



announcement.title

Registry of the EP ▾

Submission of applications

Registry of educational programs

OVPO passport

Administrative reports

Support

[< Back](#)

Registration data

|                            |                                |                                      |            |
|----------------------------|--------------------------------|--------------------------------------|------------|
| Application type           | Updating of EP in the Registry | Status                               | Approved   |
| Date of getting the status | 23.09.2025 18:14               | Sent to rework by the expert (count) | 0          |
| Sender                     | 6772                           | Registration number                  | 6B01500118 |

[Educational program passp](#)

Higher and Postgraduate Educational Programs

☐ Project EP ☐ Participant of project EP

Field of education \*

6B01 Pedagogical sciences

☐ Interdisciplinary EP

Direction of personnel training \*

6B015 Training of teachers in Natural science subjects

Group of educational programs \*

B010 Teacher training in physics

Educational program \*

6B01503 Physics

Curriculum \*

Физика (бакалавриат)

Kazakh language

Russian language

English language

EP purpose \*

On the basis of the national education model, to provide training for highly qualified specialists in the educational Physics, equipped with in-depth knowledge in the field of their specialty, skills and abilities of pedagogical activity, high culture and morality.

EP type \*

Acting EP

Level on NQF \*

6

Level on SQF \*

6

EP distinctive features

No

Degree to be conferred \*

Bachelor

Period of study \*

4

Volume of the credits \*

240

Language of education \*



announcement.title

Registry of the EP

Submission of applications

Registry of educational programs

OVPO passport

Administrative reports

Support

English

Professional Standard for EP \*

Exists

+ Add

| Nº | Name of professional standard                                    |
|----|------------------------------------------------------------------|
| 1  | Professional standards for teachers of educational organizations |

Professional standards (career standards)

Professional standard has been used at developing EP

Date of approval EP on the Academic Council \*

14-04-2025



☒Existence of the annex to the license for the direction of personnel training

The license number on the direction of training \*

KZ49LAM00007465

☐The training format is online

☒EP accreditation existence

Atlas of new professions \*

не предусмотрено

Regional standard \*

не предусмотрено

The formed educational outcomes

| Nº | Educational outcome                                                                                                                                                                                                                          |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | <div><div>In KazakhIn RussianIn English</div><div>Өртүрлі тілдік және мәдени ортада еркін қарым-қатынас дағдыларына ие болу, физиканың теориялық және эксперименттік негіздері, компьютерлік технологиялар, физиканы шет тілінде</div></div> |
| 2  | <div><div>In KazakhIn RussianIn English</div><div>Құқықтық, экономикалық, кәсіпкерлік, өндірістік, экологиялық ортада, сондай-ақ қаржылық сауаттылық, инклюзия құндылықтары, тұрақты даму және сыбайлас жемқорлыққа қарсы</div></div>        |
| 3  | <div><div>In KazakhIn RussianIn English</div><div>Типтік кәсіби есептердің математикалық модельдерін жасау және модельдердің қолданылу шекарасын ескере отырып алынған нәтижелерді түсіндіру, кәсіби қызметте математиканың</div></div>      |
| 4  | <div><div>In KazakhIn RussianIn English</div><div>Практикалық тапсырмалардың теориялық және эксперименттік нәтижелерінің шешімдерін талдау және олардың дұрыстығын бағалау, физикалық эксперимент ұйымдастыру</div></div>                    |

