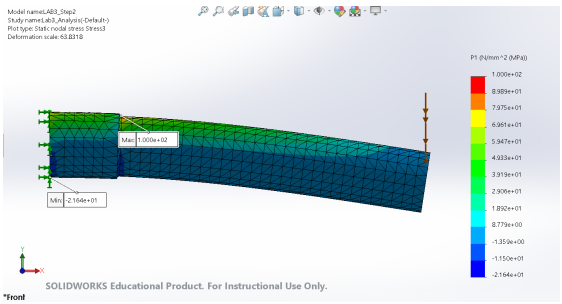
MEMS 3110 Machine Elements Lab – SP2020
LAB 3 Worksheet

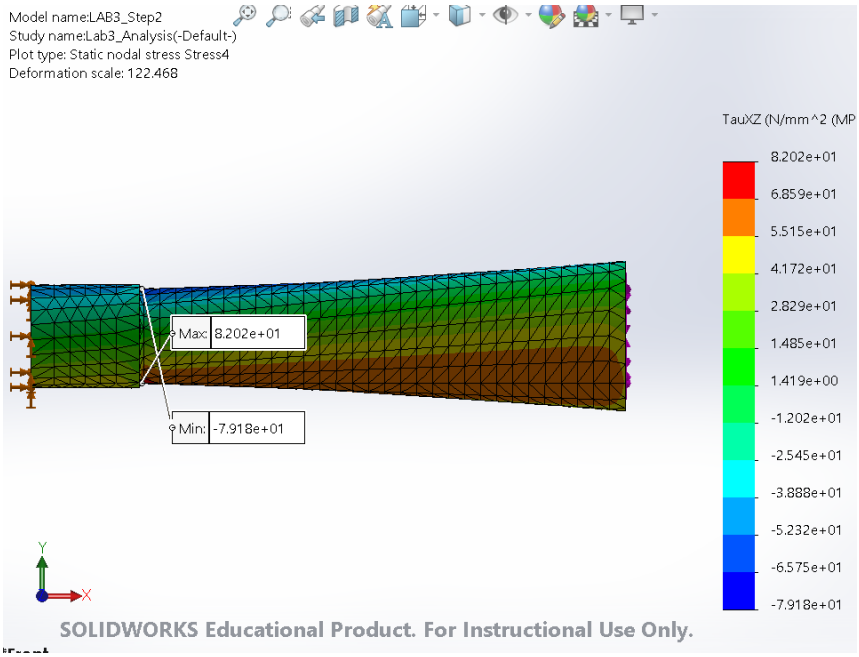
1.



2. How does the value from the finite element analysis compare to your calculated value? (Calculated value should be in the 100-150 MPa range)

Yes, it is in the range of 100-150 MPa.

3.

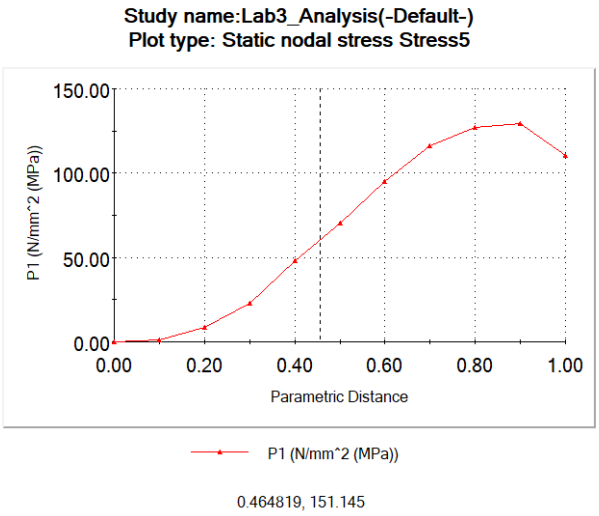


4. How does the value from the finite element analysis compare to your calculated value? (Calculated value should be in the 60-100 MPa range)

The Value does fall into the range of 60-100 MPa.

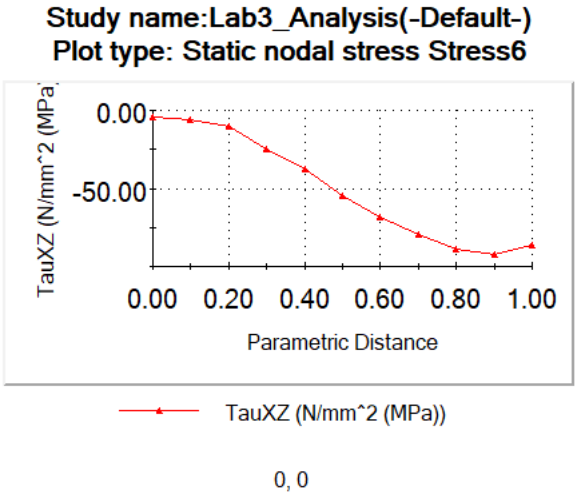
5. New value was 1.312e2 MPa. This is a lot higher than the value from the less refined mesh grid.

6.



7. The new value seems to be lower with the increased mesh grid.

8.



9. BL = Load Factor*F = 34.177*200 = 6835.4 lb.

10. Pe = ((Pi^2)*E*I)/(2L)^2 = 1.61*10^14 lbs.

Pc = Sigma*A

Pr = 1/(1/Pe + 1/Pc) = 11595.11 lbs.

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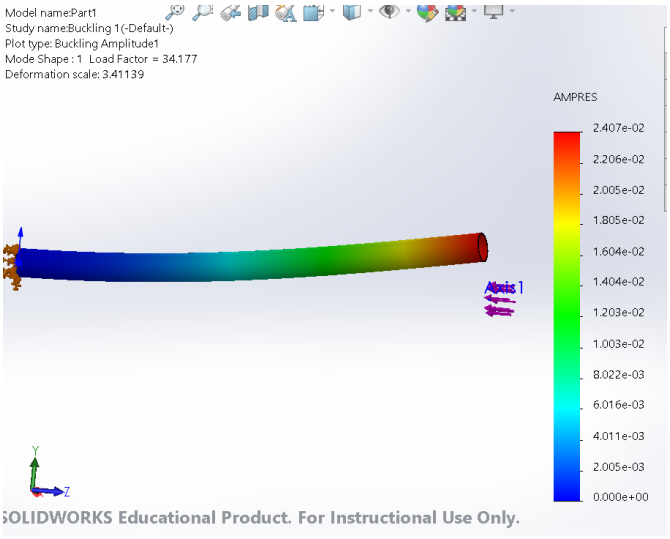
11.



12. BL = 320.54 lbs.