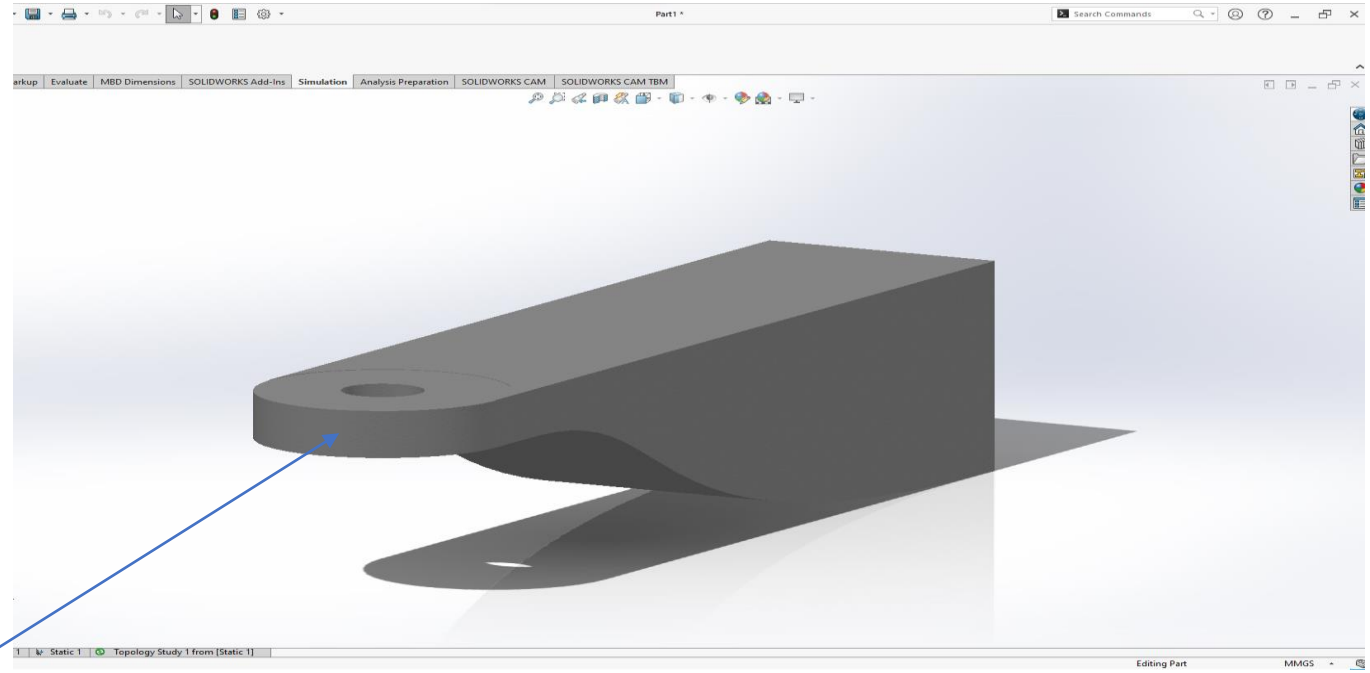
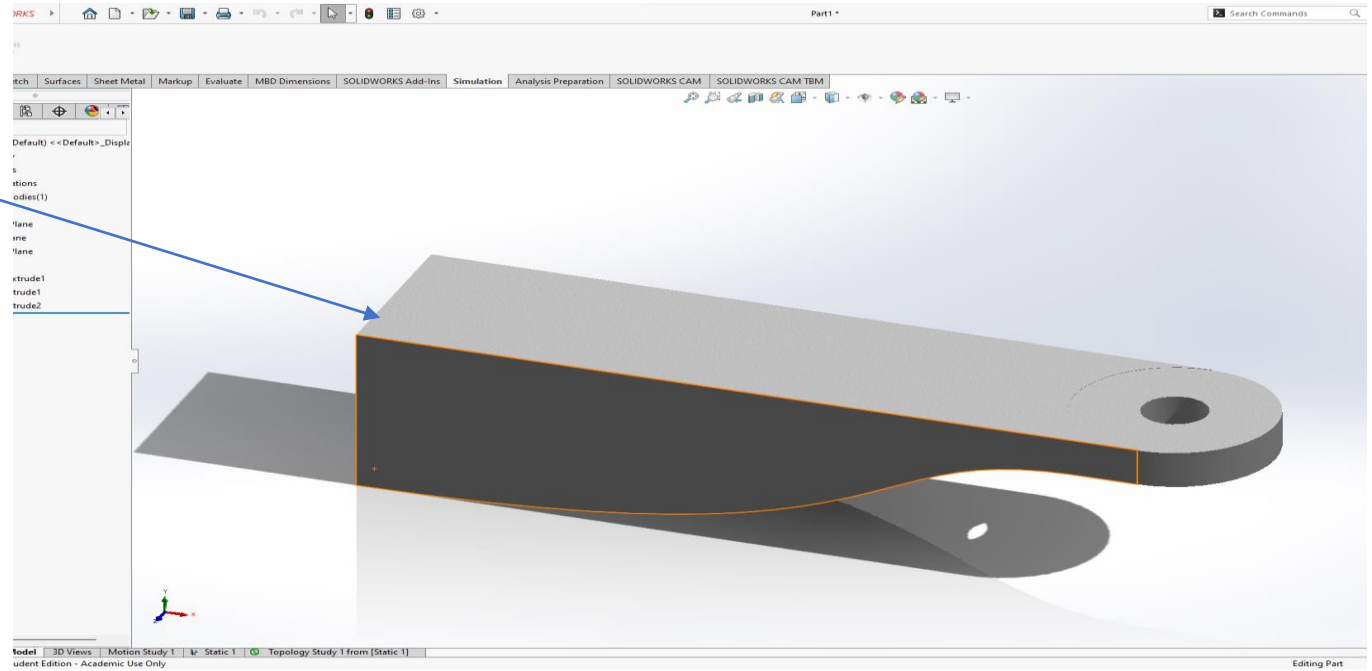
Topology study on a drone arm using Solidworks