announcement.title

Registry of the EP

Submission of applications

Registry of educational programs

OVPO passport

Administrative reports

Support

ЕДИНАЯ ПЛАТФОРМА  
ВЫСШЕГО ОБРАЗОВАНИЯ

English

|  |                                                                                                                                                                                                                                          |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <div>In KazakhIn RussianIn English</div> <div>Физикалық құбылыстарды түсіндіру, жалпы және теориялық физиканың іргелі бөлімдерінің, астрономияның негізгі теориялық білімдерін кәсіби міндеттерді шешу үшін қолдану, физика</div>        |
|  | <div>In KazakhIn RussianIn English</div> <div>Ұлттық мәдениет негізінде білім алушының эмоционалды-құндылық саласын дамытатын оқу-тәрбие жұмысын жобалау</div>                                                                           |
|  | <div>In KazakhIn RussianIn English</div> <div>Дамудың физиологиялық және функционалдық ерекшеліктерін, сондай-ақ білімгерлердің жеке білім беру қажеттіліктерін ескере отырып, орта білім беруді жетілдіру контекстінде білім беру</div> |
|  | <div>In KazakhIn RussianIn English</div> <div>Оқушыларды оқыту мен тәрбиелеуде жаңа тәсілдерді (тұлғаға бағытталған, құзыреттілік, диалогтік, коллаборативті), саралау әдістерін, критериялды бағалау жүйесін, цифрлық</div>             |
|  | <div>In KazakhIn RussianIn English</div> <div>Білім беру ортасында білім алушылардың жобалық қызметін басқарудың қазіргі заманғы әдістерін қолдану, физика және оның қосымшалары саласында ғылыми зерттеу жүргізу</div>                  |
|  | <div>In KazakhIn RussianIn English</div> <div>Эксперименттік жұмысты дербес жоспарлау, зерттеуді ұйымдастыру, оны дұрыс жүргізу, математикалық статистика аппаратын қолдана отырып алынған деректерді шебер өңдеу,</div>                 |

Data on disciplines

| Nº | Name of discipline             | Short description of discipline                                                                                                                                                                                                                                                                                                                                                                                                                | Cycle | Component | Credits | ON1                                 | CR   | ON:                      |
|----|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|---------|-------------------------------------|------|--------------------------|
| 1  | Methods of scientific research | The goal is to form knowledge about the principles, technologies, practical methods and techniques of conducting scientific research based on modern achievements of scientists. Forms the basic foundations of scientific culture and ethics, flexible perception of scientific texts, skills of effective application of acquired knowledge in planning and organizing research work, the ability to analyze and summarize research results. | GED   | EC        | 5       | <input checked="" type="checkbox"/> | Norm | <input type="checkbox"/> |



 announcement.title

 Registry of the EP

Submission of applications

Registry of educational programs

 OVPO passport

 Administrative reports

 Support

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|---|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|---|--------------------------|-------------------------------------|
| 2 | Ilyastanu                                 | The purpose of the discipline is to develop a deep-thinking personality with high aesthetic taste, appreciating literature, art, traditions, culture and language of the Kazakh people through a deep and comprehensive study of the works of Ilyas Zhansugurov. Forms an understanding of the importance of the works of Ilyas Zhansugurov in the development of the Kazakh literary language; skills of intellectual and creative thinking, the ability to cherish the values of national and spiritual heritage.                                                                                                                                                                                                                                                   | GED | EC | 5 | <input type="checkbox"/> | <input type="checkbox"/>            |
| 3 | Fundamentals of financial literacy        | Forms the basic knowledge of the principles of financial literacy among students-teachers, Develops personal finance management skills, Teaches students to analyze financial instruments and make informed financial decisions, It shows the role of financial literacy in the professional activity of a teacher.                                                                                                                                                                                                                                                                                                                                                                                                                                                   | GED | EC | 5 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4 | Basics of law and anti-corruption culture | The objective is to familiarize students with the fundamental branches and institutions of law, the foundations of anti-corruption culture, as well as the patterns of emergence, development, and functioning of the state and law. The course cultivates anti-corruption awareness and a high level of theoretical knowledge concerning the primary functions of law within the state and society, its impact on the development of the rule of law and civil society, and the value of inclusion as an integral component of a just and equitable legal order. Particular emphasis is placed on fostering students' understanding of the importance of human rights for all individuals, regardless of their social, cultural, physical, or other characteristics. | GED | EC | 5 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

- announcement.title
- Registry of the EP
- Submission of applications
- Registry of educational programs
- OVPO passport
- Administrative reports

