PROFESSIONS IN SCIENCE AND TECHNOLOGY S2

Mechanical Engineering

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GENERAL INTRODUCTION

- What is MST?

PST

Professions

A profession is primarily the practice of an activity by a person in a professional field, with the aim of earning compensation.

Like an entrepreneur. Freely Employee

Science

Sciences based on calculation and observation.

•Mathematics – Physics – Chemistry – etc.
•Exact sciences or the family of hard sciences.

Techniques

The set of applications of scientific knowledge to the production of needs and useful products.

Technology

Study of industrial techniques considered as a whole or in a specific area of activity.

The training in the Common Core ST follows the LMD system in the field of Science and Technology. Nine specialties are available to students admitted based on merit ranking. This semester, we will focus on studying this topic.

- Mechanical Engineering
- Metallurgy
- Civil Engineering
- Hydraulics
- Architecture and Urban Planning

DEFINITION OF ENGINEERING

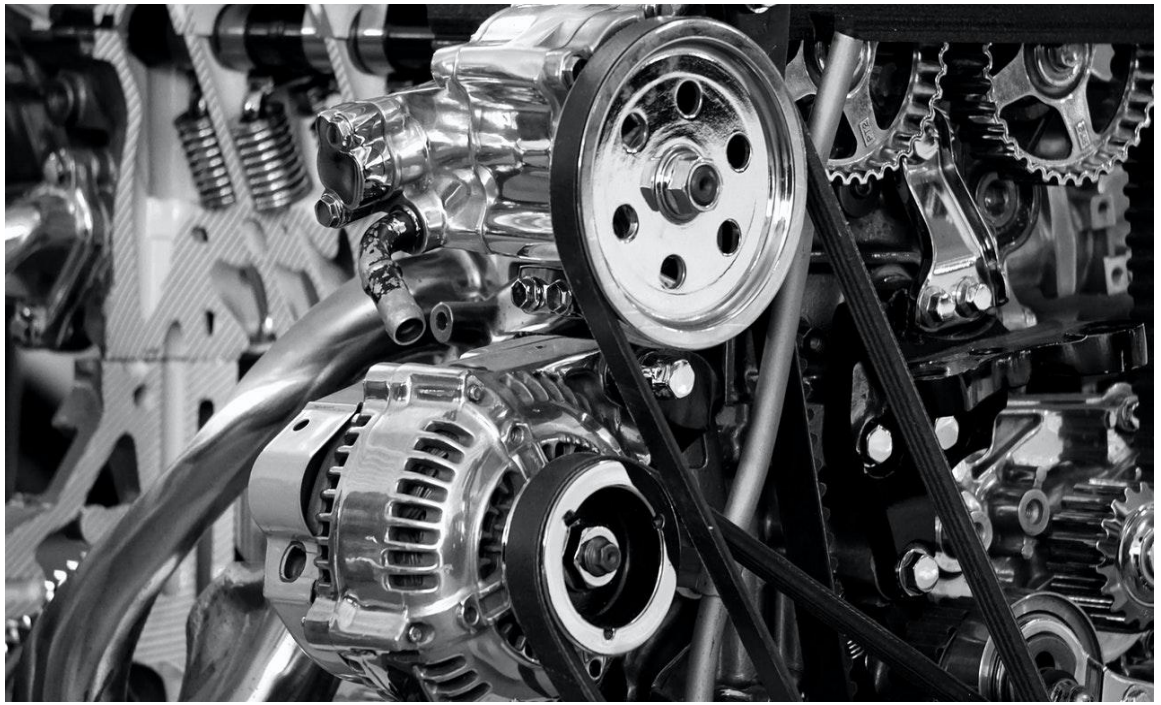
Engineering is a scientific discipline and profession that focuses on applying our understanding of the natural world to invent, design, and create solutions that address problems and meet practical objectives. The products that engineers create are referred to as technology.

