Ә/Б ОТЫРЫСЫНДА
ҚАРАЛДЫ:
әб жетекшісі
хаттама № 1
РАССМОТРЕНО
на заседании ассоциации
учителей точных наук
Белимова Е.С.
Протокол №1
от 01.09.2021

КЕЛІСЕМІН:
Оқу ісінің меңгерушісі
СОГЛАСОВАНО:
Зам. директора по
учебной работе
Баймендина А.О.
«01» 09 2021г.

БЕКІТЕМІН:
УТВЕРЖДАЮ:
ДИРЕКТОР:
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«01» 09 2021г.

ҰЗАҚ МЕРЗІМДІ КҮНТІЗБЕЛІК –ТАҚЫРЫПТЫҚ ЖОСПАРЛАУ

ДОЛГОСРОЧНОЕ КАЛЕНДАРНО –ТЕМАТИЧЕСКОЕ ПЛАНИРОВАНИЕ

Предмета по выбору «Physics in English»
(вариативный компонент)
2021-2022 учебный год

КГУ «Общеобразовательная школа №5 города Атбасар отдела образования по Атбасарскому району управления образования по Акмолинской области»

классы : 8 «А», «Б».

МҰҒАЛІМ:
УЧИТЕЛЬ: Белимова Елена Сергеевна.

Explanatory note «Physics in English».

In a rapidly changing world and increasing information flows, fundamental subject knowledge is an obligatory, but not sufficient, goal of education. Students should not just master the amount of knowledge, skills and skills. It is much more important and more difficult to instill in students the ability to independently extract, analyze, structure and use information effectively for maximum realization and useful participation in the life of society.

To solve the tasks set, the following is necessary: to transform the content of education from a knowledge-centric to a competent, result-oriented; strengthen language and information training of students.

In this connection, it seems that the transition to the teaching of subjects (both individual and whole cycles) in English - the language of international communication - is necessary and appropriate to the requirements of the time, reasonable and absolutely logical.

Such an approach is rational, first of all, apparently for the objects of the natural cycle, because they use the sign system and a huge number of words that do not have special translation in Latin.

Physics studies the most common properties and laws of the motion of matter, it plays a leading role in modern natural science. This is due to the fact that physical laws, theories and methods of investigation are of decisive importance for all natural sciences. Physics is the scientific basis of modern technology. The interdisciplinary role of the subject is also of great importance, especially taking into account the effect of the symbiosis of the humanities and natural-mathematical sciences observed in the last decade.

This course is intended for students of 8 classes of general education schools. The proposed program of the course of physics is compiled in accordance with the mandatory minimum content of secondary (full) general education, meets the requirements for the level of training graduates.

The ***aim*** of the course is to form the basis of the scientific world outlook for students through the use of the English language, cognitive interests, intellectual and creative abilities, critical thinking based on knowledge and skills obtained in the study of natural phenomena, familiarity with the basic laws of physics, their application in technology and everyday life.

Course Objectives:

- To form the skills of translation, reading using basic strategies, speaking, listening and writing, to talk about the practical work done in English, to understand the instructions, both printed and through listening, to make short reports about the course of your own experiment;
- To form skills of independent, individual, pair and group work.

Principles of the course.

The content of the course is purposefully built taking into account the following principles:

Parallelism. The study of the main sections is carried out in parallel at the lessons of physics with the advanced passing of the material in the native language.

Uniqueness. Uniqueness is necessary in the selection of linguistic units, without which it is impossible to describe physical processes.

Pragmatic. Directed training on a homogeneous contingent of students in accordance with their communication needs in the field of physics.

Visibility. All discussed processes and concepts are demonstrated with the help of instruments or visual aids.

Criteria for selecting the lesson material

• Multimodality and variety of materials (real objects, diagrams or models, oral explanation of the teacher, etc.);

• The amount of material;

• Visibility;

• Knowledge of subject vocabulary and terminology by students;

• Accessibility of the material for perception.

