The Hashemite University
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stability of columns

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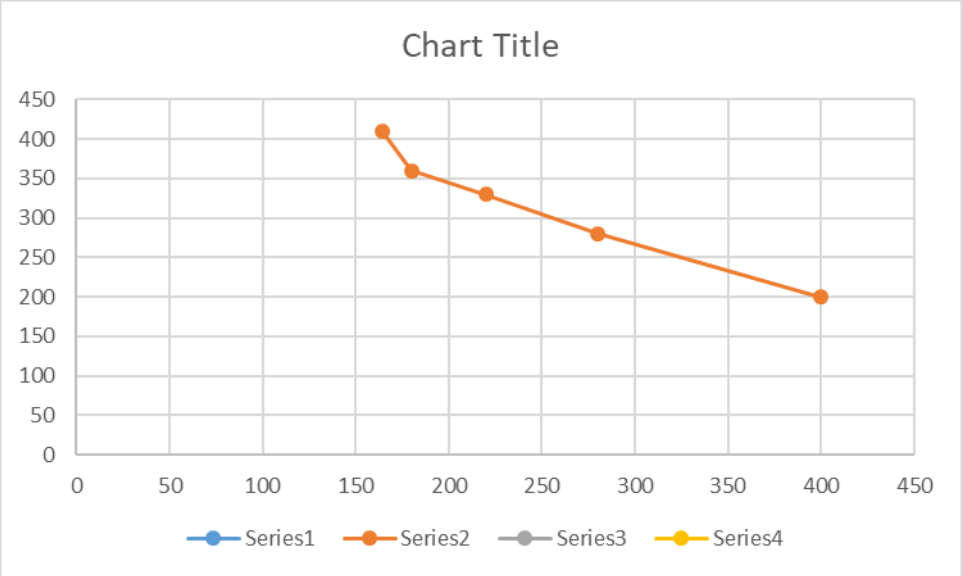
Result and calculations:

Rod material	Steel	**Cross section dimension**	(20 x 4) mm^2
Length	700 mm	**Modulus of elasticity**	210 Gpa
Cross section type	Rectangle	**Ends condition**	Pin –pin (K=1)

Experiment parameters

Deflection y [mm]	**0.5**	**1.0**	**1.5**	**2.0**	**2.5**
Load (P) N	**200**	**280**	**330**	**360**	**410**
P/y (N/mm)	**400**	**280**	**220**	**180**	**164**



Calculation:

BY APPLYING THE RELATION WE FOUND THAT :

*P(cr)=(n^2*3.14^2*E*I)/(KL)^2 >>>*
*(1^2*3.14^2*210*10^9*1.066*10^-10)/(1*700*10^-3)^2=450.5 N*
This is the critical point .

Discussion and conclusion:

We found that if p(cr)<p then it is un stable and will be buckling falier
BUT if p(cr) >p then it is stable and buckling will no occure.

P critical depend on the length of the column inversely relation and with K and propotional with moment of inertia and modulus of elastisty which depend on type of materal or steel .