APL 105 Lecture 4

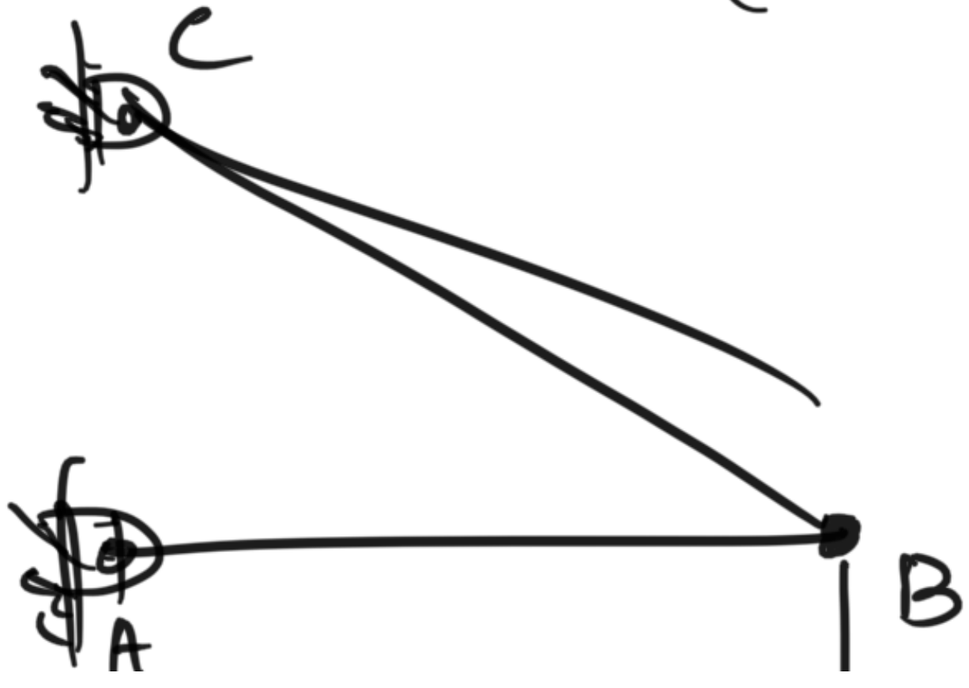
Statics: $\Sigma \vec{F} = 0$

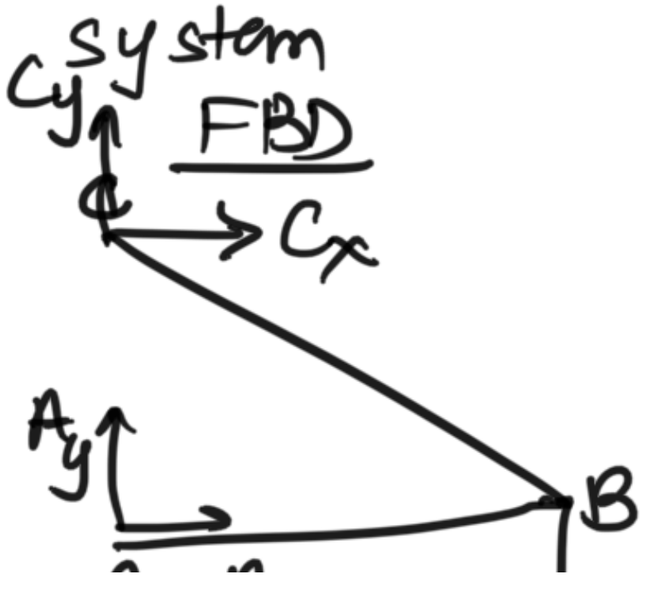
$\Sigma \vec{M}_o = 0$

$\vec{F}$ and $\vec{M}_o$ are ~~due to~~ external forces & moments on the body in question.

⇶ We could analyze the whole system or components of a system or even cut part of a single component.

If we cut a member, at the cut part, $\vec{F}$ and $\vec{M}$ (unknown) will be shown.





