# Engineer

# WHAT IS ENGINEER

**Engineers**, as practitioners of [engineering](https://en.wikipedia.org/wiki/Engineering), are [professionals](https://en.wikipedia.org/wiki/Professional) who [invent](https://en.wikipedia.org/wiki/Invention), [design](https://en.wikipedia.org/wiki/Design), analyze, build and testbuild and test [machines](https://en.wikipedia.org/wiki/Machine), [complex systems](https://en.wikipedia.org/wiki/Complex_system), [structures](https://en.wikipedia.org/wiki/Structure), [gadgets](https://en.wikipedia.org/wiki/Gadget) and [materials](https://en.wikipedia.org/wiki/Material) to fulfill functional objectives and requirements while considering the limitations imposed by practicality, regulation, safety and cost.[[1]](https://en.wikipedia.org/wiki/Engineer#cite_note-bls-1)[[2]](https://en.wikipedia.org/wiki/Engineer#cite_note-nspe-2) The word *engineer* ([Latin](https://en.wikipedia.org/wiki/Latin) *ingeniator*,[[3]](https://en.wikipedia.org/wiki/Engineer#cite_note-3) the origin of the Ir. in the title of engineer in countries like Belgium and The Netherlands) is derived from the Latin words *ingeniare* ("to contrive, devise") and *ingenium* ("cleverness").[[4]](https://en.wikipedia.org/wiki/Engineer#cite_note-4)[[5]](https://en.wikipedia.org/wiki/Engineer#cite_note-5) The foundational qualifications of a licensed professional engineer typically include a four-year [bachelor's degree in an engineering discipline](https://en.wikipedia.org/wiki/Bachelor_of_Engineering), or in some jurisdictions, a [master's degree in an engineering discipline](https://en.wikipedia.org/wiki/Master_of_Engineering) plus four to six years of peer-reviewed professional practice (culminating in a project report or thesis) and passage of engineering board examinations.

The work of engineers forms the link between [scientific discoveries](https://en.wikipedia.org/wiki/Discovery_(observation)) and their subsequent applications

## **Types of engineers**

*Main article:*[*List of engineering branches*](https://en.wikipedia.org/wiki/List_of_engineering_branches)

[](https://en.wikipedia.org/wiki/File:Albert_Memorial_-_Engineering_Group.jpg)Photograph of the Engineering group, sculpted by [John Lawlor](https://en.wikipedia.org/wiki/John_Lawlor_(sculptor)), [Albert Memorial](https://en.wikipedia.org/wiki/Albert_Memorial)

There are many branches of engineering, each of which specializes in specific technologies and products. Typically, engineers will have deep knowledge in one area and basic knowledge in related areas. For example, mechanical engineering curricula typically include introductory courses in electrical engineering, computer science, materials science, metallurgy, mathematics, and software engineering.

An engineer may either be hired for a firm that requires engineers on a continuous basis, or may belong to an engineering firm that provides [engineering consulting](https://en.wikipedia.org/wiki/Engineering_consulting) services to other firms.

When developing a product, engineers typically work in interdisciplinary teams. For example, when building robots an engineering team will typically have at least three types of engineers. A mechanical engineer would design the body and actuators. An electrical engineer would design the power systems, sensors, electronics, embedded software in electronics, and control circuitry. Finally, a software engineer would develop the software that makes the robot behave properly. Engineers that aspire to management engage in further study in business administration, project management and organizational or business psychology. Often engineers move up the management hierarchy from managing projects, functional departments, divisions and eventually CEOs of a multi-national corporation.

AUTOMOBILE ENGINEER

Automotive engineering is an important component of the automotive industry. Automotive engineers help to design new vehicles and ensure that existing cars are up to standard and work efficiently. This field of engineering is research-intensive and requires professionals to be educated and committed in their automotive engineering specialties. In this article, we explore what an automotive engineer does, the steps you can take to pursue this career path and the most common jobs in the automotive engineering INDUSTRY

AUTOMOBILE ENGINEER

* Automotive engineering, along with aerospace engineering and naval architecture, is a branch of vehicle engineering, incorporating elements of mechanical, electrical, electronic, software, and safety engineering as applied to the design, manufacture and operation of motorcycles, automobiles, and trucks and their respective engineering subsystems.

**What do automotive engineers do?**

* The production of an automobile often involves a team of automotive engineers who each specialise in a particular section of vehicular engineering. The work of these engineers is often broken down into three components: design, research and development (R&D) and production. What skills do automotive engineers require?

# Aerospace engineering

**Aerospace engineering** is the primary field of [engineering](https://en.wikipedia.org/wiki/Engineering) concerned with the development of [aircraft](https://en.wikipedia.org/wiki/Aircraft) and [spacecraft](https://en.wikipedia.org/wiki/Spacecraft).[[3]](https://en.wikipedia.org/wiki/Aerospace_engineering#cite_note-3) It has two major and overlapping branches: [aeronautical](https://en.wikipedia.org/wiki/Aeronautics) engineering and [astronautical](https://en.wikipedia.org/wiki/Astronautics) engineering. [Avionics](https://en.wikipedia.org/wiki/Avionics) engineering is similar, but deals with the [electronics](https://en.wikipedia.org/wiki/Electronic_engineering) side of aerospace engineering.