Chapter 1

Mechanical engineering

- The Great Myth

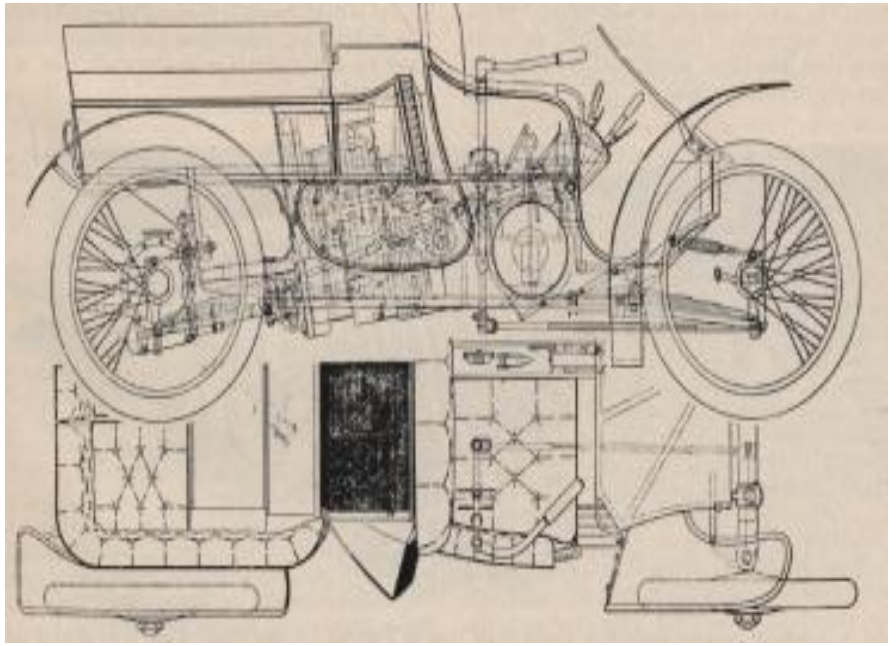
The most persistent myth about mechanical engineering is its direct association with automotive mechanics.

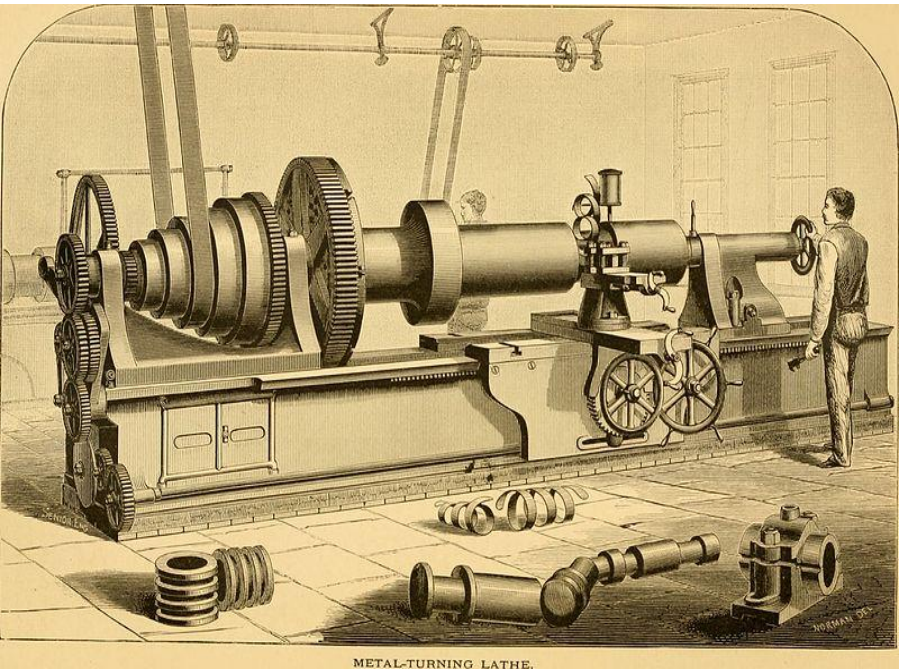


The term "mechanical" in "mechanical engineering" is not related to the work of an automobile mechanic, but rather to the principles of mechanical physics.