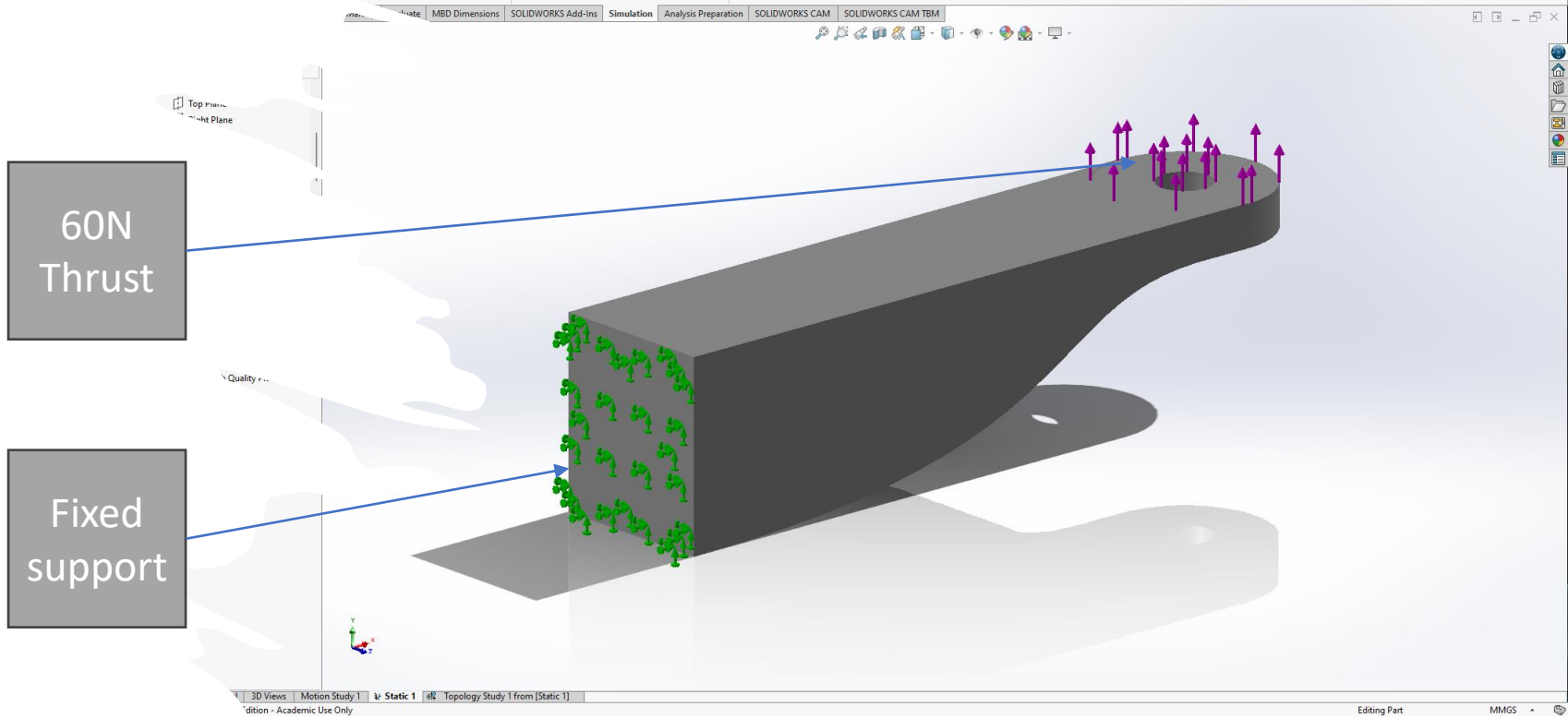
Initial Design

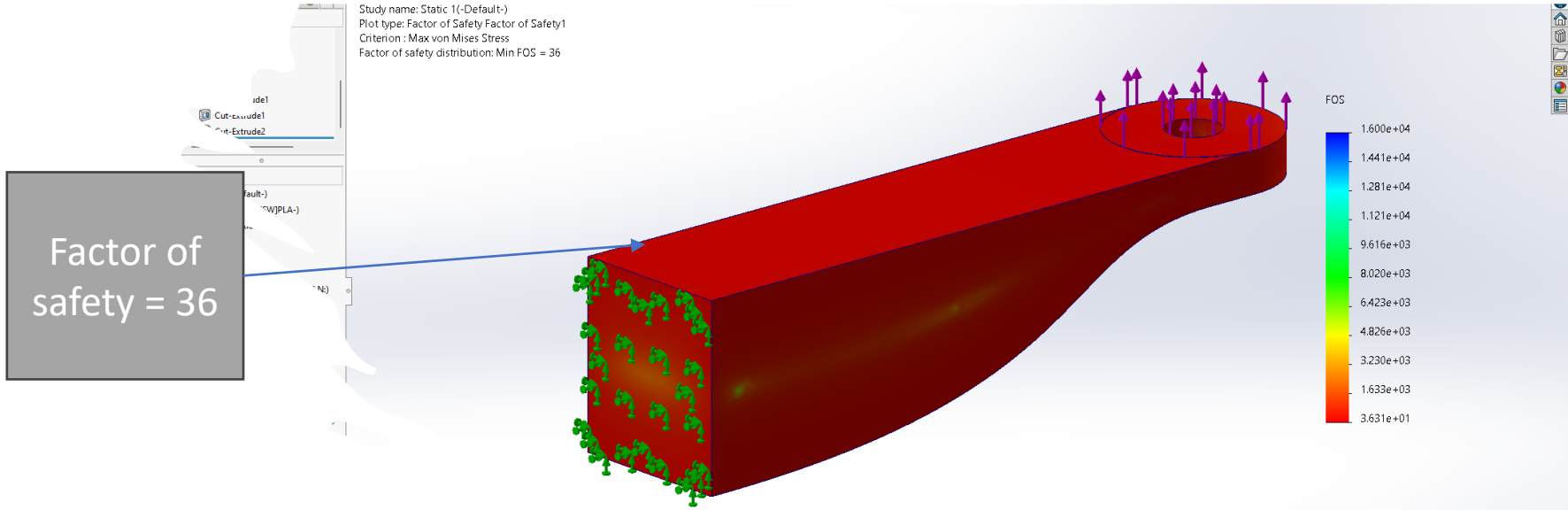




Structural analysis Setup

