THE POSITION OF THE DEPARTMENT OF MECHANICS IN PHYSICS AND ITS TEACHING

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Abstract. *This article will focus on several features of mechanics and its methodological approaches to teach students, along with its correlation with other scientific fields.*

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Introduction

Of course. Mechanical engagement requires a huge set of knowledge from physics, mathematics and slightly from chemistry too. Physics in the sense the basic laws of nature, mechanics part (both statics and dynamics), basic knowledge about electricity, and the most important atomic structure. Since, in this you are dealing with the real time scenarios you should be informative regarding the other subjects too. Among all PHYSICS AND MATHEMATICS has got a major share and are the pre -requisites to master this branch.

Mechanics is the historically first branch of physics. In the development of mechanics, experimental evidence and the collection and systematization of certain theoretical ideas were replaced by a single theory more quickly than in any other branch of physics. This unified theory emerged as a result of the works of Galileo and Newton, and it was developed by scientists from different countries. Mechanical motion - the movement of bodies relative to each other in space and time is the simplest form of motion studied in physics. Without studying mechanics, its most important concepts and laws, it is impossible to consciously master the phenomena of heat, electricity. It is absolutely clear that more complex forms of motion, such as heat, electricity, sound, and atomic phenomena, should be studied after students have mastered the basic and most characteristic aspects of the simplest form of motion studied in mechanics. Finally, mechanical movement participates in qualitatively more complex forms of movement, but it cannot replace movement. The didactic principle of simple to complex, when applied to the structure of a physics course, requires the study of physics starting with mechanics. Knowledge of mechanics is essential in studying other parts of the physics course. Learning physics without understanding the concepts of mechanics is like learning to read a book without learning the alphabet.

Indeed, in order to study the mechanism and nature of thermal phenomena, in the molecular kinetic theory of substance structure, concepts and laws of mechanics, such as kinetic and potential energy of molecules, body momentum (amount of motion) and its conservation law, dynamic interpretation of force, etc., are widely used.

In studying the electric field, magnetic field and the properties of the electromagnetic field, it is necessary to know the concepts of force, mass, work and energy, etc. During the study of mechanics, the concept of matter is developed, and the structures of matter are studied in the following sections of physics. From this the concept of the external field is also introduced (during the study of electry) and ideas about it are developed. During the study of mechanical movement,

the idea that this movement occurs in space over time is also explained. Concepts of the movement of matter in space and time are given clearly and comprehensibly at the beginning of the course in the simplest and most illustrative examples. Later, in learning more complex forms of movement, these ideas are developed and deepened. When studying mechanics, it is necessary to strengthen its experimental foundations. The study of mechanics on the basis of experiments assumes the following: the main phenomena are studied in experiments, the derivation of physical laws is based on these experiments, and the formation of concepts is based on experiments and measurements.

When mechanics is studied on the basis of experience, students gain solid knowledge of mechanical phenomena, laws, concepts, and applications. They will be able to see concrete facts from general conclusions; they will be able to "feel" the numerical values of physical quantities in different cases. As a result of repeatedly measuring the force with dynamometers, speed and acceleration with a cart with a dropper on it, or speed with a speedometer, the frequency of rotation of an object with a tachometer, and other physical quantities, students will learn about various forces, speeds, accelerations, masses, rotation frequencies and so on. the skills of knowing how to roughly determine such things are formed. These do not allow formalism in the knowledge of mechanics. It should be assumed that the evidence (facts) obtained from the experiment are closely related to the general physical theory. There can be no system of knowledge without physical theory.

In mechanics, the main physical theory that unites the entire educational material of this branch of physics is Newton's three laws of dynamics and the laws of conservation.

In the process of teaching mechanics, basic concepts (mass, force, momentum, energy, ...), physical theory (Newton's laws), generalization (universal gravitation law, conservation laws) and balance of mechanical systems, which are the "instrument" (tool) of physical science knowledge will be introduced to the student. In the process of teaching mechanics, students' worldviews, polytechnic knowledge and skills are formed correctly. They are brought up in a political-ideological, patriotic, international spirit. In the process of studying mechanics, students' logical, theoretical, scientific and technical thinking develops.

There are different methods of studying mechanical motion, one of which is to represent the motion by the path traveled, and the other is to represent the motion by the radius vector. In school, the position of a material point is determined using coordinates (through projections of the radius vector onto the coordinate axes). The displacement of a material point is determined by displacement. In general, secondary schools' students should master the vector character of kinematic quantities (displacement, velocity, acceleration), because it is necessary for learning the basic laws of motion in dynamics: writing the equations of motion in vector form gives an opportunity to reveal the physical nature of dynamic issues. When describing motion, kinematic quantities can be introduced as vector quantities by looking at the radius-vector as a function of time or coordinate.

Conclusion

Therefore, in general secondary schools, great importance is attached to working with real sizes, and the coordinate method, i.e., the second method, is chosen to describe the movement. The coordinate system is closely related to the concept of the number system and the relativity of motion. Using the coordinate method, it is possible to study motion in a plane or straight line by taking the projections of vector quantities onto the coordinate axes. Studying mechanics in the coordinate method in general secondary schools brings the definition of basic concepts and laws

closer to their definition in science; strengthens the connection of physics and mathematics, increases the level of generalization of knowledge.

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