Brief History

The decline of complex craftsmanship marks the beginning of large-scale mechanization. This transition occurred in America during the second half of the 19th century.





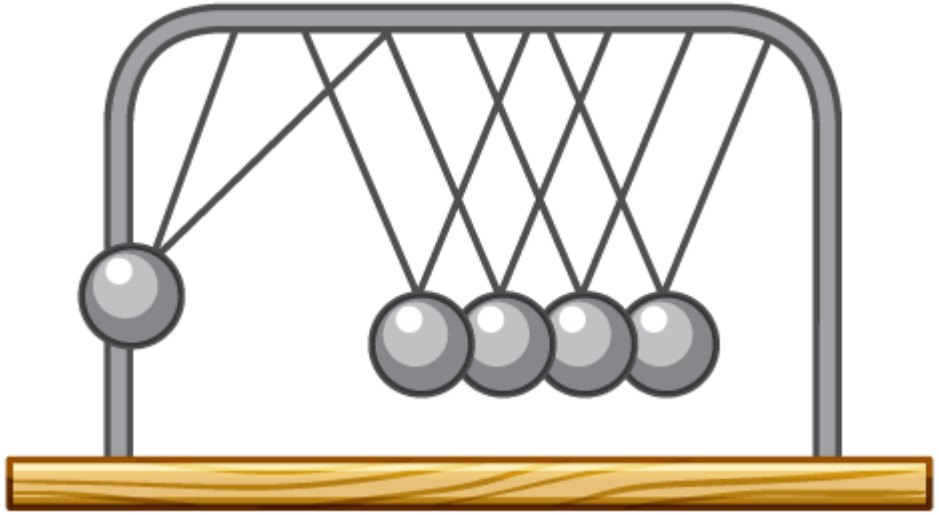
METAL-TURNING LATHE.

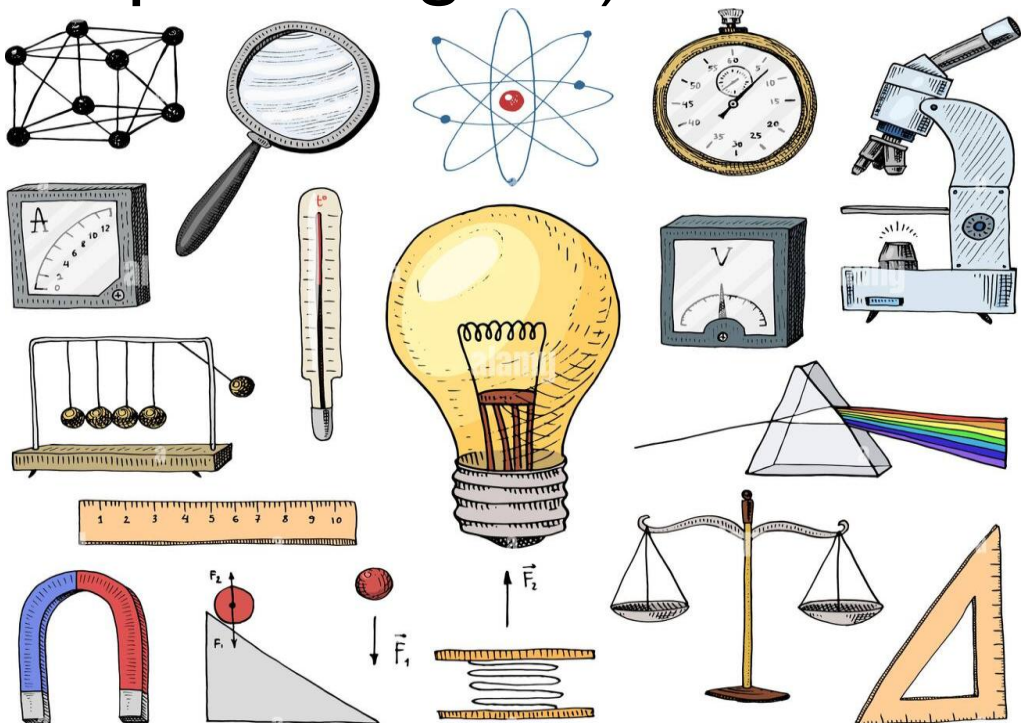
It was with the textile industry and rail transportation that mechanization gained momentum.

