

Composite Structural Components – Door Stop Beam

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Project Description

Students will be provided with a generic / non-proprietary shape representing one end of a passenger entry door-stop beam. Students will be asked to create 3 stop beams using different composite manufacturing methods, which could include hand layup, chopped fiber, oriented fiber tows, 3D printed continuous carbon fibers, resin transfer molding, or similar. Students will be asked to compare the composite parts to an aluminum baseline part (that they will also fabricate).

Technical Expertise Required

The project is seeking team members interested in one or more of:

- CAD: Iterative geometry selection process, and inputs for numerical analysis
- Structural Demand: Structural analysis using hand-calculations and stress analysis using numerical methods (FEM)
- Structural Capacity: Structural design, i.e., dimensioning and connections design based on material capacity.
- Materials Characterization: Knowledge, and research expertise to find elastic properties and strengths of candidate materials.
- Structural Testing: Fabrication and testing
- Manufacturing Engineering: Selection of material + fabrication methodology
- Project Management

Schedule and Format

- Two-quarter capstone, Winter + Spring
- Weekly meetings with the mentoring team
- 5 credits total are required
- Final deliverable to UW is a project report & and a poster presentation in the ME capstone showcase
- Final deliverable to Boeing is typically a final presentation

Getting Started

- Lead one area, support another. The “areas” might not necessarily be those listed above, but you should all be active early. Your area may also change.
 - Each team member should be responsible for writing one component of the final report.
- Take turns leading internal (students-only) meetings on your task, and get feedback from teammates
- Assess resource needs (software, testing equipment and hardware)
- Get budget # from me.
- Take turns leading weekly meetings with Boeing