**ENGINEERING**

To make this seemingly simple question even more complex, there are numerous subcategories of engineering within each of these broader areas, creating additional nuances and layers of distinction within engineering specialties. For example, the category of “mechanical engineer” includes subcategories like “aerospace engineer,” “marine engineer,” and “automotive engineer” — all of whom have completely different duties and skills, despite all technically being classified as ‘mechanical engineers.”

So how many types of engineering are there, and what does each one do? We’ve highlighted 15 of the most popular examples below, including information about the job duties, typical salaries, and the educational requirements associated with each. Where data is available, we’ll also discuss how much certain engineering fields are expected to grow over the coming decade.

**Civil Engineering**

Civil engineers work on infrastructure projects, such as the design and construction of airports, bridges, water, and sewage treatment plants, roads and streets, tunnels, and other critical systems that our society needs to operate. [**According to the Bureau of Labor Statistics**](https://www.bls.gov/ooh/architecture-and-engineering/civil-engineers.htm#tab-1)(BLS), civil engineers earned a median salary of approximately $88,050 as of 2021, with the top 10% earning “more than $133,320” annually. Additionally, the BLS expects this field to grow by 7% over the 10-year period from 2021 to 2031, which is slightly faster than the 5% national average for all occupations.

Most civil engineering jobs require, at minimum, a bachelor’s degree. However, it’s important to be aware that some employers or positions may require a master’s degree and/or additional qualifications, such as a California PE license — a topic we’ll discuss more later on in this guide. For now, let’s take a closer look at some branches or subfields of civil engineering, which include environmental engineering, structural engineering, and transportation engineering

##### Transportation Engineering

As a transportation engineer, you’ll plan and design the construction of roads, subway systems, airports, and other transportation systems. Your roles might include calculating land needs, estimating costs, and ensuring these systems are adequately maintained.

According to [**Salary.com**](https://www.salary.com/research/salary/benchmark/transportation-engineer-i-salary), “The average transportation engineer salary in the United States is $61,091 as of September 2022, but the range typically falls between $55,867 and $66,407.” And according to [**Zippia.com**](https://www.zippia.com/transportation-engineer-jobs/salary/), the top five highest-paying states for transportation engineers are West Virginia (#5), Pennsylvania (#4), Vermont (#3), Oregon (#2), and California (#1), where the average salary is closer to $89,500

##### Environmental Engineering

The role of environmental engineers is to find solutions and increase efficiency around local, state, and even global environmental issues, including but not limited to air pollution, water pollution, recycling, sustainability, and climate change. According to the [**Bureau of Labor Statistics**](https://www.bls.gov/ooh/architecture-and-engineering/environmental-engineers.htm#tab-1)**,** environmental engineers earn a median salary of over $96,800 annually and, like other types of civil engineers, are required to hold a bachelor’s degree or higher. The highest-paid industry for environmental engineers was to work for federal government organizations (excluding the U.S. Postal Service), with a median salary of over $110,000

### ****Mechanical Engineering****

Mechanical engineering is a subfield of engineering that deals with machinery, equipment, and mechanical sensors, such as combustion engines or steam turbines. As a mechanical engineer, you might be designing new mechanical prototypes, testing and redesigning heating systems, or investigating the causes of equipment failures and breakdowns during the course of your workday. It depends on what type of mechanical engineering career you pursue, as we’ll explore in just a few moments. Some fields that we’ll cover include aerospace engineering, automotive engineering, and marine engineering.

According to the BLS, “Mechanical engineers typically need a bachelor’s degree in mechanical engineering or mechanical engineering technology.” Additionally, all U.S. states require mechanical engineers to be licensed.

The [**BLS reports**](https://www.bls.gov/ooh/architecture-and-engineering/mechanical-engineers.htm#tab-1) that mechanical engineers earn a median salary of $95,300, based on the most recent data available. The top-earning 10%, however, “earned more than $136,210,” with the highest median salaries found in the scientific research and development services industry.