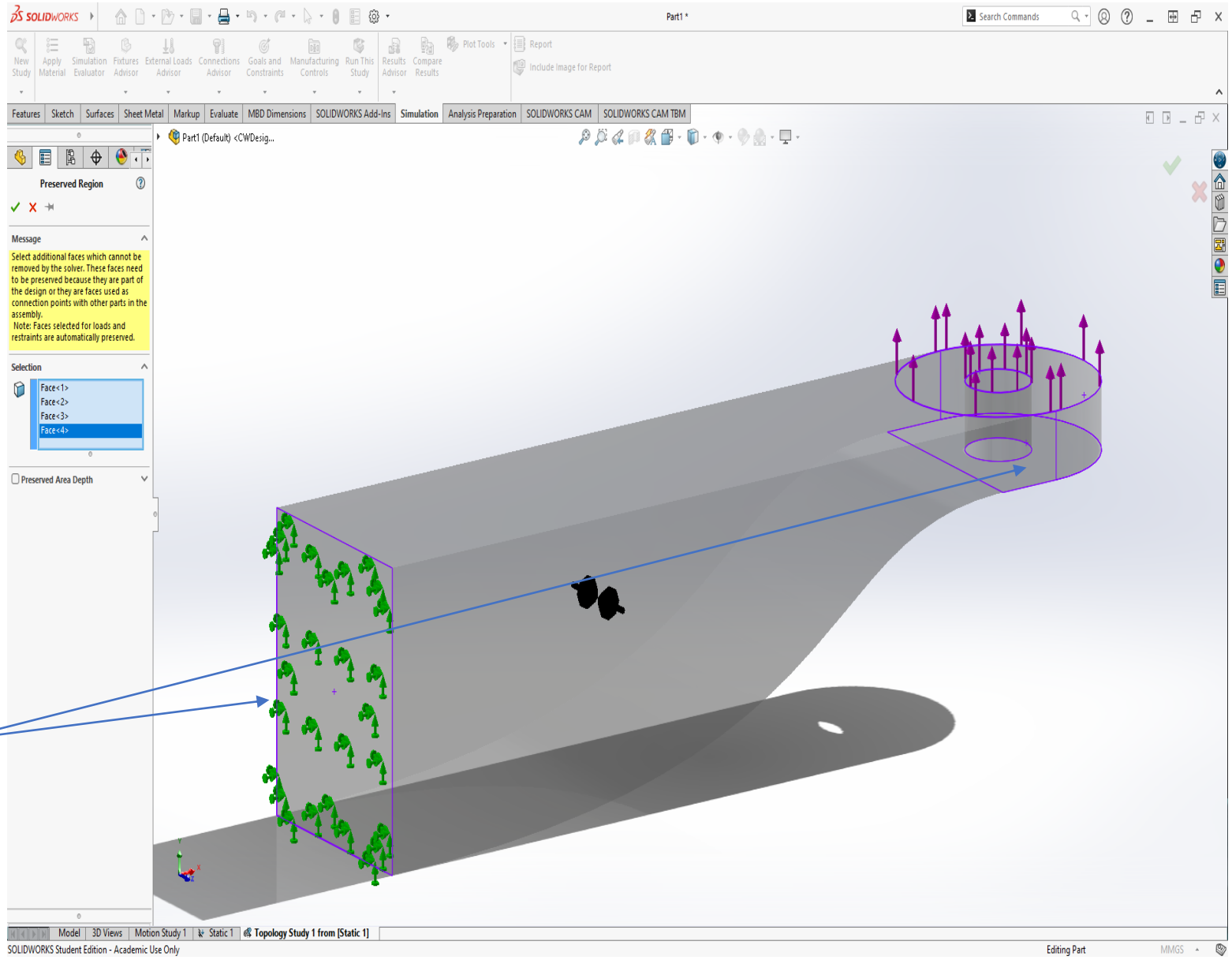
Conducted Structural analysis to estimate current design factor of safety.