"Aeronautical engineering" was the original term for the field. As flight technology advanced to include vehicles operating in [outer space](https://en.wikipedia.org/wiki/Outer_space), the broader term "[aerospace](https://en.wikipedia.org/wiki/Aerospace) engineering" has come into use

 Aerospace engineering, particularly the astronautics branch, is often colloquially referred to as "rocket science".[[5]](https://en.wikipedia.org/wiki/Aerospace_engineering#cite_note-SA-5)[[a]](https://en.wikipedia.org/wiki/Aerospace_engineering#cite_note-fn1-7)

## What does an Aerospace Engineers do

* Aerospace Engineering and Operations Technicians have to work in a challenging environment.
* Their task is to ensure the safety of the key parts of the aircrafts and spacecraft and its systems.
* The technicians have to install, run, operate and maintain the equipment used in aircrafts.
* They have to design, develop, manufacture the aerospace products and test the quality of equipment whether the equipment is working well or not.
* The operation technicians are responsible for monitoring the work platforms and maintaining the plant integrity and also to work with the engineers and construction teams.

AGRICULTRAL ENGINEER

**What is agricultural engineering?**

* Agricultural engineering is a branch of engineering which deals with agricultural production. It is an amalgamation of principles and disciplines of mechanical, civil, chemical engineering and food science. From designing the farm machinery to planning the location of the farm. Everything comes under agricultural engineering. Que.

**How to become an agricultural engineer?**

* To obtain a career as an agricultural engineer, you must have a bachelor’s degree in agricultural engineering or a related field. You must have completed your 10+2 in the Science stream with major subjects such as Physics, Chemistry, Mathematics, and Biology with a minimum aggregate of 50 per cent from a recognised board.

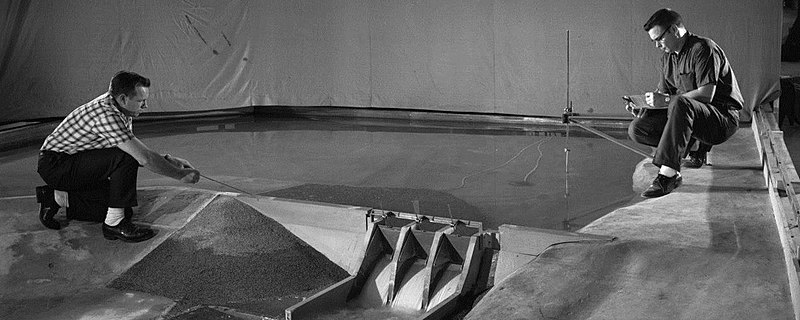
Biomedical engineering

* Biomedical engineering is the application of engineering principles to solve health and health care problems. Using their knowledge of engineering, viology, and health care, biomedical engineers design medical equipment and processes that improve human health outcomes.

**What does an agricultural engineer do?**

* Providing Technical Assistance and Support: Agricultural engineers often work closely with farmers, agricultural companies, and government agencies. They provide technical assistance and support, offering guidance on best practices, equipment selection, and troubleshooting issues related to agricultural machinery and systems.

# Civil engineering

**Civil engineering** is a [professional engineering](https://en.wikipedia.org/wiki/Regulation_and_licensure_in_engineering) discipline that deals with the design, construction, and maintenance of the physical and naturally built environment, including [public works](https://en.wikipedia.org/wiki/Public_works) such as roads, bridges, canals, dams, airports, [sewage systems](https://en.wikipedia.org/wiki/Sewage_system), pipelines, structural components of buildings, and railways.[[1]](https://en.wikipedia.org/wiki/Civil_engineering#cite_note-1)[[2]](https://en.wikipedia.org/wiki/Civil_engineering#cite_note-2)

Civil engineering is traditionally broken into a number of sub-disciplines. It is considered the second-oldest engineering discipline after [military engineering](https://en.wikipedia.org/wiki/Military_engineering),[[3]](https://en.wikipedia.org/wiki/Civil_engineering#cite_note-CSCE-3) and it is defined to distinguish non-military engineering from military engineering.[[4]](https://en.wikipedia.org/wiki/Civil_engineering#cite_note-eb-4) Civil engineering can take place in the public sector from municipal [public works](https://en.wikipedia.org/wiki/Public_works) departments through to federal government agencies, and in the private sector from locally based firms to global [Fortune 500](https://en.wikipedia.org/wiki/Fortune_Global_500) companies.[[5]](https://en.wikipedia.org/wiki/Civil_engineering#cite_note-sector-5)

## **What does a Civil Engineer do?**

**Duties and Responsibilities**  
The duties and responsibilities of a civil engineer can vary depending on the specific job role and the project they are working on. However, here are some common tasks and responsibilities associated with civil engineering:

* Designing and Planning: Civil engineers are involved in designing and planning infrastructure projects. They analyze project requirements, conduct feasibility studies, and create detailed designs, considering factors such as structural integrity, safety, functionality, and environmental impact.
* Project Management: Civil engineers play a crucial role in project management. They oversee and manage the entire lifecycle of a project, including budgeting, scheduling, procurement, and resource allocation. They coordinate with various stakeholders, including clients, contractors, and regulatory agencies, to ensure successful project execution.
* Construction Supervision: Civil engineers are responsible for supervising construction activities. They ensure that construction work adheres to the design specifications, quality standards, and safety regulations. They may visit construction sites regularly to monitor progress, resolve any technical issues, and provide guidance to construction teams.

# Computer engineering

**Computer engineering** (**CoE** or **CpE**) is a branch of [computer science](https://en.wikipedia.org/wiki/Computer_science) and [electronic engineering](https://en.wikipedia.org/wiki/Electronic_engineering) that integrates several fields of [computer science](https://en.wikipedia.org/wiki/Computer_science) and [electronic engineering](https://en.wikipedia.org/wiki/Electronic_engineering) required to develop [computer hardware](https://en.wikipedia.org/wiki/Computer_hardware) and [software](https://en.wikipedia.org/wiki/Software).[[1]](https://en.wikipedia.org/wiki/Computer_engineering#cite_note-1) Computer engineering is referred to as [computer science and engineering](https://en.wikipedia.org/wiki/Computer_science_and_engineering) at some universities.

Computer engineers require training in [electronic engineering](https://en.wikipedia.org/wiki/Electronic_engineering), [computer science](https://en.wikipedia.org/wiki/Computer_science), hardware-software integration, [software design](https://en.wikipedia.org/wiki/Software_design), and [software engineering](https://en.wikipedia.org/wiki/Software_engineering). It uses the techniques and principles of electrical engineering and computer science, and can encompass areas such as [artificial intelligence (AI)](https://en.wikipedia.org/wiki/Artificial_Intelligence_(AI)), [robotics](https://en.wikipedia.org/wiki/Robotics), [computer networks](https://en.wikipedia.org/wiki/Computer_network), [computer architecture](https://en.wikipedia.org/wiki/Computer_architecture) and [operating systems](https://en.wikipedia.org/wiki/Operating_system). Computer engineers are involved in many hardware and software aspects of [computing](https://en.wikipedia.org/wiki/Computing), from the design of individual [microcontrollers](https://en.wikipedia.org/wiki/Microcontroller), [microprocessors](https://en.wikipedia.org/wiki/Microprocessor), [personal computers](https://en.wikipedia.org/wiki/Personal_computer), and [supercomputers](https://en.wikipedia.org/wiki/Supercomputer), to [circuit design](https://en.wikipedia.org/wiki/Circuit_design). This field of engineering not only focuses on how computer systems themselves work, but also on how to integrate them into the larger picture.[[2]](https://en.wikipedia.org/wiki/Computer_engineering#cite_note-2) [Robotics](https://en.wikipedia.org/wiki/Robotics) are one of the applications of computer engineering.

Computer engineering usually deals with areas including [writing software](https://en.wikipedia.org/wiki/Software_programming) and [firmware](https://en.wikipedia.org/wiki/Firmware) for [embedded](https://en.wikipedia.org/wiki/Embedded_system) [microcontrollers](https://en.wikipedia.org/wiki/Microcontroller), designing [VLSI](https://en.wikipedia.org/wiki/Very-large-scale_integration) [chips](https://en.wikipedia.org/wiki/Integrated_circuit), [analog](https://en.wikipedia.org/wiki/Analog_device" \o "Analog device) [sensors](https://en.wikipedia.org/wiki/Sensor), [mixed signal](https://en.wikipedia.org/wiki/Mixed-signal_integrated_circuit) [circuit boards](https://en.wikipedia.org/wiki/Circuit_board), and [operating systems](https://en.wikipedia.org/wiki/Operating_system). Computer engineers are also suited for [robotics](https://en.wikipedia.org/wiki/Robotics) research, which relies heavily on using [digital systems](https://en.wikipedia.org/wiki/Digital_systems) to control and monitor [electrical systems](https://en.wikipedia.org/wiki/Electrical_systems) like [motors](https://en.wikipedia.org/wiki/Electric_motor), [communications](https://en.wikipedia.org/wiki/Computer-mediated_communication), and [sensors](https://en.wikipedia.org/wiki/Sensor).

In many institutions of higher learning, computer engineering students are allowed to choose areas of in-depth study in their junior and senior years because the full breadth.

COMPUTER ENGINEER WORK

**Research, design, develop, and test computer systems**

Computer engineers research, design, develop, and test computer systems. Some engineers specialize in hardware or software engineering. By creating and improving devices and programs, these technology professionals help keep the world working safer, smarter, and faster.