The discovery of fossil and fissile energies significantly accelerated modern mechanization

Definition:

Mechanics: Mechanics is the science that focuses on the study of forces and motion in all states of matter (solids, liquids, or gases).





Mechanical engineering refers to the body of knowledge related to mechanics, both in its physical sense (the science of motion) and in its technical sense (the study of mechanisms).

Advances in Mechanics

The development of command and control technologies, along with new design methods, has led to continuous improvements in all types of machines. These machines have become more efficient, faster, more precise, cost-effective, and capable of performing multiple functions. The widespread use of computers in industry has further accelerated this progress.

Today, mechanical engineering is on the brink of another revolution, driven by the emergence of affordable and reliable microelectronic devices, particularly various types of sensors and microprocessors.

Fields of Mechanical Engineering

Mechanics is involved in all manufacturing processes and the design of high-tech products across major industrial sectors, including:

- Production and maintenance of industrial equipment
- Production, transportation, and transformation of energy
- Metal processing
- Aerospace and aeronautics
- Shipbuilding industry
- Military industry
- Automotive industry
- Public works machinery
- And more...

The specialties of the Engineer in Mechanical Engineering

The three major specialties offered to the Mechanical Engineering engineer are:

1- Mechanical construction (design - BE)

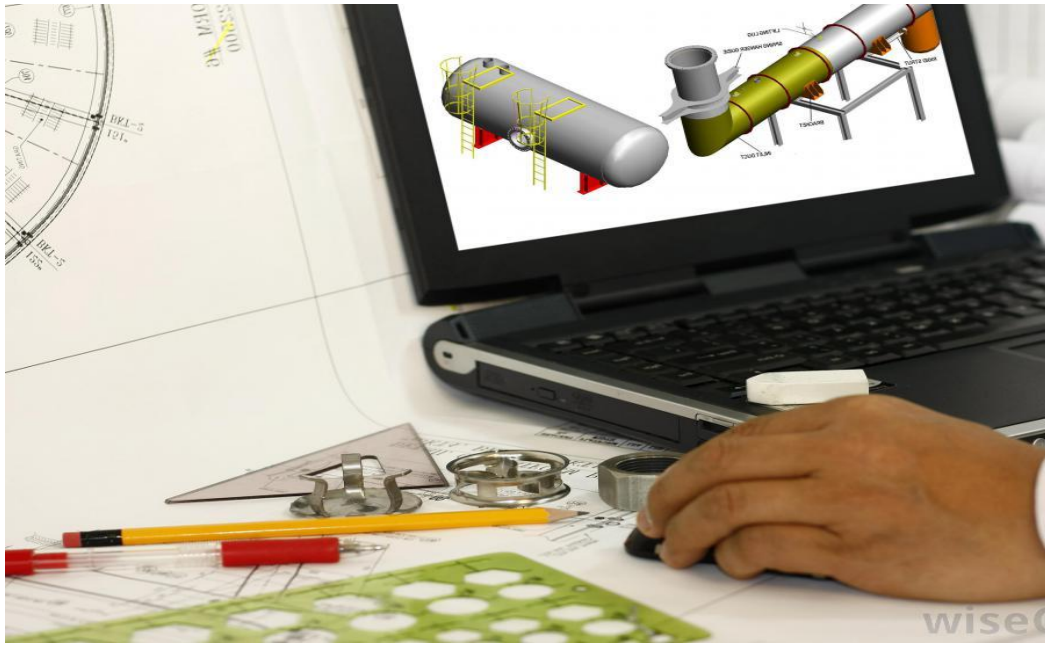
2- Mechanical manufacturing (BM)

