



Engineering/STEM Careers

With James Paradise

Engineering Definition



The profession in which a knowledge of mathematical and natural sciences gained by study, experience, and practice is applied with judgement to develop ways to utilize the materials and forces of nature for the benefit of mankind.

There are many Engineering Disciplines



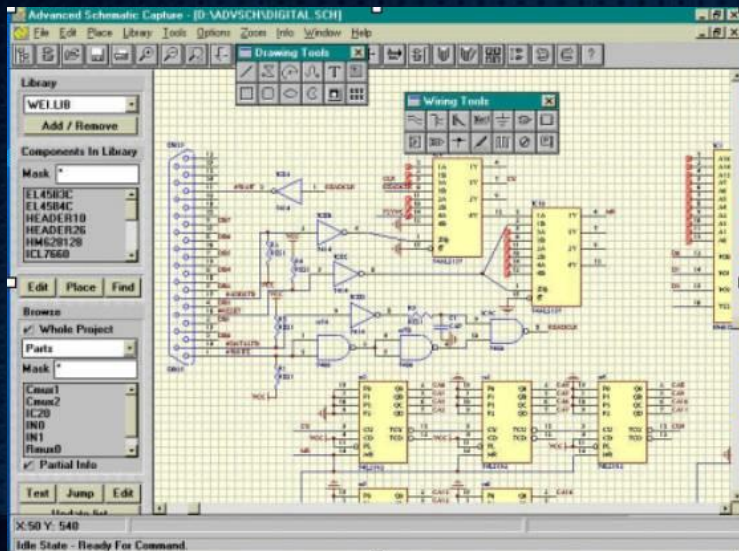
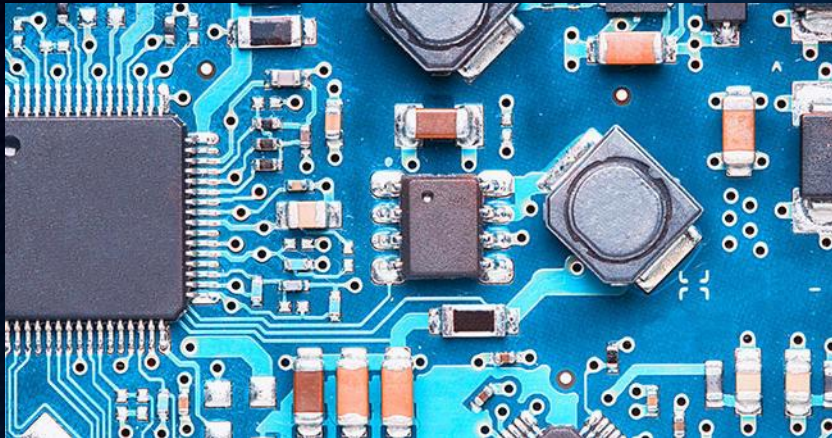
- Electrical/Electronic Engineering
- Mechanical Engineering
- Software Engineering
- Aerospace Engineering
- Chemical Engineering
- Civil Engineering
- Biomedical Engineering

- Plus many more...including Systems Engineers, Thermal Engineers, Propulsion Engineers, Industrial Engineers...

Electrical Engineer

Electrical engineering is the the field of engineering concerned with the study, design and application of equipment, devices and systems which use electricity, electronics, and electromagnetism.

* **Annual Salary:** **Entry Level: \$70,000** **Average: \$114,630** **Highest 10%: \$161,090+**



Specializations:

- Electronics
- Computer Eng.
- Power Eng.
- Telecommunic ations

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Mechanical Engineering

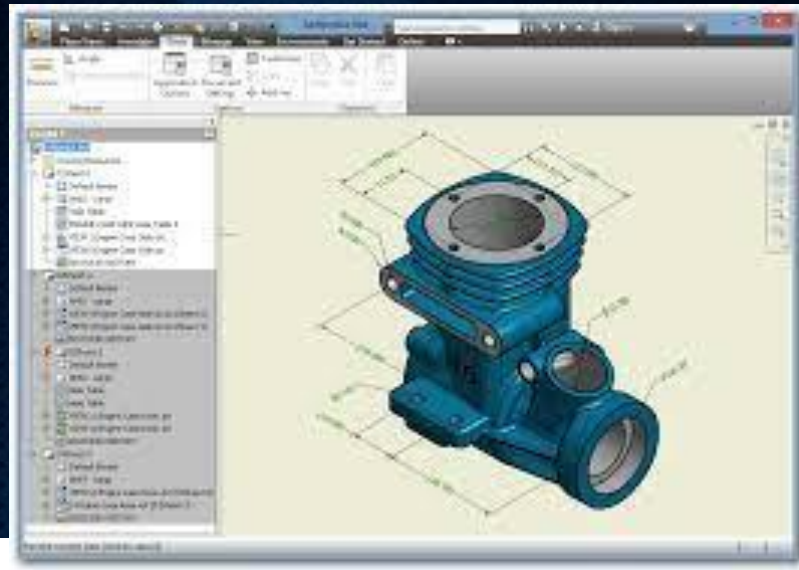
A Mechanical Engineer combines engineering physics and mathematics principles with materials science to design, analyze, manufacture, and maintain structures, mechanisms, and mechanical systems.

***Annual Salary:**

Entry Level: \$70,000

Average: \$111,970

Highest 20%: \$157,530+



Specializations:

- Applied Mechanics
- Thermodynamics
- Heat Transfer
- Statics/Dynamics



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Software Engineer/Computer Science

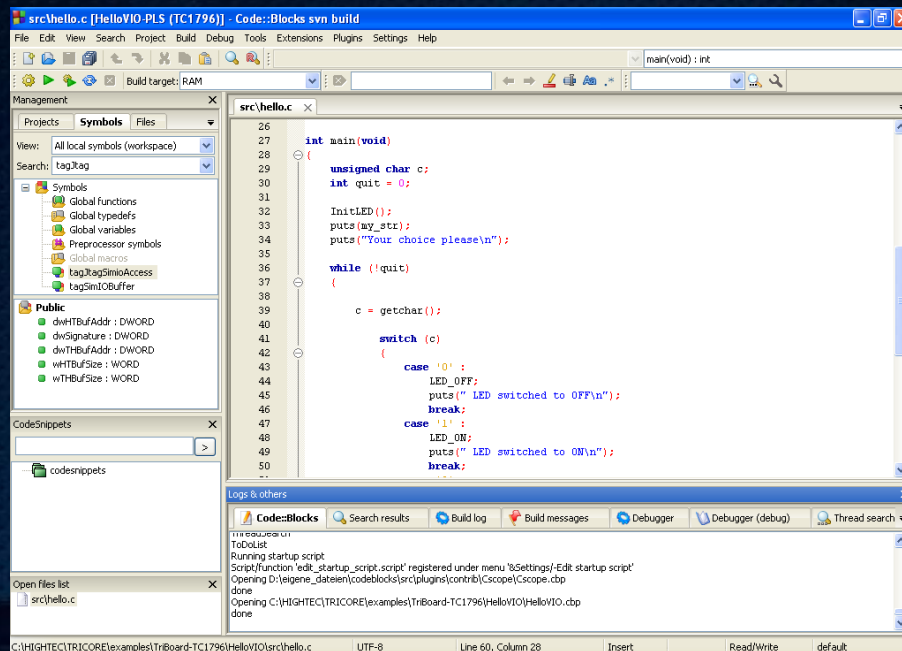
Software engineering is the systematic application of engineering approaches to the development of software.

***Annual Salary:** **Entry Level: \$72,000** **Average: \$116,940** **Highest 10%: \$170,540+**



Specializations:

- Artificial Intelligence
- Machine Learning
- Simulation
- Modeling
- Gaming/Entertainment



- CEO Info

Aerospace Engineering

An aerospace engineer designs, tests, and manages the manufacturing of aircraft, spacecraft, satellites, rockets, and missiles.