Topology study setup

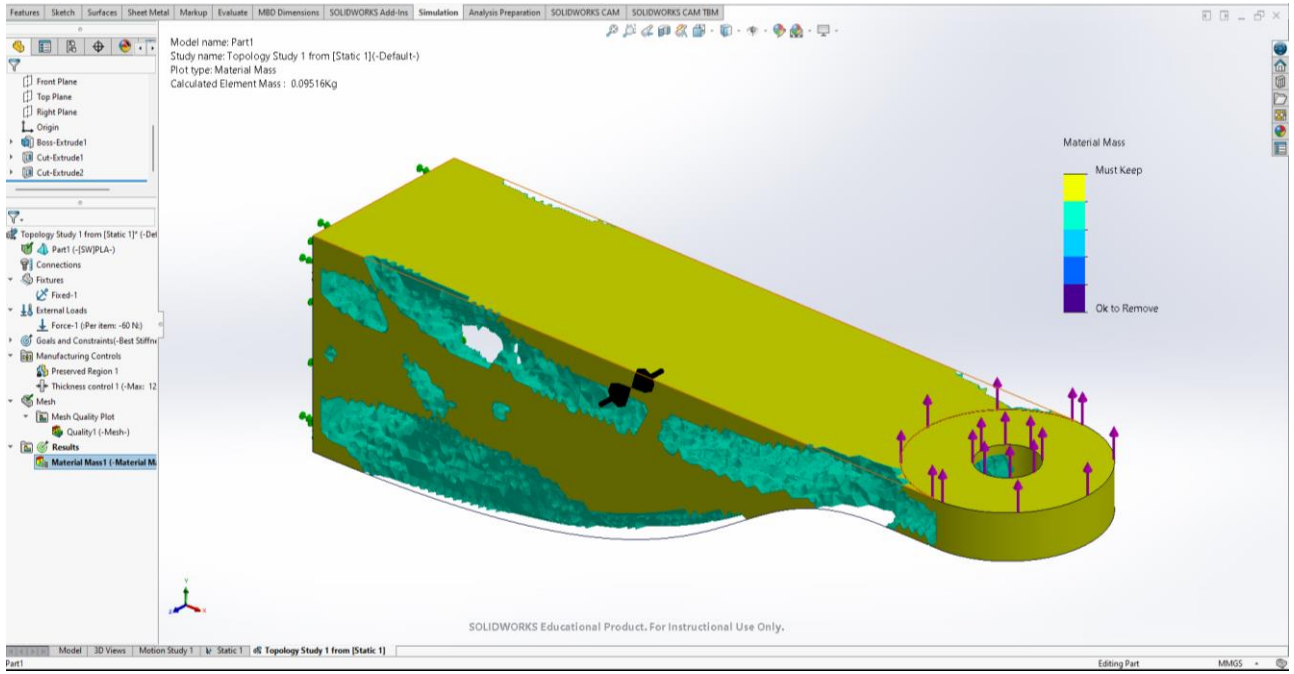
- Mass constraint
- Factor of safety
- Thickness control
- Preserved Region

