

Chapter 1 - The World of Mechanisms

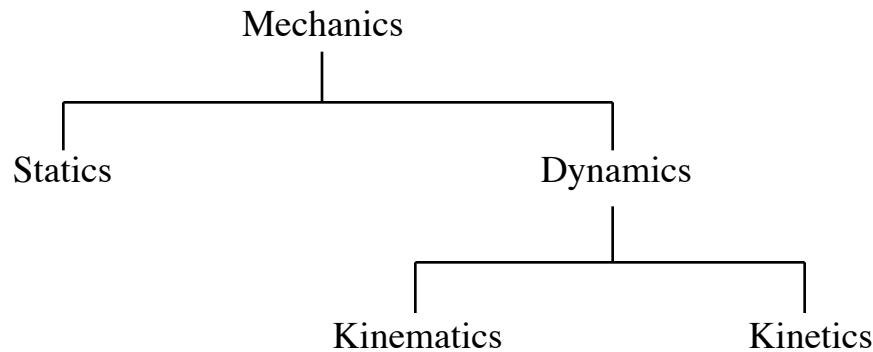
1.1 Introduction.

Design is complicated...many factors...READ THIS SECTION!

1.2 Analysis vs. Synthesis.

We will spend most time on analysis...although SYNTHESIS is often the real goal.

1.3 Mechanics



1.4 Terminology, *etc.*

MOBILITY, LINK, Driver & Follower, PAIR (joint or connection)

Kinematic Chain: OPEN *vs.* CLOSED (draw examples)

LOWER pair: surface contact...see Fig. 1.2 (6 types)

HIGHER pair: point or line contact (*e.g.* gear teeth, ball & roller bearing, cam & roller follower...

1.5 Planar, Spherical, Spatial Mechanisms

We'll focus on PLANAR

1.6 Mobility (# of DOF): # of (usually joint) variables that must be specified to bring mechanism into particular configuration.

A PLANAR link has 3 DOF, so an n -link mechanism has

$$3(n - 1) \text{ DOF}$$

WITHOUT any joints (NOT counting “ground” link).