##### All you wanted to know about aerospace engineering and aerodynamics engineering | FAMU-FSUAerospace Engineering

Aerospace engineers are responsible for tasks and duties like developing and testing various aerospace equipment and products; establishing design criteria and quality standards; ensuring that projects are completed safely and on time; evaluating project proposals; and complying with regulations, such as environmental protection regulations. Like other types of mechanical engineers, aerospace engineers need to possess a bachelor’s degree in a pertinent field, though some employers may require more advanced degrees, particularly for senior roles.

[**Data from the BLS**](https://www.bls.gov/ooh/architecture-and-engineering/aerospace-engineers.htm#tab-1) indicates that aerospace engineers earn a median salary of more than $122,200 annually, with the top 10% earning over $168,300. The BLS also reports that the top-paying industry for aerospace engineers is “research and development in the physical, engineering, and life sciences,” with median annual earnings of over $128,000.

##### Marine Engineering

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##### What is Marine Engineering? (Definition and Job Salary) - TWIAccording to the [**Bureau of Labor Statistics**](https://www.bls.gov/ooh/architecture-and-engineering/marine-engineers-and-naval-architects.htm#tab-1)**,** marine engineers — who are also referred to as marine mechanical engineers or marine design engineers, depending on the employer — are responsible for “design[ing], build[ing], and maintain[ing] ships, from aircraft carriers to submarines and from sailboats to tankers.” The BLS reports that the median salary for marine engineers is over $93,300 annually, with most positions in this field requiring a bachelor’s degree at minimum.

##### The Key Aspects of Automotive Engineering | by codezone | MediumAutomotive Engineering

If you’re fascinated by technology and passionate about cars, consider merging your interests by exploring a career in automotive engineering — a branch of mechanical engineering that deals with the design, development, testing, and manufacturing of vehicles. As an automotive engineer, you’ll be responsible for tasks and duties like creating designs and technical specifications for new vehicles; analyzing their safety and environmental impacts; determining and resolving the causes of mechanical failures; and estimating costs for various vehicle design concepts. According to Payscale.com, the average salary for an automotive engineer is approximately [**$79,900 annually**](https://www.payscale.com/research/US/Job=Automotive_Engineer/Salary)**.**

### Electrical Engineering - MCKV Institute of Engineering****Electrical Engineering****

Electrical engineering is a broad subdiscipline of engineering that deals with the full spectrum of electrical and electronic parts and components, from radar, navigation, and communication systems to the electrical systems inside cars and airplanes. Electrical engineering jobs generally require a bachelor’s degree or higher, though a master’s degree will enable you to move into more competitive and specialized roles.

Electrical and electronics engineers earned a median salary of more than $101,700, with the top 10% earning nearly $163,000 annually, according to [**BLS data**](https://www.bls.gov/ooh/architecture-and-engineering/electrical-and-electronics-engineers.htm#tab-1)**.** The highest paying industries for electrical engineers are “research and development in the physical, engineering, and life sciences” ($125,080); “semiconductor and other electronic component manufacturing” ($107,190); and “navigational, measuring, electromedical, and control instruments manufacturing” ($102,110).

##### Information Technology (IT) Engineering

Some typical job duties for an information technology engineer or IT engineer include, but are not limited to, identifying and implementing improvements to an organization’s computer systems; configuring systems and testing their performance; diagnosing and resolving systems-related issues; developing new software; and, potentially, managing other IT staff members.

The BLS does not provide salary information specific to IT engineering but does report salary, job outlook, and educational requirement data for a wide range of IT-related professions, which you can [**begin exploring here**](https://www.bls.gov/ooh/computer-and-information-technology/home.htm)**.** According to [**Salary.com**](https://www.salary.com/research/salary/listing/it-engineer-salary)**,** “The average IT Engineer salary in the United States is $95,879,” though the figure can range anywhere from around $85,800 to $110,200.