Methodical recommendations for lesson planning.

To implement the goals and objectives of this course, it is proposed to use the method of language-based integrated learning (CLIL).

The CLIL lesson includes the following components:

Content is the knowledge, skills, and skills of the subject area that are progressing.

Communication (communication) - the use of foreign language in training, with emphasis on its use.

Cognition is the development of cognitive and cognitive abilities that form a general representation (concrete or abstract).

Cultural (cultural knowledge) is the provision of oneself as a part of culture, as well as the awareness of the existence of alternative cultures.

When planning a lesson, the following points should be considered:

• The CLIL lesson is not a foreign language lesson, but a substantive lesson in a foreign language.

• Auditing is one of the most important types of speech activity when learning the language.

• Reading is the main kind of speech activity, reading materials should make sense.

• Speaking is a type of activity in which it is necessary to focus on clarity of presentation, simplicity and fluency, while grammar fades into the background.

• Writing - an activity through which lexical and grammatical skills develop.

• The lesson should be based on texts (printed, or audio recording).

• The language components of the lesson depend on the subject.

• Lexical material is more important than grammatical.

• The tasks set in the lesson depend on the student's level of preparation.

- **The structure of the lesson.**

The lesson is organized according to a four-stage scheme:

1. Text processing.
2. Awareness and organization of acquired knowledge.
3. Language understanding of the text.
4. Zaaniya for students.

Tasks for students depend on the level of students' preparation, on the tasks of instruction, and on the preferences of students. A sample list of tasks:

- draw up a chart, table, map, etc.
- fill in the table
- find specific information
- find the match
- place the paragraphs in the correct order
- define the procedure
- fill in the blanks in the text
- problem posing: question-answer, term-definition, part-whole
- tasks to search for specific information
- games in which you have to guess the words
- write questions on the text
- oral presentation of the work.

Expected results:

Students should know:

- categories of scientific knowledge (phenomena and facts, concepts, laws, theoretical conclusions);

- methods of scientific cognition (observation, experiment, construction of hypotheses and models, derivation of consequences and their verification);

- concepts, quantities, laws provided for in program material, in English;

- the main values of the lexical units studied;

- features of the structure of simple and complex sentences.

Students should be able to:

- use the methods of scientific investigation of natural phenomena, establish relationships between physical quantities, explain the results obtained and draw conclusions;
- apply theoretical knowledge in solving life problems in various fields of activity;
- describe and explain physical phenomena;
- draw conclusions from the listened material with contextual prompts;
- to formulate simple questions based on the material heard;
- convey the main idea of the text;
- to anticipate the content of the text with the help of headings, photographs, keywords, excerpts on a familiar topic;
- ask simple and complex questions for obtaining specific information and responding to them;
- interact with students (in pairs, in a group) to complete assignments;
- fill out tables, diagrams, schemes, questionnaires, forms;
- make notes on the text in accordance with the communicative task.

The curriculum-thematic plan of the course
Учебно-тематический план курса 8 класс. «Physics in English»