F

FBD of AB

Ay

Ax

Bx

By

Bx

F

A Ax

F

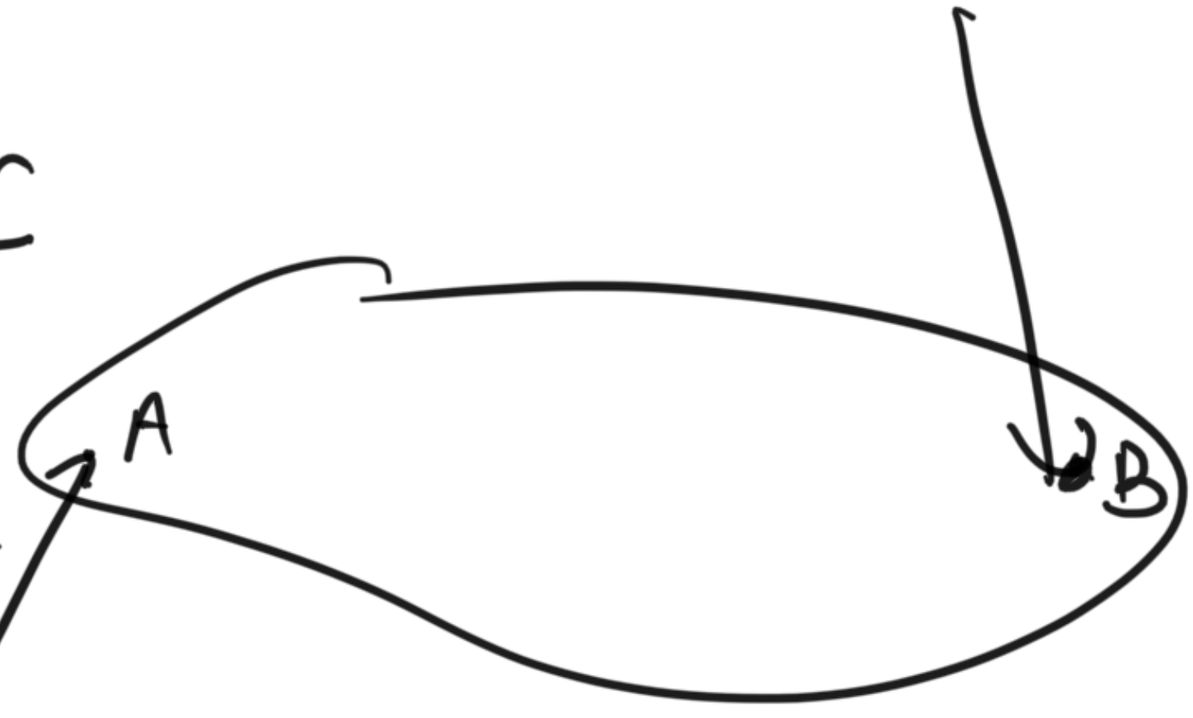
FBD of BC

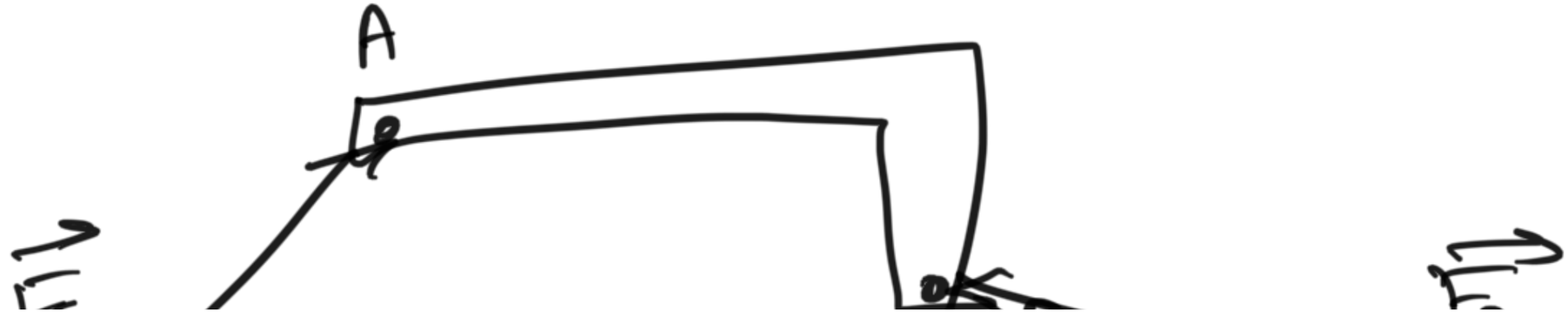
C

B

2 Force member

only at 2 external points on member, forces act and no external moment at any point.





$$\vec{F_1} + \vec{F_2} = 0 \Rightarrow \vec{F_2} = -\vec{F_1}$$

$\vec{M}_A = 0 \Rightarrow$ $\vec{F_2}$ passes through A

$\vec{F_1}$ passes through B