Physics

Physics is one of the oldest and most interesting fields of science. It is the science that is concerned with the study of nature and the universe. Understanding natural phenomena and the forces that control the behavior of materials and organisms; The interactions that take place between the main components of matter, the study of energy, matter, movement, time, and everything related to nature, electrical and magnetic forces, energy in its forms in the universe, and new and renewable energies to establish laws and theories about any natural phenomenon that is monitored. The word physics goes back to its Greek origin, "physikos." Physics is considered one of the oldest branches of science in terms of logical and experimental scientific interpretation, whether in classical physics or modern relativistic and quantum physics. It is considered as a constantly changing science, and this is related to the progress of scientific research in which physics is the scientific basis. It has opened wide and diverse horizons in new research and applied specializations. It must be noted that the laws of physics are extremely precise. Because it has a strong relationship with mathematics.

• The fields of physics include many exciting disciplines:

- Solid state physics; is considered one of the broadest branches of physics, as it is concerned with studying solid materials using methods such as quantum mechanics, geometric crystallography, materials science, and thin films. Solid physics explains many of the behavior and properties of solid materials, composition, shape, and other physical and chemical properties. Solid-state physics forms the theoretical basis for the science of metallic, polymeric and ceramic materials and their direct applications. An example of this is the manufacture of semiconductors, solid-state electronics, superconducting materials, the production of nanomaterials, smart materials, alloys, and others that are used in all engineering applications and all aspects of civil, medical, and military life.
- Nuclear Physics; Nuclear physics is a section of physics that focuses on studying the components of the atom, the nuclei, and all the elementary particles inside the nucleus, whether protons or neutrons, and their interactions. It is also interested in studying nuclear properties, whether functional or structural. It includes branches such as atomic physics, nuclear physics and particle physics.

- Classical physics; is concerned with the study of movement and forces in moving bodies, and includes branches such as dynamics, mechanics, heat, sound, and light.
-Theoretical physics; Which relies on advanced mathematics, physics concepts, and classical and modern theories in physics in developing concepts and models for many new properties in physics or solving dilemmas facing scientists in that field.
- Modern physics; It includes the study of phenomena that occur at the atomic level and fundamental particles, and includes branches such as quantum physics and relativistic physics.
- Quantum physics; what is also known as quantum mechanics and within modern physics, are those hypotheses that focus on studying the behaviour of material particles and light from the atomic and sub-atomic perspective, and modern interpretations of the nature of the atom and its contents.
- Astrophysics; Which relates to the study of celestial bodies and bodies such as planets and stars, their movement and characteristics, and astronomical phenomena in general, and includes branches such as astronomy and cosmology.
- Laser physics; It is a science that deals with the production of lasers, the study of the effects of lasers on public life, and their uses in other industrial, medical, and scientific applications.
- Biophysics; It is one of the modern sciences that works in biological or biological systems. The importance of biophysics comes from knowing how molecules of matter are formed, how various molecules move from the cell and how they work, and it also explains the work of non-simple systems in our bodies, such as the brain, immune system, circulatory system, and many other systems. Biophysics is a scientific branch that intersects mathematics, chemistry, physics, engineering, pharmacology, and materials science to learn and improve new methods for understanding how different biological systems work.
- Medical physics; Medical physics has developed greatly in recent decades and has become very important in human life after being related to human medical uses, such as radiation, particles, and electromagnetic fields. It includes branches such as medical physics, nuclear medicine, and biomedicine.

- Environmental physics; It is concerned with studying the relationship between living organisms, natural factors, and physical phenomena in the environment, and includes branches such as biological physics and geophysics, and new uses that improve and preserve the biological environment.

- Physics of renewable energy; It includes studies of the physics of new and renewable energies, such as solar energy, wind energy, thermal energy, and other alternative sources to fossil fuels, and what is related to finding alternative sources, such as solar cells, designing and manufacturing them.

Many branches of physics have been developed and are constantly expanding, including computational physics, applied physics, quantum physics, statistical physics, and others.

• Research areas in physics:

The research fields in physics are constantly expanding and diversifying and have expanded to include many branches in the disciplines of physics and the disciplines cooperating with them, such as chemistry, biological sciences, engineering, medicine, geology, and others, which contribute to the development of the world around us and help provide advanced technology to the world, make the best use of things, achieve rational consumption of fuel, and save energy. It is used in industries and maintains health and safety for human life, as in:

Developing materials science, new materials, smart materials with advanced and new properties, applications of thin films in modern technology, photovoltaic cells and energy-storing tables, what is new in renewable energies and their technologies, nanophysics, nanotechnology and nanoelectronics, biological physics and biological processes, new concepts in medicines and quantum computing, and the development of powerful and advanced computing. As well as cosmic physics and new universe studies..