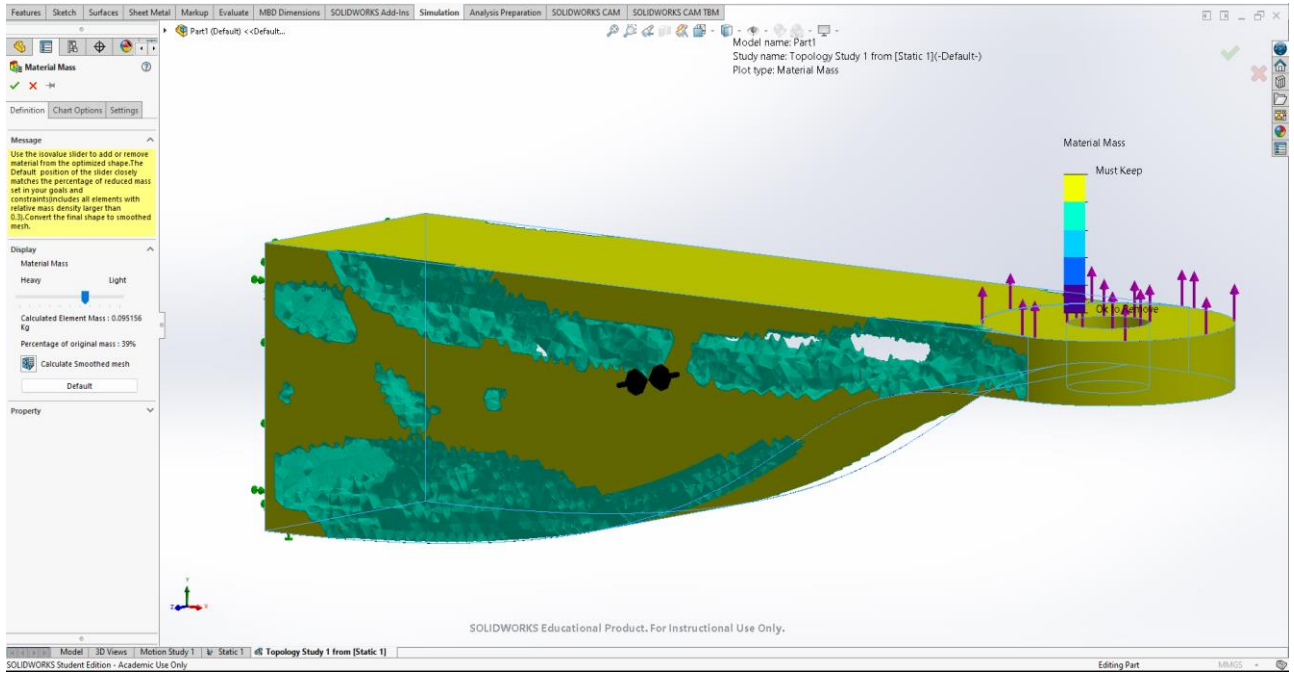


Topology Study Setup

1st Analysis

- Mass constraint = 60% mass reduction
- Factor of safety=4
- Thickness control
  - Min=10mm
  - Max=12mm

