SCIENCE

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

How do we define science? According to Webster's New Collegiate Dictionary, the definition of science is "knowledge attained through study or practice," or "knowledge covering general truths of the operation of general laws, esp. as obtained and tested through scientific method [and] concerned with the physical world."

What does that really mean? 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. Less formally, the word science often describes any systematic field of study or the knowledge gained from it.

What is the purpose of science? Perhaps the most general description is that the purpose of science is to produce useful models of reality.

Most scientific investigations use some form of the scientific method. Find out more about the scientific method.
Science as defined above is sometimes called pure science to differentiate it from applied science, which is the application of research to human needs.
Fields of science are commonly classified along two major lines:

•Natural sciences, the study of the natural world, and
•Social sciences, the systematic study of human behavior and society.

The Different Fields of Science

This is just a partial listing of some of the many, many different possible fields of study within science. Many of the fields listed here overlap to some degree with one or more other areas.

Biology

Anatomy
Astrobiology
Biochemistry
Bioinformatics
Biophysics
Botany
Cell biology
Developmental biology
Ecology
Entomology
Epidemiology
Immunology
Marine biology
Microbiology
Molecular Biology
Morphology
Neuroscience
Physical anthropology
Physiology
Population dynamics
Structural biology
Taxonomy

Evolution (Evolutionary biology)
Freshwater Biology
Genetics
Toxicology
Virology
Zoology

Chemistry

Analytical chemistry
Biochemistry
Computational chemistry
Electrochemistry
Inorganic chemistry
Materials science
Organic chemistry
Polymer chemistry
Physical chemistry
Quantum chemistry
Spectroscopy
Stereochemistry
Thermochemistry

Physics

Acoustics
Astrodynamics
Astronomy
Astrophysics
Biophysics
Classical mechanics
Computational physics
Condensed matter physics
Cryogenics
Dynamics
Fluid dynamics
High Energy Physics
Materials physics
Mechanics
Nuclear physics
Optics
Particle physics
Plasma physics
Polymer physics
Quantum mechanics
Solid State physics
Thermodynamics

Earth Science

Environmental Science
Geodesy
Geography
Geology
Hydrology
Meteorology
Oceanography
Paleontology
Seismology

ENGINEERING

Engineering underpins almost every aspect of modern life

Engineering is the discipline, art, and profession that applies scientific theory to design, develop, and analyze technological solutions. In the contemporary era it is generally considered to consist of the major basic branches of chemical engineering, civil engineering, electrical engineering, and mechanical engineering. There are numerous other engineering subdisciplines and interdisciplinary subjects that are derived from concentrations, combinations, or extensions of the major engineering branches.

Chemical Engineering

Chemical Engineering is the application of physical and biological sciences to the process of converting raw materials or chemicals into more useful or valuable forms.

Subdiscipline Scope Major specialties

Process engineering

Petroleum refinery engineering

Plastics engineering

Paper engineering

Textile engineering

Molecular engineering

Materials engineering

Metallurgical engineering

Ceramic engineering

Polymer engineering

Crystal engineering

Biomaterials,

Corrosion engineering

Biomolecular engineering

Civil engineering

Civil engineering comprises the design, construction, and maintenance of the physical and natural built environments.

Subdiscipline Scope Major specialties

Environmental engineering

Ecological engineering

Fire protection engineering

Sanitary engineering

Wastewater engineering

Municipal or urban engineering

Geotechnical engineering

Mining engineering

Foundation (engineering)

Structural engineering

Earthquake engineering

Wind engineering

Architectural engineering

Ocean engineering

Mining engineering

Transport engineering

Traffic engineering

Highway engineering

Railway systems engineering

Water resources engineering

Hydraulic engineering

River engineering

Coastal engineering

Groundwater engineering

Electrical engineering

Electrical engineering comprises the study and application of electricity, electronics, and electromagnetism.

Computer engineering

Software engineering

Hardware engineering

Network engineering.

Electronic engineering

Control engineering

Telecommunications engineering

Optical engineering

Power engineering

Mechanical engineering

Mechanical engineering comprises the design, analysis and usage of heat and mechanical power for the operation of machines and mechanical systems.

Subdiscipline Scope Major specialties

Acoustical engineering

Manufacturing engineering

Thermal engineering

Air Conditioning

Refrigeration

Heating, Ventilating, Air-Conditioning and Refrigerating

Sports engineering

Vehicle engineering

Automotive engineering

Naval architecture

Aerospace engineering

Marine engineering

Power plant engineering

- Geothermal power plants
- Coal-fired power plants
- Hydroelectric power plants
- Diesel engine (ICE) power plants
- Tidal power plants
- Wind Turbine Power Plants
- Solar power plants

Energy Engineering

Systems engineering

Systems engineering is an interdisciplinary field of engineering that focuses on how to design and manage complex engineering projects over their life cycles. Issues such as reliability, logistics, and coordination of different teams (requirements management), evaluation measurements, and other disciplines become more difficult when dealing with large or complex projects. Systems engineering deals with work-processes, optimization methods, and risk management tools in such projects. It overlaps technical and human-centered disciplines such as control engineering, industrial engineering, organizational studies, and project management. Systems engineering ensures that all likely aspects of a project or system are considered, and integrated into a whole.

