# Mechatronics engineering:

Mechatronics engineering also called mechatronics, is an interdisciplinary branch of engineering that focuses on the integration of mechanical, electrical and electronic engineering systems, and also includes a combination of robotics, electronics, computer science, telecommunications, systems, control, and product engineering.

As technology advances over time, various subfields of engineering have succeeded in both adapting and multiplying. The intention of mechatronics is to produce a design solution that unifies each of these various subfields. Originally, the field of mechatronics was intended to be nothing more than a combination of mechanics, electrical and electronics, hence the name being a portmanteau of the words "mechanics" and "electronics"; however, as the complexity of technical systems continued to evolve, the definition had been broadened to include more technical areas.

# Biomedical engineering:

Biomedical engineering (BME) or medical engineering is the application of engineering principles and design concepts to medicine and biology for healthcare purposes (e.g., diagnostic or therapeutic). BME is also traditionally logical sciences to advance health care treatment, including diagnosis, monitoring, and therapy. Also included under the scope of a biomedical engineer is the management of current medical equipment in hospitals while adhering to relevant industry standards. This involves procurement, routine testing, preventive maintenance, and making equipment recommendations, a role also known as a Biomedical Equipment Technician (BMET) or as clinical engineering.

Biomedical engineering has recently emerged as its own study, as compared to many other engineering fields. Such an evolution is common as a new field transition from being an interdisciplinary specialization among already-established fields to being considered a field in itself. Much of the work in biomedical engineering consists of research and development, spanning a broad array of subfields (see below). Prominent biomedical engineering applications include the development of biocompatible prostheses, various diagnostic and therapeutic medical devices ranging from clinical equipment to micro-implants, common imaging equipment such as MRIs and EKG/ECGs, regenerative tissue growth, pharmaceutical drugs and therapeutic biologicals.

# Computer engineering:

Computer engineering (CoE or CpE) is a branch of electrical engineering and computer science that integrates several fields of computer science and electronic engineering required to develop computer hardware and software. Computer engineers require training in electronic engineering, hardware-software integration, software design, and software engineering. It uses the techniques and principles of electrical engineering and computer science, and can encompass areas such as artificial intelligence (AI), robotics, computer networks, computer architecture and operating systems. Computer engineers are involved in many hardware and software aspects of computing, from the design of individual microcontrollers, microprocessors, personal computers, and supercomputers, to circuit design. This field of engineering not only focuses on how computer systems themselves work, yet it also demands them to integrate into the larger picture. Robots are one of the applications of computer engineering.

Computer engineering usually deals with areas including writing software and firmware for embedded microcontrollers, designing VLSI chips, designing analog sensors, designing mixed signal circuit boards, and designing operating systems. Computer engineers are also suited for robotics research, which relies heavily on using digital systems to control and monitor electrical systems like motors, communications, and sensors.

# Software engineering:

Software engineering is an engineering-based approach to software development.A software engineer is a person who applies the engineering design process to design, develop, maintain, test, and evaluate computer software. The term programmer is sometimes used as a synonym, but may also refer more to implementation rather than design and can also lack connotations of engineering education or skills.

Engineering techniques are used to inform the software development process, which involves the definition, implementation, assessment, measurement, management, change, and improvement of the software life cycle process itself. It heavily uses software configuration management, which is about systematically controlling changes to the configuration, and maintaining the integrity and traceability of the configuration and code throughout the system life cycle. Modern processes use software versioning.