№	Theme	What is being studied	The student will	Number of hours	Date
Heat phenomena					
1	Motion of atoms and molecules.	Brownian motion. Diffusion. Molecular-kinetic theory.	- Describe experimental proofs and show examples of Molecular-Kinetic Theory.	1	08.09
2	Temperature and internal energy.	Temperature. Temperature scales. Internal energy.	- Describe usage of thermal expansion in temperature measurement; - Use different temperature scales (Kelvin, Celsius); - Describe ways of changing of internal energy.	1	15.09
3	Heat transfer. Application of heat transfer.	Heat transfer. Conduction. Convection. Radiotion.	- Compare different types of heat transfer; - Tell examples of heat transfer in daily life and industry; - Tell examples of adaptation of living organisms to different temperatures.	1	22.09
4	Specific heat capacity.	Mass of the substance. Type of the substance. Change in the temperature of the substance.	- Determine heat lost and heat given during heat transfer; - Explain physical meaning of specific heat capacity.	1	29.09
5	Heat of combustion.	Heat of combustion. Formula of heat of combustion.	Apply formula of heat of combustion to solve problems.	1	06.10
6	Heat exchange.	Heat exchange. Heat balance.	Apply equation of heat balance to solve problems.	1	13.10
States of matter					
7	Melting and freezing.	Melting. Specific latent of fusion. Freezing. Formula of freezing/ melting.	- Use Molecular-Kinetic Theory to describe melting and freezing; - Apply formula of freezing/ melting for problem solving.	1	20.10
8	Evaporation and condensation.	Evaporation. Specific latent heat of evaporation. Condensation.	- Use Molecular-Kinetic Theory to describe boiling and condensation;	1	27.10
9	Graphical analysis.	Temperature-time graph of melting and freezing;	- Analyze temperature-time graph of melting and freezing;	1	10.11

		boiling and condensation.	- Analyse temperature-time graph of boiling and condensation.		
10	Humidity.	Humidity. Humidity and Temperature. Boiling and Air pressure.	- Determine amount of heat during boiling; - Explain dependence of boiling point on external pressure.	1	17.11
Thermodynamics					
11	First law of thermodynamics.	First law of thermodynamics.	- Explain the first law of thermodynamics.	1	24.11
12	Heat engines.	Heat engines.	- Describe transformations of energy in heat engines; - Explain working principles internal combustion engine and steam turbine.	1	01.12
13	Efficiency of heat engine.	Efficiency of heat engine. The formula of efficiency.	- Determine efficiency of heat engine; - Propose methods to increase efficiency of heat engines.	1	08.12
14	Ecology and energy.	Fossil fuels. Biomass fuels. Nuclear fuels. Water power. Sun and wind power.	- Estimate the effect of heat engines on ecology of environment.	1	15.12
Electrostatics					
15	Electric charge.	Electric charge. Charging methods. Positive and negative effects of charging.	- Characterize electric charge; - Explain charging by friction and induction; - Give examples of positive and negative effects of charging; - Explain charging by rubbing, induction and contact.	1	22.12
16	Conservation of electric charge. Coulomb's law.	Conservation of electric charge. Interaction between charges. Coulomb's law.	- Explain law of conservation of charge; - Apply Coulomb's law for problem solving.	1	29.12
17	Electric field.	Electric field.	- Explain physical meaning of "electric field" and determine its dynamics characteristics; - Calculate force applied on charge by electric field; - Show electric field by using electric field lines.	1	12.01
18	Electric potential.	Potential. Potential	- Explain physical meaning of electric potential and	1	19.01

	Potential difference.	difference.	potential difference.		
19	Capacitance and capacitors.	Electric capacitance. Capacitors. Parallel plate capacitors.	- Describe structure of capacitor and its function.	1	26.01
Electric current					
20	Electric current.	Electric current. Source of current. Conductors and insulators.	- Explain conditions for production of electric current.	1	02.02
21	Electric circuit. Voltage.	Electric elements. Electric circuit. Voltage.	- Use schematical drawings of elements of electric circuit to draw electric circuit; - Explain physical meaning of voltage and its unit of measurement.	1	09.02
22	Electrical resistance.	Electrical resistance.	- Apply Ohm's law for part of electric circuit for problem solving.	1	16.02
23	Resistivity.	Length. Area. Resistivity. Resistance and temperature.	- Explain physical meaning of electric resistance and its unit of measurement; - Apply formula of resistivity for problem solving.	1	23.02
24	Parallel and series connections of resistors.	Series combination. Parallel combination.	- Design complex electric circuits (that have series and parallel combination of resistors) by using Ohm's law.	1	02.03
25	Electrical energy and power.	Electrical energy and power. Joule-Lenz law.	- Apply formulas of electric power and electric work for problem solving.	1	09.03
Electromagnetism					
26	Magnetic field.	Magnetic field lines. Electric current and magnetic field. Electromagnet. Magnetic field in nature.	- Explain properties of magnetic field; - Determine direction of magnetic field of straight wire and solenoid; - Describe magnetic phenomena in nature.	1	16.03
27	Electric motors. Electricity production.	Electric motors. Electromagnetic induction. Electricity production.	- Describe the effect of the magnetic field on current carrying wire; - Explain the structure and working principles of an electromotor and electric	1	06.04

