

13 Different Types of Engineering Explained

By [Brandon Weber](#)

As a student considering your options for college or university, the choices can be overwhelming. This is the case even within certain disciplines where there might be a dozen different subcategories and / or specialties within the profession. Let's explore some of the more popular Engineering disciplines, shall we?

Agricultural Engineering is the engineering discipline that strives to apply engineering science to agricultural production and farming. In some circles it is commonly accepted that the scope of agricultural engineering is broader than all other forms of engineering, as it combines elements of mechanical, civil, and chemical engineering with animal and plant biology.

Architectural Engineering involves the application of engineering principles to building construction and design. In some parts of the world, the words architect and architectural engineer are used interchangeably.

Biomedical Engineering strives to apply engineering principles and technology to the field of medicine. Originally considered an interdisciplinary specialization, biomedical eng has grown to become a respected discipline of its own. Tissue engineering, while also considered a specialization within biotechnology, is one such example of biomedical engineering in action.

Ceramic Engineering relates to the practice of designing and creating objects from inorganic, non-metallic materials. The process generally includes the purification of raw materials, the production of compounds, their formation into components, and the study of their composition, properties and structure.

Civil Engineering is a discipline that deals primarily with the design, construction and maintenance of bridges, roads, canals, and the like. As a point of interest, this engineering discipline was enshrined to distinguish itself from military engineering. It is considered the second-oldest discipline, after military.

Computer Engineering is a combination of computer science and electronic engineering. Computer engineers design both computer software and computer hardware, in addition to developing solutions for the integration of the two.

Electrical Engineering is the study and application of electromagnetism, electronics, and electricity. It's a broad-based discipline that encompasses the design and implementation of various electronic / electrical systems such as circuits, generators, motors, and transformers.

Environmental Engineering refers to the application of scientific principles to environmental improvement. Generally speaking, this discipline attempts to provide healthy air, water and land for safe habitation. Additionally, this particular discipline attempts to find ways to reverse environmental damages caused by pollution.

Industrial Engineering is a discipline concerned with the development and ongoing improvement of integrated systems. In manufacturing systems, focus is placed on finding ways to eliminate waste

(time, money, materials, energy, etc). Industrial engineering is not necessarily limited to manufacturing, however.

Manufacturing Engineering, on the other hand, deals almost exclusively with the design and maintenance of different manufacturing processes, tools, equipment and machines. Lean manufacturing principles are one such example of scientific manufacturing in action.

Materials Engineering is concerned with the properties of matter and it's application to science and technology. This generally refers to the study of the structure of materials at the molecular level, and includes elements of applied physics and chemistry. Nanotechnology is one such example of materials engineering in action.

Mechanical Engineering is one of the oldest disciplines, and is primarily concerned with the design, production and use of tools and machines. It is primarily concerned with the generation and application of mechanical power.

Nuclear Engineering is a discipline that is primarily concerned with finding practical applications of nuclear energy. This includes the development and maintenance of nuclear reactors, power plants, and weapons.

Brandon Weber likes to tinker with things in his workshop when he's not busy helping his clients solve complex technology problems. To explore the latest [mechanical engineering jobs](#) or to learn more about engineering in general, he encourages you to join the conversation at Engineering dot com.

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