|   |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |    |   |                          |                                     |
|---|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|---|--------------------------|-------------------------------------|
| 5 | Ecology and life safety basics         | <p>Purpose – the goal is to develop knowledge of the fundamentals of ecology, sustainable development, and life safety, enabling the analysis of ecological processes, the assessment of the socio-environmental consequences of anthropogenic activities, the assurance of environmental safety, and the application of methods and technologies for protection in emergency situations. Develops the ability to assess the impact of environmental factors on human health; to forecast ecological processes for planning and implementing measures aimed at enhancing life safety and ensuring environmental security; and to make informed decisions in adverse environmental and emergency situations, taking into account the potential consequences of accidents, disasters, and natural hazards within the framework of sustainable development principles.</p>                         | GED | EC | 5 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6 | Economics and entrepreneurship         | <p>Objective – to familiarize students with the economic challenges of modern society, develop economic thinking, and provide knowledge of the theoretical foundations and practical skills in the field of entrepreneurship. The program is aimed at forming a comprehensive understanding of the functioning of the economy, while delivering business education focused on acquiring applied competencies in various areas of entrepreneurial activity. Special attention is given to issues of sustainable development, efficient resource use, and the implementation of lean production principles as key elements of effective and environmentally responsible business practices. The course also explores the specifics of creating and successfully managing a business, taking into account modern requirements for environmental and social responsibility in entrepreneurship.</p> | GED | EC | 5 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7 | Physics of the atom and atomic nucleus | <p>The discipline is aimed at studying the basic provisions, laws, logical content and mathematical expressions of atomic physics, nuclear physics. The main properties of the atomic nucleus, the main types of radioactivity, the laws of simple and complex radioactive decay, General laws of nuclear interactions, the elementary theory of fission and synthesis of atomic nuclei, modern achievements in the field of physics of the atom and the atomic nucleus are considered.</p>                                                                                                                                                                                                                                                                                                                                                                                                     | BD  | UC | 5 | <input type="checkbox"/> | <input type="checkbox"/>            |

- announcement.title
- Registry of the EP
- Submission of applications
- Registry of educational programs
- OVPO passport
- Administrative reports

|    |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |    |    |   |                          |  |                          |
|----|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---|--------------------------|--|--------------------------|
| 8  | Higher mathematics                   | Discipline is aimed at improving the level of fundamental mathematical training of students with the strengthening of its applied orientation, to acquaint students with the basics of mathematical apparatus necessary for solving theoretical and practical problems, as well as familiarization with the basic concepts of mathematical analysis, the development of methods and methods of solving mathematical problems, the development of logical and algorithmic thinking                                                                                                                                                                                                                                               | BD | UC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 9  | Inclusive education                  | Examines the theoretical foundations of the organization of inclusive education, historical aspects of the development of inclusion, inclusive education model. Studies technologies of inclusive education, drawing up an individual educational route, planning of educational process taking into account special educational needs of children, the organization of tutor practice in the conditions of inclusive education                                                                                                                                                                                                                                                                                                 | BD | UC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 10 | Mechanics                            | The course examines the basic laws of motion and interaction of bodies, forming students' understanding of the fundamental principles of mechanics. It includes sections on kinematics, dynamics, conservation laws, statics, oscillations and waves and basic mechanics of liquids and gases. Newton's laws, the principle of relativity, the law of conservation of energy and momentum, and the characteristics of motion are considered. The course deepens the knowledge gained in the school curriculum. The student knows methods and techniques for solving specific physical problems, physical applications of mathematical concepts, and has the skills to build physical models and perform practical calculations. | BD | UC | 6 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 11 | Molecular physics and thermodynamics | Discipline is aimed at studying the basic concepts and models, the laws of molecular physics and thermodynamics, physical and mathematical methods of processing and analysis of information in the field of thermal phenomena in macrosystems, the physical principles of the equipment intended for the study of thermal phenomena.                                                                                                                                                                                                                                                                                                                                                                                           | BD | UC | 8 | <input type="checkbox"/> |  | <input type="checkbox"/> |



 announcement.title

 Registry of the EP

Submission of applications

Registry of educational programs

 OVPO passport

 Administrative reports

 Support

|    |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |    |   |                          |  |                          |
|----|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---|--------------------------|--|--------------------------|
| 12 | Physiology of school children development | Examines the General patterns of age-related features of growth and development of children and adolescents, the formation of their physiological functions. Studies the interaction of the child with the environment, hygiene standards and requirements aimed at the protection and promotion of health, harmonious development and improvement of the functionality of the body of children and adolescents                                               | BD | UC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 13 | Optics                                    | The discipline is aimed at studying the theoretical foundations, basic concepts, laws and models of optics, as well as the physical foundations and principles of modern optical devices. The discipline deals with the development of concepts about the nature of light, the basics of photometry, the main provisions of wave and geometric optics, the phenomenon of the photoelectric effect, Bohr theory, the structure of the atom and atomic spectra. | BD | UC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 14 | Pedagogy                                  | Considers the latest methods and technologies of teaching in the framework of the updated content of secondary education. Studies methods of scientific analysis, forecasting, planning and management of the pedagogical process.Forms theoretical ideas about pedagogy as a branch of humanitarian knowledge and interaction of subjects of educational process                                                                                             | BD | UC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 15 | Theory and methods of educational work    | Examines the methods of organization of educational work and describes the laws, the essence and content of the processes of education, studying the features and principles of education within the updated content of secondary education. It is aimed at forming the interest of the future teacher for further pedagogical self-education and professional self-improvement                                                                               | BD | UC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |



 announcement.title

 Registry of the EP

Submission of applications

Registry of educational programs

 OVPO passport

 Administrative reports

 Support

|    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |    |    |   |                                     |      |                          |
|----|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---|-------------------------------------|------|--------------------------|
| 16 | Electricity and magnetism | The course covers the basic characteristics of electric and magnetic fields, their laws and interrelationships. Students study electrostatics, electric current, magnetic phenomena, electromagnetic vibrations and waves. Special attention is paid to the consideration of the physical essence of the phenomena under study and the concepts describing them and the limits of applicability of physical interpretations and laws. Practical exercises and laboratory work help to apply theoretical knowledge to the analysis of electrical and magnetic systems and phenomena, forming the basis for further study of physics. The presentation of this section is a development and deepening of the corresponding section of the secondary school physics course. | BD | UC | 7 | <input type="checkbox"/>            |      | <input type="checkbox"/> |
| 17 | Academic writing          | The discipline is aimed at the formation of professional competence and the expansion of communicative competence related to analytical text activities; the formation of students ' skills of linguistic and pragmatic thinking, the ability to analyze expressive units of language and competently choose the right unit, depending on the goals and conditions of communication, understanding the meaning of the principles and culture of academic integrity. The discipline involves the implementation of professional activities related to the search for information in scientific databases, the analysis and abstracting of texts, working with various genres of academic writing.                                                                         | BD | EC | 4 | <input checked="" type="checkbox"/> | High | <input type="checkbox"/> |
| 18 | Astronomy                 | Objectives of the discipline introduction of students with modern ideas about the Universe as a whole; the Solar system; celestial bodies; the physical nature of all observed phenomena and processes in the Universe; the formation of basic astronomical concepts, theories, laws; instilling skills of astronomical observations; the formation of professional knowledge and skills                                                                                                                                                                                                                                                                                                                                                                                 | BD | EC | 5 | <input type="checkbox"/>            |      | <input type="checkbox"/> |



 announcement.title

 Registry of the EP

Submission of applications

Registry of educational programs

 OVPO passport

 Administrative reports

 Support

|    |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |    |    |   |                                     |      |                          |
|----|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---|-------------------------------------|------|--------------------------|
| 19 | Modern problems of astrophysics                | Objectives of the discipline introduction of students with modern ideas about the Universe as a whole; the Solar system; celestial bodies; the physical nature of all observed phenomena and processes in the Universe; the formation of basic astronomical concepts, theories, laws; instilling the skills of astronomical observations; the formation of professional knowledge and skills.                                                                                                                                                   | BD | EC | 5 | <input type="checkbox"/>            |      | <input type="checkbox"/> |
| 20 | Methods of scientific and pedagogical research | The purpose of studying the discipline is to acquire students, as future teachers, the ability to competently build, organize and conduct experimental psychological and pedagogical research, due to the needs of the educational and educational process, as well as to draw correct conclusions based on the data obtained. The discipline involves the study of statistical methods in pedagogical research.                                                                                                                                | BD | EC | 5 | <input checked="" type="checkbox"/> | High | <input type="checkbox"/> |
| 21 | Special chapters of differential equations     | The purpose is to familiarize students with the main directions of the theory of special chapters of differential equations and to master the basic techniques for solving practical problems on the topics of the discipline, as well as practical methods for solving such equations. The course develops practical problem solving skills and a high level of theoretical knowledge about the basic functions of differential equations necessary for the successful study of subsequent mathematical and other natural science disciplines. | BD | EC | 5 | <input type="checkbox"/>            |      | <input type="checkbox"/> |
| 22 | Fundamentals of artificial intelligence        | The discipline is aimed at studying the elements of combinatorics, probability theory and mathematical statistics. The main content of the course is devoted to the study of random events and random variables. A significant place is given to the elements of mathematical statistics. Examples of applying theoretical knowledge to solving probabilistic and statistical problems are presented.                                                                                                                                           | BD | EC | 5 | <input type="checkbox"/>            |      | <input type="checkbox"/> |

