

ENGINEERING AS A PROFESSION

FIRST CHAPTER - FIRST PART

Engineering is the scientific utilization of the forces and materials of nature in the construction, production and operation of works for the benefit of man.

Scientific utilization, involves a choice of method best suited to the desired end, requiring an expert knowledge of past experience and a creative ability to meet new situations, because in many cases the procedure is without precedent and the problems must be resolved afresh. The results should be reliability and economy.

The forces involved include those derived from heat energy from fuels, through steam and internal combustion engines, buoyancy of water, electricity, gravitation, magnetism, mechanical action, cohesion, adhesion, radio activity, waterfalls, wind pressure, etc. The materials comprise alloys, composite materials, copper, iron, stone, wood, glass, rubber, and many other complex materials.

Construction embraces the erection of bridges, buildings, highways, railways, airports, water systems and many other means of public and private works.

Production means principally power generation and the manufacture of goods on an organized scale.

Operation means organizing man power, funds, and other procedure in carrying on industrial and utility enterprises.

Works include not only public and private works but factories, machines and manufactured products.

The benefit of man means essentially supplying the economic needs of man such as housing, food, clothing, communication and transportation, entertainment and convenience and implies a knowledge of the economic organization of society, because the needs of man are supplied through highly complex organization of production and distribution.