

ELEMENTS OF INTERDISCIPLINARY CONNECTION IN BIOPHYSICS TEACHING

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***Abstract:** One of the main elements of modern teaching technologies is the use of interdisciplinary communication in lessons. Because now scientific innovations in the field of sciences are created on the basis of interconnected problems of various sciences. This article aims to increase the effectiveness of the lesson by using elements of sciences close to biophysics.*

***Key words:** biophysics, physics, spectroscopy, x-ray structural analysis, electron paramagnetic resonance.*

The Laws on Education implemented in our republic set the task of reforming the education system, ensuring that the teaching of sciences in all educational institutions is modern, and that the scope of knowledge is connected with life processes. Demands such as wide application of new pedagogical technology of teaching are set. Therefore, special attention is paid to the development success of modern science and technology physics and related biophysics based on programmatic requirements. In order to fulfill such a task, first of all, it requires a wide application of the integrative method of teaching.

In modern pedagogy, learning by connecting the directions of the educational system is called integrative education. For example, the study of physics and biophysics has a great impact on the understanding of physical phenomena and processes that occur in nature, living organisms, including the human body, as well as the physical methods of examining natural processes and treating patients. On the one hand, this is an important factor for the successful implementation of interdisciplinary communication in teaching, and

on the other hand, it serves as an important factor for directing students to the specialty of biophysics, in particular, to the specialty of medicine.

In modern medical practice, various physical devices are widely used for both diagnosis and treatment. This puts before educational institutions the issue of training personnel who have solidly mastered the basics of physics and biophysics.

The main methods of biophysics include: spectroscopy, X-ray structural analysis, radiospectroscopy, including electron paramagnetic and nuclear resonance, spectropolarimetry and other optical methods for studying the structure of molecules, measuring biopotentials and electrical conductivity, calorimetric measurements, vacuum techniques and low-temperature techniques, the method of targeted atoms, ionizing and optical radiation sources (including quantum generators-lasers), as well as physical and mathematical modeling of biological processes. All these methods, tools and methods came to biology from physics, physical chemistry and mathematics.

The science of physics is the main base of the development of science and technology, in turn, the development of technology helps the development of the science of physics. The development of physics and technology, in turn, serves as the main factor for the development of other sciences and their practical application. This issue is also specific to the medical field.

The instrument-making industry of our country makes a great contribution to the development of medicine by applying the achievements of physics.

Below we will consider interdisciplinary connections in passing some topics.

№	Physics topics	Biophysics topics
1	Speed, average speed	Speed of human movement. Nerve impulses, speed of blood flow in veins. The effect of high speed on the human body. Accelerations that

		occur during the start of the athletes and during the ascent and landing of the pilot or cosmonauts.
2	Forces of nature, elastic forces	Human and animal muscle strength, stretching and shortening of muscles, causes of bone fractures. Application of force meter in medicine.
3	Mechanical work	Muscle work. Heart work and strength.
4	Movement of liquid in a pipe, Bernoulli's equation	Laws of blood movement in blood vessels. Measuring his movement speed, blood pressure.
5	Gas laws	Use of gas laws during respiration.
6	Surface tension, molecular theory of the surface layer	Blood transfusion, structure and importance of skin.
7	Electric current. Current strength	Use of electric currents for therapeutic purposes.
8	Electric current in a vacuum. Electric lamps.	Use of electronic lamps in medicine. Electrocardiograph. Application of electronic oscillograph for analysis of biopotentials.
9	Diffusion of light. Illumination.	The influence of light on human growth and development. The norm of illumination for various tasks.
10	X-ray light	The effect of X-ray light on the body. X-ray devices.
11	Radioactive isotopes.	Use of radioactive isotopes in medicine. Biophysical basis of human radiation protection. Impact of biosphere pollution on public health.

It is important to study the medical aspects of biophysics in such an interconnected manner, because the human body is a very complex system, which can be studied only by synthesizing and generalizing the knowledge obtained from various disciplines.

The purpose of using the method of interdisciplinarity in the study of biophysics is to encourage students to acquire knowledge in depth, to acquire skills and competences based on the requirements of DTS, to develop observational skills in students, to transfer the knowledge gained on one or another general issue to others. is to supplement with information obtained from subjects and to increase the ability to retain in memory.

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