##### Network Engineer" Images – Browse 4,253 Stock Photos, Vectors, and Video | Adobe StockNetwork Engineering

Network engineers design, develop, and maintain a wide variety of network infrastructures, ensuring efficiency, connectivity, and optimal performance. For example, on a day-to-day basis, you might be responsible for handling tasks like installing routers and VPNs, upgrading systems and scheduling updates, backing up data, and making sure that networks are secure. According to data posted on [**Indeed.com**](https://www.indeed.com/career/network-engineer/salaries)**,** the average salary for a network engineer is over $90,100, with some of the highest-paying cities including New York, Chicago, and Washington, D.C.

##### Computer Engineering" Images – Browse 11,941 Stock Photos, Vectors, and Video | Adobe StockComputer Engineering

If you’re interested in computing, consider channeling your interests into a professional role as a computer engineer. In this type of career, you’ll be handling tasks and responsibilities like designing and testing computer hardware, making design modifications based on detailed analyses, and ensuring that hardware and software work together smoothly for businesses and consumer products.

[**According to BLS data**](https://www.bls.gov/ooh/architecture-and-engineering/computer-hardware-engineers.htm#tab-1), computer hardware engineers earn a median salary of approximately $128,170 annually, with the top 10% earning salaries above $208,000. The BLS projects a 5% growth in employment in this field during the period from 2021 to 2031, which is the same pace as the national average for all occupations.

### Chemical Engineers: Universal Engineers...!****Chemical Engineering****

Chemical engineering is an interdisciplinary area of engineering that applies principles not only from chemistry as you might expect, but also from areas like biology, mathematics, and physics. Chemical engineers develop innovative solutions that help the fuel, food, and drug industries — among countless others — address some of their most critical challenges. For example, chemical engineers might have roles in conducting research, troubleshooting issues, designing equipment, or implementing safety protocols. A bachelor’s degree is typically the minimum degree required for positions within this field, along with relevant work experience and passing scores on professional exams like the Fundamentals of Engineering (FE) exam.

Chemical engineers earn a median salary of $105,550, according to [**BLS data**](https://www.bls.gov/ooh/architecture-and-engineering/chemical-engineers.htm#tab-1), with the top 10% earning over $187,400. The BLS also reports that the field of chemical engineering is expected to grow at a rate of 14% during the coming decade — “much faster than [the] average” of 5% — painting an optimistic economic portrait of the industry’s future.

##### Pharmaceutical Engineering

As a pharmaceutical engineer, you’ll work to enhance the safety of pharmaceutical drugs, applying your knowledge to issues that range from manufacturing equipment to the labeling of bottles. Like other chemical engineering professions, pharmaceutical engineering jobs generally require you to hold a bachelor’s degree in a relevant field — in this case, a major such as chemistry or biochemistry.

Based on data compiled by [**Zippia.com**](https://www.zippia.com/pharmaceutical-engineer-jobs/salary/), the average salary for pharmaceutical engineering jobs is approximately $84,600 in the United States. However, this figure can vary depending on your geographic location: as Zippia.com also reports, the top five best-paid states for pharmaceutical engineers are New Mexico (#5), California (#4), Michigan (#3), Massachusetts (#2), and in first place, Washington, where the average salary is over $121,000.

##### Textile EngineeringTextile Engineering

As a textile engineer, you’ll apply your research skills and knowledge of engineering to advance the performance and development of various textiles and materials, such as fabrics that need to be breathable, waterproof, elastic, or heat-resistant. For example, you might be responsible for testing and analyzing the qualities of natural versus synthetic fibers, discussing raw materials with suppliers, or implementing quality control procedures. According to Salary.com, the average salary for a textile engineer is approximately $83,200, “but the [**salary range typically**](https://www.salary.com/research/salary/posting/textile-engineering-salary) falls between $75,827 and $91,586” (as of September 2022).

##### Biochemical Engineer - Salary, How to Become, Job Description & Best SchoolsBiochemical Engineering

Biochemical engineering deals with researching and developing new, more efficient, more sustainable ways of converting biological materials (such as molecules or cells) into essential products we need to drive our society, from textiles and paper products to food and petroleum.

