study of bioinformatics Rosalind.
12. http://www.ncbi.nlm.nih.gov/- website of the National Center for Biotechnology Information NCBI.
13. http://www.mendeley.com/- *Mendeley*: Free reference manager and PDF organizer; biblithecar program.
14. http:// www.ebi.ac.uk- website of the European Bioinformatics Institute

15. http:// www.scopus.com – Bibliographic database and Scopus citation index

16. http://thomsonreuters.com/thomson-reuters-web-of-science/ bibliographic database and Web of Science citation index

List of information technologies and software

1. Microsoft Office Professional Plus 2013 is an office suite that includes software for working with various types of documents (texts, spreadsheets, databases, etc.);
2. 7Zip 16.04 - free file archiver with a high degree of data compression;
3. Adobe Acrobat XI Pro – a software package for creating and viewing electronic publications in PDF format;
4. AutoCAD Electrical 2015 - three-dimensional computer-aided design and drafting system;
5. ESET Endpoint Security 5 is a comprehensive protection for Windows-based workstations. Virtualization support + new technologies;
6. WinDjView 2.0.2 - a software to recognize and view files with the same format DJV and DjVu; SolidWorks 2016 - CAD software package for automation of industrial enterprise operations at the stages of design and technological preparation of production
7. Compass-3D LT V12 - three-dimensional modeling system
8. Notepad++ 6.68 – text editor

VIII.METHODICAL INSTRUCTIONS FOR MASTERING THE DISCIPLINE

IX. MATERIAL AND TECHNICAL SUPPORT OF DISCIPLINE

Training sessions on the discipline are held in rooms equipped with appropriate equipment and software.

The list of material and technical and software of the discipline is given in the table.

Logistics and Software Discipline

Name of special premises and premises for independent work	Equipment special premises and rooms for independent work	List of licensed software. Details of the supporting document
690922, Primorsky Krai, Vladivostok, Russky Island,	Multimedia audience:	-

Saperny Peninsula, Ajax village, 10, aud. M 605	Screen with electric drive 236 * 147 cm Trim Screen Line; Projector DLP, 3000 ANSI Lm, WXGA 1280x800, 2000:1 EW330U Mitsubishi; Subsystem of specialized fasteners of equipment CORSA-2007 Tuarex; Video switching subsystem: DVI DXP 44 DVI Pro Extron matrix switch; DVI twisted pair extender DVI 201 Tx/Rx Extron; Subsystem of audio switching and sound amplification; acoustic system for ceiling mounting SI 3CT LP Extron; digital audio processor DMP 44 LC Extron; extension for IPL T CR48 management controller; Wireless LANs for trainees are provided with a system based on 802.11a/b/g/n 2x2 MIMO(2SS) access points. HP All-in-One 400 All-in-One 19.5 (1600x900), Core i3-4150T, 4GB DDR3-1600 (1x4GB), 1TB HDD 7200 SATA, DVD+/-RW, GigEth, Wi-Fi, WT, usb kbd/mse, Win7Pro (64-bit)+Win8.1Pro(64-bit), 1-1-1 Wty	
690922, Primorsky Krai, Vladivostok, Russky Island, Saperny Peninsula, Ajax village, 10, aud. M 422	Multimedia audience: Monoblock HP ProOne 400 G1 AiO 19.5" Intel Core i3-4130T 4GB DDR3-1600 SODIMM (1x4GB)500GB; Projection screen Projecta Elpro Electrol, 300x173 cm; Multimedia projector, Mitsubishi FD630U, 4000 ANSI Lumen, 1920x1080; Mortise interface with TLS TAM 201 Stan automatic cable retraction system; Avervision CP355AF Visualizer; Microphone cordless radio system UHF band Sennheiser EW 122 G3 consisting of a wireless	-

	microphone and receiver; LifeSizeExpress 220-Codeconly- Non-AES video conferencing codec; Network video camera Multipix MP-HD718; Two 47" LCD panels, Full HD, LG M4716CCBA; Subsystem of audio switching and sound amplification; centralized uninterrupted power supply	
690922, Primorsky Krai, Vladivostok, Russky Island, Saperny Peninsula, Ajax village, 10, aud. M 627	Light microscope Carl Zeiss GmbH Primo Star 3144014501 (13 pcs.); Light microscope with digital camera Altami BIO8 (2 pcs).	-
Computer Class of the School of Biomedicine Aud. M723, 15 workplaces	Screen with electric drive 236 * 147 cm Trim Screen Line; Projector DLP, 3000 ANSI Lm, WXGA 1280x800, 2000:1 EW330U Mitsubishi; Subsystem of specialized fasteners of equipment CORSA-2007 Tuarex; Video switching subsystem: DVI DXP 44 DVI Pro Extron matrix switch; DVI twisted pair extender DVI 201 Tx/Rx Extron; Subsystem of audio switching and sound amplification; acoustic system for ceiling mounting SI 3CT LP Extron; digital audio processor DMP 44 LC Extron; extension for IPL T CR48 management controller; Wireless LANs for trainees are provided with a system based on 802.11a/b/g/n 2x2 MIMO(2SS) access points. HP All-in-One 400 All-in-One 19.5 (1600x900), Core i3-4150T, 4GB DDR3-1600 (1x4GB), 1TB HDD 7200 SATA, DVD+/-RW, GigEth, Wi- Fi, WT, usb kbd/mse, Win7Pro (64-bit)+Win8.1Pro(64-bit), 1-1-1 Wty	-

X. VALUATION FUNDS

Oral questioning.

