Engineering mechanics – characteristics of a force

Mechanics may be defined as the science which consider the effects of forces on rigid bodies. The subject divides naturally into two parts Static and Dynamics. In Static we consider the effects and distribution of forces on rigid bodies which are and remain at rest. In Dynamics we consider the motion of bodies caused by the forces acting upon them.

Engineering MechanicsStaticsDynamicsForce SystemApplicationKinematicsKineticsConcurrentTrussesTranslat- ion Translation Parallel Cancroids Rotation Rotation Non-concurrent? recreational Motional Motion Fundamental Concepts and Definitions Rigid body is defined as a definite amount of matter the parts of which are fixed in position relatives to each other. Force may be defined as that which changes, or tends to change, the state of motion of a body.

Characteristics of a force are (1) its magnitude, (2) the position Of its line Of action, and (3) the direction (or sense) in which he forces acts along its line of action. The principle of transmissible of a force states that the external effect of a force on a body is the same for all points of application along its line of action, it is independent f the point of application. Force System A force system is any arrangement where two or more forces act on a body or on a group of related bodies.

When the lines of action of all the forces in a force system lie in one plane, they are referred to as being coplanar otherwise they are non-coplanar. Forces whose line of action pass through a common point are called concurrent those in which the lines of action are parallel are called parallel

force system and those in which the line of action neither are parallel nor intersect in a common point are known as non concurrent force system.