announcement.title

Registry of the EP

Submission of applications

Registry of educational programs

OVPO passport

Administrative reports

Support

|    |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |    |    |   |                          |                          |
|----|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---|--------------------------|--------------------------|
|    |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |    |    |   |                          |                          |
| 23 | Fundamentals of applied behavior analysis | Course goal — to develop the ability, grounded in Applied Behavior Analysis (ABA), to critically analyze data-based functions of behavior; design and implement individualized interventions in inclusive educational settings; and evaluate their effectiveness, safety, and ethical soundness. Develops skills to: operationalize behavior; collect and analyze data (incl. ABC); identify behavioral functions; design and apply behavior support plans; teach functionally equivalent alternative behavior; manage crisis situations; and assess outcomes.                               | BD | EC | 5 | <input type="checkbox"/> | <input type="checkbox"/> |
| 24 | Methods of mathematical physics           | Discipline occupies a significant place in the General mathematical training of students. Within the framework of the discipline, students study the differential properties of different fields, get acquainted with the most typical physical problems that describe real physical processes, as well as their mathematical models. Students master the methods of solving partial differential equations, get acquainted with a number of the most widely used in solving problems of special functions, also with the concept of generalized functions and their application in physics. | BD | EC | 5 | <input type="checkbox"/> | <input type="checkbox"/> |
| 25 | School Physics Experiment Technique       | The discipline is aimed at the study of the following main topics: the place and role of educational experiment in the system of methods of teaching physics; principles of acquisition of the physics room equipment for educational experiment; selection criteria demonstrations, laboratory work and experimental research; technique and technology of educational experiment in physics; safety rules during demonstration experiments and experiments.                                                                                                                                | BD | EC | 4 | <input type="checkbox"/> | <input type="checkbox"/> |
| 26 | Fundamentals of micro-and nanotechnology  | The discipline is aimed at studying information from individual sections of physics and related Sciences that make up the physical foundations of micro-and nanotechnology. The content of the discipline: the basic laws, concepts and definitions of physical phenomena, processes and media that are the basis of these technologies, methods of transformation of fundamental physical laws into applied technological dependencies, calculations of physical laws that determine the parameters of the processes of micro-and nanotechnology.                                           | BD | EC | 5 | <input type="checkbox"/> | <input type="checkbox"/> |



 announcement.title

 Registry of the EP

Submission of applications

Registry of educational programs

 OVPO passport

 Administrative reports

 Support

|    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |    |   |                          |  |                          |
|----|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---|--------------------------|--|--------------------------|
| 27 | Robotics and mechatronics                        | General concepts of mechatronics and robotics, purpose and scope of mechatronics and robotics, basic definitions and main directions of development of mechatronics and robotics, intellectualization, miniaturization, technological support of mechatronic and robotic systems, digital motion control technologies, computer-aided design technologies, modern mechatronic and robotic modules and systems are considered.                                                                                                             | BD | EC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 28 | Basics of vector analysis in theoretical physics | Discipline is the mathematical basis of electrodynamics, as well as some special disciplines. Students learn the basics of mathematical field theory. Within the discipline students master the basic operations of vector algebra, differential operations of vector analysis in orthogonal coordinate systems, integral equations (Ostrogradsky-Gauss, Stokes), learn to apply the basics of vector and tensor analysis in electrodynamics problems.                                                                                    | BD | EC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 29 | Practicum on solving physics problems 1          | The course covers the main sections of mechanics, molecular physics, thermodynamics, electricity and magnetism. The course covers Newton's laws, conservation laws, motion of bodies in the gravity field, work and energy, laws of thermodynamics, properties of gases, laws of electrostatics, electric circuits, magnetism and electromagnetic induction. The workshop is aimed at developing problem solving skills, analyzing physical phenomena, and applying mathematical methods in physics.                                      | BD | EC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 30 | Practicum on solving physics problems 2          | The course covers key areas of optics, quantum, atomic and nuclear physics. The laws of geometric and wave optics, interference, diffraction, polarization and dispersion of light are considered. The fundamentals of quantum physics are studied: wave-particle dualism, atomic and molecular spectra. In nuclear physics, radioactivity, nuclear reactions, the structure of the atomic nucleus and elementary particles are analyzed. The course is aimed at developing problem solving skills and understanding physical principles. | BD | EC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |



announcement.title

Registry of the EP

Submission of applications

Registry of educational programs

OVPO passport

Administrative reports

Support

|    |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                     |    |    |   |                                     |      |                          |
|----|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---|-------------------------------------|------|--------------------------|
| 31 | Using Mathcad to solve physics problems                         | The basic mathematical packages, the possibilities and scope of mathematical packages, methods of solving physics problems using programming languages, the structure of the program window Mathcad and Matlab, the construction of computer programs in Mathcad and Matlab.                                                                                                                                        | BD | EC | 5 | <input type="checkbox"/>            |      | <input type="checkbox"/> |
| 32 | Using the Python programming language to solve physics problems | The main purpose of the discipline is to introduce students to modern approaches used in programming, and to give the initial skills of using the Python programming language for solving physics problems. The discipline deals with algorithms for processing arrays and other structured data using the Python language.                                                                                         | BD | EC | 5 | <input type="checkbox"/>            |      | <input type="checkbox"/> |
| 33 | Professional terminology in the field of physics                | The discipline covers the study of practical grammar and vocabulary of a foreign language for the mastery of everyday speech in oral and written form, as well as the study of special terminology for the active use of a foreign language, both in everyday and professional communication.                                                                                                                       | BD | EC | 4 | <input checked="" type="checkbox"/> | High | <input type="checkbox"/> |
| 34 | Computer simulation of physical processes                       | On discipline the possibility of numerical modeling of physical processes and realization of models on the basis of public programming languages basic and Pascal is considered. Such an approach with minimal mathematization of the phenomenon allows to develop physical intuition and the ability to apply the knowledge of physics in applied activities.                                                      | BD | EC | 5 | <input type="checkbox"/>            |      | <input type="checkbox"/> |
| 35 | Processing and analysis of physical experiment data             | The objectives of the discipline are: the formation of students 'basic knowledge of the basic methods of processing experimental and observational physical data; the formation of students' knowledge of the theoretical foundations of statistical methods of data processing and analysis; the formation of students ' skills in applying machine learning methods for analyzing data from physical experiments. | BD | EC | 4 | <input type="checkbox"/>            |      | <input type="checkbox"/> |
| 36 | Innovative technologies in teaching physics                     | Digital technologies in education and smart-education issues are studied. The aspect is made for flexible learning in an interactive educational environment based on the use of mobile devices with content from around the world, which is freely available, allowing to expand the boundaries of learning, not only in terms of the number of students, but also in terms of time and spatial indicators.        | BD | EC | 5 | <input type="checkbox"/>            |      | <input type="checkbox"/> |

announcement.title

Registry of the EP

Submission of applications

Registry of educational programs

OVPO passport

Administrative reports

Support

|    |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |    |    |   |                          |  |                          |
|----|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---|--------------------------|--|--------------------------|
|    | Experimental foundations of physics 1          | The discipline is aimed at forming a stable interest of students in the active use and improvement of experiments and experiments in mechanics and molecular physics; the development of appropriate experimental skills necessary to improve educational experimental installations, the manufacture of homemade devices and devices for experiments, the modernization of existing devices.                                                                                    | BD | EC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 38 | Experimental foundations of physics 2          | The discipline introduces students to the basics of measurement methods in a physical laboratory. The discipline is intended for the preparation and conduct of laboratory work and demonstration experiments in the main branches of physics (electricity and magnetism, optics, physics of the atom and atomic nucleus). As a result, students get an idea of the specifics of the experimenter's work and will be able to determine their aptitude for this type of activity. | BD | EC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 39 | Probability theory and mathematical statistics | The discipline is aimed at studying the elements of combinatorics, probability theory and mathematical statistics. The main content of the course is devoted to the study of random events and random variables. A significant place is given to the elements of mathematical statistics. Examples of applying theoretical knowledge to solving probabilistic and statistical problems are presented.                                                                            | BD | EC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 40 | Technology of criteria-based assessment        | Knowledge, skills and abilities gained in the process of studying this discipline will allow students to navigate in such issues as the place and role of evaluation in the educational process, the main approaches to the evaluation of educational achievements of students, modern models of evaluation of educational achievements of students, the organization of the system of criteria-based assessment of students, techniques, forms and means of its implementation. | PD | UC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 41 | Classical mechanics                            | The study of the discipline are considered Newtonian, Lagrangian, Hamiltonian formulation of equations of motion of the system, variational principles, conservation laws, particle motion in the fields, the problem of two bodies, the dynamics of solids and particle dynamics in non-inertial reference systems, equations of mechanics of continuous media.                                                                                                                 | PD | UC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |



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| 42 | Statistical physics and basics of physical kinetics | The discipline is aimed at the formation of deep and solid knowledge and understanding of the fundamental thermodynamic and statistical laws of physics of macroscopic systems; the use of knowledge for the formulation and solution of problems of modern physics. Contents: statistical system as an object of research. Microcanonic distribution in quantum statistics. Thermodynamics of closed systems. Classical statistical mechanics. Maxwell-Boltzmann statistics of ideal gases. Fermi-Dirac and Bose-Einstein distribution. | PD | UC | 6 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 43 | Methods of teaching physics                         | Content of the discipline: the Main tasks of teaching physics in school. Interdisciplinary connections, their methodical and didactic value. Forms of organization of training sessions in physics, teacher planning. Demonstration experiment, laboratory classes in physics. Solution of physical problems, classification of problems. Types of control of knowledge and skills of students. The use of technical means in the classroom. Elective courses in physics.                                                                | PD | UC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 44 | Quantum mechanics                                   | The basic principles and apparatus of quantum mechanics are considered, macroscopic manifestations of quantum laws of conductivity of solids and their application in electronic and measuring technology are considered. Students should get a clear idea of the physical nature of phenomena subject to quantum laws, learn to interpret quantum processes from a materialistic position.                                                                                                                                              | PD | EC | 6 | <input type="checkbox"/> |  | <input type="checkbox"/> |
| 45 | Methodology and technology of distance education    | Considered methodological issues of distance learning and e-learning methods, examines the features of the organization of the educational process using remote educational technologies, taking into account the achievements of science, modern educational practice and advanced pedagogical experience.                                                                                                                                                                                                                              | PD | EC | 5 | <input type="checkbox"/> |  | <input type="checkbox"/> |



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| 46 | Planning and organization of project activities in the school | The article deals with the pedagogical essence of design, the features of educational project management, the scientific apparatus of pedagogical design, the theoretical foundations of the implementation of the pedagogical project. The discipline is aimed at forming knowledge about the modern requirements and conditions of the organization of project activities in education, methods of diagnosing the quality of the educational process, the use of modern methods of managing the project activities of students in the educational environment, providing the necessary pedagogical support.                               | PD | EC | 6 | <input type="checkbox"/> | <input type="checkbox"/> |
| 47 | Quantum field theory                                          | The main purpose of teaching this discipline is to familiarize with the basic concepts, phenomena, modern problems of quantum field theory, the transition from the General course of non-relativistic quantum mechanics, based on the solution of the schrödinger equation, to relativistic equations of quantum mechanics, which are based on the Klein-Gordon-Fock equation for spinless particles and Dirac equation for spin 1/2                                                                                                                                                                                                       | PD | EC | 6 | <input type="checkbox"/> | <input type="checkbox"/> |
| 48 | Special issues of methods of teaching physics                 | The proposed ways of modernization of general secondary education in Kazakhstan are considered. The issues of using modern teaching tools, educational technologies of teaching, methods of teaching a school course of physics (grades 7-11) are discussed. Attention is paid to the consideration of the main characteristics of various learning technologies: personality-oriented, level differentiation, problem-based learning, information, and their practical application in school education. The necessity of introducing pedagogical innovations and innovative activities of teachers into the practice of work is justified. | PD | EC | 5 | <input type="checkbox"/> | <input type="checkbox"/> |
| 49 | Solution of Olympiad tasks on physics                         | Discipline is aimed at solving Olympiad problems in General physics, focused on maintaining a high level of interest in physics. The content of the proposed problems covers all sections of the course of General physics, while the problems are often synthetic, combining programs of different sections of physics, which brings up students ' understanding of a single physical picture of the physical phenomena considered in the problems.                                                                                                                                                                                        | PD | EC | 6 | <input type="checkbox"/> | <input type="checkbox"/> |

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| 1                                                                                                                   | Expertise | 23.09.2025 16:54 | ОБНОВИТЬ |
| Basis for updating of EP *                                                                                          |           |                  |          |
| Изменение лицензии, исключен ПС Педагог, утративший силу. Добавили новую дисциплину "Основы прикладного поведения". |           |                  |          |