Interdisciplinary

Discipline Scope Major specialties

Aerospace engineering

Aeronautics

Astronautics

Agricultural engineering

Aquaculture engineering

Biomechanical engineering

Bioprocess engineering

Biotechnical engineering

Ecological engineering

Food engineering

Forest engineering

Health and Safety engineering

Natural Resources engineering

Machinery Systems engineering

Information & Electrical Systems Engineering

Applied engineering

Automation/control systems/mechatronics/robotics

Computer-aided drawing and design (CADD)

Construction

Electronics

General

Graphics

Nanotechnology

Biomedical engineering

Biological engineering

Biochemical engineering

Biosystems engineering

Biomedical engineering

Biotechnical engineering

Biomechanical engineering

Biomolecular engineering

Bioresource engineering

Bioprocess engineering

Genetic engineering

Health and Safety engineering

Pharmaceutical engineering

Protein engineering

Safety engineering

Systems Biology

Synthetic Biology

Tissue engineering

Building services engineering

Mechanical engineering

HVAC: heating, ventilation and air conditioning

Refrigeration

Plumbing or public health (MEP) engineering

Electrical engineering,

Artificial lighting and emergency lighting,

ICT

Low voltage

Lightning protection

Security, CCTV, and alarm systems

Vertical transportation: escalators and lifts

Fire engineering, including fire detection and fire protection

Natural lighting design

Building facades engineering

Energy supply

Energy engineering

Solar engineering

Wind engineering

Railway engineering

Industrial engineering

Manufacturing engineering

Component engineering

Systems engineering

Construction engineering

Safety engineering

Reliability engineering

Mechatronics engineering

Robotics

Instrumentation engineering

Avionics

Military engineering

Combat Engineering

Strategic support

Ancillary support

Nanoengineering

Molecular engineering

Materials science

Instrumentation engineering

Electronics

Nuclear engineering

Medical Physics

Nuclear fuel

Radiation Protection

Petroleum engineering

Reservoir engineering

Drilling engineering

Production engineering

TECHNOLOGY

1. the practical application of science to commerce or industry
2. the discipline dealing with the art or science of applying scientific knowledge to practical problems; "he had trouble deciding which branch of engineering to study"

MATHEMATICS

The study of numbers, patterns, space, and change.

You won't need special equipment, millions of dollars or lots of people. You just need your mind.

Mathematics is pure. It does not rust or decay. It only needs your thought to make it work.

Mathematics goes beyond the real world.

Yet the real world seems to be ruled by it.

Universal Language

Mathematics often looks like a collection of symbols. But Mathematics is not the symbols on the page but what those symbols ***mean***.

And it doesn't matter what country you are from, or what language you speak, if you are trained in Mathematics you will also understand what those symbols mean.

So it is the Universal Language. It rises above words.

In fact it is quite possible that Mathematics will be the common link between ourselves and any aliens we may one day meet!

Where did Mathematics come from?

Nobody is certain, but Mathematics may simply be "part of us".

Even people without mathematical training can use their fingers to count, can use basic logic to solve things, and can recognise different properties of shapes.

Logical

Above all Mathematics is **logical**.

Most of higher Mathematics is based on just a few established ideas (theorems and axioms), and the rest is created purely by logical thinking.

Fun and Challenging

Mathematics is challenging to your mind, and that is what makes it fun. There is nothing better than working on a difficult puzzle, and then getting a breakthrough.

Applied Mathematics

Mathematics has wide applications in Engineering, Physics, Chemistry and most of the other sciences. The major discoveries and inventions have Mathematics at their heart.

And it is widely used in both Information Technology and Communication. These owe their very existence to Mathematics.

Accountants, Economists and Business people use it every day.

The weather is predicted using powerful Mathematical Modeling.

And your favourite computer game has inside it lots of mathematical equations that work out how everything moves and behaves.

An Adventure

And Mathematics is an adventure ... there are always new things to discover and learn. And it will never cease to amaze you how neatly and beautifully it all fits together

It is not always easy, but what good adventure has no challenges? Most of the fun is in learning new things, mastering new methods and solving new puzzles.

Sub Disciplines

Foundations

Arithmetic

Algebra

Analysis

Combinatorics

Geometry and topology

Applied mathematics

Probability and statistics

Computational sciences

Physical sciences

ART

Art is a diverse range of human activities and the products of those activities, usually involving imaginative or technical skill. In their most general form these activities include the production of works of art, the criticism of art, the study of the history of art, and the aesthetic dissemination of art. This article focuses primarily on the visual arts, which includes the creation of images or objects in fields including painting, sculpture, printmaking, photography, and other visual media. Architecture is often included as one of the visual arts; however, like the decorative arts, it involves the creation of objects where the practical considerations of use are essential—in a way that they usually are not in a painting, for example. Music, theatre, film, dance, and other performing arts, as well as literature and other media such as interactive media, are

included in a broader definition of art or the arts. Until the 17th century, art referred to any skill or mastery and was not differentiated from crafts or sciences. In modern usage after the 17th century, where aesthetic considerations are paramount, the fine arts are separated and distinguished from acquired skills in general, such as the decorative or applied arts.

Art may be characterized in terms of mimesis (its representation of reality), expression, communication of emotion, or other qualities. During the Romantic period, art came to be seen as "a special faculty of the human mind to be classified with religion and science". Though the definition of what constitutes art is disputed and has changed over time, general descriptions mention an idea of imaginative or technical skill stemming from human agency and creation.

The nature of art, and related concepts such as creativity and interpretation, are explored in a branch of philosophy known as aesthetics