

INTRODUCTION TO SCIENCES

The word Science comes from the Latin "scientia," meaning knowledge.

Science refers to a system of acquiring knowledge. This system uses observation and experimentation to describe and explain natural phenomena. The term Science also refers to the organized body of knowledge people have gained using that system.

In simple words, the word Science often describes any systematic field of study or the knowledge gained from it. The purpose of Science is to produce useful models of reality.

The field of Sciences are commonly classified into two major categories:

- **Natural sciences** - The study of the natural world,
- **Applied Sciences** - The application of scientific knowledge and research for human needs.

Natural Sciences

Natural science is a branch of science concerned with the description, prediction, and understanding of natural phenomena, based on empirical evidence from observation and experimentation.

Natural science can be divided into two main branches and these branches of natural science may be further divided into more specialized fields

1. Life science (or biological science).
2. Physical science is subdivided into fields like Physics, Space Science, Chemistry, and Earth Science.

Life Sciences

The life sciences comprise the branches of science that involve the scientific study of organisms – such as microorganisms, plants, and animals including human beings. While biology remains the centerpiece of the life sciences, technological advances in molecular biology and biotechnology have led to a host of specializations and interdisciplinary fields.

Here, we have covered the popular ones.

- Anatomy – study of form and function, in plants, animals, and other organisms, or specifically in humans
- Biochemistry – study of the chemical reactions required for life to exist and function, usually a focus on the cellular level
- Biotechnology – study of the manipulation of living matter which includes genetic modification
- Botany – study of plants Ecology – study of the interactions of living organisms with one another and with the non- living elements of their environment
- Genetics – study of genes and heredity.
- Marine biology – study of ocean ecosystems, plants, animals, and other living beings

- Microbiology – study of microscopic organisms (microorganisms) and their interactions with other living organisms
- Zoology – study of animals, including classification, physiology, development, and behavior

Physical Sciences

Physical science is a branch of natural science that studies non-living systems, in contrast to life science. It in turn has many branches, each referred to as a "physical science", together called the "physical sciences"

The popular branches of Physical sciences are Physics, Chemistry and Earth Science.

Physics

This involves the study of matter and its motion through space and time, along with related concepts such as energy and force. More broadly, it is the general analysis of nature, conducted in order to understand how the universe behaves.

Here, we have covered the popular branches of physics.

- Astrophysics – study of the physical aspects of celestial objects
- Planetary science – scientific study of planets (including Earth), moons, and planetary systems, in particular those of the Solar System and the processes that form them.
- Geophysics – the physics of the Earth and its environment in space; also the study of the Earth using quantitative physical methods
- Thermodynamics – branch of physical science concerned with heat and its relation to other forms of energy and work.
- Nuclear physics – field of physics that studies the building blocks and interactions of atomic nuclei.
- Quantum physics – branch of physics dealing with physical phenomena where the action is on the order of the Planck constant.

Chemistry

This subject deals with the study of the composition, structure, properties and change of matter. Chemistry deals with such topics as the properties of individual atoms, the manner in which atoms form chemical bonds in the formation of compounds, the interactions between substances through chemical reactions to form different substances etc.

Here, we have covered the popular branches of Chemistry.

- Organic chemistry – study of the structure, properties, composition, mechanisms, and reactions of organic compounds. An organic compound is defined as any compound based on a carbon skeleton.
- Inorganic chemistry – study of the properties and reactions of inorganic compounds.
- Environmental chemistry – study of chemical and biochemical phenomena that occur diverse aspects of the environment such the air, soil, and water. It also studies the effects of human activity on the environment.

Earth Sciences

Earth science is the study of how the natural environment (ecosphere or Earth system) works and how it evolved to its current state. It includes the study of the atmosphere, hydrosphere, lithosphere, and biosphere.

Here, we have covered the popular branches of Earth Science.

