Learning Notes – CubeSat Panel Design

This document records what I learned while completing this SolidWorks project.
It is intended to show my learning process, mistakes, and improvements.

SolidWorks Skills Learned
- Creating fully defined sketches
- Applying geometric and dimensional constraints
- Using Extruded Boss/Base and Fillet features
- Using Hole Wizard for accurate hole placement
- Dimensioning hole centers from edges
- Applying material and evaluating mass properties

Key Concepts Understood
- Importance of symmetry in mechanical design
- Why edge distance matters for fastener holes
- Difference between appearance and material in SolidWorks
- Parametric modeling for easy future modifications

Mistakes & Fixes
- Initially placed holes without reference dimensions
  → Fixed by dimensioning 10 mm from edges
- Confused appearance with material assignment
  → Learned to apply material via FeatureManager tree
- Assembly alignment issues
  → Understood the importance of mates and reference planes

Engineering Takeaways
- Small design decisions affect manufacturability
- Clear dimensioning is critical for real-world fabrication
- Documentation is as important as modeling

Next Improvements
- Convert the part into an assembly
- Add fasteners and constraints
- Perform basic static analysis
- Create 2D manufacturing drawings

Reflection
This project helped me understand how professional CAD models are created and documented.
It strengthened my confidence in SolidWorks and motivated me to continue learning aerospace design.