

COMPUTER AIDED ENGINEERING DESIGN (BFF2612)

LAB. EXERCISE 3 (FEM)

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Computer Aided Engineering Design: Dr Nizar



LAB. EXERCISE 3 (FEM)

HOLLOW BEAM

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AIDED ENGINEERING DESIGN



Part Design

- Create a rectangle in YZ plane.
- Height is 80 mm, width is 50 mm.
- Place in the centre.





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- Exit from the sketch and do PAD with the length of 700 mm.
- Check on the Thick and insert the Thickness1 and Thickness2 of 4 mm each.

		Pad Def	inition	r ×
First Limit			Second Limit	
Туре:	Dimension	~	Туре:	Dimension 🗸 🗸
Length:	700mm	-	Length:	0mm 🚖
Limit:	No selection		Limit:	No selection
Profile/Surface		Direction		
Selection: Sketch.1		Normal to profile		
Thick			Reference: No selection	
Reverse Side			Thin Pad	
Mirrored extent			Thickness	1 4mm 🚔
Reverse Direction Thickness2: 4mm			2: 4mm 🚔	
		< <less< th=""><th>Neutra</th><th>I Fiber 🗌 Merge Ends</th></less<>	Neutra	I Fiber 🗌 Merge Ends
			OK	Cancel Preview



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- Select the beam and Apply materials.
- Select Aluminum.



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Finite Element Analysis

- Select Analysis and Simulation in the Start.
- Select Generative Structural Analysis.
- Select Static.







- Double click on nodes and elements or green lines. •
- Change the size to become 10 mm. •



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- Apply the boundary conditions.
- Select Clamp.
- Select one of the planes of the cross section of the beam as shown in figure.







- Apply the load.
- Select Distribution Force.
- Select the top edge in the other end of the beam and apply the load in Z direction with the value of -1000 N.

Distributed Force 😑 🗢 🗙				
Name Distributed Force.1				
Supports 1 Edge				
Axis System				
Type Global 🗸				
Display locally				
- Earce Vector				
Norm 1000N				
X ON				
Y ON				
z -1000N				
Handler No selection				
OK Gancel				



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• Press Compute to get the result of the FEA.



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AIDED ENGINEERING DESIGN





- After analysis completed, select Deformation to see the result.
- Select Von Mises to see the plastic yielding.





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