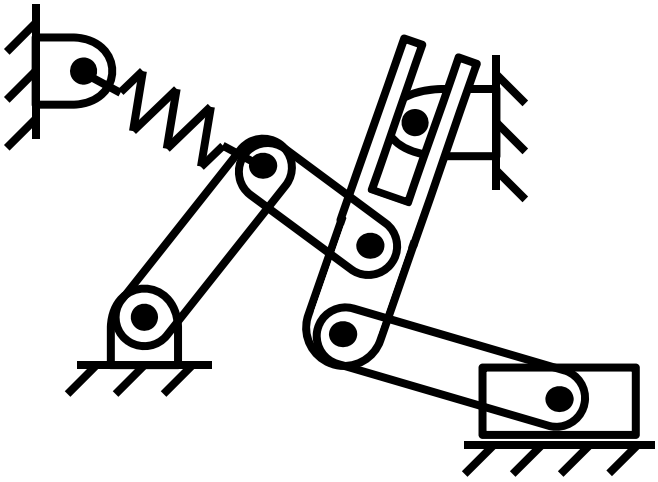
ME5243: Advanced Mechanism Design

Kinematic Diagrams & Degrees of Freedoms

1. Below are two pictures of a mountain bike frame that has rear suspension. In a group of 2 or 3, discuss and answer the following:

a) Create a kinematic diagram of the rear suspension linkage, assuming the bike frame is ground.
b) Label all of the links and joints.
c) Identify all binary and ternary links.
d) Determine the number of degrees of freedom via intuition and analytically.

2. Consider the mechanism sketched below and answer the following in groups of 2 or 3.



a) Create a kinematic diagram of the linkage.
b) Label all of the links and joints.
c) Identify all link and joint types.
d) Determine the number of degrees of freedom via intuition and analytically.