The BLS does not report on biochemical engineering but does provide data for the closely related fields of bioengineering and biomedical engineering. Not only do professionals in these fields earn a median [**salary of over $97,000**](https://www.bls.gov/ooh/architecture-and-engineering/biomedical-engineers.htm)— the industry is also growing at a “faster than average” pace, with the BLS projecting a 10% change in employment during the period from 2021 to 2031.

### Pros and Cons of Being an Industrial Engineer (Plus Duties) | Indeed.com****Industrial Engineering****

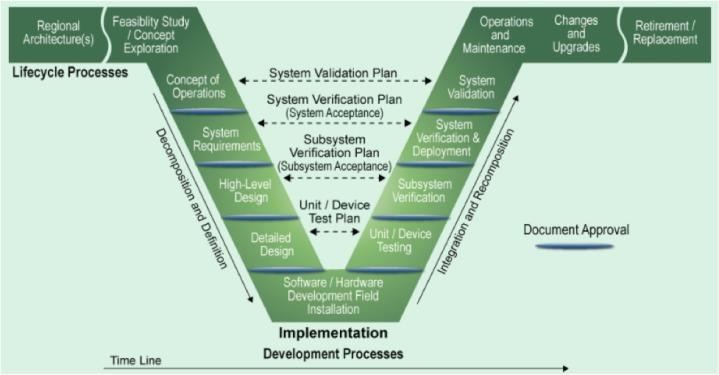
Industrial engineers are responsible for developing and implementing strategies that increase the efficiency of processing plants, manufacturing plants, and other complex systems, finding ways to, as the BLS says, “integrate workers, machines, materials, information, and energy.” In plain English, that translates to day-to-day tasks like implementing improved quality control protocols; meeting with vendors and clients to discuss key issues like technical specifications; and ultimately, determining how the speed and cost-efficiency of manufacturing processes could be enhanced.

To become any kind of industrial engineer, you’ll need at least a bachelor’s degree. You’ll also generally need four or more years of relevant work experience, and passing scores on professional exams like the FE exam noted earlier.

Like mechanical engineers, industrial engineers [**earn a median salary**](https://www.bls.gov/ooh/architecture-and-engineering/industrial-engineers.htm#tab-1) of approximately $95,300, according to BLS figures. However, this field has a more robust career outlook — 10% projected growth in employment from 2021 to 2031— when compared with both mechanical engineering (2% projected growth) and the national average for all occupations (5% projected growth).

Three popular subfields of industrial engineering include systems engineering, supply chain engineering, and manufacturing engineering. Read on to learn more about each of these industries.

##### Systems Engineering

Systems engineers earn an average salary of $81,796, according to [**Payscale**](https://www.payscale.com/research/US/Job=Systems_Engineer/Salary). Systems engineers design, test, and install various operating systems and software to enhance the efficiency of organizations. To be an effective systems engineer, you’ll need to have strong critical thinking and problem-solving skills, excellent written and verbal communication skills, and exceptional analytical and organizational skills — along with a bachelor’s degree and, for certain senior positions, potentially a master’s degree.

##### Supply Chain Management & Logistics | Integrated Systems EngineeringSupply Chain Engineering

The COVID-19 pandemic brought home to many the importance of an uninterrupted supply chain. Supply chain engineers work to develop and implement supply chain strategies, working with departments like sales and customer service to identify bottlenecks or other challenges — and execute swift solutions. According to data [**compiled by Glassdoor**](https://www.glassdoor.com/Salaries/supply-chain-management-salary-SRCH_KO0,23.htm#:~:text=The%20estimated%20total%20pay%20for,salaries%20collected%20from%20our%20users.), supply chain engineers earn an average salary of more than $81,000 annually.

##### Manufacturing Engineering

According to [**Payscale**](https://www.payscale.com/research/US/Job=Manufacturing_Engineer/Salary), “The average salary for a manufacturing engineer is $72,694” in the United States. The role of a manufacturing engineer is to design and operate more efficient and competitive systems, such as robots, computer networks, and specialized machinery designed to handle or move heavy equipment