			devices; - Describe electromagnetic induction; - Give examples of electricity production in the world and in Kazakhstan.		
Optics					
28	Lunar and solar eclipse.	Lunar and solar eclipse.	- Graphically represent solar and lunar eclipses.	1	13.04
29	Reflection.	Reflection. The rules for reflection of light. Image formation in a plane mirror.	- Experimentally determine relationship between the angle of incidence and the angle of reflection; - Explain and give examples of regular and diffuse reflection; - Plot image in plane mirror and list its properties.	1	20.04
30	Refraction.	Refraction. The law of refraction.	- Apply the law of refraction for problem solving; - Draw a ray diagram in rectangular prism.	1	27.04
31	Converging lens.	Converging lens. Image formation by a converging lens. Magnification of image.	- Apply the formula of a thin lens for problem solving; - Apply the formula of a magnification of lense for problem solving; - Draw a ray diagram of the image in a thin lense and list properties of the image.	1	04.05
32	Diverging lens.	Diverging lens. Image formation by a diverging lens. Magnification of image.	- Apply the formula of a thin lense for problem solving; - Draw a ray diagram of the image in a thin lense and list properties of the image.	1	11.05
33	Human eye and optical devices.	Human eye. Normal vision and eye defects.	- Describe the correction of myopia and hyperopia.	1	18.05
34	What you need to remember?		- Describe and explain physical phenomena; - Apply theoretical knowledge in solving life problems in various fields of activity; - Establish relationships between physical quantities.	1	25.05
	Total			**34**	

Sources for the teacher
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1. Концепция развития иноязычного образования Республики Казахстан. – Алматы: Казахский университет международных отношений и мировых языков, 2010.
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9. Локтюшина Е. А. Иностранный язык в профессиональной деятельности современного специалиста: проблемы языкового образования. Волгоград: Перемена, 2012. 176 с.
10. Мартынова М.В. Интегрированное обучение. Педагогические технологии. типы и формы интегрированных уроков. Методические рекомендации. http://ido.tsu.ru/ss/?unit=199
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16. Smagulova, J. Language policies of kazakhization and their influence on language attitudes and use // The International Journal of Bilingual Education and Bilingualism. – 2008. – №11(3-4). –pp. 440-475.

Sources for the students
Источники для учащихся

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2. Bazarov Y., Mirzakhmedov A., Tussyubzhanov A. Terminology.- Almaty: Астана-кітап, 2017.
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The curriculum-thematic plan of the course
Учебно-тематический план курса 9 класс

№	Разделы долгосрочного плана	Темы/Содержание раздела долгосрочного плана	Цели обучения	Кол-во часов	Дата
1	**Модуль 1 "Basics concepts of kinematics" (4)**	Introduction. Movement. Vectors and operations on them.	Know the concepts: material point, reference system, velocity, displacement; be able to classify the type of movement;	1	02/09

