INDUSTRIAL SOLUTIONS LABORATORY

Company Information

Company Name	*NAVAIR*	**Date Submitted**	*10/8/2024*
Project Title	Design of a H-53 Crew Position System (NAVAIR_H53 Crew)	**Planned Starting Semester**	*Spring 2025*

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		Electrical	2
Computer	2-3	Systems	

Company and Project Overview:

For more than 60 years, Fleet Readiness Center East, at Marine Corps Air Station, Cherry Point, N.C., has played an integral role in our national defense. The facility's In-Service Support Center provides multi-disciplinary, engineering services in both design and maintenance. Our workforce has earned a reputation of excellence, providing worldwide support for Navy and Marine Corps aviation.

Home to nearly 4,000 employees, NAVAIR Fleet Readiness Center East has more than 1,100 engineers shaping the future of naval aviation. Engineers have the opportunity to work on a variety of different aircraft, components, and support equipment, growing their technical skillset and keeping America's Marines and Sailors in the fight.

NAVAIR Fleet Readiness Center East is home to a large number of Fleet Support Teams (FSTs), all of which possess technical authority to provide guidance to Naval and Marine Corps squadrons

around the world. Each FST supports a major aircraft or platform and includes engineers in a variety of disciplines.

NAVAIR is an active participant in capstone projects for a variety of school and uses said projects as a means for recruiting high achieving engineers.

Many of the Navy and Marine Corps' operational commitments are within extremely harsh environments. These harsh environments make it very difficult for pilots to maintain situational awareness, driving efforts to provide the pilots with superior systems as technology advances. Situational awareness is paramount for pilots, ensuring that the aircraft and crew are positioned correctly for safe and efficient operation. While intercommunication systems assist with this, they are not always an ideal solution. We would like to enhance pilot awareness by providing a means to actively track and record positional data of crew members in an aircraft and display it to the pilots.

Project Requirements:

Develop a prototype system that spatially locates and logs crew members within the confines of an aircraft.

The system must meet the following specifications:

- Area of detection to be cockpit and cabin which combined measures 30 ' L x 8' W x 8' H
- Display positional data in real time
- Record positional data every 10 seconds for 8 hours
- Record up to 6 crew members at once
- Accurate within 12 inches
- Function in environments to include smoke, dust, and rain
- Obtain positional data from passive devices which can be attached to flight suit

Expected Deliverables/Results:

Develop a prototype system that spatially locates and logs crew members within the confines of an aircraft.

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):

- Circuit design and sensors
- Wireless Communications
- Embedded SW/programming
- Printed Circuit Board Design required
- Must be a US Citizen