- Atmospheric Sciences - the study of the Earth's atmosphere, its processes, the effects other systems have on the atmosphere, and the effects of the atmosphere on these other systems.
- Environmental Science – It is an integrated, quantitative, and interdisciplinary approach to the study of environmental systems on earth
- Geology - the study of the Earth, with the general exclusion of present-day life, flow within the ocean, and the atmosphere. The field of geology encompasses the composition, structure, physical properties, and history of Earth's components, and the processes by which they are shaped.
- Geography - study of earth and its people
- Oceanography - the study of the physical and the biological aspects of the ocean.
- Soil Science- the study of soil as a natural resource on the surface of the Earth including soil formation, classification and mapping

Applied Sciences

Applied science is a discipline of science that applies existing scientific knowledge to develop more practical applications, like technology or inventions. This includes a broad range of applied science related fields from engineering, medicine etc.

First lets discuss about Medicine

Here, we have covered the popular branches of Medicine.

- Cardiology – The area of medicine that deals with the heart and the diseases that affect it
- Dentistry– The study of people's teeth and how to treat problems of the teeth and mouth
- ENT - Study of diseases affecting ear, nose, and throat
- General Practice – The work of a doctor who treats people for a wide range of medical problems, rather than concentrating on a specific type of medical problem
- Gynecology – The type of medicine that deals with the study and treatment of medical conditions and diseases that affect women and their reproductive organs
- Hematology – The scientific study of blood
- Immunology– The study of how diseases can be prevented and how the immune system works
- Neurology - The study of your nervous system and the diseases that affect it. A doctor who is an expert in this subject is called a neurologist.
- Nutrition – The science of food and its effect on health and growth
- Orthopedics - The part of medicine that deals with the treatment of orthopedic injuries or diseases

- Ophthalmology – The study and treatment of diseases in eyes.
- Pathology – The study of the causes of diseases and how they affect people
- Pharmacology – The scientific study of medicines and drugs used for treating medical conditions
- Pharmacy – The scientific study of methods of preparing medicines and drugs used for treating medical conditions
- Pediatrics - The part of medical science that deals with children and the treatment of their illnesses
- Virology – The treatment and study of illnesses caused by viruses

Now, lets see the specializations in Engineering

Here, we have covered the popular branches of engineering.

- Electrical engineering - This is one of the oldest engineering degrees known. It is involved with the study of electric components, signals and circuits. It comes up with ideas on how to develop new electronic products. With the introduction of digital technology, many engineering schools have restructured the degree to be known as electrical and electronic engineering. It is the most dynamic engineering course
- Aerospace engineering - As the name suggests, it is a field of study that involves the making and designing of space bodies. These categories include rockets, aircraft and spacecraft. It is a very delicate field of engineering.
- Biomedical engineering - This is a relatively new area of engineering. It involves the scientific study of life processes that helps to come up with drugs, medical tools and essentially advances in the areas of healthcare.
- Chemical engineering - This body of engineering involves the conversion of raw materials and chemicals into valuable products that is meant to improve life.
- Mechanical engineering - It is also an ancient field of engineering. It involves the design, repair, operation and maintenance of heavy machinery, automobiles or precisely, any non-living objects that have moving parts. It is a part of engineering where all the others depend for operation.
- Civil engineering - It focuses on how to design and come up with lasting and safe structures. It deals with areas of building design, bridges, road infrastructure and the building of dams and any structures that require the use of earth or concrete.
- Computer engineering - This is also a new branch of engineering which has come to existence following the discovery of computers. It is involved with computer programming, graphic designs, software development and other computer- related subjects.
- Others - There are other minor and upcoming engineering degree courses. This include water, energy, genetic and agricultural engineering.

KEY TAKEAWAYS

- The term Science also refers to the organized body of knowledge people have gained using that system.
- Fields of Science are commonly classified along two major lines: Natural Science and Applied Science
- Natural science can be divided into two main branches i.e Life sciences and physical sciences.
- Life Science mostly deals with Biological Sciences
- Physical Sciences deals with Physics, Chemistry and Earth Sciences
- Next, we have applied sciences. Applied Sciences deals with fields like Medicine, engineering etc