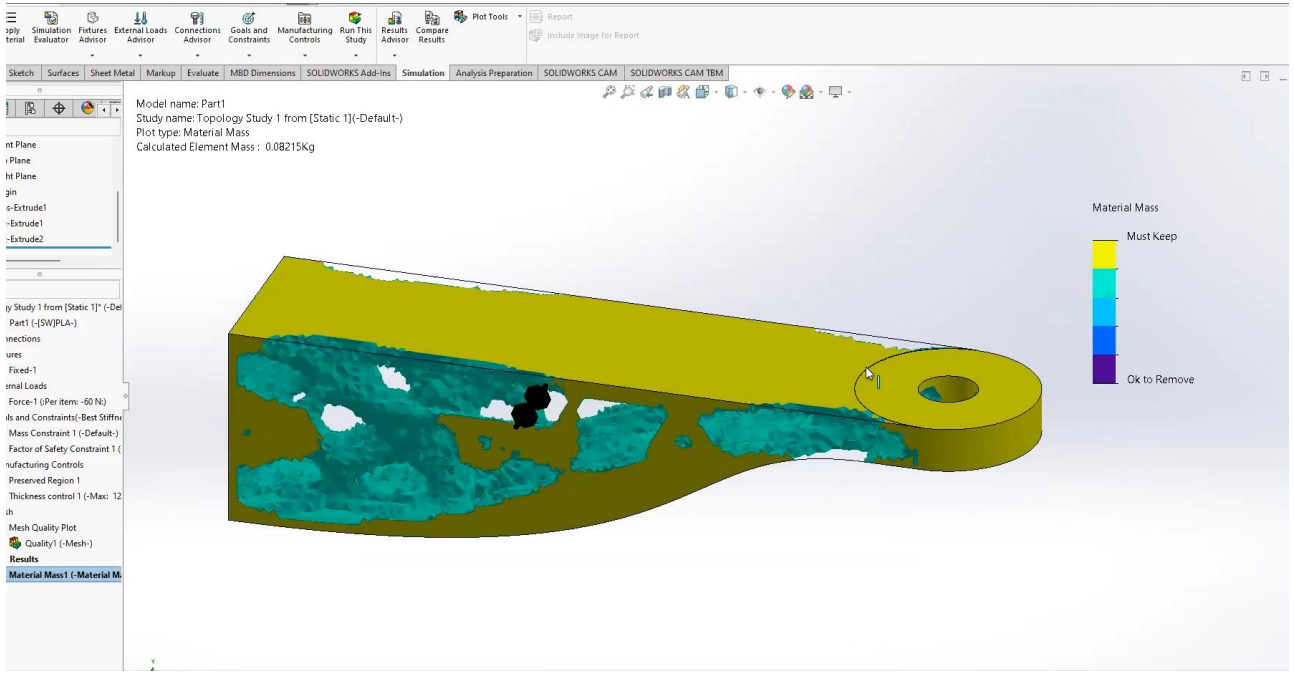


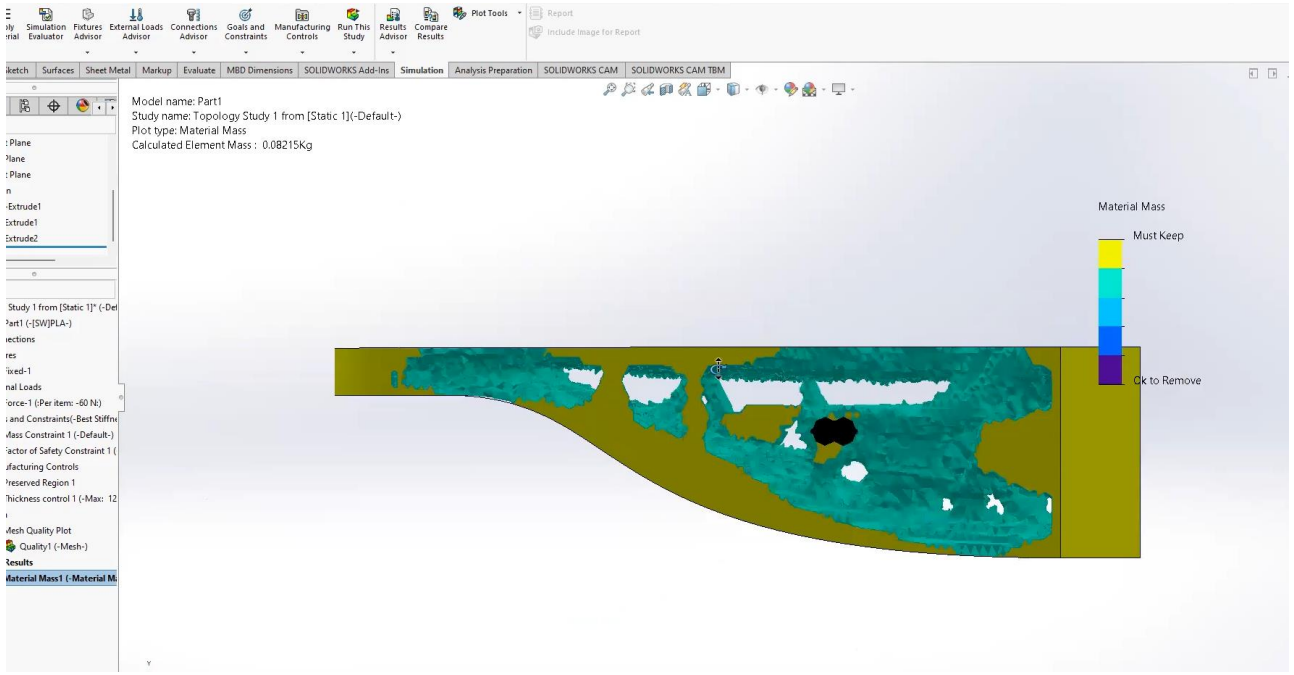


Topology Study Setup

2nd Analysis

- Mass constraint = 65% mass reduction
- Factor of safety=4
- Thickness control
  - Min=10mm
  - Max=12mm