			be able to perform operations with vectors; know the basic definitions in English.		
2		Rectilinear uniformly accelerated motion. Acceleration. Free fall. Acceleration due to gravity.	Apply acceleration and free fall formulas to solve problems; know the words needed to solve problems in English.	1	09/09
3		Curvilinear motion. Linear and angular velocities.	know the terms in English: curvilinear motion, the movement of a point in a circle, angular velocity and acceleration; apply knowledge to solve problems; be able to work with text.	1	16/09
4		Solve problems. Test 1.	show the knowledge gained in practice; to solve the problem in English;	1	23/09
5		Starry sky. Celestial sphere.	work with the celestial sphere;	1	30/09
6		Systems of celestial coordinates. Time. Calendar.	analyze video on the topic, to answer the tests made for the video	1	07/10
7		The laws of motion of the planets of the Solar system.	know the difference between Kepler's laws in English and Russian	1	14/10
8	**Модуль 2 "Basics of astronomy" (4)**	Test 5	to show off their skills at orientation in the starry sky	1	21/10
9	**Модуль 3 "Dynamics" (5)**	Newton's first law. Force.	understand information when they watch videos; give examples of inertial reference	1	29/10

			systems;		
		2 quarter.			
10		Newton's second law. Weight.	apply knowledge to solve problems; to make sentences in English;	1	11/11
11		Newton's third law. The force of gravity.	give examples on the topic, be able to present the material in English	1	18/11
12		Movement of artificial satellites. Body weight. Weightlessness.	distinguish the first, second, third cosmic speed	1	25/11
13		Solve problems. Test 2.	make a cluster on the studied topic; defend the answer in English	1	02/12
14		The momentum of the body.	know definitions on this topic in English; be able to make sentences	1	09/12
15		The law of conservation of momentum. Jet propulsion.	make a story about jet propulsion in English; be able to solve problems	1	16/12 п.д. 23.12
16		Energy. The law of conservation and transformation of energy.	find examples from everyday life; to retell the text	1	
	Модуль 4 "Laws of conservation" (4)		3 quarter.		
17		Solve problems. Test 3.	apply knowledge to solve problems	1	13/01
18		Oscillatory motion. Period, frequency, amplitude of oscillations.	know the basic concepts in English; to see the peculiarities of translation	1	20/01
19		Mathematical and spring balance.	be able to display the formula in English	1	27/01
20		Free and forced vibrations. Resonance.	show experiments with resonance and explain them	1	03/02
21	**Модуль 5 "Oscillations. Waves" (7)**	Waves. Sound wave. Characteristics of the sound.	Know what a sound; learn music classic tunes	1	10/02

22		Sound reflection. Echo. Ultrasound.	to distinguish between graphs of ultrasonic waves	1	17/02
23		Electromagnetic waves. Radio connection.	to analyze the video; to retell the content of the video in English	1	24/02
24		Solve problems. Test 4.	apply knowledge of graphs and their explanations in English	1	03/03
25		Thermal radiation. Planck's hypothesis about light quanta.	create conversations with each other on a topic	1	10/03
26		Photoelectric effect. The Einstein formula for the photoelectric effect.	to know the history of the discovery of the photoelectric effect	1	17/03
			4 quarter.		
27		X rays. Radioactivity.	analyze the text, highlight the most basic concepts on the topic	1	31.03
28		The Experiments Of Rutherford. Atomic structure.	know the atomic structure, work in pairs, groups, explain the material in English	1	07/04
29		Nuclear interaction. Nuclear force	be able to solve problems and conduct mental experiments on the topic	1	14/04
30		Defect of mass. The binding energy of the nucleus.	know the theory and be able to tell it in simple words in English	1	21/04
31	**Модуль 6 -7 "Atomic structure. Atomic phenomena.**	The law of radioactive decay. Nuclear chain reaction. Nuclear reactor.	search for information about nuclear reactors in foreign articles	1	28/04
32	**Information on elementary particles" «Nuclear physics» (11)**	Energy of the Sun and stars. Radioactive isotopes and their applications.	be able to write short articles on the topic in English	1	05/05

33		Elementary particles and cosmic rays. Universe evolution.	create clusters in English on this topic	1	12/05
34		Solve problems.Test 6.	summarize all the knowledge that has been passed this year; retell the text in English	1	19/05