



Company Information

Company Name	<i>Sullenberger Aviation Museum-Bosch Community Fund</i>	Date Submitted	<i>10/14/25</i>
Project Title	<i>Design of a Universal Airplane Wheel Support System (SULLY_WHEEL)</i>	Planned Starting Semester	<i>Spring 2026</i>

Senior Design Project Description

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills.

Discipline	Number	Discipline	Number
Mechanical	6	Electrical	
Computer		Systems	

Company and Project Overview:

Sullenberger Aviation Museum (SAM) harnesses the awe-inspiring power of flight to **educate, inspire, and elevate** the next generation. Our mission is to spark curiosity and open doors to careers in aviation and aerospace, while fostering **economic growth and opportunity** in Charlotte and beyond.

SAM is more than a museum—it's an **immersive experience** where visitors of all ages can explore the remarkable stories, innovations, and diverse individuals who shaped aviation history. Through our extensive collection of aircraft, artifacts, and interactive exhibits, we bring aviation to life, offering hands-on learning that encourages exploration and discovery.

About Sullenberger Aviation Museum

Founded in 1992 by aviation enthusiast and Carolina's Wing Commander of the Commemorative Air Force, **Floyd Swinton Wilson**, and his wife Lois. SAM stands proudly alongside Charlotte Douglas International Airport. The museum is home to **iconic aircraft and historical treasures**, including the celebrated "**Miracle on the Hudson**" exhibit—featuring the very plane that safely landed in New York's Hudson River on January 15, 2009.

SAM tells stories of **innovation, courage, and perseverance**, inspiring visitors to chase their dreams and reach for the skies.



As a **Smithsonian Affiliate** and anticipating over **120,000 visitors annually**, SAM plays a vital role in Charlotte's cultural landscape, offering tours, educational programs, and private event spaces. Join us as we take flight into the future—one story at a time.





This project will design a mechanical support system needed for museum aircraft on display.

This project is financially supported by the Bosch Community Fund. The Bosch Community Fund, the corporate foundation for Bosch in North America, was established in 2011 to provide community engagement and philanthropic support on behalf of our company.

Bosch Community Fund



The Fund focuses on the enrichment of science, technology, engineering and math (STEM) education and advancing environmental sustainability initiatives. BCF partners with 501(c)(3) organizations and educational institutions across the country to provide quality project-based learning, hands-on learning opportunities for students and professional development for teachers.

Project Requirements:

The pictures below show the 5 display aircraft that will be the subject of this project:





**INDUSTRIAL SOLUTIONS
LABORATORY**





The aircraft are typically rolled into the display space on their landing gear wheels. The landing gear wheelsets are designed for take-offs and landings. They were not designed for long-term storage. For the museum, the aircraft are towed into their display space and remain parked there indefinitely. Over time, the wheels degrade and cannot adequately support the aircraft. Periodically, the aircraft need to be rearranged to support new aircraft or new thematic display concepts. When that occurs, the degraded landing wheel sets make it difficult to move.

The objective for this project is to design a support concept that can allow long term display of the 5 aircraft and allow movement to occur with existing museum machinery when movement is needed.

Expected Deliverables/Results:

- Design for a universal wheel set support that can be used on 5 different aircraft.
- Prototype and demonstration of the design at the museum
- Design to be operated using existing museum equipment.
- Complete design package that is buildable by a third party. Part of the project is to have a third party verify this.
- Provide maintenance and operations manual
- The exhibit should include signage or labelling crediting the financial sponsor, the Bosch Community Fund, and the UNC Charlotte logo recognizing the student work.



Disposition of Deliverables at the End of the Project:

Students are graded based on their display and presentation of their team's work product. It is mandatory that they exhibit at the Expo, so if the work product was tested at the supporter's location, it must be returned to campus for the Expo. After the expo, the team and supporter should arrange the handover of the work product to the industry supporter. This handover must be concluded within 7 days of the Expo.

List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):

- Strong CAD skills
- Strong interest and capability in FEA
- Ability to travel as required to the museum to take measurements, fully understand requirements and do prototype testing.