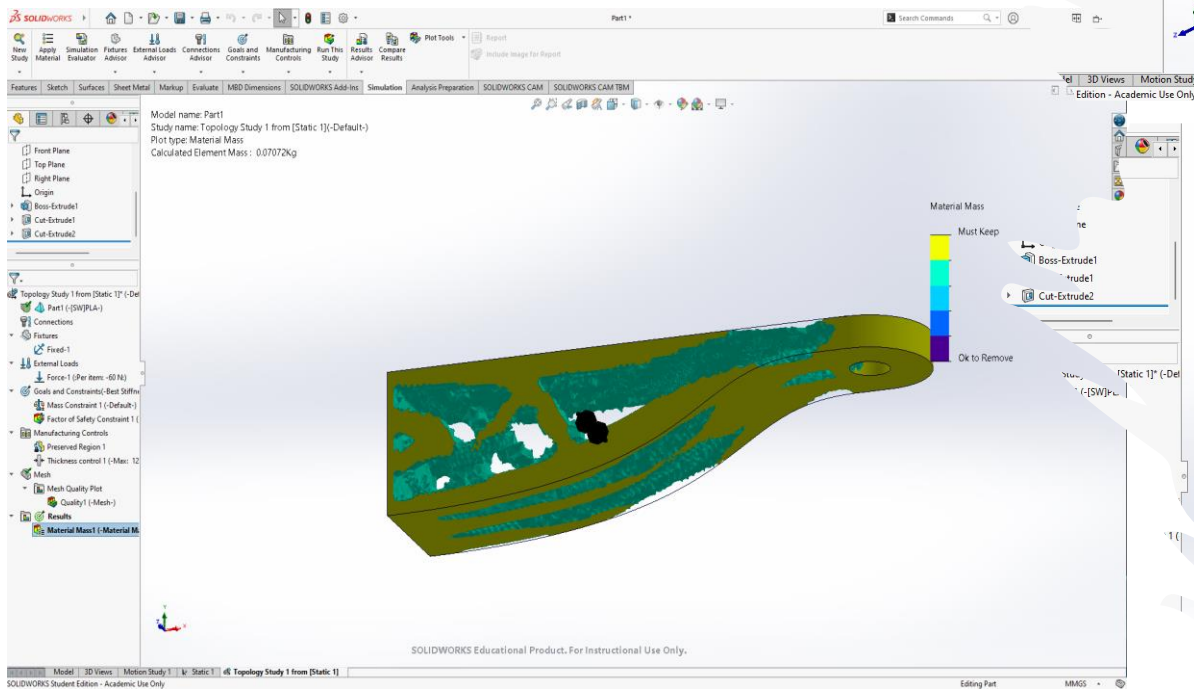


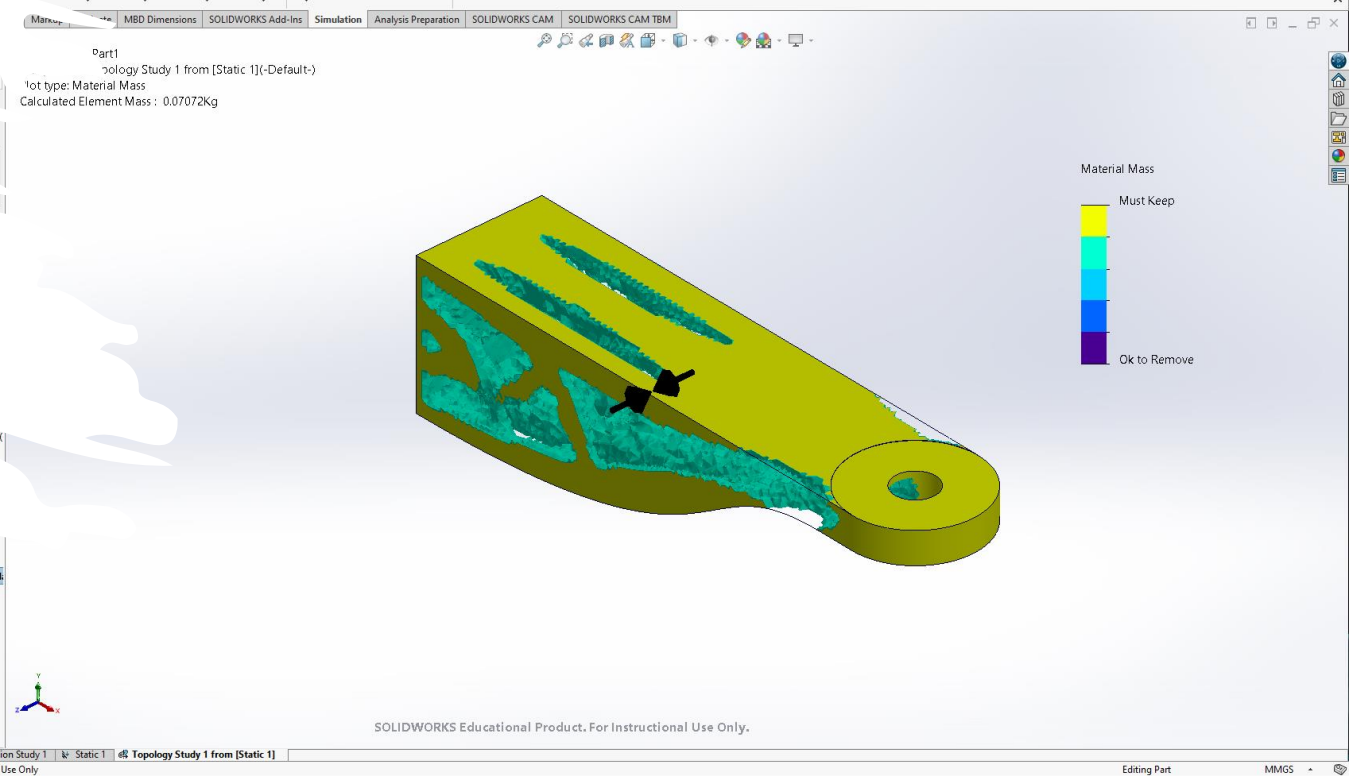


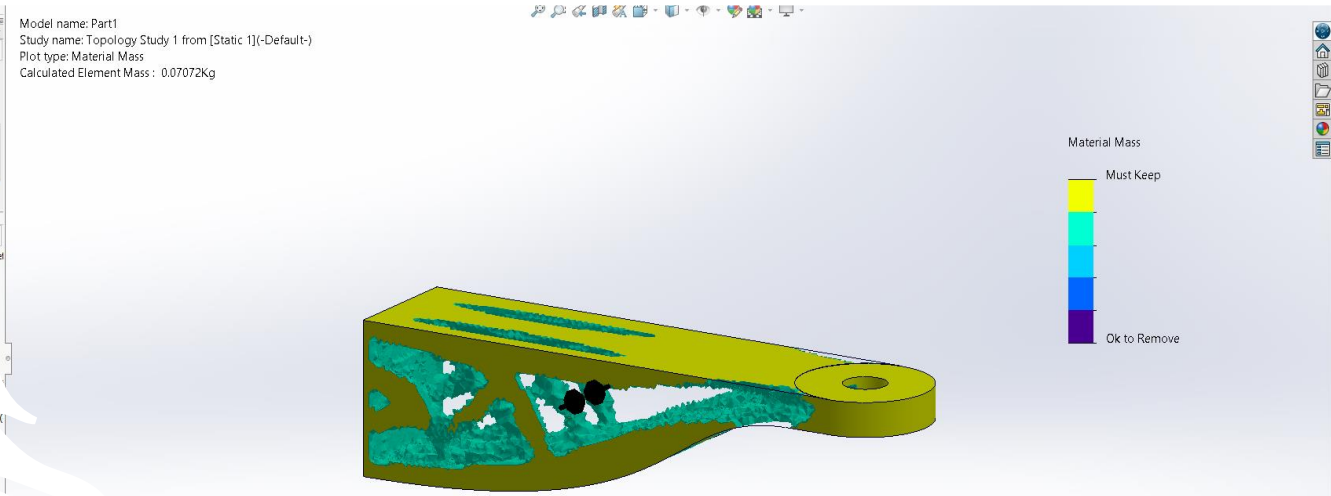
Topology study setup

3rd Analysis

- Mass constraint = 70% mass reduction
- Factor of safety=4
- Thickness control
  - Min=10mm
  - Max=12mm







Optimized shape