

## **Introduction to Engineering DDesign**

The design is an important activity that aims to create products and systems that serve specific needs and has a critical role in the context of engineering systems. It is to be noted here that engineering design is an important activity that provides configuration details as well as shapes and sizes of various engineering entities, based on the applicable physical laws as well as constraints that act on such systems and components. It is found that engineering design is an important element of the overall design process of any practical system.

In simple terms, engineering design process is a creative activity through which, we arrive at tangible forms of components/ elements that serve the need stated as a design problem for an engineering system. In this discipline, we make use of fundamental laws of physics to capture the essential features of a requirement, which is then translated into a product that meets the stated requirement. For example, if we have a need that an automobile should run at a certain value of top speed, we use the basic laws of mechanics to arrive at the design of an engine that can deliver the desired torque and, hence, the speed. Similarly, if we want to design a heating system to achieve a level of temperature, we use the laws of thermodynamics and heat transfer to set up such a system.

The present short course is intended as an introductory material with regard to the fundamental processes involved in the field of engineering design and familiarizes the participants with the methodologies and tools that help to create good designs for different types of engineering applications. The participants can expect to acquire basic knowledge about designing, including underlying principles and techniques. The course is of twelve hours duration and is delivered over six weeks.