Specializations:

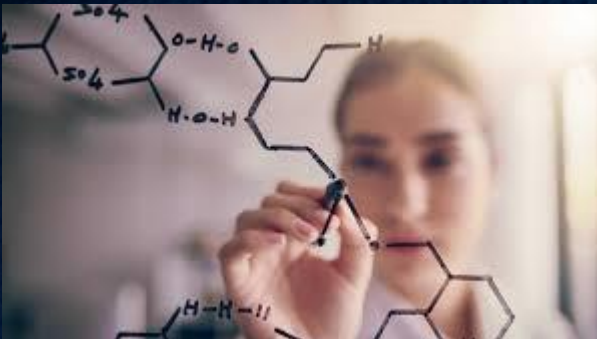
- Aerodynamics
- Thermodynamics
- Materials
- Celestial mechanics



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Chemical Engineer

Chemical Engineer designs and initiates processes for the manufacturing of chemicals and related products such as cement, detergents, gasoline, plastics, synthetics, and more.



Specializations:

- Petroleum Eng.
- Biological Eng.
- Environmental Eng.



Civil Engineer

A Civil Engineer applies principles of engineering, mathematics, materials, and science to design and build infrastructure systems such as bridges, roads, dams, transportation centers and treatment systems for water and other resources.



Specializations:

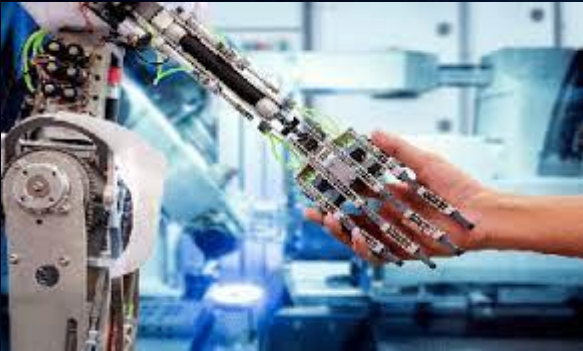
- Transportation Eng.
- Construction Eng.
- Structural Eng.



- Municipal/Urban Eng.

Biomedical Engineer

Electrical engineering is the the field of engineering concerned with the study, design and application of equipment, devices and systems which use electricity, electronics, and electromagnetism.



Specializations:

- Orthopedic Implants
- Medical Imaging
- Bio-Sensors



Engineering/STEM Career Outlook



Young

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Old

Aging/Retiring Baby Boomers:
10,000 people turn 65 each day.
This will continue at this pace for the next 15 years.

Engineering/STEM Career Outlook

In 2016, there were 6.9 million engineers and scientists employed in the US, accounting for 4.9% of the U.S. employment.

New Job Growth (2016 to 2026)

- All scientists/engineers: 853,600 jobs/1.1% annual growth rate
- Overall workforce: 0.7% annual growth rate

1,265,000 engineers will be needed in the next 10 years according to BLS

- due to total number of openings due to new job growth and
- due to labor force exits/retirements.

Highest Earning BS Degrees



(arranged alphabetically)

Aerospace Engineering

Applied Mathematics

Biomedical engineering

Chemical Engineering

Civil Engineering

Computer Engineering

Computer Information Technology

Electrical Engineering

Industrial Engineering

Information Security Analyst/Cyber

Materials Science and Engineering

Mechanical Engineering

Nuclear Engineering

Petroleum Engineering

Software Engineering/Computer Science

Systems Engineering

What do Engineers earn?

Mean Salary

All scientists and engineers was
\$94,450.

All other occupations was \$49,630.

Level	Prefix / Suffix	Job Title Example	Starting Salary	Median Salary	Yrs to Reach
1	Associate	Mechanical Engineer Associate	\$70,000	\$84,817	0
2		Mechanical Engineer	\$80,000	\$89,888	2-4
3	Senior	Senior Mechanical Engineer		\$108,300	8-10
4	Staff	Staff Mechanical Engineer		\$130,930	15
5	Senior Staff	Mechanical Engineer Senior Staff		\$154,708	20
6	Principle	Mechanical Engineer Principle		\$199,212	25

Characteristics of Engineers



- Mathematical Ability
- Problem solving
- Creativity
- Analytical ability
- Logical thinking
- Attention to detail
- Continuous learning

Skills that accelerate progression

- Teamwork
- Communication skills
 - Presentation Skills
 - Cross-generational Communication skills
- Leadership



Questions?