3- Thermal or energy engineering

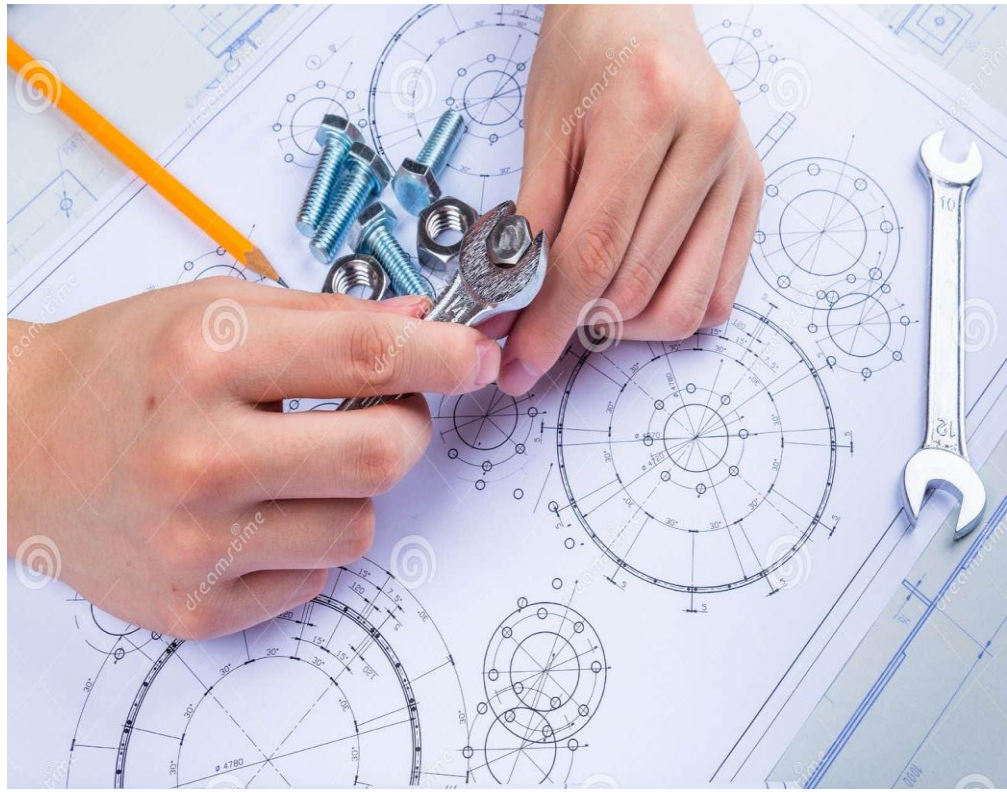
Mechanical industry professions:

❖ Mechanical design engineer

A mechanical design engineer is a professional who spearheads the process of developing and designing products that come under the category of mechanical components. By providing mechanical design services, the engineer would have to develop products as per the briefing of the client.



And he /she will be involved in all the stages of mechanical product development, right from planning and testing to execution and manufacturing. By working with machine design products, such as robotic components, industrial equipment and other appliances, a mechanical design engineer must be an expert in all kinds of mechanical design principles, to curate reliable designs.



❖ Mechanical production engineer

Industrial, Mechanical and Production Engineers design, organise and oversee the construction, operation and maintenance of mechanical and process plant and installations, establish programs for the coordination of manufacturing activities, and ensure usage of resources is cost effective.

❖ Thermal engineering

Thermal engineering focuses on the transfer of heat, fluid mechanics Thermal engineers design systems that utilize various thermal sources of generated energy to create chemical, mechanical or electrical energy.

They must have an understanding of thermodynamics, fluid mechanics and heat and mass transfer.

❖ Maintenance agent in industrial mechanics

The majority of industrial machines have a strong mechanical component: the agent mechanical maintenance technician can therefore work in practically all sectors, he mainly ensures the maintenance and troubleshooting of equipment and machines.

❖ Adjuster

He carries out the adjustment and functional assembly
of parts, elements, mechanical systems individually or in series using machining equipment, forming, according to safety rules
and production requirements.