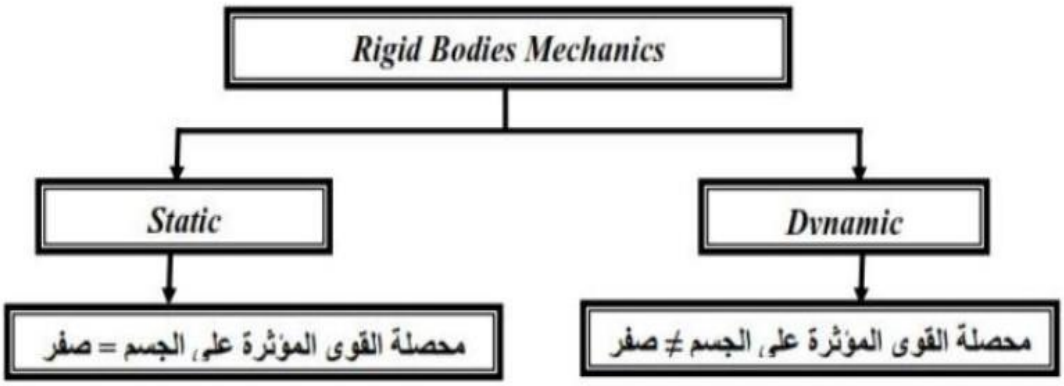
Al-Mustaqbal University / College of Engineering & Technology
Electrical Techniques Engineering Department Class (1st)
Subject (Engineering Mechanics) / Code (UOMU025021)
Lecturer (Msc Hiba Mohsin AL-Bawi)
1stterm – Lecture No.1

Mechanics is a branch of the physical sciences that is concerned with the state of rest or motion of bodies that are subjected to the action of forces.

Rigid-body mechanics is divided into two areas: statics and dynamics.

Statics: which concerns the equilibrium of bodies under action of forces**.**

Dynamics: which concerns the motion of bodies.



Basic Quantities. The following four quantities are used throughout mechanics.

Length. Length is used to locate the point in space and thereby describe the size of a physical system.

Time. Time is quantity plays an important role in the study of dynamics.

Mass. Mass is a measure of a quantity of matter, a measure of the resistance of matter to a change in velocity.

E-mail: hiba.mohsin.abd@uomus.edu.iq

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Force. In general, force is considered as a "push" or "pull" exerted by one body on another. This interaction can occur when there is direct contact between the bodies, such as a person pushing on a wall, or it can occur through a distance when the bodies are physically separated.

QUANTITY	DIMENSIONAL SYMBOL	SI UNITS			U.S. CUSTOMARY UNITS		
			UNIT	SYMBOL		UNIT	SYMBOL
Mass	M	Base units	kilogram	kg		slug	—
Length	L		meter	m	Base units	foot	ft
Time	T		second	s		second	sec
Force	F		newton	N		pound	lb

Scalars and Vectors Quantities:

Most of the physical quantities in mechanics can be expressed mathematically by means of scalars and vectors.

Scalar: is physical quantity which has only magnitude. For example, mass, volume, time, and length are scalar quantities

Vector: is physical quantity which has both a magnitude and direction such as force, velocity, and displacement**.**

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