Oral questioning allows you to assess the knowledge and logic of the student, the ability to use terminology, speech skills and other communication skills.

The training function is to identify details that for some reason were not sufficiently understood during the training sessions and in preparation for the test.

A survey is a means of control, organized as a special conversation of the teacher with the student on topics related to the discipline being studied, and designed to clarify the amount of knowledge of the student on a certain section, topic, problem, etc.

Examples of topics for oral inquiry

1. Research work: its structure, support, implementation and reporting.
2. Types of development work and their features: production of products under the state order, manufacture of goods by order of a commercial organization, product development, fulfillment of orders of the Russian Ministry of Defense.
3. R&D as a complex of research and development works, basic concepts: customer, main executor, executor of the constituent part, scientific development, program for the implementation of the R&D system.
4. State sources of funding for research and development: grants and state tasks, their features, main indicators, registration of applications and reports.
5. Private sources of financing: venture funds and business angels, their features, ways of attraction, presentation of projects.
6. Types of intellectual property rights: copyright, related rights, patent law, rights to means of individualization, the right to production secrets (know-how), rights to new plant varieties.
7. Types of patents and their features: invention, utility model, industrial design and selection achievement.
8. Patent search: international patent classification, databases, Russian, foreign and international patent offices.
9. Example of registration and structure of a patent application for an invention: patent claim, field of science and technology, prior art, analogues and prototype, main content (technical problem, technical problem, technical solution), examples.
10. The concept of technology transfer. Approaches in technology transfer: technology push and market push. Forms of technology transfer. Technology transfer centers.

11. Technology transfer in the "Triple Helix" model: government, business and research centers (universities), their interaction in the general and regional aspects.

12. Small innovative enterprises: concept, signs, legislative regulation of the status and mechanisms of creation with the participation of scientific and educational institutions.

Methodological recommendations that determine the procedures for assessing the results of mastering the discipline

Assessment tools for intermediate attestation

Intermediate certification of students in the discipline is carried out in accordance with local fefu regulations and is mandatory. The form of reporting on the discipline is zaeven. Zaeven for the discipline includes answers to 2 questions.

Methodical instructions for the delivery of zachyota

Credit is taken by the leading teacher (associate professor, professor), for whom this type of educational load is assigned in the individual plan. The formof the eventis oral.

Duringthe study, students can use the work program of the discipline, as well as with the permission of the teacher conducting the test, reference literature and other manuals.

The time allowed to the student to prepare for the answer tothe z acouple should be no more than 40 minutes.

The presence ofunauthorized persons (except for persons carrying out the inspection) without the permission of the relevant persons (rector or vice-rector for academic affairs, director of the School, head of the OBOR or director of the department) is not allowed. Disabled persons and persons with disabilities who do not have the opportunity to move independently are allowed to take the exam with accompanying persons.

With an intermediate attestation, students are given a grade of "zaread" or "not credited". If the student does not appear for credit, an entry "did not appear" is made in the statement.

Questions for credit

1. Research work: its structure, support, implementation and reporting.
2. Types of development work and their features: production of products under the state order, manufacture of goods by order of a commercial organization, product development, fulfillment of orders of the Russian Ministry of Defense.
3. R&D as a complex of research and development works, basic concepts: customer, main executor, executor of the constituent part, scientific development, program for the implementation of the R&D system.
4. State sources of funding for research and development: grants and state tasks, their features, main indicators, registration of applications and reports.
5. Private sources of financing: venture funds and business angels, their features, ways of attraction, presentation of projects.
6. Types of intellectual property rights: copyright, related rights, patent law, rights to means of individualization, the right to production secrets (know-how), rights to new plant varieties.
7. Types of patents and their features: invention, utility model, industrial design and selection achievement.
8. Patent search: international patent classification, databases, Russian, foreign and international patent offices.
9. Example of registration and structure of a patent application for an invention: patent claim, field of science and technology, prior art, analogues and prototype, main content (technical problem, technical problem, technical solution), examples.
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11. Technology transfer in the "Triple Helix" model: government, business and research centers (universities), their interaction in the general and regional aspects.
12. Small innovative enterprises: concept, signs, legislative regulation of the status and mechanisms of creation with the participation of scientific and educational institutions.

Criteria for assigning a grade to a student on the test

Evaluation of the test	Requirements for the formed competencies
"credited"	"credited" is exhibited to the student if he has deeply and firmly mastered the program material, exhaustively, consistently, clearly and logically coherently presents it, is able to closely link the theory with practice, freely copes with tasks, questions and other types of application of knowledge, and does not find it difficult to answer

	when modifying tasks, uses in the answer the material of monographic literature, correctly justifies the decision made, has versatile skills and techniques for performing practical tasks in the methodology of scientific research.
"credited"	The grade "credited" is given to the student if he firmly knows the material, correctly and substantively presents it, avoiding significant inaccuracies in the answer to the question, correctly applies theoretical provisions when solving practical questions and tasks, possesses the necessary skills and techniques for their implementation.
"credited"	The grade "credited" is given to the student if he has knowledge only of the basic material, but has not mastered its details, allows inaccuracies, insufficiently correct wording, violations of the logical sequence in the presentation of the program material, has difficulties in performing practical work.
"not credited"	The grade "not credited" is given to a student who does not know a significant part of the program material, makes significant mistakes, uncertainly, with great difficulties performs practical work. As a rule, it is not credited to students who cannot continue their studies without additional classes in the relevant discipline.